ANNUAL REPORT 2018

Feeling good

BÜHLER

Feeling good

At Bühler, we feel good about what we do. We have a positive impact on the economies in which we operate and the people we employ. We are proud to play a decisive role in vital industries. From the foods you eat, to the cars you drive, to the technologies you use daily, Bühler is part of your life. We are working to create sustainable innovations for a better world so that our customers and consumers can feel as good as we do.

THE BÜHLER GROUP

Every day, billions of people come into contact with Bühler process technologies to cover their basic needs for food and mobility. We develop innovations for a better world with a focus on sustainability, health, safety, and energy efficiency.

GRAINS & FOOD

We significantly contribute to safely feeding the world as a front-runner in the global production and processing of wheat, corn, oats, rye, rice, pasta, cereal, and pulses. Our Grains & Food (GF) solutions and digital technologies help manufacturers make safe and healthy finished products for both human and animal nutrition. Learn more about where you will find our GF technologies on pages 34–35.

CONSUMER FOODS

We offer the full gamut of technologies and solutions to bring life's little pleasures to people all over the world. From equipment to roast cocoa beans, machines to prepare dough, ovens for baking wafers, and enrobing machines for that final delicious chocolatey touch, Consumer Foods (CF) is the single source from raw material to tasty sweets and savory treats. Learn more about where you will find our CF technologies on pages 36–37.

ADVANCED MATERIALS

We provide solutions for die-casting, wet-grinding, and thin-film technologies for high-volume application areas, including the automotive industry, precision optics, ophthalmics, electronics, packaging, inks, and paints. Our Advanced Materials (AM) solutions and technologies help manufacturers produce higher-efficiency vehicles, make buildings more economical, advance telecommunications, and give better eyesight to wearers of prescription lenses. Learn more about where you will find our AM technologies on pages 38–39.

TOGETHER FOR CUSTOMER SUCCESS

From the first spark of a product idea to seeing it come to life thanks to a smooth production process, we are proud to be at our customers' service. Working hand in hand, our Consumer Foods team ensures that our customers keep enjoying the sweet side of life.

Contents

Stefan Scheiber, CEO, and Calvin Grieder, Chairman, at the spiral staircase in the nearly completed CUBIC innovation campus lobby.

STRENGTHENING OUR STRATEGIC POSITION

Dear customers, colleagues, and business partners,

The 2018 business year was characterized by continued growth and the progression of our strategic setup to further secure and advance the sustainable future of our company.

Operationally, we can report a continuation of organic growth within our businesses. Grains & Food increased turnover by 9.2% to CHF 2.2 billion, and Advanced Materials by 5.6% to CHF 705 million. Haas contributed turnover of CHF 373 million. Organic- and acquisition-related growth led to a jump in Group turnover of 22% to CHF 3.3 billion. In terms of profitability, we are not fully satisfied. Our EBIT increased by 13% to CHF 231 million with a slight margin decline from 7.6% to 7.1%. Profitability was impacted by necessary adjustments at our Changzhou, China, site. After years of over-proportional growth in China, this move ensures its alignment with Bühler's global standards and systems and sets the foundation for further expansion. Without this one-time effect, the EBIT margin would have reached 8%.

Our strategic position was improved by several factors. First, by the full integration of the Austrian Haas Group. The Haas business has already contributed favorably to the development and financials of the Bühler Group. This encouraged us to accelerate the full consolidation of Haas and to unify our complementary businesses. We therefore established a third strategic pillar – Consumer Foods – to focus on this important, global growth market. This pillar stands alongside Grains & Food and Advanced Materials from January 2019.

Second, we further strengthened our global setup. Our new factory and R&D facility for the feed industry in Changzhou, China, is now in full operation. Third, we have also nearly completed our CUBIC innovation campus in Uzwil, Switzerland. The first departments have moved in. The CUBIC, with its new application centers, heralds a new age of collaborative innovation, where we can more fully live our cross-boundary, collective approach to research and development. With the CUBIC, we are creating a catalyst to turn the pressing global challenges of today into viable business models with customers, partners, academia, and start-ups.

In this context, we continued to develop and harness digital opportunities. We are convinced that these new, value-driving digital services will benefit not only our customers, but also end consumers. A key moment in our digitalization journey was marked in April 2018 when we formed an alliance with Microsoft to drive the rollout of cloud-based solutions. In September, another milestone was reached with the launch of the Bühler Insights digital platform – our secure, high-performance, and reliable platform for all of our digital services. These initiatives create vast potential for improving safety, quality, efficiency, and traceability across production value chains.

We feel good about developing sustainable solutions and doing what is right together with our customers and collaboration ecosystem. "Feeling good" is also the motto of this year's annual report.

We wish to express our sincere gratitude to our customers, partners, our workforce and their families, and our owners. Our success and our ability to feel good about all that we have achieved is due to your commitment and trust. We look forward to working closely with you for years to come.

Yours faithfully,

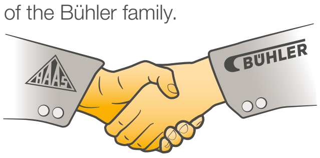
Calvin Grieder
Chairman of the Board

Stefan Scheiber
Chief Executive Officer

HIGHLIGHTS
OF THE YEAR 2018

BÜHLER WELCOMES THE HAAS GROUP

The development of Bühler's **consumer foods** segment takes a significant step forward as the **Haas Group,** global market leader in production systems for cookies, wafers, ice-cream cones, cakes, and bakery products, becomes part of the Bühler family.



GENDER COMMITMENT

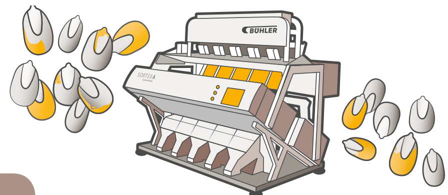
BÜHLER

On **International Women's Day,** Bühler Group CEO Stefan Scheiber joins forces with 50 Swiss-based companies to make a public pledge in support of **gender equality** in the company.

PARTNERSHIP WITH MICROSOFT

Bühler and Microsoft commit to an **alliance** that will **enhance food safety and traceability** with the rollout of cloud-based solutions and the evaluation of blockchain applications.

LAUNCH OF A LIFESAVER



Bühler unveils a **breakthrough in sorting technology.** LumoVision minimizes toxic contamination in corn by identifying and removing cancer-causing, aflatoxin-infected grains more accurately and with greater speed than any previous solution.

ANIMAL NUTRITION RESEARCH

400 guests from 30 countries attend the opening of Bühler's new **manufacturing and R&D** site in Changzhou, China. It serves the **animal nutrition** and grain logistics sectors with its 3,000 employees.

January | February | March | April | May | June

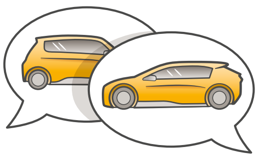
ECO-FRIENDLY COFFEE

Bühler announces that it's building the world's first **ultra-low-emission** coffee processing plant, for Norwegian coffee producer **Joh. Johannson Kaffe.**

COCOA LAB OPENS

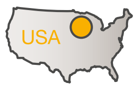
A **new application lab** opens in Indonesia. **Bühler Indonesia** can now offer complete customer trials for cocoa processing, ranging from cocoa beans to cocoa liquor and to the end product, chocolate bars.

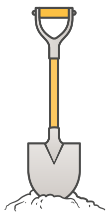
FUTURE OF MOBILITY



On the eve of the **Beijing Motor Show,** Bühler brings together over 200 experts and influencers for its AM Networking Days 2018 event to discuss the future trends that will **reshape the automotive industry.**

BREAKING GROUND

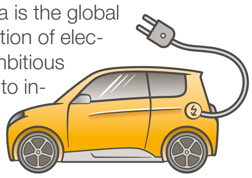




Bühler **Minneapolis breaks ground** on its Food Application Center for special milling applications. The center will officially open in the first half of 2019.

BATTERY BOOST

Bühler opens a new **battery lab** in Wuxi, China, further consolidating its position in the **e-mobility** market. China is the global leader in the production of electric vehicles, with ambitious government targets to increase electric car sales to 5 million by 2020.



INCLUSIVE ENVIRONMENT

A **Group-wide Diversity & Inclusion project** team is formed at Bühler to raise awareness of the need for inclusive diversity within the company.

DIGITAL FIRSTS

The Ipack-Ima trade show in Milan sees Bühler unveil more than 20 new **digital innovations.** These will help Bühler meet its ambitious 2020 targets of reducing **energy consumption** and waste in the food chain by 30%.

FOOD SAFETY ALERT SYSTEM

Bühler launches **safefood.ai,** a single source for food safety alerts. The **digital platform** filters information on food safety incidents and risks from numerous sources to enable customers to respond swiftly and efficiently to potential food safety risks.

SECURELY IN THE MIX

The brand-new 200 Swiss franc note hits the streets, its crisp colors mixed on Bühler equipment. Bühler has a global market share of more than 75% for equipment that produces **security inks.**

LASTING CONNECTIONS

Thirteen delegates under age 30 from 10 different Bühler sites attend the **One Young World** forum. They are among 1,800 participants from 190 countries who gather to address the most pressing challenges of the world.

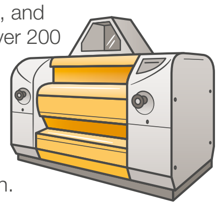
DRIVING DEVELOPMENT

The opening of a Bühler **cocoa training center** in **Ivory Coast** is announced. This center supports the country's goal to increase the amount of cocoa processed in the country. An application lab will open in the first half of 2019.

GOLD AWARD

Bühler Consumer Foods and partner Crealogix receive the Brandon Hall Group **Gold Award** in the category **Best Customer Training Program** for **ChocoGenius,** a blended learning approach for chocolate line operators that combines web-based courses with face-to-face training at Bühler or at the customer's site.

CONTINUOUS SUCCESS



The 5,000th Antares roller mill leaves our factory in Uzwil, Switzerland for its new home in South Korea. Its success story began a decade ago, and thanks to over 200 customer projects in this time, it has become an industry icon.

July | August | September | October | November | December

AWARD-WINNING PROCESS

Bühler's Atta process with **PesaMill** – the first industrial process technology for the production of whole wheat Atta flour – wins the **GRAPAS Innovation Award** 2018.

STRONG SIGNAL

Our customers experience firsthand the **united world** of **Bühler and Haas** at the International Bakery Exhibition 2018 (iba) in Munich, Germany.

SUSTAINABLE ACQUISITION

The position of **Bühler Leybold Optics** is further strengthened by the acquisition of US-based Sputtering Components Inc., a leading supplier of components for large-area **vacuum coating systems** such as architectural glass and displays. Architectural glass can cut a building's energy use by over 50%.

CUSTOMER PROXIMITY

A **new application center** and service station specializing in rice, flour milling, feed, and coffee opens in **Myanmar,** in the Thilawa Special Economic Zone – a strategic location located close to many local and foreign industrial food companies.

RIBBON CUTTING

Bühler opens a **new factory for dies and roller shells** in Enschede in the Netherlands. More than 80 people from the **feed and biomass** industry attend the ribbon-cutting ceremony.

SPECIAL INSIGHT

A landmark moment as Bühler launches the pioneering **Bühler Insights** platform in partnership with Microsoft. The secure, high-performance **platform for digital services** in the food and feed industries utilizes Microsoft's pioneering Azure cloud technology to help customers slash costs and waste, and boost safety, traceability, and transparency.

LUCKY NUMBER

The 500th Ecoline die-casting cell goes into operation at automotive parts manufacturer Huashuo in China. Our customer now has 45 Ecolines.

"WE TAKE OUR RESPONSIBILITY SERIOUSLY"

Why CEO Stefan Scheiber is optimistic, what fills him with gratitude, how digitalization is an opportunity not to be missed, and what today's soccer has to do with cohesion and culture.

Interview: Burkhard Böndel, Head of Corporate Communications

Mr. Scheiber, Bühler's solutions around the globe are currently providing food for approximately 2 billion people each year. And 1 billion travel and commute in vehicles made with Bühler technologies. What does this mean for you?
We are conscious of the responsibility that we carry and take it very seriously. Playing such a relevant role in both nutrition and mobility offers us the opportunity to address – together with our customers – some of the most pressing challenges of our time. Consider the children suffering from malnutrition and the people who only have access to contaminated foods. And let's not forget the effects of climate change and what that will mean for food security for our growing population. We are now in a phase that will be decisive for the planet.

It is time to address the problems triggered by humankind. Our generation is now defining how the world will be passed on to our children, and whether they will have the same life opportunities and possibilities for development that we have had. We should all be working to bring about the sustainable turnaround that we so urgently need. Bühler can make a significant contribution here – but not alone. Hence our philosophy to collaborate with a broad spectrum of companies and individuals to create "innovations for a better world."

What specifically is Bühler doing?

As a result of the first Networking Days event in 2016, we have defined our sustainability objective: 30% less energy and 30% less waste to be achieved by our process solutions. We have pursued this goal with determination with all new product innovations. We are measuring the results and have already recorded achievements. In this way, our process solutions are not only becoming more sustainable. We also differentiate ourselves from our competitors and provide our customers with measurable added value. We intend to take this challenge to the next level with the opening of the new CUBIC innovation center. This center will embody our innovation spirit and culture and provide us with new opportunities for cooperation with customers, businesses, academia, start-ups, and more. Furthermore, this investment is a clear intergenerational acknowledgment of Switzerland as a location for innovation.

The CUBIC will officially open in spring 2019, and in August we will invite our customers to join us there for the first time. Together, we look for solutions and opportunities that will make sustainability commercially successful, and will also leave a healthier planet for future generations.

Bühler's aspiration alone does not make for a successful company. How do you translate the power of determination into profitable growth?

With a value-based corporate culture, and passionate staff working for customers every day on every continent. Our aim is to transform the global challenges into sustainable technologies and business models. But in the end it is always about convincing customers with the genuine added value provided by our solutions. We must also strive to remain ahead of our competitors with our innovations, and our customer service needs to be the best.

How will you achieve this?

By covering entire value-creation chains with our product portfolio and therefore presenting ourselves as full solution providers – from grain to bread, from the cocoa bean to chocolate, or from molten aluminum to the finished engine block. Today, this is all strongly supported by digital technologies. Add to this our commitment to supplying service and transferring and sharing knowledge. This positioning enables Bühler to generate additional value for customers that no other competitor can offer.

Second, we strive to become the technology and market leader in all of our business segments. We made significant progress in 2018. An example of this strategy is the acquisition of Haas, a milestone that changes Bühler's structure, in particular because in this way we can offer our customers a complete product portfolio in the consumer foods sector. We introduced a new generation of mills, the Mill E3, at the 2018 Ipack-Ima in Milan, Italy.

After 30 years of continuous development in milling, the Mill E3 marks a real transformation. It will reduce building investment by 30%, can be installed 30% faster, and will save at least 10% in energy use. The market launch is planned in 2020. We are also planning to unveil a revolutionary new die-casting platform in June 2019 at the GIFA trade fair in Düsseldorf, Germany. Our teams began developing this solution in 2016, and prototypes were successfully tested throughout 2018 – so keep your eyes open for this.

Getting back to the Haas acquisition, how did the integration progress in 2018?

Remarkably well. We are very satisfied with the results in the first year. After an initial moment of surprise for staff and customers, a unique positive momentum has arisen. The acquisition has put us in a position to offer our customers integrated product solutions from one source, for wafers, cakes, cookies, chocolate confectionery, and bakery products. All parties involved quickly realized what additional value we can generate with this combination, and their enthusiasm is unmistakable.

The transition has been so smooth and successful that Bühler will base itself on three strategic pillars, rather than on the previous two of Grains & Food and Advanced Materials. The third pillar is Consumer Foods. With this step we are the clear No. 1 in this global growth market, and have great potential for the future. The move is effective in 2019, but the building blocks were put in place in 2018.

In this regard, is it helpful to still be a family business?

Generally, family businesses can plan more independently, and they can have a more long-term orientation than companies listed on the stock exchange. We are very proud to be able to work for the Bühler family because we are not only sharing common values but really living them. The investments in Haas or in the CUBIC would not be possible without alignment between the family, the Board of Directors, and management. In this way, we have the ideal conditions to take Bühler into the future.

Let's look further ahead: What are the major themes that move you?

Digitalization and inclusive diversity stand out as points of focus alongside many others. Networking, artificial intelligence, and robotics make it possible to combine the physical and virtual worlds to generate new value in a more efficient way. The transformations that may unfold as a result of digitalization are fascinating, enticing, and also disquieting in equal measure. As a company we cannot afford to miss out on the opportunities it will present. Therefore, we are actively moving this transformation forward on all levels, for efficient production in the factory, in our machinery with networked technologies, and with completely new digital services and business models.

In April 2018, we partnered with Microsoft to further our efforts to enhance food safety and traceability along the value chain, and also to evaluate blockchain applications.

What is the reason for the increased emphasis on inclusive diversity?

First, inclusion is a human right. It is my firm belief that each and every employee at Bühler should feel welcomed and comfortable at work. Second, every strategy is only as good as the people who implement it. People always operate in a cultural framework. To put it in a nutshell: "Culture eats strategy for breakfast." If we want to maintain the lead in our

Stefan Scheiber, Chief Executive Officer.

“We look for solutions that will make sustainability commercially successful, and will also leave a healthier planet for future generations.”

STEFAN SCHEIBER
CEO

competitive markets, we have to work continuously on our culture. I like to use soccer as an analogy.

Diversity brings different perspectives into the arena, and an atmosphere of teamwork, trust, and belonging is what creates a winning team. In the past, possession of the ball lasted an average of three seconds. Today, it is just one second. To play at this speed, you have to activate and include all the talent on the playing field. The players must trust each other, so that when they get the ball they intuitively know where to move it and know that other players are working with them to move it forward.

At Bühler, we are working on establishing a more open culture that will attract a diversity of talent: people who are willing and empowered to contribute their perspectives irrespective of their age, origin, beliefs, or gender. In a first step, I made a public pledge on International Women’s Day 2018 in support of gender equality in our company.

This commitment, which is fully backed by our Board of Directors and management, also includes the commitment to increase the share of women we employ by 1% year-over-year and accelerating. This enrichment in terms of knowledge and abilities is a decisive factor for us to win the game.

How do you believe your markets will develop – and what do you expect in the longterm?

I am generally positive because the world economy is continuing to grow, albeit no longer as dynamically. Risks in the currency markets have increased, and the new trade barriers and tariffs are not making business any easier. However, new opportunities are always arising. In general, we are operating in interesting markets for which we are developing sustainable solutions. We have strong market positions. We have a committed workforce with outstanding skills. And we have relationships with thousands of fantastic customers around the world who are investing in the future. I find all of this encouraging and motivating.

Are you proud of what Bühler and you have achieved over your last two years as CEO?

I am proud of what has been achieved. I am also fully aware that what has been accomplished is only possible thanks to our customers, a great management team, a great workforce at all our locations, and the great support of our shareholder family. Let’s not forget that this is also combined with a certain degree of good fortune. We cannot influence everything. I am aware of my own limitations, and I am grateful to be supported by everyone at Bühler who is striving to make it stronger.

Group Report

We are operationally and strategically well positioned. In the year under review, we strengthened our global setup with the ongoing expansion of our production network, with a strategic acquisition, and the construction of the CUBIC innovation campus.

IMPROVED MARKET POSITION AND GROWTH

2018 is marked by the successful integration of Haas, an improved market position, and a high rate of innovation.

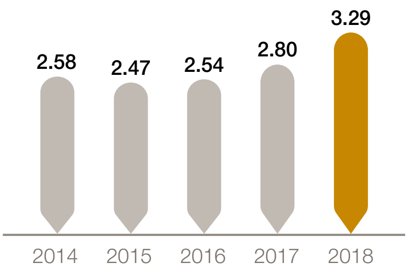
The 2018 business year was characterized by continued organic growth in all segments with a gain in market share. Based on the successful integration of the Austrian Haas Group, Bühler established a third business pillar: Consumer Foods, effective January 2019. With this strategic step, we improved our market position in this important growth market. Haas already contributed positively to Bühler's performance in the first year. While maintaining a healthy financial position, our profitability margin stands slightly below last year's level and does not fully reflect the earnings potential of the company.

The leading technology and market position of the Bühler businesses was further strengthened by ongoing, substantial investments and accelerated development with a focus on digital platforms and services. It is for this reason that we have made extensive strategic investments in recent years, for example, in the construction of our new CUBIC innovation campus and the application centers in Uzwil, Switzerland. We have also invested in our global production network, opening a battery application lab in Wuxi, China; moving our Die Casting revision business to a new location in Brescia, Italy; and modernizing our Uzwil site. Despite the somewhat gloomy economic conditions of 2018, we remain optimistic that we will continue on a sustainable course of economic growth.

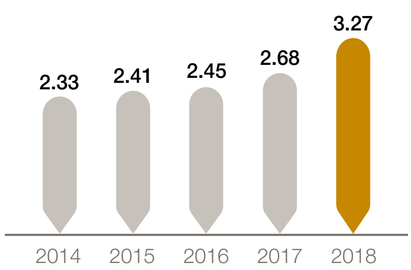
All businesses showed organic growth

All Bühler businesses have shown a continuation of organic growth by increasing their order intake, the most important indicator for growth. With a growth rate of 3.2%, the order intake of Grains & Food (GF) again surpassed the CHF 2 billion threshold, reaching CHF 2.2 billion. The order intake of Advanced Materials (AM) increased by 7.3% to CHF 721

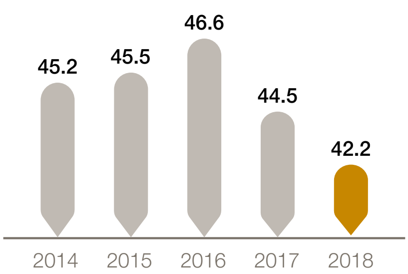
Order intake
(in billion CHF) **+17%**



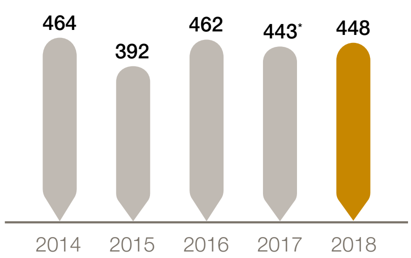
Turnover
(in billion CHF) **+22%**



Equity ratio
(in %) **-2.3 pp**



Net liquidity
(in million CHF) **+1%**



* excluding corporate bond of CHF 420m

million, and Haas contributed CHF 382 million. Turnover grew even more strongly: GF by 9.2% to CHF 2.2 billion, AM by 5.6% to CHF 705 million, and Haas added CHF 373 million. As a result of the combined organic and acquired growth, we were able to raise order intake on the Group level by 17% to CHF 3.3 billion compared to the previous year. Turnover increased by 22% to CHF 3.3 billion, which resulted in an order backlog of CHF 1.92 billion (+5.9%).

All regions contributed to this positive performance, whereby turnover growth in Europe (+28%) and Asia (+40%) stand out. Europe accounts for 31% of the global turnover and Asia for 30%. This is all the more encouraging as it demonstrates that Bühler has the ability to harness the potential of developing markets as well as those that are more saturated. Our geographic range is broad and well-balanced: Europe 31%, Asia 30%, North America 14%, Middle East & Africa 14%, South America 6%, and South Asia 5%.

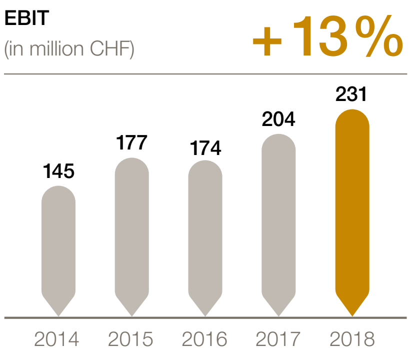
Structurally, our portfolio mix also achieved further gains. Services (+19.5%) and the single machine business (+5.7%) together account for turnover of CHF 971 million. The e-commerce platform, myBühler, is developing into an important service business. At the end of 2018, 4,000 Bühler customers were connected. Turnover also increased by 25.2% in projects and plants.

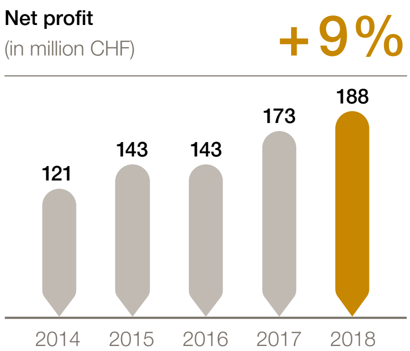
Strong financial position remains

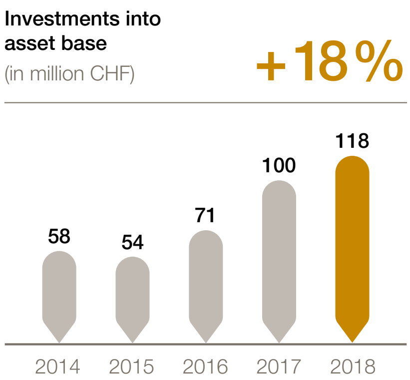
EBIT increased in absolute terms by 13% to CHF 231 million, which represents an EBIT margin of 7.1% (previous year: 7.6%). Profitability was impacted by necessary adjustments at our Changzhou, China, site. After years of overproportional growth in China, this move ensures its alignment with Bühler's global standards and systems and sets the foundation for further expansion. Without this one-time effect, the EBIT margin would have been 8%.

With a slightly improved tax rate of 20.1% (previous year: 20.2%) and a financial result of CHF 4.6 million (previous year: CHF 13 million), net profit grew by 9% and reached CHF 188 million (previous year CHF 173 million). Starting from a healthy level, Bühler's financial situation remained strong. The expenses for research and development (R&D) were further increased to CHF 145 million (4.4% of Group turnover) in line with our strategy to be an innovation leader in our industries.

The investments into the asset base were also expanded to CHF 118 million (+18%). Operating cash flow increased by 28% to CHF 202 million. Net liquidity remained high at CHF 448 million (+1.1%, excluding the corporate bond). The equity ratio dropped slightly to 42.2% (previous year: 44.5%) mainly due to effects from the Haas acquisition.







STRONG OPERATING BUSINESS

All Bühler segments contributed to its strong growth – with Advanced Materials once again posting record results and Haas already having made a positive impact on the Group result in the first year of its acquisition.

Order intake	
CHF 2.2 billion	+3.2%

Turnover	
CHF 2.2 billion	+9.2%

Grains & Food

Grains & Food, which returned to growth in 2017, was able to sustain its upward trend in 2018 and increased order intake by 3.2% to CHF 2.2 billion. Turnover grew 9.2% to CHF 2.2 billion. The growth was fueled by the growing demand in the consumer foods market. Bühler's Consumer Foods business area achieved a growth rate of more than 20% due to extraordinarily large orders from Japan, Germany, and the US. Milling experienced moderate growth as a result of Southeast Asia and China increasing investment in food security. We also progressed with our single machine business, namely, with our optical sorters. In the high-end optical sorting market we have gained market share, strongly driven by new applications for fruits and vegetables.

With Mill E3, Milling Solutions introduced a completely new concept that revolutionizes industrial milling. With the integrated grinding system Arrius, preassembled and tested modules, and a power-bus bar system, Mill E3 reduces energy consumption by 10%, enables 30% faster installation, and a 30% reduction of investment into construction. We are reducing the height of the building by half, to three floors.

Grain Quality & Supply continued to be the clear market leader for the brewery market, winning major orders for malting. In 2018, we also saw improvements in the grain storage market, where we strengthened our market position.

In Digital Technologies we established our position as a leader for digitalization. We introduced more than 20 digital innovations, achieved sizable first turnover, and we entered into a partnership with Microsoft. Within this business area, our sorting business did especially well with the growth in new market segments such as fruits and vegetables, creating technologies for the grading of products, and for separating contaminants.

Following the successful integration of Haas in 2018, Bühler decided to strengthen its leading position in the consumer foods market with the creation of a new business pillar beginning 2019. The new Consumer Foods business includes the Bakery, Wafer, Biscuit, Chocolate & Coffee, and Confectionery business units.

With the Networking Days in Changzhou, China, which focused on animal nutrition, Bühler positioned itself as a leading solution provider in the global feed market. The three-day event at this new manufacturing and R&D center for the feed industry attracted over 1,000 guests from over 30 countries.

Order intake

CHF 382 million	+4.0%*

Turnover

CHF 373 million	+17.1%*

*Compared to previous year where Haas had not been part of Bühler.

Haas

Already in the first year of being part of Bühler, Haas contributed strongly to the Group's performance. Under the leadership of CEO Germar Wacker, Haas achieved CHF 382 million in order intake and CHF 373 million in turnover. It was the best result in the history of Haas and mainly driven by the wafer and biscuit businesses.

In wafers, in which Haas already has a strong position with almost 50% global market share, Asia and Europe showed the strongest demand. In Indonesia, our largest customer decided to further increase capacity and expand into other Asian regions, especially China.

Together, Haas and Bühler offer comprehensive and integrated solutions. This is best illustrated with a customer project that began in 2018 to develop a new snack that includes wafers, cream, nuts, and chocolate, and also enrobing. This customer is now able to develop this complex product and the respective production line with one technology and solution partner.

Haas also showed strong turnover growth in biscuits, and took the opportunity to consolidate this business after years of expansion and more than doubling its size. The biscuits portfolio was streamlined and processes were aligned to meet the demands of a larger organization. With this, the Haas biscuit business is prepared for the next growth step in this important market within the new Consumer Foods business. Its aim is to gain additional market share.

In 2018, Haas also presented a series of innovations underscoring its leading technology position – such as the new Eco Oven demonstrated at the iba trade show in Munich. The oven reduces energy consumption by around 30% as confirmed by first customer trials. Another leading-edge application is its smart glasses. Based on an augmented reality solution and device, smart glasses make a completely new way of servicing machines and equipment possible.

Order intake

CHF 721 million	+7.3%

Turnover

CHF 705 million	+5.6%

Advanced Materials

Advanced Materials saw outstanding performance for the fifth year in succession and had another record year in 2018. It continued riding its wave of growth from 2017 to develop the business further, increasing order intake by 7.3% to CHF 721 million and turnover by 5.6% to CHF 705 million. The first Networking Days run by Advanced Materials in Suzhou, China, in April 2018 on the future of mobility highlighted the positioning and relevance of the business as a solution provider for the automotive industry and beyond.

After the successful market launch of a new process for manufacturing battery slurry, Grinding & Dispersing succeeded in tripling the business with corresponding orders for additional production lines. This battery slurry process has increased the electrical properties of batteries and is also more profitable. Grinding & Dispersing also grew in other areas – such as digital printing for personalized applications – driven by innovative products such as MacroMedia and MicroMedia in combination with integrated and modularized plant construction designs. This new technology and plant generation reduces use of raw materials by up to 10%, energy by up to 30%, and costs by up to 20%. The expertise in ink production also highlights the strong position in security inks. The ink in the new 200 Swiss franc note, for example, is processed on three-roll mills.

Success is further accelerating in Die Casting. This business area is experiencing a substantial increase in incoming orders and turnover. Growth has been driven by the Carat and Ecoline machine series. Thus far, over 500 systems of both product families have been installed at customer locations. Alongside previous technical solutions, three factors have been decisive here: First, the global positioning of Die Casting – Bühler is the only solution provider with the ability to locally produce die-casting machines in all three major hubs of the automotive industry. Second, this business area has in-depth knowledge of applications for aluminum structural components. Third, Die Casting is profiting from the rapid development of e-mobility, as it is increasingly common for parts of these vehicles to be made of light alloys. In Brescia, Die Casting moved into a new home with its revision business. This is now geared to double in volume, underlining the commitment to customer service.

Leybold Optics saw a massive increase in business with precision optics coating systems, including its Helios technology. The business area has successfully launched the new ion-beam sputtering solutions for high-end applications with the most challenging requirements. Furthermore, Leybold Optics has improved its strategic market position with the acquisition of Sputtering Components Inc., Owatonna, US. With this move, Leybold Optics acquired crucial products and technologies for large-area vacuum coating systems. Sputtering Components Inc. will continue to serve the global producers of coated glass and displays, integrating Leybold Optics' expertise in optical measuring technology and process control.

STRATEGIC INVESTMENTS

In 2018, Bühler invested CHF 118 million into its asset base – in line with its Strategy 2020. In addition to the acquisition of the Austrian Haas Group and US-based Sputtering Components Inc., the funds were used primarily for the development of new digital technologies and process solutions, the modernization of our production and service network, as well as for strengthening our innovative capabilities. We have proactively utilized our capital, without overstretching our room to maneuver.

The added value of the union of Haas and Bühler was clearly apparent in the first year following the acquisition – the closing took place in January 2018. Haas is a highly respected manufacturer of systems for producing wafers, cookies, and biscuits and is the clear market leader. The machines and solutions from Haas and Bühler ideally complement one another. This fruitful fusion has unlocked a multitude of opportunities for both companies to jointly take a leading position in the consumer foods market.

From the time of the announcement, the liaison between Bühler and Haas met with approval. Customer responses were positive: "Haas and Bühler are a perfect match. The amalgamation opens the way for innovations." And: "The fact that Haas is coming together with Bühler is very positive for us. It is easier to do business with one company than with two." Another example: "Haas and Bühler support us as confectionery producers, and we support both companies, for example, in the development of new machines and applications."

The merger has already resulted in many joint projects, and has created a great deal of value for our customers. As a result of this positive momentum, we decided to accelerate the seamless integration of Haas. For this reason, the technically related Bühler business units for chocolate, baked goods, and coffee have moved from the Grains & Food segment and fused with Haas to make a new, third Bühler business pillar – Consumer Foods. The new organization is led by the previous Haas CEO, Germar Wacker, who was also made a member of the Executive Board. Both moves came into effect on January 1, 2019. Bühler continued to invest strongly in innovation with expenses for research and development (R&D) of CHF 145 million (previous year: CHF 119), representing a ratio to turnover of 4.4%. The transformation to digitalization, initiated in 2016, moved forward at an impressive pace in the 2018 reporting year. About 20% of our innovation spending went into developing digital solutions.

Dynamic digital transformation

The e-commerce solution myBühler, which enables existing customers to request services and replacement parts on the portal, significantly contributed to our digital offering. About 4,000 Bühler customers were connected at the end of 2018.

Bühler and Microsoft committed to an alliance in April 2018 that will enhance food safety and traceability with the rollout of cloud-based solutions. The Bühler Insights digital platform is another milestone launched in September. It is our secure, high-performance, and reliable cloud platform for digital services. It sets new standards in security, traceability, transparency, and data availability across production value chains. Bühler developed the new platform in close partnership with Microsoft. The result is a single solution to run all of Bühler's digital services.

Today, more than 85% of our solutions can be connected to it. It offers numerous interfaces with standard industry automation and control systems, thus enabling the connection of a wide range of technologies.

At the Microsoft Ignite trade show held in September 2018 in Orlando, Florida, Bühler presented a selection of its digital services. This included MoisturePro, a cloud-based digital service that greatly reduces the energy costs of thermal processing for the food and feed industries. MoisturePro is just one of a range of services that are connected with Bühler Insights. Another is LumoVision, an optical sorting

The first Bühler teams moved into the CUBIC in February 2019.

solution that makes it possible to identify and sort corn contaminated with aflatoxin, a carcinogen produced by mold. LumoVision uses ultraviolet cameras and sensors to cut rates of contamination in corn by as much as 90% – as well as maximize productivity.

Two image-processing solutions are also connected to Bühler Insights: GrainiGo for corn and TotalSense for rice. These enable customers to analyze and document the quality of these raw materials using the portable units, their smartphones, an app, and sample trays where quality parameters have been set. A photo is made via smartphone and sent to the secure Bühler Insights platform for analysis. It produces a report that dates and locates the sample for quality traceabilty and as proof of quality compliance. A short time later, the reports are already available. Saving time is critical when adjusting machinery on a production line to maximize output and profitability.

PastaSense, also launched in 2018, uses sensor technology to allow producers to monitor their entire process from raw materials to the end product, completely eliminating the need for manual checks.

Other new digital solutions from Bühler include safefood.ai, which has the potential to revolutionize food safety management by scanning thousands of web pages, databases, news, and social media channels for relevant information. It identifies the products affected and provides customized early warnings to companies so that they can quickly respond. PreMa, meanwhile, facilitates safe grain storage by measuring and tracking the key functions of silo plant equipment, including cleaning machines, filters, elevators, chain conveyors, and silo bins.

Currently, customers can choose from a digital portfolio of over 30 digital services. A further 30 will be launched during 2019. This is just the beginning. Bühler, in partnership with Microsoft, is also actively exploring the potential of blockchain technology to achieve full traceability in the food chain and significantly increase safety and transparency. Blockchain will enable companies to trace the source of any contamination

in no time, averting potential problems of illness, production losses, and reputational damage.

Global innovation and production network

For investments in Bühler's global production network, three projects stand out: the opening of a new battery application lab in Wuxi, China, the move of Bühler's Die Casting revision business to a new site in Brescia, Italy, and the modernization and expansion of the Uzwil, Switzerland site.

In view of the rising demand for lithium-ion battery production, Bühler opened a 400-square-meter application lab in Wuxi to support customers with concept trials, formulation, and process optimization. China is witnessing a high demand for electrode slurry plant projects, thanks to ambitious government plans to electrify the automotive sector. In China, 40% of all cars sold should be partially or fully electrified by 2030. Another field of application is the intermediate storage of solar or wind energy. As a consequence, substantial market growth rates are forecast for lithium-ion batteries. This new application center sets a new standard for innovation within the Bühler Group. In Brescia, Die Casting moved into a new home with its revision business, which is now geared to double in volume, underlining the commitment to customer service.

The work to modernize its Swiss location is running according to plan. The goal of the five-year project is to develop Uzwil into one of the world's leading production sites using Industry 4.0 technologies. This should maintain the competitiveness of the Swiss location for the longterm. The first phase – to refurbish production and logistics for mass-produced parts – is completed. The construction and refurbishment of innovation labs and application centers is ongoing as part of the CUBIC innovation campus project.

The CUBIC is nearing completion. In early 2019, Bühler employees began moving in, and the official opening of the fully operational innovation campus is set for spring. The CUBIC connects to the application centers where customers can conduct tests with Bühler technologies and experts. The considerable investment of about CHF 50 million over a period of three years is a sign of the company's dedication to innovation, technology, and Switzerland as a location. The campus will create new opportunities for cooperation both internally and with external partners. We want to sustainably increase the innovative strength and market leadership position of Bühler for the longterm, and work together with partners from industry, science, NGOs, and start-ups to develop innovations for a better world.

With positive energy into the future

We continue to view the future with optimism. We are aware of the accelerated changes of the digital age and are keeping an eye on the uncertainties in current world events, including geopolitics, currencies, interest rates, and opposing trends in free trade. Meanwhile, new business opportunities are emerging, such as in the developing countries of Africa or China's new Silk Road initiative. We are convinced that the opportunities for Bühler are greater than the risks.

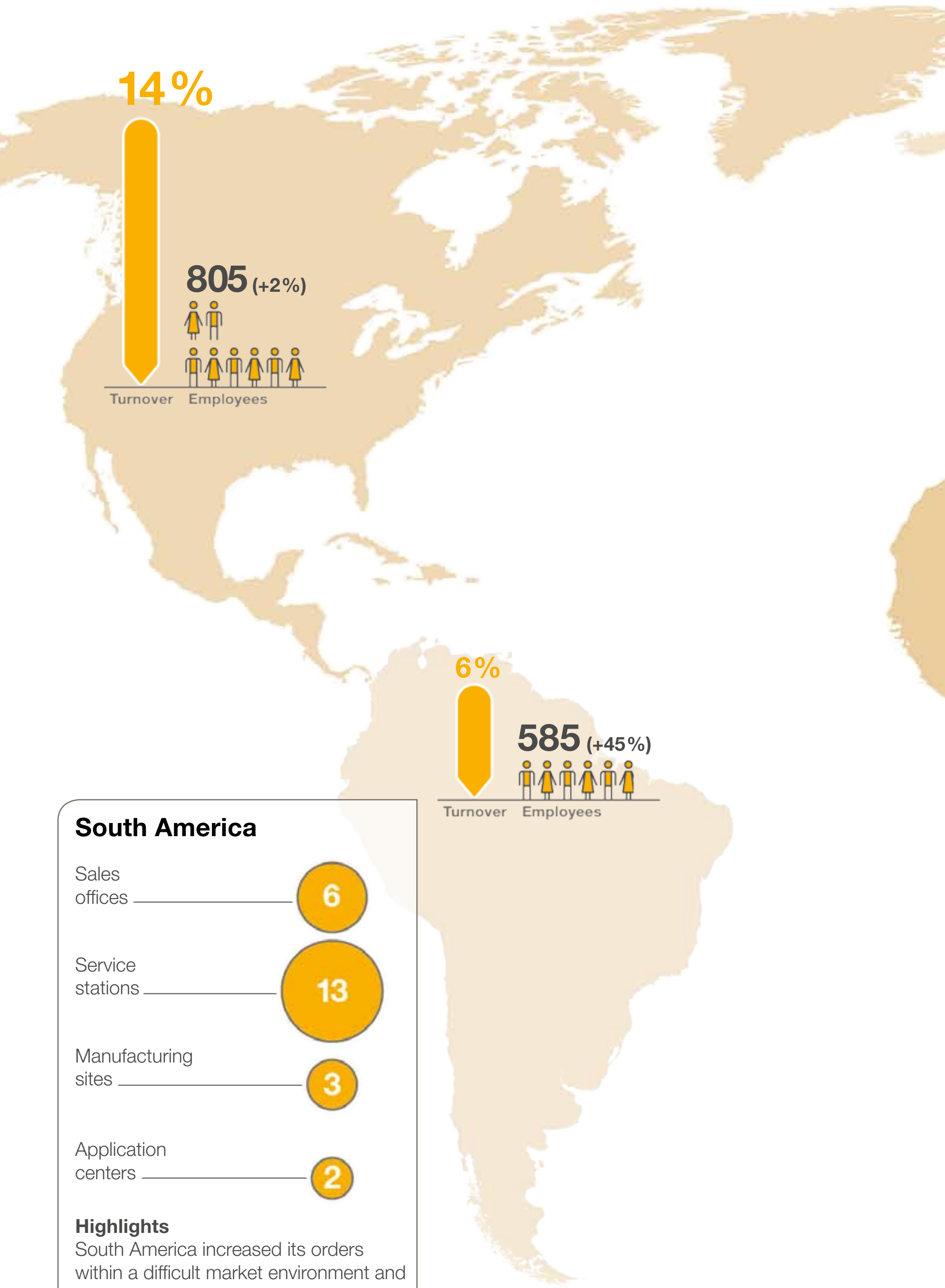
We are well placed to achieve the leading position in the consumer foods market with our new business pillar, and we have fully embraced the new and exciting opportunities offered by digitalization. We are investing considerable resources in developing and harnessing these opportunities. And in the spirit of our partnership-based innovation philosophy, we will continue to work with our customers and to expand our innovation network to make our physical world better with digital means. We will host a broadly scoped Networking Days event in Uzwil in August 2019, which for the first time will cover all Bühler business units.

Under the Networking Days 2019 slogan "Creating Tomorrow Together," we will continue to work together with our customers, partners from industry and science, as well as academia and start-ups to explore new, sustainable solutions for food production and mobility. We want to leave our children and following generations with a planet that, at the very least, offers them the same life and development opportunities it offers us. It is our responsibility today to ensure a sustainable tomorrow.

Bühler anticipates its growth course will continue with further improved profitability in the 2019 business year.

IN THE REGION, FOR THE REGION

Bühler is a global player with manufacturing sites, service stations, sales offices, R&D facilities, and application and training centers across 140 countries. It has further strengthened its regional presence for its customers with the acquistion of Haas.



North America

Sales offices	9
Service stations	7
Manufacturing sites	3
Application centers	6

Highlights
North America achieved fantastic growth in coffee and nuts and also in Die Casting. Bühler Raleigh began with the modernization of its facilities. The integration of Bühler's Leybold Optics business was another substantial step taken in 2018. A new Food Application Center for specialty milling and novel food applications is under construction in Minneapolis. It will open in the first half of 2019.

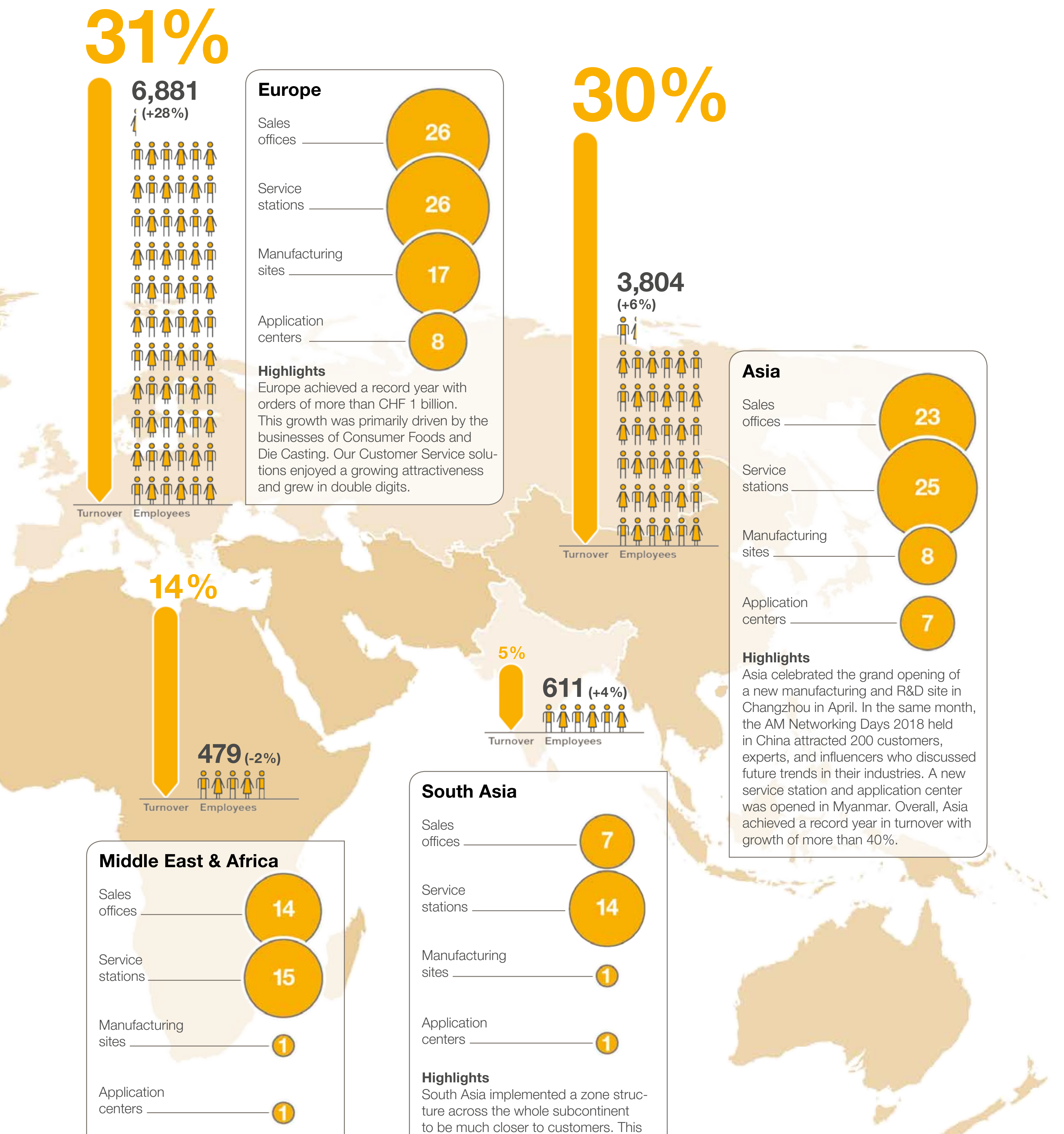
South America

Sales offices	6
Service stations	13
Manufacturing sites	3
Application centers	2

Highlights
South America increased its orders within a difficult market environment and achieved a breakthrough in the feed market as well as substantial business growth in Chile and Peru. The strong local service setup was rewarded with record orders for Customer Service and single machines.

= 2018 turnover share by region

= Total 13,165 employees (incl. Haas) in 2018 compared to 10,972 in 2017



Europe

Sales offices	26
Service stations	26
Manufacturing sites	17
Application centers	8

Highlights
Europe achieved a record year with orders of more than CHF 1 billion. This growth was primarily driven by the businesses of Consumer Foods and Die Casting. Our Customer Service solutions enjoyed a growing attractiveness and grew in double digits.

Asia

Sales offices	23
Service stations	25
Manufacturing sites	8
Application centers	7

Highlights
Asia celebrated the grand opening of a new manufacturing and R&D site in Changzhou in April. In the same month, the AM Networking Days 2018 held in China attracted 200 customers, experts, and influencers who discussed future trends in their industries. A new service station and application center was opened in Myanmar. Overall, Asia achieved a record year in turnover with growth of more than 40%.

South Asia

Sales offices	7
Service stations	14
Manufacturing sites	1
Application centers	1

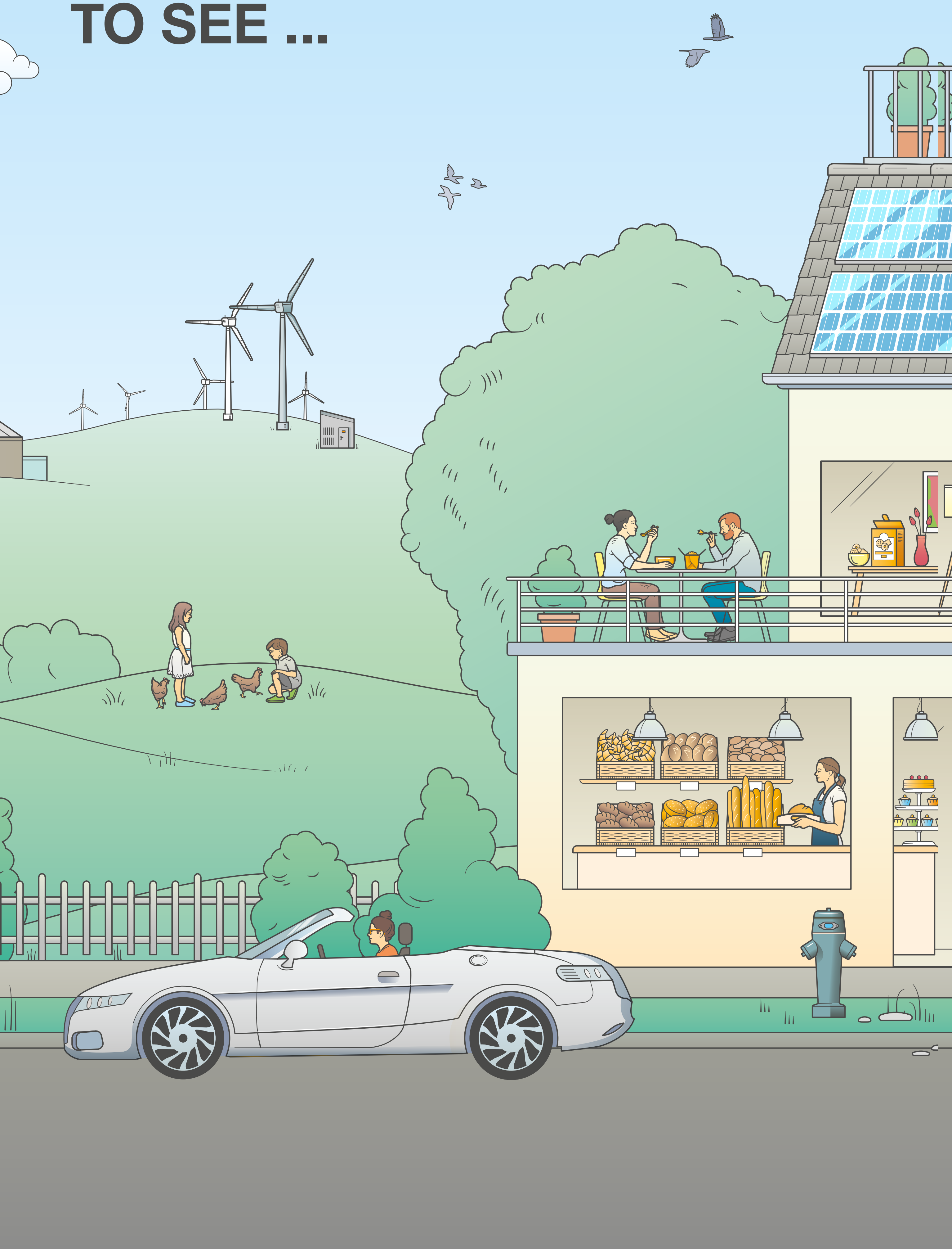
Highlights
South Asia implemented a zone structure across the whole subcontinent to be much closer to customers. This structure supported our growth strategy, and India recorded a record year of new orders driven by Milling and Die Casting.

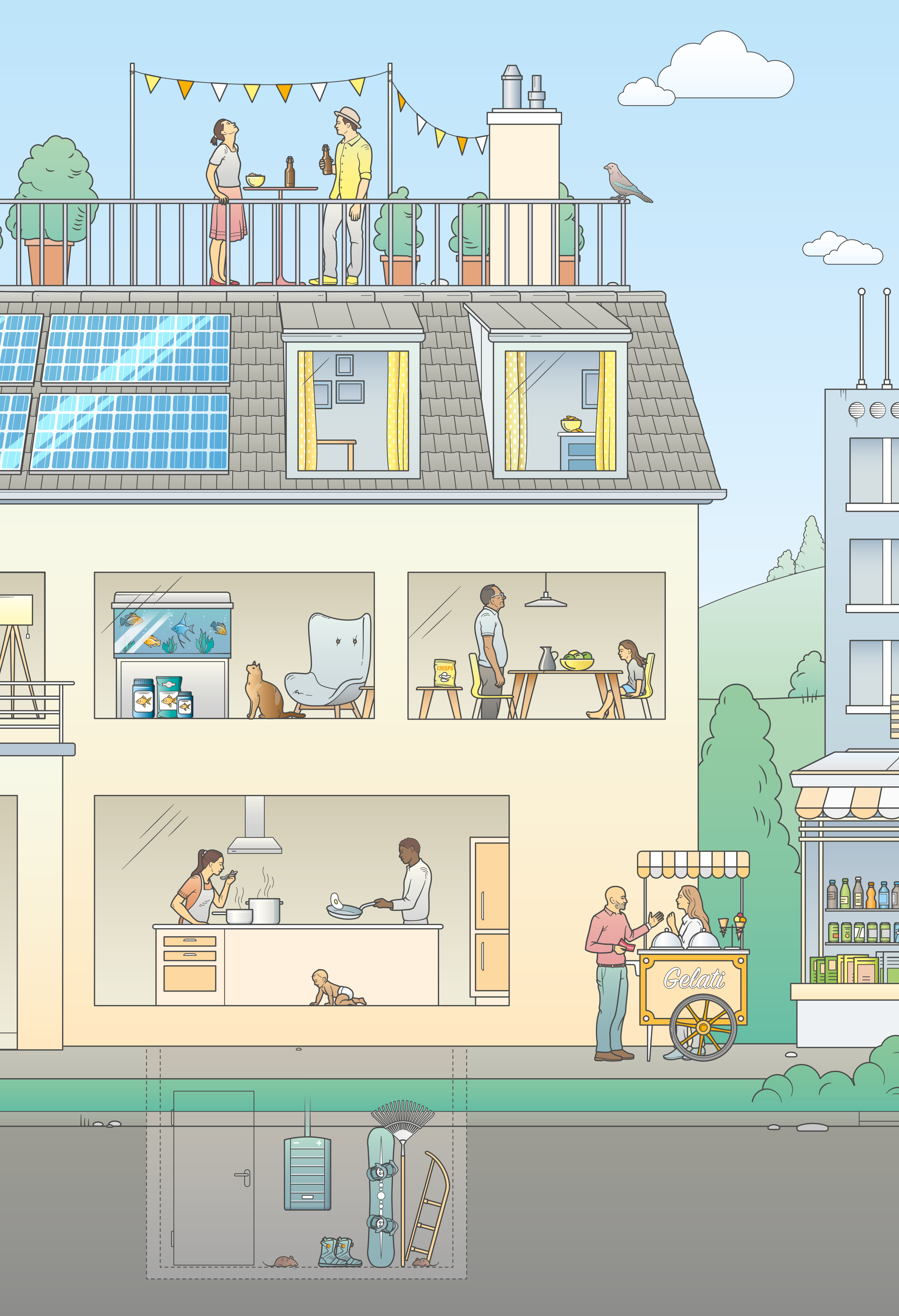
Middle East & Africa

Sales offices	14
Service stations	15
Manufacturing sites	1
Application centers	1

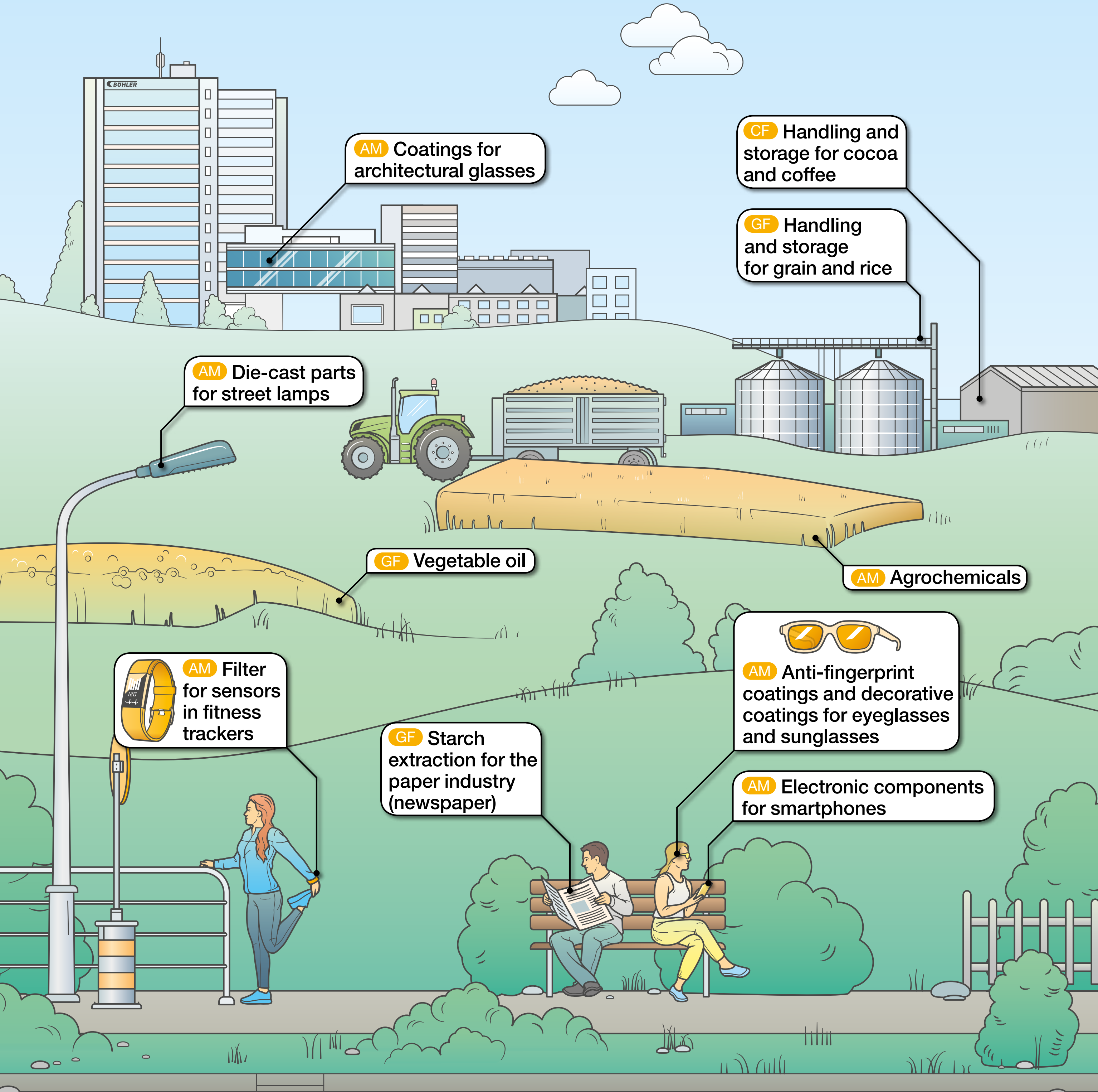
Highlights
Middle East and Africa developed positively despite a very difficult market environment. Bühler strengthened its organizational setup in Nigeria and Ivory Coast, where training and service facilities were built.

YOU'LL BE SURPRISED TO SEE ...




CRISPS
Gelati

... EVERYWHERE OUR TECHNOLOGIES TOUCH YOUR DAILY LIFE.

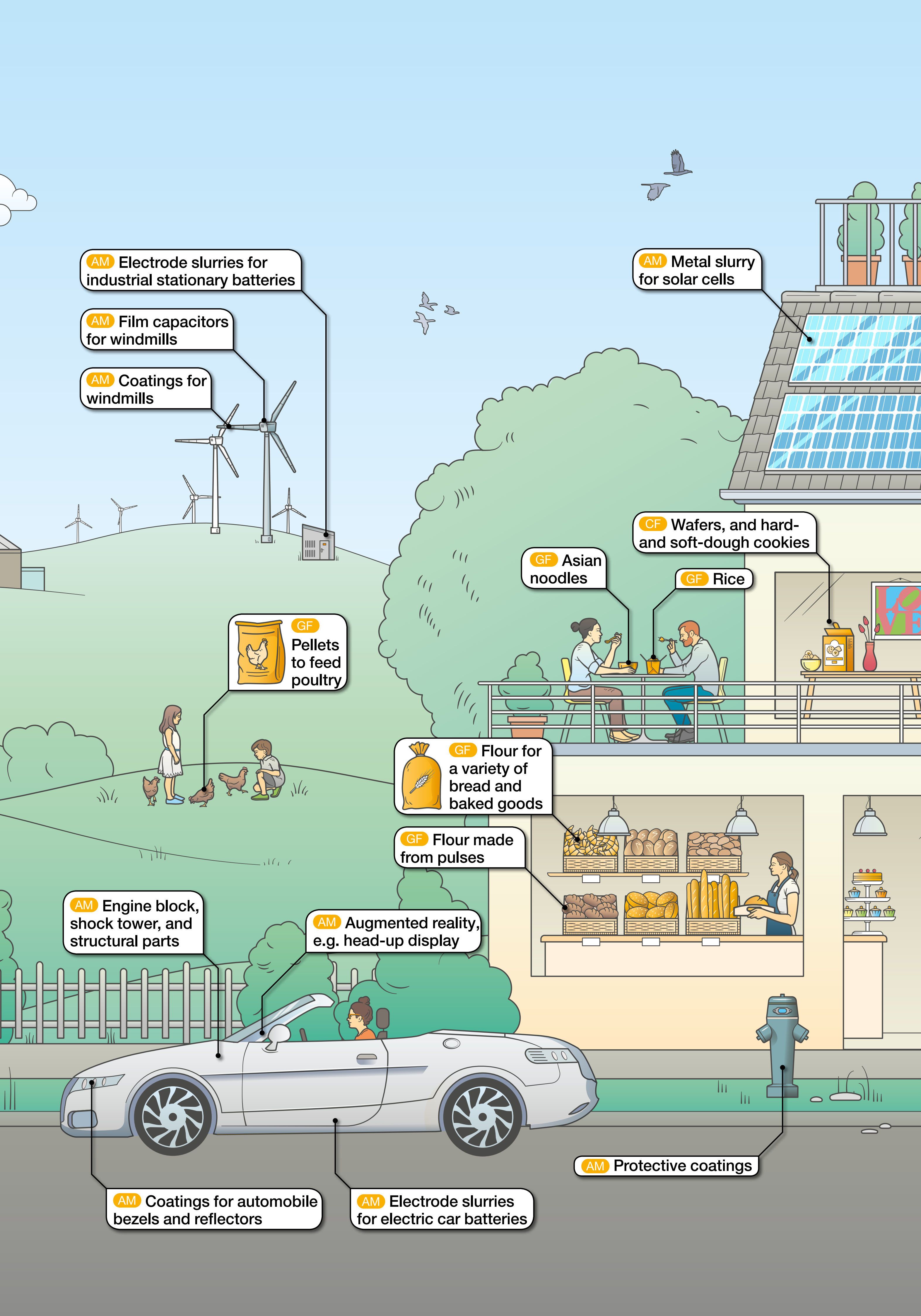


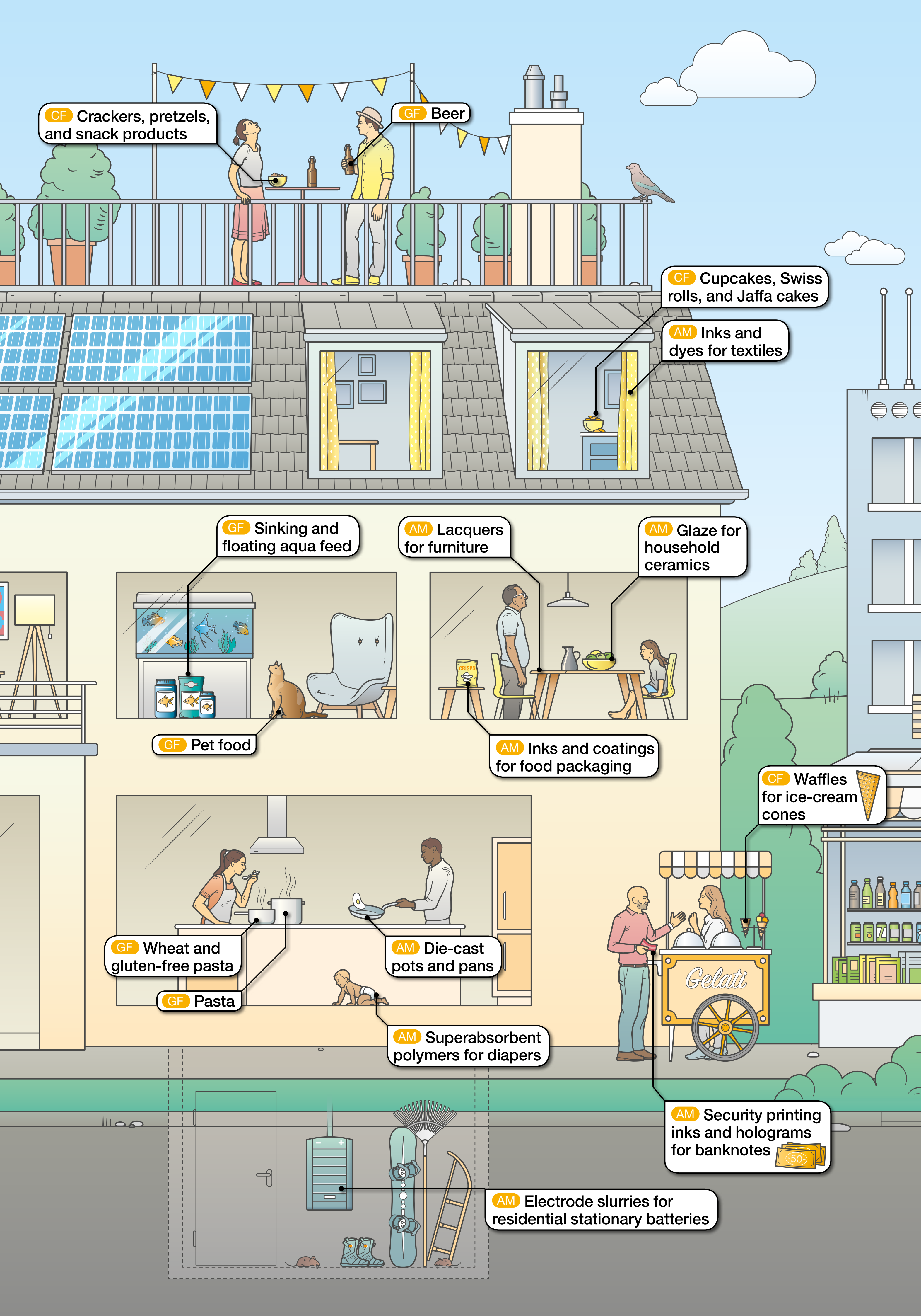
Every day, billions of people come into contact with Bühler technologies to cover their basic needs for food and mobility, and more. Our technologies are in your smartphone, solar panels, diapers, lipstick, banknotes, the foods you eat, and the vehicles you drive. We strive to create innovations for a better world, with a special focus on healthy, safe, and sustainable solutions.

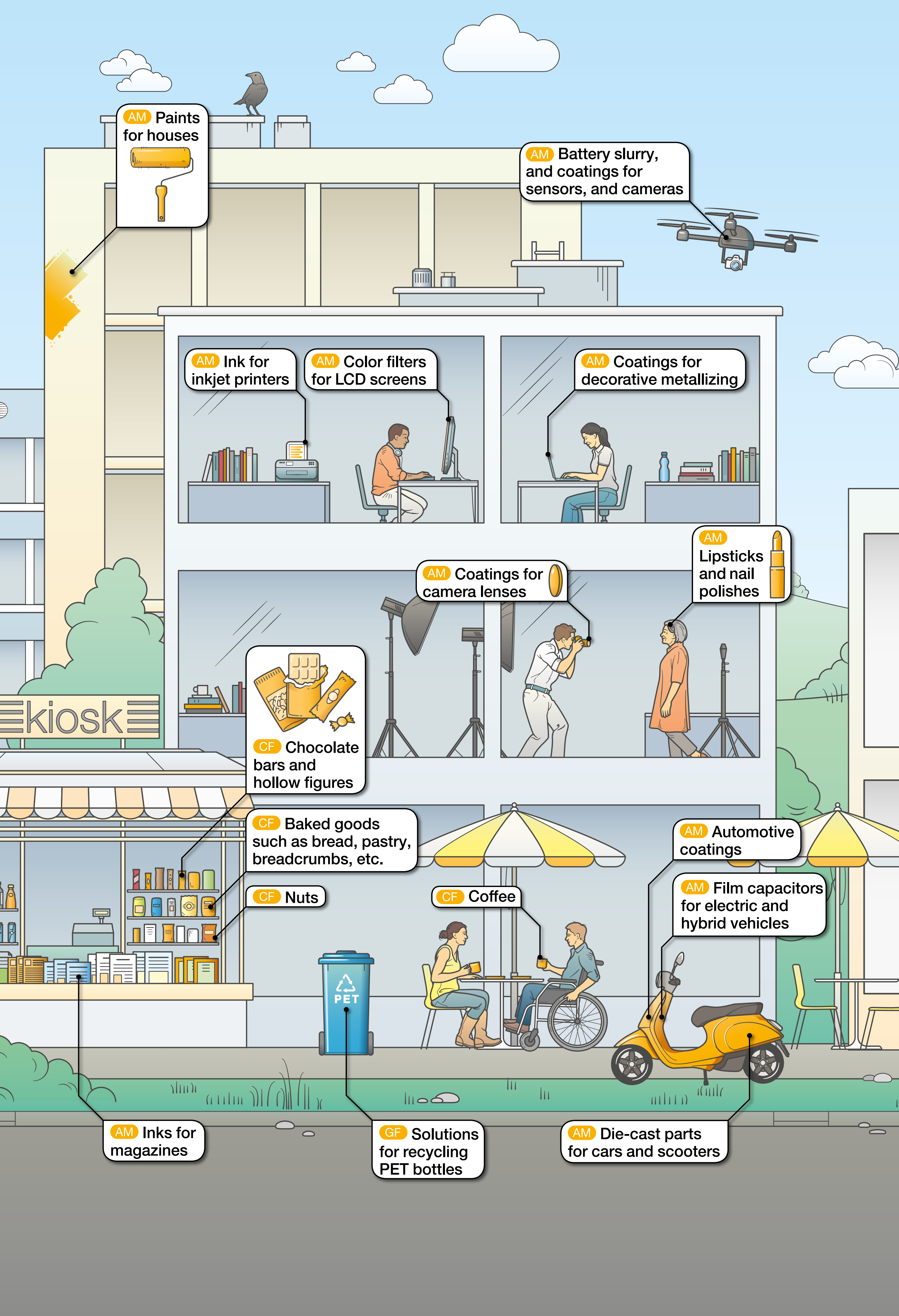
Bühler's businesses:

Grains & Food	GF
Consumer Foods	CF
Advanced Materials	AM

This is just a small selection of products made with Bühler technologies.


AM Electrode slurries for industrial stationary batteries
AM Film capacitors for windmills
AM Coatings for windmills
AM Metal slurry for solar cells
CF Wafers, and hard- and soft-dough cookies
GF Asian noodles
GF Rice
GF Pellets to feed poultry
GF Flour for a variety of bread and baked goods
GF Flour made from pulses
AM Engine block, shock tower, and structural parts
AM Augmented reality, e.g. head-up display
AM Protective coatings
AM Coatings for automobile bezels and reflectors
AM Electrode slurries for electric car batteries


CF Crackers, pretzels, and snack products
GF Beer
CF Cupcakes, Swiss rolls, and Jaffa cakes
AM Inks and dyes for textiles
GF Sinking and floating aqua feed
AM Lacquers for furniture
AM Glaze for household ceramics
CRISPS
GF Pet food
AM Inks and coatings for food packaging
CF Waffles for ice-cream cones
GF Wheat and gluten-free pasta
AM Die-cast pots and pans
GF Pasta
AM Superabsorbent polymers for diapers
Gelati
AM Security printing inks and holograms for banknotes
50
AM Electrode slurries for residential stationary batteries



AM Paints for houses
AM Battery slurry, and coatings for sensors, and cameras
AM Ink for inkjet printers
AM Color filters for LCD screens
AM Coatings for decorative metallizing
AM Lipsticks and nail polishes
AM Coatings for camera lenses
kiosk
CF Chocolate bars and hollow figures
CF Baked goods such as bread, pastry, breadcrumbs, etc.
CF Nuts
CF Coffee
AM Automotive coatings
AM Film capacitors for electric and hybrid vehicles
PET
AM Inks for magazines
GF Solutions for recycling PET bottles
AM Die-cast parts for cars and scooters

Our business

As diverse as Bühler's end markets may be – from food and feed, to vehicles, printing units, buildings, packaging, lenses, batteries, and much more – two common factors hold its broad portfolio together: process solutions and sustainability.

GRAINS & FOOD
At a glance

We want everyone to have access to healthier nutrition. As versatile the technologies, process solutions, and applications of Grains & Food may be, this is their common focus – no matter whether it is to process grains, rice, corn, or pulses. Bühler customers provide over 2 billion people with staple products.

We want there to be enough to eat while also reducing food waste. We want to preserve resources such as energy and water. To accomplish this, we are using more and more digital technologies.

Grain Quality & Supply offers reliable cleaning, storage, and transportation solutions for raw materials. Additionally, this business area also delivers complete solutions for rice and malt production. Milling Solutions combines the ideal grinding and processing of grains and pulses with the highest of hygiene standards. Value Nutrition enables the energy-efficient, reliable production of pasta, breakfast cereals, animal feed, pet food, and aqua feed using extrusion and drying technology. Here, meat substitute products made of textured vegetable protein are playing an ever more important role. With optical sorting, and cloud-based monitoring solutions, the Digital Technologies business area ensures that harmful substances are removed during processing and that the safety of food and feed is documented.

All business areas offer process solutions for the entire value chain: from harvested grain to flour, breakfast cereals, pasta, or animal feed. Add to that a global network of service, training, and application centers, enabling customers to optimally operate our systems.

Grain Quality & Supply

Grain Quality & Supply provides high-quality, safe processing solutions for grain logistics, cleaning and storage, malting and brewery, and rice. It aims to increase efficiency, improve traceability, and reduce food loss.

Milling Solutions

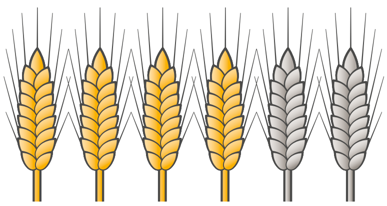
Milling Solutions delivers state-of-the-art process technology for transforming raw materials such as wheat, rye, oats, corn, and pulses into high-grade flour and semolina products.

Value Nutrition

Value Nutrition is the global solution and technology partner for producers of animal feed, pet food, aqua feed, pasta and noodles, vegetable oil, cereals, and snacks.

Digital Technologies

Digital Technologies offers sorting machines, industrial measuring machines, sensors, control systems, and service-driven products for the food and non-food processing industries.

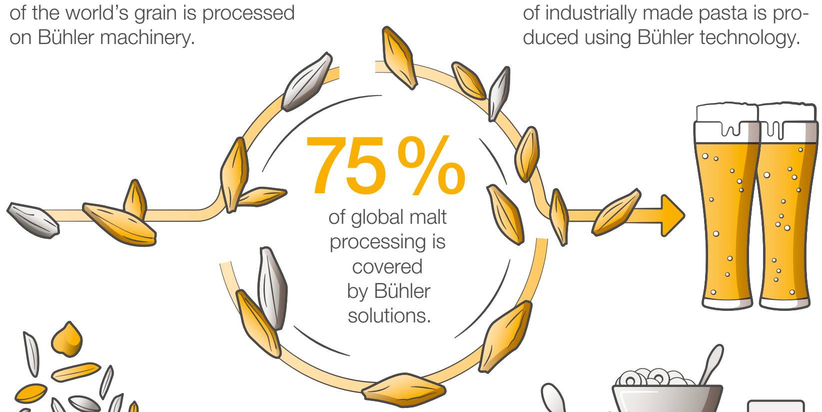


65 %

of the world's grain is processed on Bühler machinery.

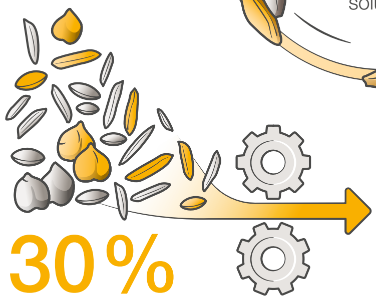
40 %

of industrially made pasta is produced using Bühler technology.



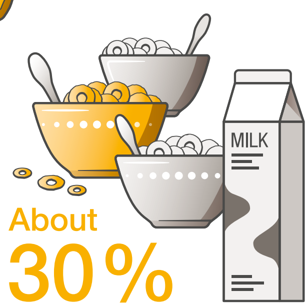
75 %

of global malt processing is covered by Bühler solutions.



30 %

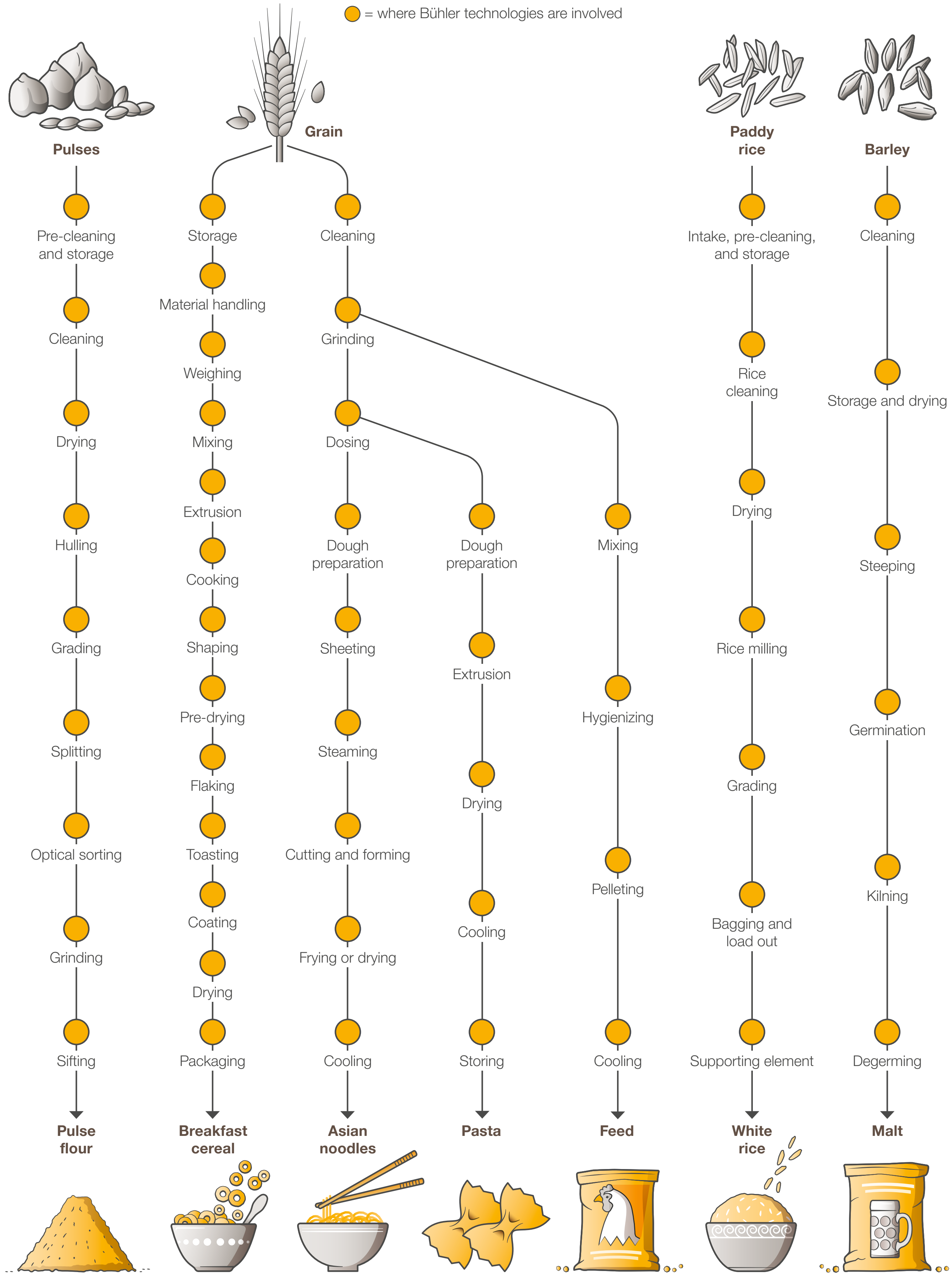
of global rice and pulse production is covered by Bühler solutions. Rice is a staple food for 3 billion people.



About 30 %

of all breakfast cereals are processed with Bühler technologies.

How various raw materials become high-quality food products: Seven examples of Bühler Grains & Food process technologies



CONSUMER FOODS
At a glance

We want all people to be able to enjoy sweets, baked products, nuts, chocolate, and coffee in good conscience. This means transforming safe raw materials into optimized recipes. It also means carefully handling raw materials, supporting sustainable value chains, reducing waste, and increasing energy efficiency throughout production.

Consumer Foods is all about end products. Whatever the product, from crunchy ice-cream cones, to chocolates, cookies, wafers, pralines, and snacks, quality is at the forefront. Our Bakery business brings together expertise in processing flour, sugar, creams, nougat, chocolate, marshmallow, dairy, and non-food products as well as premixing flours, cereals, and spices. Wafer offers tailor-made solutions for baking, filling, and cutting. Biscuit is specialized in processing cookies and crackers. Chocolate & Coffee is specialized in cleaning, roasting, grinding, and finishing raw materials, while Confectionery is responsible for shaping liquid chocolates into pralines and bars as well as coating wafers and cookies with chocolate.

The joy these business units can offer with integrated solutions shines when doughs, nuts, and chocolate are combined into many different end products. Close collaboration with Grains & Food results in more seamless process chains starting with grains, incorporating grinding and extrusion, and ensuring efficiency, food safety, and transparency with visual sorting and digital services.

Bakery
Bakery offers process and handling solutions for dry and liquid ingredients for a range of consumer products for the baked goods, premix, confectionery, and dairy industries.

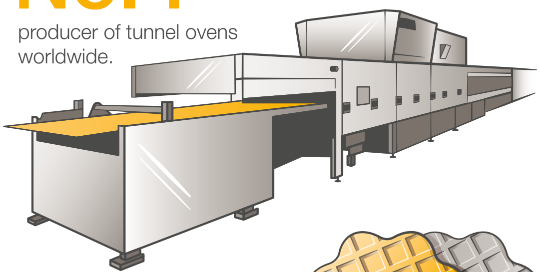
Wafer
Wafer is the foremost solution provider for flat or hollow wafers, wafer sticks, cones, and soft waffles. Put your trust in the world market leader that unites quality, tradition, and progress.

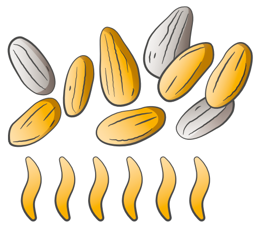
Biscuit
Biscuit is the specialist for cookies, cakes, crackers, and more, providing machines with shorter baking terms that consume less energy and provide full control over dough moisture content.

Chocolate & Coffee
Chocolate & Coffee provides complete solutions for processing cocoa beans to high-quality chocolate masses and develops coffee and nuts into tasty end products.

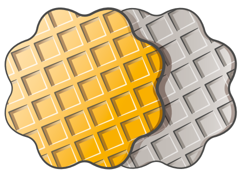
Confectionery
Bühler Confectionery offers unique solutions to mould chocolate in any shape and form. It offers technologies to produce cereal, protein, fruit and nut bars, plain or enrobed with chocolate.

No. 1
producer of tunnel ovens worldwide.

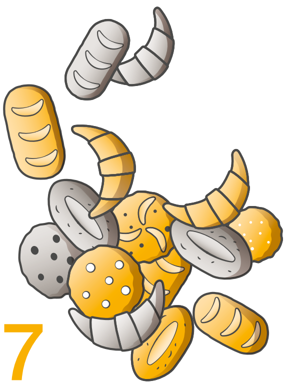




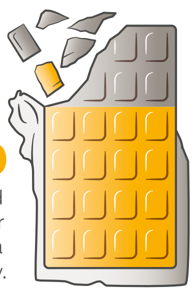
65 %
of cocoa beans and nibs are roasted and processed with Bühler roasting technology.



55 %
of all waffles and wafers are produced using our solutions.

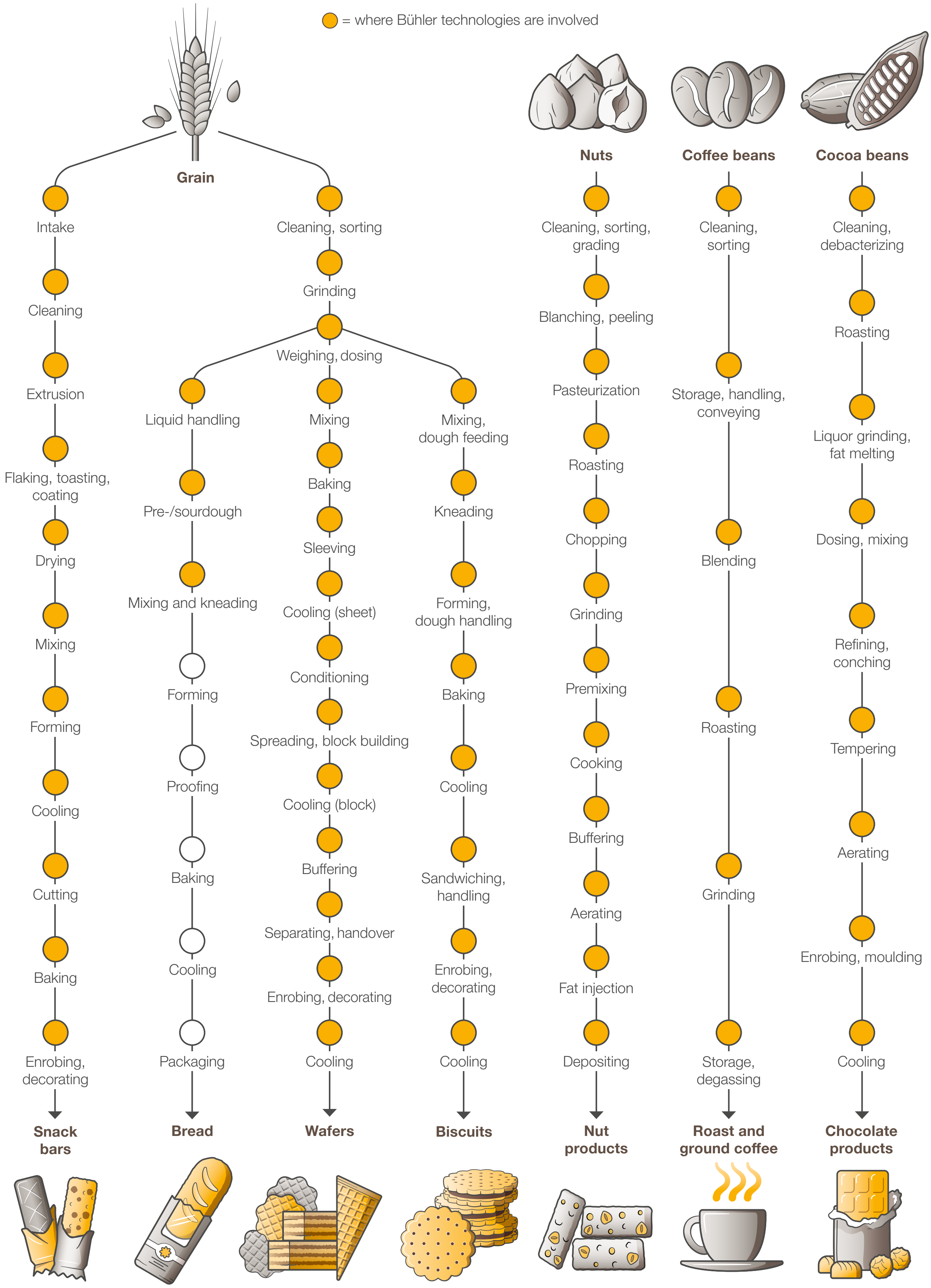


7
out of Europe's top 10 bakeries run on Bühler technology.



70 %
of all chocolate is produced with Bühler solutions. Over 4.5 million tons of cocoa beans are harvested yearly.

How various raw materials become high-quality food products: Seven examples of Bühler Consumer Foods process technologies



ADVANCED MATERIALS
At a glance

We strive to ensure the efficient use of resources and to protect the environment. This is a common thread that runs through the technologies, process solutions, and applications of the Advanced Materials (AM) business. Lightweight components made of aluminum that reduce car fuel consumption are manufactured on production cells from our Die Casting business area; vacuum-coated architectural glass for building facades produced on systems from Leybold Optics make buildings more energy-efficient; and battery electrode slurry produced on Grinding & Dispersing equipment increases the range of electric vehicles.

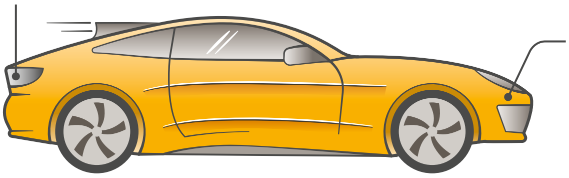
The spectrum of applications covered by the three business areas is wide. It ranges from ultra-fine-grade pigments for analog and digital printing inks, to pastes for electronic components as well as components for cosmetics and agrochemicals, to electrode slurries for lithium-ion batteries. With our technologies, our customers produce coatings for sensors, lenses for eyeglasses and cameras alike, solutions for displays such as mobile phone screens, and applications in precision optics for lasers or LIDAR (light detection and ranging). And on the light-metal casting side, applications for engine blocks, oil pans, transmission housings, structural components, and typical e-mobility-related components such as battery or electronic controller housings. Varied as these markets may be, there is one driver they share: the demand for improved mobility. Approximately 60% of the AM business stems from the automotive industry, with electro mobility becoming an ever more important growth driver. The business areas not only supply the technologies and systems, but also process expertise, including a global network for testing, training, consultation, and a wide range of services.

Die Casting
Bühler Die Casting is the global technology partner for all high-pressure die-casting needs and supports its customers through all phases of their investment.

Leybold Optics
Bühler Leybold Optics is the specialist for the development and manufacturing of vacuum-coating by physical vapor deposition equipment.

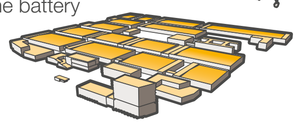
Grinding & Dispersing
Bühler Grinding & Dispersing offers future-oriented wet mixing, grinding, and dispersing technology solutions for a variety of industries.

50% of the world's car taillights and headlamps are metallized on Bühler machines.

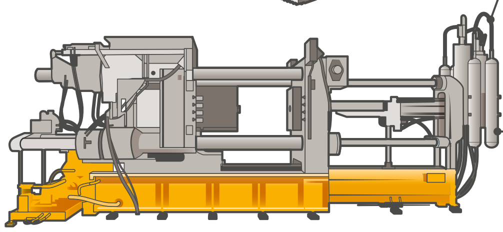


50% of new cars worldwide have die-cast components produced with Bühler technology.

30 gigafactories will be running worldwide by 2030. Bühler technology has gained market share in the battery segment beyond first-reference installations.



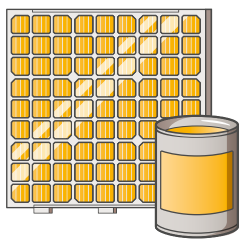
Some **25%** of all die-cast components produced globally are made on Bühler systems.

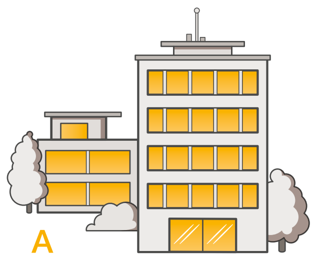


Nearly **1,000** die-casting foundries rely on Bühler day in, day out.

Over **75%** of all banknote printing inks are made with Bühler machines.

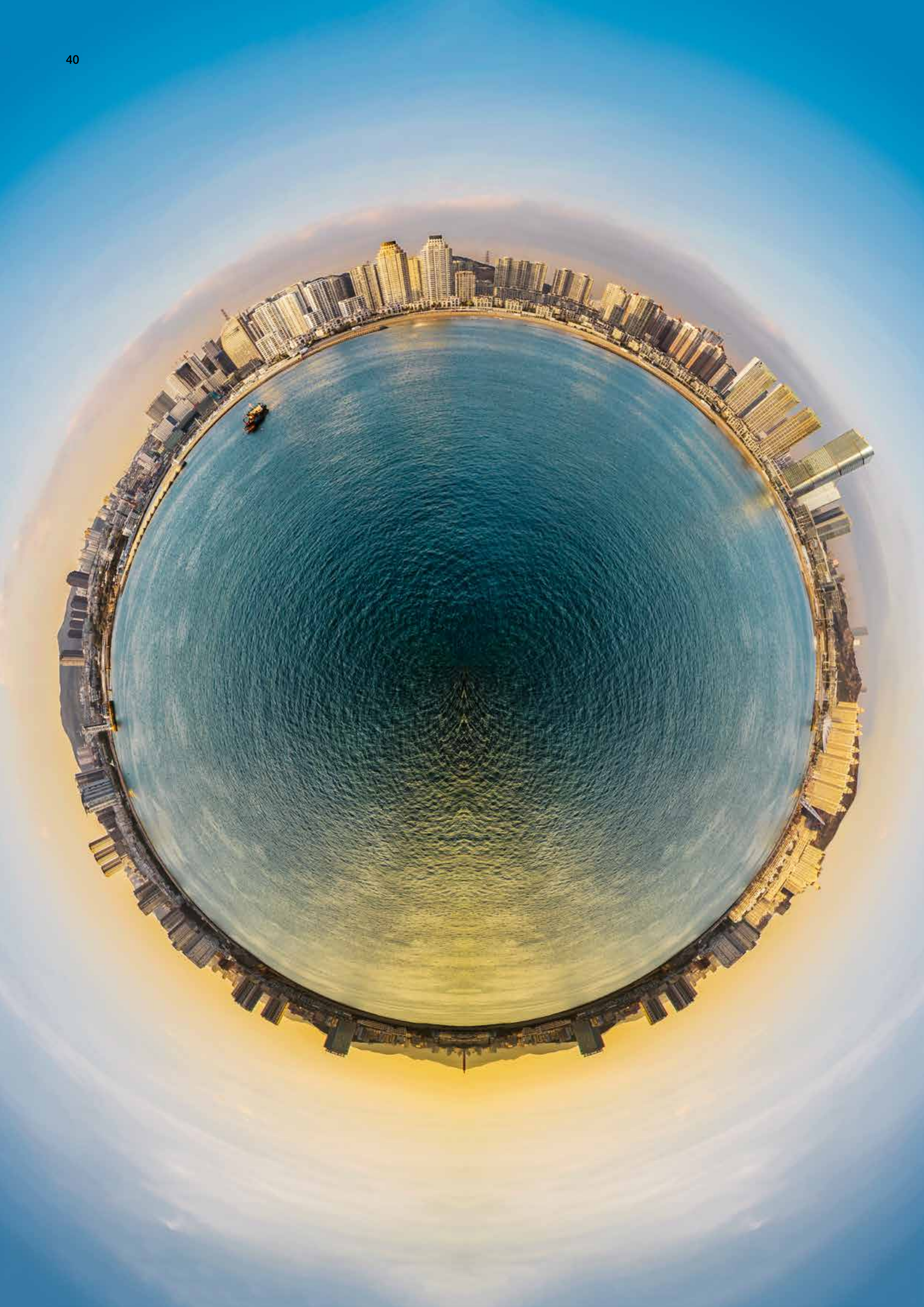
75% of the silver paste used in solar panels is produced on Bühler equipment.





A **50%** cut in energy is achieved in buildings using architectural glass coated by Leybold Optics glass coaters.

Aluminum to die-cast parts, pigments to cosmetics: Six examples of Bühler Advanced Materials process technologies



OUR SUSTAINABLE STRATEGIC FRAMEWORK

Two years ago, Bühler identified five core topics central to tackling growing global challenges and meeting the needs of its customers. Today, they are more relevant than ever.

Food and feed safety

We are continuously improving our solutions for the production of safe food and feed.
In 2018, 42% of our R&D projects focused on the topic.

Food and feed safety

According to the World Health Organization (WHO), each year, about 600 million people fall ill as a result of eating contaminated food. WHO states that food safety, food security, and nutrition are all inextricably linked, with unsafe food creating a vicious cycle of disease and malnutrition that particularly affects the young and the elderly. For example, contamination with pathogenic microorganisms, mycotoxin contamination, food adulteration, and fraud, are among the food and feed safety challenges our customers face. Bühler is striving to help them address these issues with innovative technologies that detect and eliminate contaminants and boost transparency and traceability.

It is not just the food we consume ourselves where safety is a vital concern – what we feed to livestock is equally important, since ultimately we end up eating it ourselves. While annual animal feed production now exceeds 1 billion tons, that figure is likely to increase exponentially as a growing world population increases the demand for meat products. Bühler applies the same strict hygienic design and engineering guidelines to its feed technologies as it does to food. For example, its grain-cleaning solutions enable the removal of dangerous mycotoxins at an early stage, while optical sorting rejects contaminated grain fractions and other foreign materials. Aflatoxin-contaminated corn causes suffering for millions of people worldwide, and Bühler introduced a revolutionary data-driven optical sorter in 2018 to help solve this pressing challenge. LumoVision, using special cameras and sensors, reduces aflatoxin contamination in corn more quickly and accurately than ever before. It is connected to the Bühler Insights digital platform to deliver an unprecedented level of accuracy.

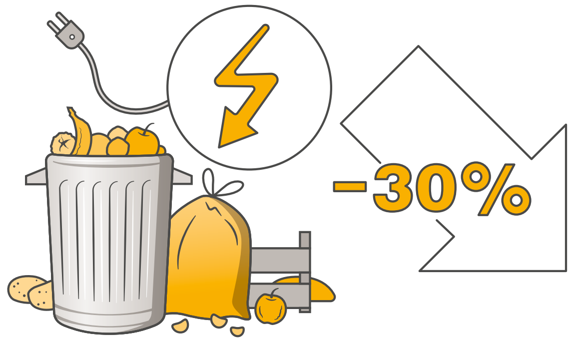
In this digital age where food incidents can quickly become food safety scandals, traceability, transparency, and data intelligence are the truest allies of food and feed processors. Bühler's partnership with Microsoft, signed in April 2018, combines Bühler's industry expertise with Microsoft's cutting-edge artificial intelligence, Internet of Things (IoT), and blockchain technologies to take safety, traceability, and transparency to the next level.

Bühler's new safefood.ai solution, also launched in 2018, has the potential to revolutionize food and feed safety. It scans thousands of databases, web pages, news and social media channels for food safety risks, and gathers them in one conduit. This knowledge hub equips companies with the information necessary to quickly and effectively respond to food safety risks.

The potential of the digital revolution to improve processes, and increase food safety and transparency is immense, and Bühler's journey to embrace and develop new, digital solutions for its customers has only just begun.

Nutrition

We are committed to developing solutions for enjoyable, safe, nutritious, and sustainable food. We harness science, technology, and partnerships to maximize nutritional value.



Energy and waste reduction

Our goal is to reduce energy consumption and waste by 30% by 2020. In 2018, 35% of our R&D projects were focused on improving energy efficiency and 42% on improving yield.

Nutrition

The Committee on World Food Security's most recent report made it clear that malnutrition in all its forms not only remains a critical challenge, but is far from limited to the developing world. Low-quality diets that lack nutrient-rich foods are a major risk factor for disease, as is the serious and worsening obesity problem. Of the world's estimated 800 million-plus undernourished people, all but around 20 million of them live in low-income countries. Bühler is steadfastly committed to helping develop and support local economies by providing education and jobs. For example, Bühler's African Milling School in Nairobi, Kenya, has seen 82 millers graduate its Miller's Apprenticeship program since 2014, as well as 30 head millers who graduated from the Head Miller program.

In 2018, Bühler opened a cocoa application lab in Indonesia and an application center for rice, flour milling, feed, and coffee in Myanmar. It also announced the development of a cocoa training center in Ivory Coast to be opened in 2019.

In order to help provide an ever-growing population with a nutritious diet, Bühler is constantly working to develop industrial-scale solutions for alternative protein sources, such as those derived from plants for human consumption or insects for feed. Bühler's ongoing partnership with Protix to develop the potential of insect protein, will help to provide a major sustainable and nutritious supply of animal feed. Bühler is also leading the development of textured vegetable proteins, products from alternative protein sources such as soy – once the preserve of the vegetarian market. The growing popularity of meat-free eating among health-conscious flexitarian consumers has created a significant market for protein-rich meat alternatives, and Bühler's landmark research partnership in this area with ETH Zurich is yielding increasingly impressive results.

Bühler has also partnered with ETH Zurich's World Food System Center on research projects to develop long-term solutions for future food challenges. This year saw the Swiss Green Economy Symposium present its first SDG of the Year Award to Africa Improved Foods (AIF), a joint venture between the Rwandan government and major financial players to create a more sustainable industry, with Bühler supplying the factory, process technology, and expertise. The AIF initiative promotes local production by directly buying farmers' yields of corn and soy at competitive prices in order to produce fortified porridge that will reduce the incidence of stunting and malnutrition in young children.

Energy and waste reduction

With the stark predictions of the Intergovernmental Panel on Climate Change's October 2018 report making headlines around the world, it has never been more urgent for every organization to play its part in averting potential catastrophe. Bühler has long been committed to sustainability, and is making progress toward its goal of cutting energy use, water consumption, and waste by 30% by the year 2020.

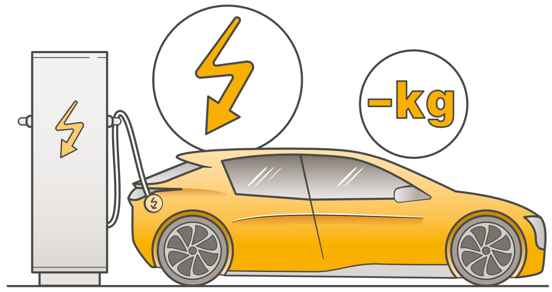
The company invests 4–5% of its turnover in research and development each year as it looks to find new ways to meet its ambitious sustainability targets. In 2018, it invested 4.4%. Its new CUBIC innovation campus in Uzwil, Switzerland, which officially opens in spring 2019, brings together employees, clients, start-ups, and students to drive research and development to the next level.

The CUBIC is not only designed to foster an environment of collaborative innovation, it is also built with efficiency in mind. Its smart glass facade will significantly reduce energy costs. Buildings such as the CUBIC that use smart glass facades with electrochromic glazing produced on Bühler Leybold Optics machinery, require up to 50% less energy for heating and cooling.

In 2018, Bühler began building the world's first ultra-low-emission coffee processing plant for its customer, Joh. Johannson Kaffe. The Norwegian coffee company's plant will produce record-low greenhouse gas emissions, setting a new

Digitalization

Digital solutions will help us – and our customers – improve quality, and reduce waste, energy, and downtime. In 2018, we introduced more than 20 new digital services.



Mobility

We contribute to making cars lighter with our die-casting systems, and electric vehicles more energy efficient with our solution for electrode slurry.

eco-standard in the field of coffee production. Bühler will supply the complete process technology, from coffee intake to cleaning, blending, grinding, and roasting – while the latter process usually accounts for around 80% of a plant's overall energy consumption, Bühler's technology will cut it by half.

Digitalization

Bühler has long maintained that digitalization is not an end in itself, but a vital means of meeting the challenges of its other core topics. With a third of all food wasted or never reaching consumers, digital solutions can provide a precisely targeted means of making food production more sustainable and safer.

In April 2018, Bühler and Microsoft committed to an alliance that has vast potential for improving food safety, quality, efficiency, and traceability. This partnership puts Bühler at the vanguard of secure and ultra-high-performing, cloud-based frameworks for the food, feed, and advance material industries. This was followed by the launch of the Bühler Insights digital platform at the Microsoft Ignite conference in September. Currently, Bühler has the capability to connect more than 85% of its solutions to Bühler Insights.

Among the digital solutions launched in 2018 are the GrainiGo grain analyzer, which uses cloud and IoT technology to enable customers to cut costs, boost yields, and improve quality. PastaSense brings digital quality control to an industry that has long relied on traditional processes. Traditional quality controls involve samples being taken to the lab every few hours during the production process. Every three seconds, PastaSense automatically measures and records the main production parameters to reduce analytical workload, improve quality, reduce waste, and improve traceability.

SmartPro, introduced in 2018, is Bühler's digital service for the wet-grinding process. Through continuous observation of important process parameters, it enables increased traceability, better process control, and benchmarking, which results in significant production optimization.

Another innovation, which was prototyped in 2018, is the QuaLiB digital quality management system for lithium-ion battery (LIB) electrode slurry production. It monitors the process and product parameters of continuous mixing, enabling the system to immediately respond to changes. QuaLiB increases production yield, improves product consistency, enhances traceability, and reduces operational costs for LIB electrode manufacturers. It will be launched in 2019.

Currently, Bühler customers can choose from a digital portfolio of over 30 digital services, and another 30 are in the pipeline to enter the market during 2019.

Mobility

The planet's growing population and burgeoning middle classes don't just mean increased demand for food – they also mean exponentially increasing demands for cars, trucks, and fuel, with road traffic a huge source of greenhouse gas emissions. One way of addressing this challenge is through electro mobility. Bühler is at the forefront of developing the new technology with its innovative means of producing battery slurry – a central component of the production process for lithium-ion batteries.

March 2018 saw the opening of Bühler's new battery application lab in Wuxi, China, further consolidating its position in the production of high-performing electrode slurries. China aims to partially or fully electrify 40% of all cars sold by 2030. It is the world's leading market for electric cars. Bühler's Wuxi-based lab will support customers with concept trials, formulation, and process optimization. Covering 400 square meters, the Wuxi lab will be able to produce battery samples on a much improved performance and consistency level than was previously possible. The analytical capability to evaluate samples within five minutes, further speeds up innovation cycles. Lithium-ion batteries have the potential for storage of solar or wind energy, making them an essential product for a sustainable future.

BÜHLER AND THE 17 SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals (SDGs) are the 17 global goals set out by the General Assembly of the United Nations – a universal call to action to protect the planet. Here's how Bühler is playing its part.

Bühler's Core SDGs

Grains & Food/ Consumer Foods* SDGs

2 ZERO HUNGER

We are developing sustainable **alternative protein sources** from plants and insects, strengthening **food safety and security,** and improving process efficiency to dramatically **cut post-harvest waste** through innovations such as LumoVision.

6 CLEAN WATER AND SANITATION

We are reducing the burden on freshwater utilization by increasing the efficiency of food value chains with respect to food waste. An example is the Prime Masa Nixtamal process, an industrial-scale solution that **cuts water use by 90%.**

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

In 2018, Bühler **invested CHF 145 million into R&D projects.** This is 4.4% of its turnover. Bühler also helps strengthen infrastructure in local markets through affordable processes and equipment. For example, customers can buy quality refurbished Bühler machines through its **ReNew hub.**

1 NO POVERTY

Bühler is investing in training, supporting local economies, and passing on expertise – its involvement in the Partners in Food Solutions program is also helping to improve food security and nutrition and boost economic development across Africa.

3 GOOD HEALTH AND WELL-BEING

Bühler provides innovative solutions on an industrial scale to help eradicate mycotoxins and other contaminants, working with food manufacturers to improve nutritional value, and developing state-of-the-art warning systems to improve food safety.

4 QUALITY EDUCATION

In addition to Bühler's 600 apprentices in training, our experts transfer expertise to local communities. Examples include Indonesia's cocoa application facility, Kenya's African Milling School, the forthcoming Ivory Coast chocolate training hub, and more.

5 GENDER EQUALITY

Diversity and inclusion are top priorities for Bühler. It is committed to increasing the percentage of women employees by 1% year-on-year. It also invests in inclusion training, and all employees have equal rights, regardless of gender, religion, ethnicity, or age.

■ = These SDGs relate to the core competencies of Bühler.
■ = These SDGs are also important for Bühler.

* From January 2019.

17 PARTNERSHIPS FOR THE GOALS

Bühler is active in partnership programs and industry initiatives with customers and academic institutions to strengthen economic and sustainable development – these include the World Food System Center, MassChallenge, EIT Food, and Partners in Food Solutions.

16 PEACE AND JUSTICE STRONG INSTITUTIONS

All employment rights are fully guaranteed by law in the countries where Bühler operates. In 2018, Bühler launched a Diversity & Inclusion initiative to foster a diverse and inclusive workplace and culture. It is already running multinationally.

15 LIFE ON LAND

Bühler's digital innovations will help its customers reduce waste, water, and energy by optimizing overall equipment effectiveness. We are developing process solutions for alternative proteins, such as insects for feed. No fertile land is needed for insect production.

13 CLIMATE ACTION

Bühler partners with Lishen in China to produce slurry for 400,000 electric car batteries a year, and continues to **develop energy efficient, waste reducing solutions.** Around 75% of the world's silver paste used in **solar panels** is also produced with the help of Bühler machines.

Advanced Materials SDGs

7 AFFORDABLE AND CLEAN ENERGY

Bühler is a **leader in lithium-ion battery technology,** as used in the growing electric car market, and it is also developing **ultra-low-emission facilities** for customers, such as a coffee plant for Norwegian producer Joh. Johannson Kaffe.

11 SUSTAINABLE CITIES AND COMMUNITIES

Using architectural smart glass coated on Leybold Optics glass coaters can **cut a building's energy use by half.** The glass coated on a single Leybold Optics machine in one year would save almost as much energy as is produced by a nuclear power plant.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Alongside the range of solutions Bühler provides to customers to **minimize environmental impact,** its own sites are also being ISO 14001 certified. Meanwhile, the development of digital solutions to **reduce waste and energy consumption** is picking up pace.

14 LIFE BELOW WATER

Bühler is developing and producing processing technologies for aqua feed, with a focus on creating complete diets that maintain fish health. It is also exploring potential technologies to produce insect proteins for aqua feed.

10 REDUCED INEQUALITIES

Bühler's Code of Conduct covers behavior in relation to employees, customers, suppliers, business partners, and others, backed by an internal Compliance Board. Unconscious bias awareness training was introduced in 2018 in Switzerland.

8 DECENT WORK AND ECONOMIC GROWTH

Bühler creates education, training, and employment opportunities across the developing world, and partners to provide access to knowledge. Bühler offers adequate compensation, safe and rewarding work, and employee development programs around the globe.

OUR EMPLOYEES

A key element of our sustainability approach is the promotion and training of our staff.

At Bühler we have long recognized that our employees are our most important resource, and so each year we strive to improve the level of training, delivery mechanisms, and employment culture to ensure continual staff development.

As part of this process Bühler has launched its Diversity & Inclusion initiative to make sure that every employee has the same opportunities for personal development and that we are leveraging the best skills available both internally and externally. Driven from the top of the organization, the initiative has been designed to help Bühler always recruit, retain, and advance diverse talent, while reinforcing a culture of inclusion.

A dedicated Group-wide Diversity & Inclusion project team has been set up to drive the initiative. To date, a training program to help mitigate unconscious bias in the workplace has been rolled out, an awareness campaign has been launched, and a new mentoring program is being piloted in Uzwil, Switzerland. Mentoring involves one-on-one facilitated learning, with an experienced mentor providing advice and guidance on the mentee's career development goals. The new initiative facilitates both the transfer of knowledge and the development of competencies. The program started in May 2018 and will conclude in June 2019 with a graduation ceremony. A university team has also been employed to analyze Bühler globally, to see where the company can achieve responsible and sustainable improvements when promoting diversity and inclusion. As part of the Diversity & Inclusion initiative, Bühler's CEO Stefan Scheiber joined 50 Swiss-based companies in 2018 with a pledge to support gender equality. He pledged to increase the share of women Bühler employs by 1% year-on-year. Bühler has chosen to make this a global commitment across its worldwide operations.

Flexible learning

Bühler is committed to making training more accessible, while also moving from structured learning to more flexible and customized training. In 2018, Bühler launched B-Learning, a new learning management system that is delivered through a range of different training mediums. At its heart is a state-of-the-art, globally accessible virtual learning library offering a broad spectrum of courses on subjects ranging from business to leadership. Students can use the medium best suited for them and their circumstances, whether it is videos, e-learning, classroom training, webinars, or mobile apps. B-Learning provides staff with the opportunity to expand and deepen their knowledge anytime and anywhere, through an entirely new and flexible learning environment. Its global accessibility means there are no longer any geographical barriers to learning.

B-Learning tracks the courses taken by staff while also monitoring a trainee's strengths and weaknesses so that managers are equipped to support an individual's further development. The resource is also available to instructors to help them in their delivery of more traditional high-quality training. B-Learning has been developed so courses can be targeted at both staff and customers.

Bühler and Haas clearly merged together as one very motivated group at the iba trade fair in September 2018.

Supporting change

Sales drive growth. To help our sales teams recognize the pivotal role they play in achieving a profitable future, Bühler has launched a new initiative targeted at its sales leaders. With advances in technology and the increasing complexity of global markets, our clients have to adapt to fast-changing business environments. As our clients' businesses change, Bühler needs to change to support them. To help with this process, Bühler has launched its Service Excellence & Sales Leadership for Profitable Growth program to inspire our sales leaders from all regions and business groups to help them become agents of change. The three-day program, designed and delivered by a leading global business school, provides sales leaders with the skills to motivate and inspire their teams so all sales staff will appreciate their role in driving profitable growth for the company. Courses are delivered both on-site and through pre- and post-program virtual training and executive coaching sessions.

Bühler is striving to make sure that entrepreneurship along with creativity and decisive thinking runs deep within the company. In 2014, our international Master of Bühler Management (MBM) program was developed to ensure the right skills are in the right places to harness commercial opportunities when they arise. Each year around 30 middle managers are selected from different countries, business areas, and backgrounds to participate in a 12-month training program designed to ingrain entrepreneurial skills throughout the company. Each module is held in one of three different countries. Along with the program each participant is tasked with identifying a potential business opportunity, achieving buy-in from

Carsten Petry and Mary Olwal completed the Master of Bühler Management program in 2016 and now develop innovations together.

key decision makers, and then producing a realistic assessment of the potential return on investment from their idea.

In 2018, Bühler further developed the program around the theme of "leading to win," with emphasis on the skills needed for future success, such as entrepreneurial agility, collaborative leadership, communication, and innovation. To help achieve this, the MBM program has gone into partnership with a leading business school near London, where tailored programs place a strong emphasis on ensuring that learning translates into behavioral change.

Vocational training

One area where Bühler has long-standing expertise is in the field of vocational apprenticeships. It all started over a hundred years ago with the launch of the first Bühler metalworking apprenticeship. Today, the highly successful Swiss apprenticeship model has been exported around the world, with Bühler offering training in 12 different vocational areas to around 600 trainees enrolled worldwide each year. Sites offering vocational training include those in Switzerland, Germany, Austria, China, India, Brazil, the US, and South Africa. Under the Swiss model apprentices receive a mix of practical and academic training.

An example is the academy in Minneapolis, US, which offers apprentices practical hands-on training at the Bühler plant along with three months of class-based training at a local vocational school. All training, classes, tools, books, computers, and uniforms are paid for by Bühler along with each apprentice receiving a salary and social benefits. Bühler invests around USD 30,000 per apprentice per year for training and education. The Swiss vocational training model is seen as a global benchmark and is being adopted by other countries.

Leadership pipelines

Bühler also has a number of different initiatives designed to nurture the best talents from within the company as well as new talents joining the company into tomorrow's leaders.

One such pipeline, now in its second year, is the Excelerator program, an initiative that tailors career development to the specific needs of an individual. With such a wide geographical spread, Bühler has access to some of the best talents the world has to offer. The aim of Excelerator is to ensure that these talents are first recognized and then enabled to mature and develop into leadership roles. The initiative involves employees being nominated for a two-day assessment program from which 20 candidates are selected. An individual development and coaching plan is then drawn up for each successful candidate to build on their strengths and develop their leadership abilities.

The Bühler International Management Trainee program offers another pipeline into senior management and leadership. Designed to attract the best talents leaving universities and business schools, the three-year program takes seven trainees a year and fast tracks them through the Bühler corporate experience. They get the chance to work with Bühler's top management at the Executive Board member or regional head level, where they get to understand the top-to-bottom workings of the company. Candidates take responsibility for a major Bühler project as well as experience all the entrepreneurial challenges that go with a new business venture such as a start-up. Trainees also have the chance to work abroad for one year as part of the program.

To make sure Bühler is positioned to attract the best talent, the company has also been building up the strength of its employer brand. Bühler has been increasing its profile at universities, investing in talent through corporate partnerships, running workshops on subjects such as digital services in food, and attending conventional work fairs as well as more innovative career experiences such as the Long Night of Careers.

Through all these mediums, Bühler has been spreading the message that the company offers so much more than machine manufacturing and that joining us can lead to exciting career opportunities in digital technology, the advancement of the Internet of Things, and food technology, among many other specialist fields. Bühler has been forging new links to help raise awareness of the diversity of the things we do as a way of attracting the best talent available.

One such example is our relationship with the international engineering network UNITECH. By being part of this

Eduardo Hagmann de Lima Castro began his apprenticeship in 2018.

Vijayalakshmi Bandihalli Magadaiah, Production Assistant in Bangalore.

professional cooperation program, Bühler has been able to form relationships with nine leading academic partners along with numerous corporate partners. These links have helped Bühler to establish contact with new engineering talent early on in their studies and offer internships to new engineers from a range of prestigious academic institutions. Finally, we have welcomed new colleagues into the Bühler Group as a consequence of our successful acquisition of Haas, the Austrian-based producer of wafer, cookie, and confectionery production systems, at the start of 2018. With the Haas Group staff, Bühler now has a total of 13,165 employees in 140 countries.

Bühler's motivated vocational education and training team supports the apprentices through to graduation.

Feeling good about food

Food nourishes and sustains us. Every day, more than 2 billion people consume foods processed with Bühler equipment. Our innovations play a vital role in helping our customers produce safe, high-quality foods with minimal waste and optimal efficiency. Safe food supplies support global health, national economies and trade, contribute to nutrition security, and underpin sustainable development. And let's not forget: They also make us feel good.

Transforming lives and livelihoods with safe food

Contaminated food is a cause of over 200 diseases, and it leads to around one in 10 people falling ill each year, according to the World Health Organization. A common source of contamination of staple foods is naturally occurring mycotoxins produced by mold on grain. The mold thrives in warm, humid conditions – a problem that will only get worse with the effects of climate change.

One of the most highly carcinogenic is aflatoxin. Around 500 million people – mainly in the world's poorest regions – are at risk of chronic exposure to aflatoxins, which can affect the immune system, stunt children's growth, and cause liver cancer.

A team of dedicated engineers at Bühler has taken a big step toward solving this challenge with LumoVision, an optical sorting application able to identify and sort corn contaminated with aflatoxin faster and more accurately than has ever been possible. The team designed a hyperspectral camera and powerful LED-based UV lighting system to cut contamination rates by 90%. With these, each kernel is analyzed as it passes the machine's sensors. Contaminated grains that glow brightly under the UV light are blown out of the product stream by air nozzles that deploy within milliseconds of detection.

By connecting LumoVision to the cloud via the Bühler Insights platform, which was developed together with Microsoft, it is possible to make a real-time risk assessment of the grains as they are processed. The data collected is securely transmitted to the platform, where it is compared to other data such as the weather conditions under which the corn grew. This data is combined to calculate the risk of contamination for each grain. By comparing the data collected by LumoVision to the data stored in the cloud, it is even possible to assess the risk of aflatoxin occurring in each batch from a certain provider and optimize sorting accordingly. This predictive technology will bring food safety to new levels.

LumoVision processes up to 15 tons of product an hour. It also reduces yield loss to less than 5%. So it's no surprise that in 2018, Forbes called it a "remarkable new technology."

Sorting to save lives

Closing the protein gap

Hiltl burger

Textured thinking for tasty meat alternatives

By midway through this century, it is estimated that the world's population will require an extra 265 million tons of protein. Developing sustainable alternative sources is vital to closing this gap. Meanwhile, around two-thirds of all vegetable proteins produced are fed to livestock such as cattle, pigs, and poultry. The transformation of plant protein into animal protein is a far from efficient process.

Bühler is at the forefront of the search for alternative protein sources and is actively developing the potential of textured vegetable products. They are protein-rich meat alternatives that are obtained from vegetable raw materials via the cooking extrusion process, with many now virtually indistinguishable from meat (like the vegetarian "burger" in the photo on the left) in terms of texture, taste, and color.

Today, most textured vegetable proteins are soy-based, but Bühler is working closely with customers and key partners such as ETH Zurich (the Swiss Federal Institute of Technology) to develop products from materials such as bean isolate, wheat gluten, sunflower seeds, and pulses. Worldwide production rates for pulses remain far lower than for corn, rice, or wheat, though they are protein-rich and need less water to cultivate. Bühler has developed innovative solutions to streamline every part of the production process for pulses, including cleaning, hulling, splitting, and sorting.

The time is ripe to work together to invest in alternative proteins, not only to close the impending gap, but also because of consumer preferences. The ever-growing popularity of both vegetarian and vegan dishes among health- and environmentally-conscious flexitarian consumers is growing. Let's give consumers alternatives they will enjoy with every bite.

Improving diets and tackling malnutrition

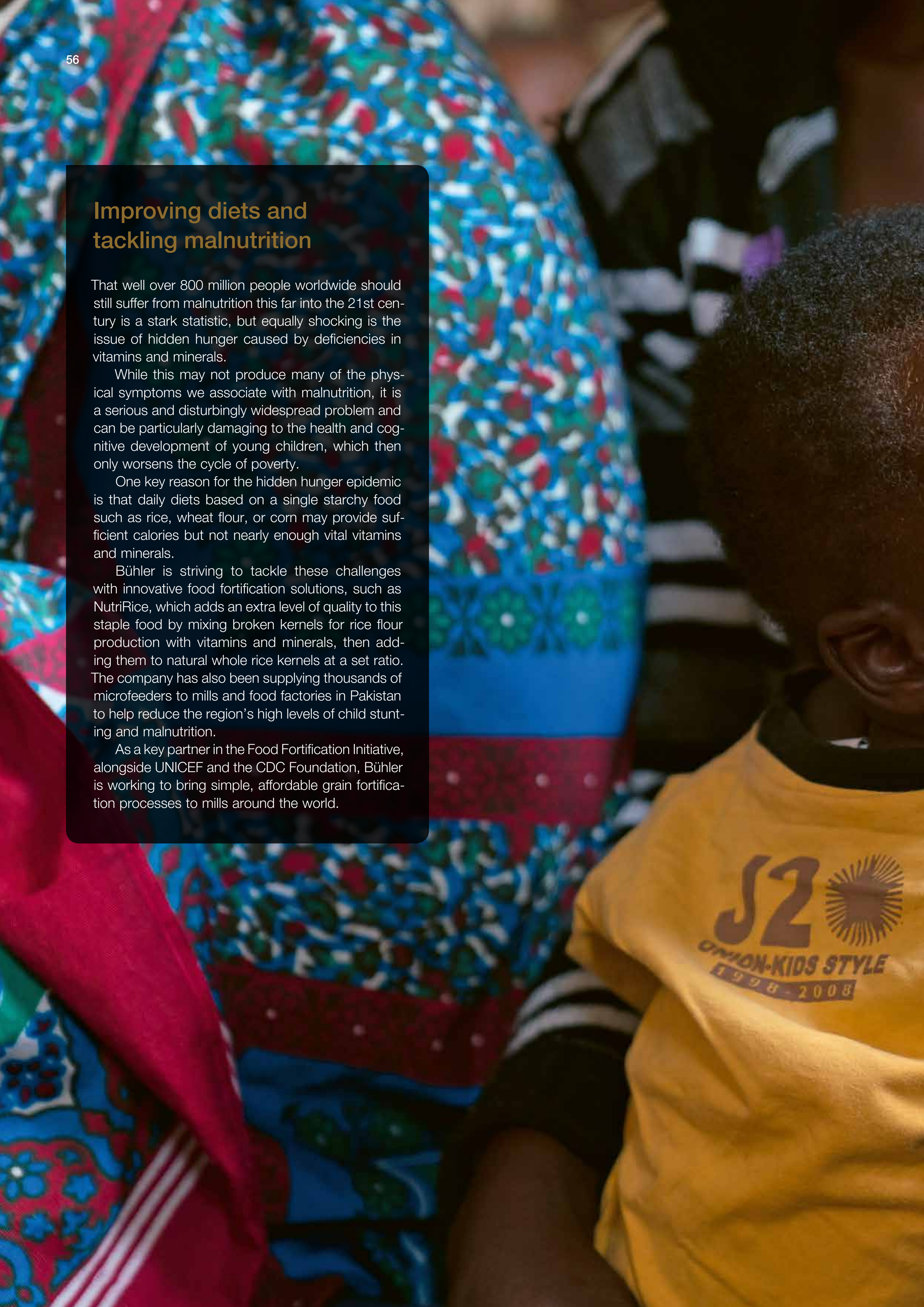
That well over 800 million people worldwide should still suffer from malnutrition this far into the 21st century is a stark statistic, but equally shocking is the issue of hidden hunger caused by deficiencies in vitamins and minerals.

While this may not produce many of the physical symptoms we associate with malnutrition, it is a serious and disturbingly widespread problem and can be particularly damaging to the health and cognitive development of young children, which then only worsens the cycle of poverty.

One key reason for the hidden hunger epidemic is that daily diets based on a single starchy food such as rice, wheat flour, or corn may provide sufficient calories but not nearly enough vital vitamins and minerals.

Bühler is striving to tackle these challenges with innovative food fortification solutions, such as NutriRice, which adds an extra level of quality to this staple food by mixing broken kernels for rice flour production with vitamins and minerals, then adding them to natural whole rice kernels at a set ratio. The company has also been supplying thousands of microfeeders to mills and food factories in Pakistan to help reduce the region's high levels of child stunting and malnutrition.

As a key partner in the Food Fortification Initiative, alongside UNICEF and the CDC Foundation, Bühler is working to bring simple, affordable grain fortification processes to mills around the world.



Fortify to flourish

Reduce, reuse, renew

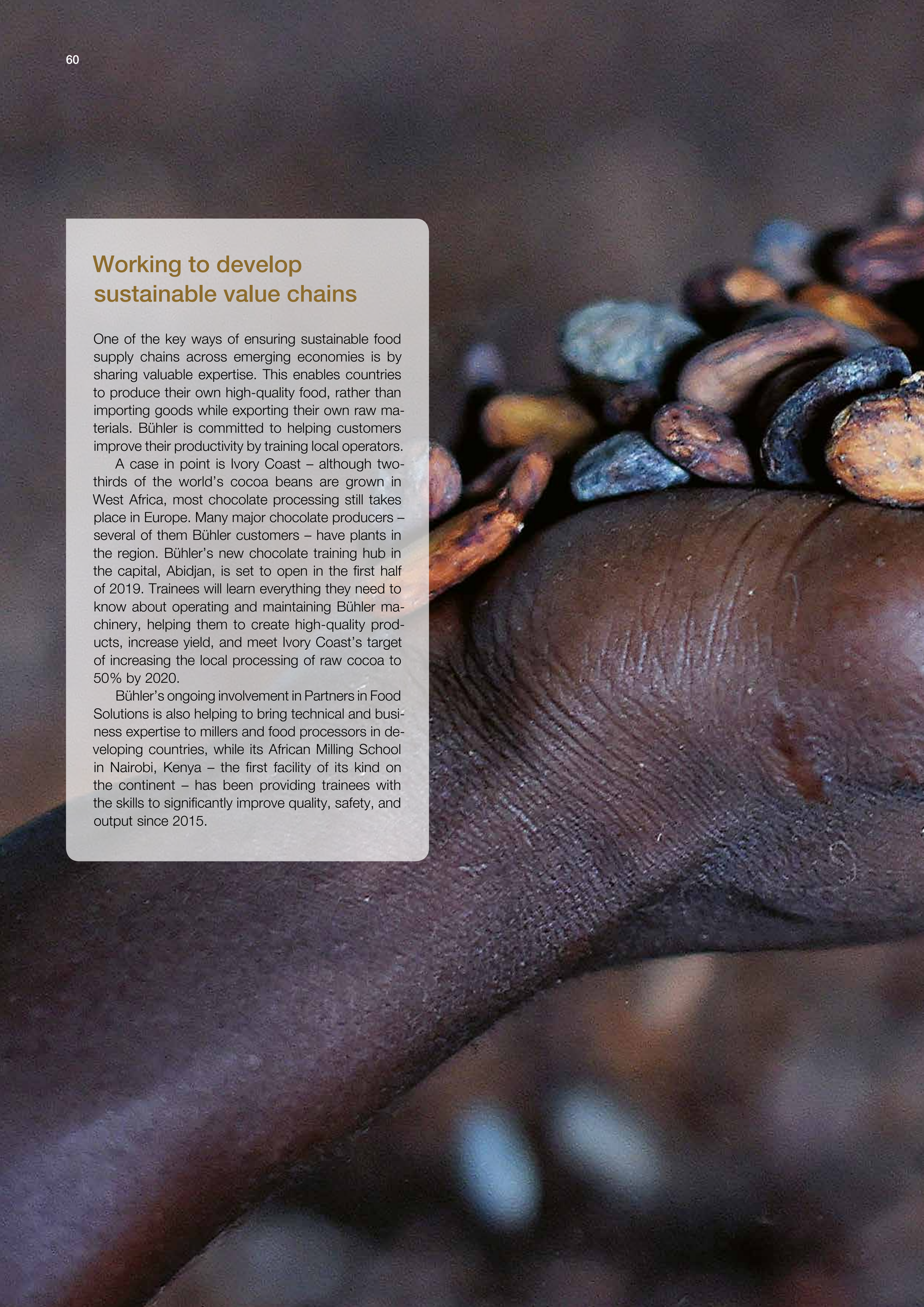
Reducing energy and water use is vital to food security

A third of all food is wasted between the field and the table. A sad truth, but this doesn't have to be the end of the story. Technology can contribute to the reduction of food waste, energy use, and water consumption. Bühler is committed to developing technologies that reduce waste and energy consumption by 30% by 2020, as well as methods to reduce water use in food processing.

An example is a new process for making Nixtamal corn flour used for tortillas – a product that outsells white bread in the US. Bühler's Prime Masa Nixtamal uses 90% less water than traditional methods through technology that steams the corn instead of cooking it in water for hours. The process uses almost 40% less steam and 30% less energy than previous methods and eliminates the need for the 1,500 liters of water that would normally be wasted during production of 1 ton of corn.

Bühler has also been addressing the issue of the up to 10% of bread left unused after baking as a result of errors, rejection, or overproduction. This unused, wasted bread is given a second life by being put back into the process, becoming a valuable ingredient that has proven to have a positive effect on the end product. It also increases dough yields by up to 10%.

It's not just new products where Bühler is helping to save resources. Its 2018 launched ReNew Internet platform enables customers to find new homes for their old Bühler machines. The company acts as a hub, overhauling these oldies but goodies and selling them to new owners with full warranties. This means machines remain economically viable and don't end up as scrap metal.



Working to develop sustainable value chains

One of the key ways of ensuring sustainable food supply chains across emerging economies is by sharing valuable expertise. This enables countries to produce their own high-quality food, rather than importing goods while exporting their own raw materials. Bühler is committed to helping customers improve their productivity by training local operators.

A case in point is Ivory Coast – although two-thirds of the world's cocoa beans are grown in West Africa, most chocolate processing still takes place in Europe. Many major chocolate producers – several of them Bühler customers – have plants in the region. Bühler's new chocolate training hub in the capital, Abidjan, is set to open in the first half of 2019. Trainees will learn everything they need to know about operating and maintaining Bühler machinery, helping them to create high-quality products, increase yield, and meet Ivory Coast's target of increasing the local processing of raw cocoa to 50% by 2020.

Bühler's ongoing involvement in Partners in Food Solutions is also helping to bring technical and business expertise to millers and food processors in developing countries, while its African Milling School in Nairobi, Kenya – the first facility of its kind on the continent – has been providing trainees with the skills to significantly improve quality, safety, and output since 2015.

Sustainable value

Partnership with customers

“Engineering Customer Success” – this is the level of performance that Bühler promises its customers. In four examples, we show how we honor this promise to help our customers change the world for the better.

GOOD FOR US, GOOD FOR THE PLANET

Barilla Group, Italy

Barilla is conquering the world with pasta, demonstrating how sustainability can transform into a factor for economic success.

Like lighthouses, major brands cast light on the rough sea of globalization. They help us navigate through the vast expanse of all imaginable purchase decisions. What should I wear today? What car should I drive? And: What should I eat?

Parma, Italy, is home to one of these lighthouses: Barilla – the 140-year-old, fourth-generation family business. Each year, Barilla produces around 1.8 billion tons of food at its 28 production sites – 14 in Italy and 14 abroad. From pasta, to sauces, bakery products, and crispbreads, these locations export food products to over 100 countries. As the world market leader with over EUR 3.5 billion in turnover and more than 8,000 employees, Barilla is a fixed star in the pasta universe.

The Barilla lighthouse not only shines bright – it also shines green. “Good for you, good for the planet” is their mantra. “Feeding a steadily growing population with good products without harming the planet is one of the greatest challenges of our time,” says Guido Barilla, Chairman of the Barilla Group. The first few examples show the emphasis the company from Parma has placed on making a contribution to addressing global challenges:

Raw materials: Barilla’s sustainability program begins with raw materials – durum wheat, tomatoes, eggs. In 2017, over 2,000 Italian farmers produced 240,000 tons of durum wheat. By following the “Barilla Decalogue for the Sustainable Cultivation of Durum Wheat,” the farmers managed to reduce greenhouse gas emissions and their own costs by an average of 10%. Barilla also sets great store in animal welfare: Headquartered in Parma, the group uses 94% cage-free eggs. Barilla has taken palm oil out of its range entirely.

Production: For each ton of pasta Barilla has produced in its facilities since 2010, the company managed to reduce its water consumption by 31% and greenhouse gas emissions by 24%. In addition, Barilla has optimized its sauce and pesto production to reduce water consumption by 15% and CO_2 emissions by 49%.

Nutrition: In 2017, Barilla launched 10 new products with a mission to improve the company’s nutritional profile. Since 2010, they have also improved the nutritional profile of 387 products, which now contain less sugar, saturated fats, and salt. Also in 2017, the company launched 100% vegetable sauces containing neither animal ingredients nor lactose to meet the changing demands of consumers.

With planned investments of around EUR 1 billion into its industrial assets, Barilla will be driving its focus on sustainability forward in the years to come. This foundation is the new engine in Barilla’s story of growth.

“With our pasta, we not only share the ways of Italy with the world,” explains Antonio Copercini, Chief Group Supply Chain Officer at Barilla, responsible for global production. “We are also conveying the message that economic success and sustainability can go hand in hand.” Barilla spaghetti coated in pesto not only exude the warm wind of the Mediterranean. They also allow consumers to enjoy their food in good conscience.

An employee at the Barilla plant in Iowa checks the process line.

"There is a long cooperation between our companies, starting with Pietro Barilla and Urs Bühler."

ANTONIO COPERCINI
Chief Group Supply Chain Officer, Barilla

Antonio Copercini, Chief Group Supply Chain Officer, Barilla.

The key aspect of Barilla's sustainability endeavor is establishing regional value chains, from the cultivation of raw materials to processing down to distribution. Barilla has established a strategic production network with factories in Europe, the US, and Russia. Last year, the Italian company purchased an average of 90% of its wheat at the same location where it produces its pasta. Millions of tons of greenhouse gases are thereby avoided.

In the US, production began in 1998. Starting from scratch, Barilla's market share is now 34%. Encouraged by this triumph, the company entered the Russian market in 2012. The pasta producer hailing from Parma saw even faster growth in the east, with 12% of all quality pasta coming from Barilla in just a few years. Success in both the US and Russia called for the construction of additional plants as well as expansion of existing facilities.

Partners for 50 years

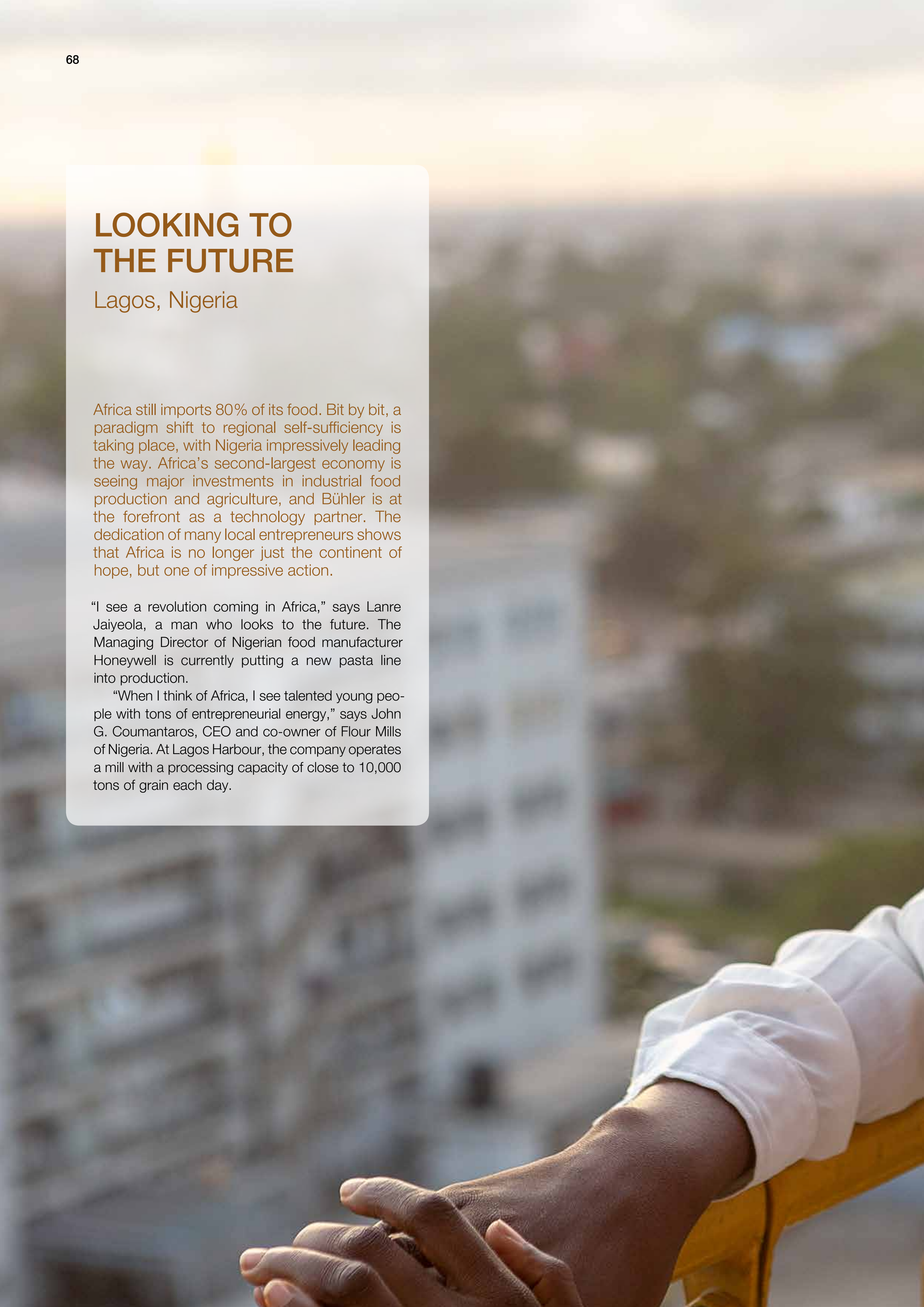
Sustainability and expansion require a competent solution partner. For over 50 years, Bühler has been one of the most important suppliers to Barilla. Pietro Barilla ordered the first pasta line in Uzwil, while the mill in Parma is full of equipment from Bühler. Today, Bühler serves Barilla along the entire supply chain. With cleaning systems for durum wheat, optical sorters, roller mills, plansifters, and pasta lines, Bühler plays a major role in Barilla's sustainable success story.

"For us, Bühler's expertise is the deciding factor," explains Copercini. This alliance is much more than a purely professional customer relationship. "There is so much that connects us," Copercini continues. "Tradition as a family company, a company culture with similar values, quality, sustainability – and passion."

For its current new buildings and expansions, Barilla again and again opted for Bühler as its preferred supplier. Seven of the 11 new production lines in the past six years have come from the Swiss Group: In 2013, two pasta lines for the market launch in Russia; in 2014, two lines in Ames, US, with the start of gluten-free production; in 2017, a large dry goods line for an expansion in the US; and expansion of production in Russia with two additional lines that same year. "Bühler has made a major contribution to our expansion, and we are glad to have such a competent, reliable partner at our side to help realize these ambitious projects," explains Copercini. This focus on sustainability and healthy eating requires both the manufacturer and technology suppliers to constantly adapt and innovate. Take gluten-free pastas for example: Bühler recognized this trend early on, developing the right extrusion technology based on the Polymatik pasta press. As gluten is not here to act as an adhesive, the Polymatik is responsible for hydrothermal treatment of the raw material. Take energy efficiency as an example: To cut energy costs and make production more sustainable, Bühler has developed dryers that save up to 40% energy. Take digitalization as an example: sensors that continually capture raw material and pasta properties and store data, with the added value of end-to-end production monitoring for quality management and automatic data storage.

Innovation for an even better world

Bühler's research and development efforts were the clincher for the latest new product: Pasta made not from grain, but pulses – namely, red lentils, and chickpeas. Pulses are not only unbeatable when it comes to sustainability. They also require very little water and fertilizer and keep the fields fertile by fixing nitrogen in the soil. And the nutritional value of pulses is second to none: rich in protein, low-fat, chock-full of minerals and vitamins. Barilla launched its new pulses pasta line at the end of 2018, once again setting the benchmark in terms of sustainability.



LOOKING TO THE FUTURE

Lagos, Nigeria

Africa still imports 80% of its food. Bit by bit, a paradigm shift to regional self-sufficiency is taking place, with Nigeria impressively leading the way. Africa's second-largest economy is seeing major investments in industrial food production and agriculture, and Bühler is at the forefront as a technology partner. The dedication of many local entrepreneurs shows that Africa is no longer just the continent of hope, but one of impressive action.

"I see a revolution coming in Africa," says Lanre Jaiyeola, a man who looks to the future. The Managing Director of Nigerian food manufacturer Honeywell is currently putting a new pasta line into production.

"When I think of Africa, I see talented young people with tons of entrepreneurial energy," says John G. Coumantaros, CEO and co-owner of Flour Mills of Nigeria. At Lagos Harbour, the company operates a mill with a processing capacity of close to 10,000 tons of grain each day.

Nigeria's population is expected to rise to 410 million by 2050, according to the United Nations.

"Simply put, Africa has enormous potential," says Sagar Dixit, Project Manager at Kellogg's Tolaram. In Lekki, the company built a breakfast cereal plant with Bühler as a partner that has an output of 10,000 tons of crispy flakes annually.

"Now it comes down to processing the raw materials that we have in our country," says Aliko Dangote, the most successful entrepreneur and richest man in Africa. With Dangote Group, he generates sales of over USD 4 billion every year.

Four locations in Nigeria, four companies, four times the action. This is the new Africa.

Pressing challenges

Nigeria's economic upturn is restoring confidence. However, the African continent faces pressing challenges. According to the United Nations, today's population of 1.3 billion will double to 2.6 billion by 2050. A majority of this population boom can be traced back to growth in Nigeria, which is expected to be the third-largest country in the world by 2050. Meanwhile, over 20 million people are starving on the continent, and 30% are malnourished, including 165 million children. For children, malnutrition is especially devastating, as the insufficient supply of nutrients causes stunted growth, cognitive development issues, and a weakened immune system.

Investments in local production

"It is exciting to see how Africa is transforming into a whole new dynamic," says Andreas Flückiger, Regional Head for the Middle East & Africa at Bühler. A deciding paradigm shift is currently taking place as nations move away from imports toward regional production with local raw materials. Today, 80% of all food in Africa is still imported – an unbelievable figure. After all, Africa has the climate and land needed to grow.

Aliko Dangote hopes to draw on this. "We want to change the entire value chain across Africa. Only local products will be processed and produced," says Dangote. With flour, pasta, salt, sugar, and beverages, Dangote is already a key food producer in Nigeria.

But that's not all: Now, Dangote is making an investment in the high double-digit millions to strengthen the local farming and processing of rice. The region is practically made for rice. Six different locations in Nigeria will be equipped with 10 rice processing plants with an overall capacity of 160 tons per hour. Directly and indirectly, this will create thousands of new jobs. And thanks to process technology from Bühler, including optical sorting, the food products will be safe and high-quality. “We have to offer people a way out of poverty,” is Dangote’s creed.

First-class efficiency and hygiene

In many places, the future is already here. Those who are looking for a global standard for the most modern factories to produce breakfast cereals can go to the free-trade zone of Lekki, on the outskirts of Lagos. Hygiene: world-class. Food safety: exemplary. Efficiency: record-breaking.

The process that Bühler and Kellogg’s Tolaram have developed for the new factory significantly reduces waste, energy, and water consumption. “Without Bühler, these advances would not have been possible,” explains Sagar Dixit, Project Manager at Kellogg’s Tolaram, who has worked on the new facility along with his team.

The savings not only benefit the environment, but also the bottom line: The food is affordable for most Nigerians. Fortified with vitamins and minerals, the crunchy breakfast food also contributes to a healthy diet. And here is where you see the new Africa: Step by step, Kellogg’s Tolaram is working to supply the factory with locally cultivated rice. “We are teaching farmers about cultivation, fertilization, and secure storage,” says Dixit. Production has created jobs for 150 people directly, and many more indirectly.

This is just the beginning. About 30 tons of corn run daily through the extruder, dryer, and packaging machines. Cereal is selling like hotcakes. The expansion of the factory to double the capacity is already underway and should be finished by August 2019.

As new and groundbreaking as this type of project is, there are pioneering companies that have shown the way for decades. Companies like Flour Mills of Nigeria (FMN).

> “We want to change the entire value chain across Africa. Only local products will be processed and produced.”

ALIKO DANGOTE
Owner and Chairman of Dangote Group

Aliko Dangote, Owner and Chairman of Dangote Group.

Sagar Dixit, Project Manager at Kellogg’s Tolaram.

Lanre Jaiyeola, Managing Director at Honeywell.

John G. Coumantaros, CEO of Flour Mills of Nigeria.

Around 50 years ago, the Greek shipowner George S. Coumantaros was looking for new ideas as to how he could use his fleet. The opening of Nigeria at the time presented the company with new opportunities. Why not build a mill in Lagos and ship the grain using company freighters? Said and done. Back then, Coumantaros already relied on Bühler. As the demand for flour swallowed up all available production capacities, FMN immediately built its next mill. With this trend continuing to date, FMN now operates the second-largest mill complex in the world, with a processing capacity of nearly 10,000 tons per day.

Ten thousand tons translates into 20 million one-kilogram loaves of bread each day. This makes FMN a key hub in the Nigerian food chain. But today, after diversifying, FMN produces much more than just bread flour: The company is purchasing more and more raw materials from local production to manufacture pasta, noodles, snacks, cooking oil, and sugar. Quality, food safety, and supply reliability are the top priorities for the company.

"We are aware of our responsibility to the people of Nigeria and our employees," says John G. Coumantaros, who has run the family business since 2014. This is why FMN invests heavily in training its staff. Bühler offers all the necessary facilities at its African Milling School in Kenya or the new cocoa training center in Ivory Coast that will open in 2019.

All's well that ends well? There's no question about that. But Africa still has not created a sustained turnaround. Is the rapid population growth eating away at all of the progress? Will the growth continue? Will the political relationships continue to stabilize?

It is too soon to sound the all-clear. However, the principle of hope has joined with the motto of action. "We face neither East nor West; we face forward," Kwame Nkrumah once said. He was the man who led Ghana as one of the first countries in Africa to independence in 1957. Today, his vision is more relevant than ever.

"We are aware of our responsibility to the people of Nigeria and our employees."

JOHN G. COUMANTAROS
CEO of Flour Mills of Nigeria

The Lagos state government has developed programs to boost food security in the state and the country at large.

Training millers in Africa

Professional training in Nairobi

When Bühler announced the opening of the African Milling School (AMS) in Kenya in 2014, the first 25 slots were quickly allocated – from Johannesburg to Cairo, mill operators welcomed professional training for their employees, something lacking in this form until then. A good miller is key to the mill yield, increases the quality of the flour, and ensures high plant availability and safety.

In a two-year dual training course, AMS conveys the necessary expertise and certifies young people as millers or head millers. It is Bühler's fifth milling school worldwide, alongside centers in Switzerland, China, the US, and India. For the milling industry in Africa, this school represents a milestone and a clear sign of progress. To date, 82 people have completed the miller apprenticeship program, and more than 30 head millers have graduated from the Head Miller program. More than 500 participants have attended short courses at AMS over the past four years.

Investing in the future

New chocolate training center in Ivory Coast

Two-thirds of all cocoa beans are grown in West Africa, and Ivory Coast is at the top of the supplier list. Still, the majority of chocolate processing takes place in Europe. Now, Ivory Coast plans to bring home at least 50% of raw cocoa processing by 2020 (currently one-third). Thanks to tax incentives for cocoa mills and chocolate producers, this goal is within reach. In the past five years, several major chocolate producers – many of whom are Bühler customers – have opened plants in the region. To help process these high-quality products and contribute to the sustainable growth of the regional cocoa industry, Bühler will open a cocoa training center in the capital city of Abidjan in the second half of 2019. In practical lessons, participants will be trained in operating and maintaining cocoa bean processing machines. This not only reinforces the development of local skills, but also helps operators of Bühler chocolate processing lines to improve the quality of their products.

With a capacity of 10,000 tons a day, Flour Mills of Nigeria is among the world's largest mills.

A career in milling

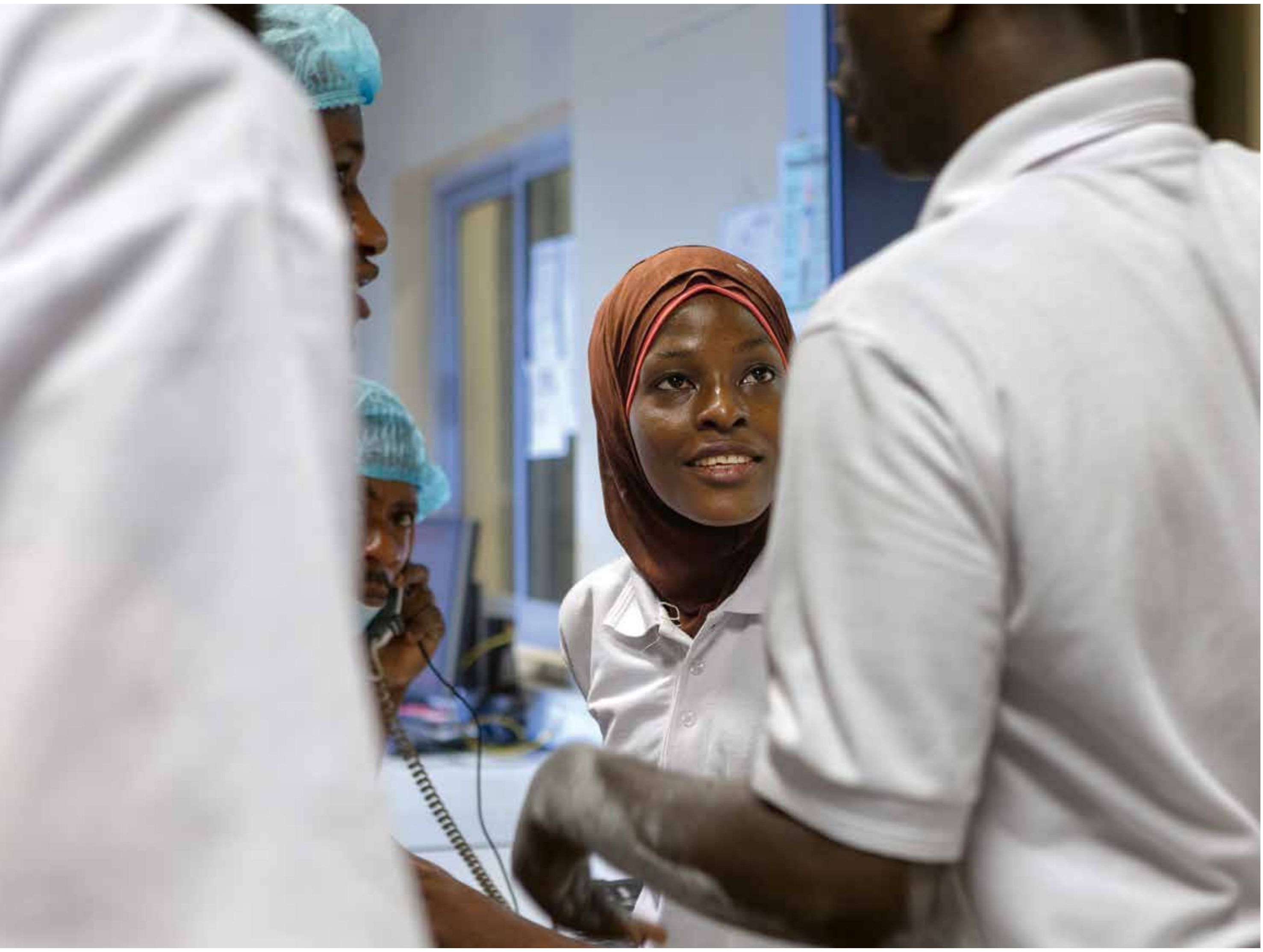
Looking ahead with confidence

As 30-year-old Huzeinat Shidi applied for a position at Flour Mills of Nigeria (FMN) four years ago, she had no idea that her life would be changed so radically for the better. When she didn't hear back for weeks, she accepted that she wasn't getting the job. But then something else happened: She was not only hired, but also given a promotion in just a short time. Her managers quickly saw her motivation, skill, and diligence. One clear sign of recognition – FMN sent her to Kenya in 2015 to Bühler's African Milling School.

She excelled, becoming the first female miller, not just at FMN, but in all of Africa. Within the FMN milling complex, she quickly took over shift responsibility for a 1,000-ton plant. But that's not all: FMN has so much faith in the young expert that she was sent to the most famous training grounds for the industry in the world, the Swiss School of Milling in St. Gallen in 2018. There, she completed a next level of training. "Milling is my passion," says Shidi.

"Simply put, Africa has enormous potential."

SAGAR DIXIT
Project Manager at Kellogg's Tolaram



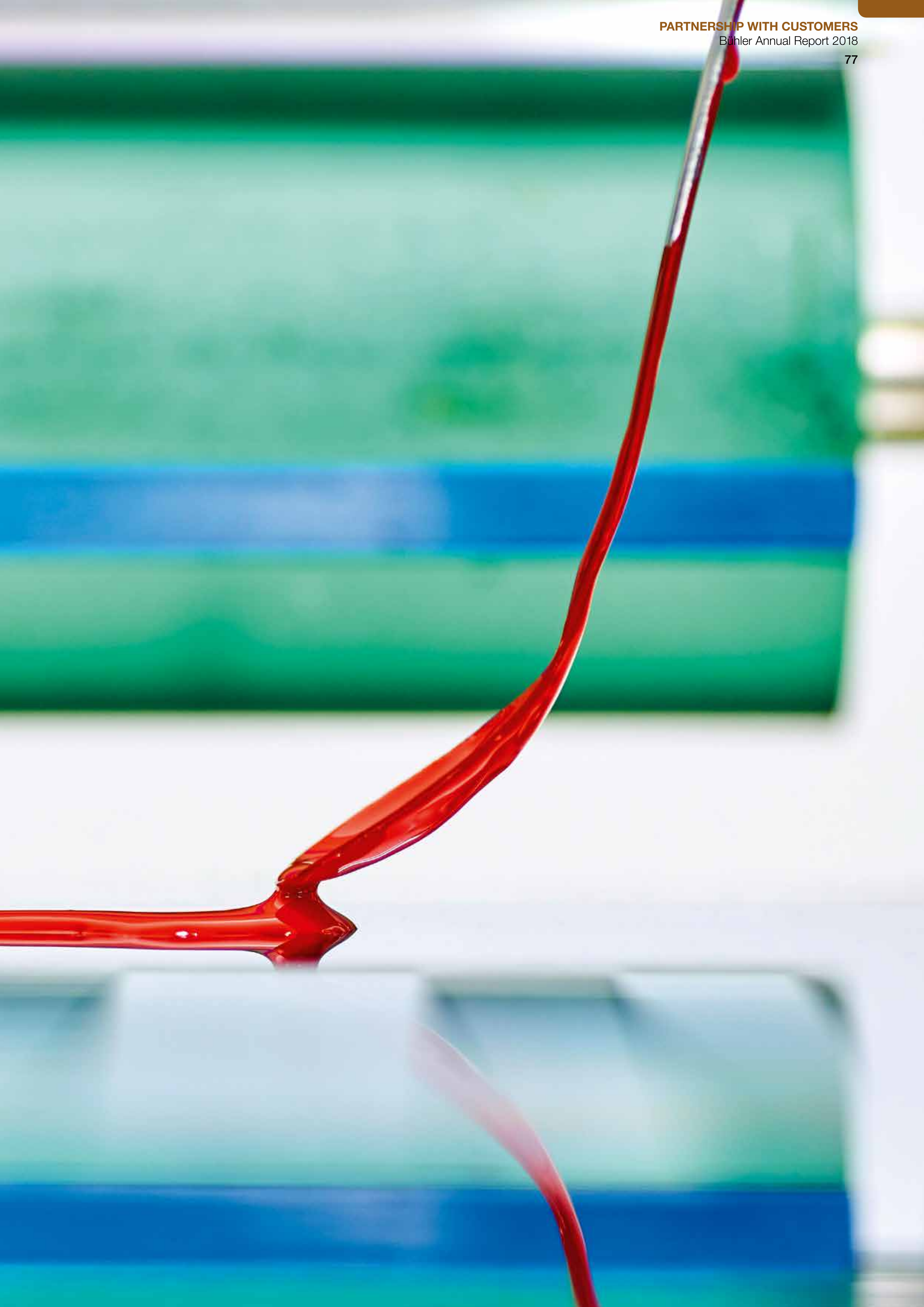
Her training at the African Milling School has prepared Huzeinat Shidi for her role as shift manager at Flour Mills of Nigeria.

SIX STROKES OF LUCK FOR A TRULY HAPPY ENDING

HiTech Ink., Indonesia

For decades, Japanese-Indonesian ink manufacturer HiTech Ink. was an impenetrable fortress for Bühler. How then has it come to be that HiTech Ink. has partnered with the Swiss provider to realize a revolutionary new plant concept?

It's a complicated story lasting years. A story of resistance overcome thanks to perseverance, knowledge, and passion. The heroes: Rita Suzanna and Iskandar Bongso. Suzanna is the Operational Director of HiTech Ink. in Indonesia, while Bongso is the Head of Sales, Advanced Materials. Our story revolves around ceramic balls that grind color pigments into micrometer particles and systems that mix them into high-end inks. For a long time, our story subsisted on hope alone. Out of curiosity grows trust that breaks the ice. And as is the case in any true tale, fate is also at play, entwined with strokes of luck.



It took Rita Suzanna of HiTech Ink., and Iskandar Bongso of Bühler six years to formally bring the two companies together.

Our story begins in 1996. A Japanese color and chemicals company expands, opening a subsidiary in Indonesia: HiTech Ink. The first stroke of luck: The Japanese parent company decides to task regional management with strategic development. Stroke of luck number two immediately followed: Rita Suzanna is hired as Operational Director. The third moment of luck: As a kick-start, HiTech becomes part of a joint venture with a small ink company, including the property, buildings, and machinery. It then purchases the Bühler agitated bead mill Boa 125 from the other partner. The Boa enters into the possession of HiTech in this indirect way, drawing attention to Bühler. The seed is sown. But, it will take nearly 20 years for it to take form.

HiTech starts with mini-scale production, manufacturing six tons per month. Right from the start, the company focuses on inks for noodle, cookie, chocolate, soap, diaper, and detergent packaging – primarily printed onto film or cardboard by its customers. The start-up quickly begins to grow and needs more equipment. As a business with a Japanese parent company, there is no doubt that the new machines will come from the Land of the Rising Sun. Solidarity among Japanese companies has proven itself for decades, a bond so strong that the Arctic will thaw before it breaks. At least for now.

> **“Each new machine once again confirms that Bühler was the right choice for us.”**
>
> **RITA SUZANNA**
> Operational Director, HiTech Ink.

Where inks get their quality

The Indonesian director soon begins looking for alternatives. She isn’t pleased that the newly delivered machines begin to malfunction after just a short time – the process zone giving out too quickly. “This kept us from growing,” the director remembers. She isn’t really impressed with the quality of the ink either. Suzanna reaches out to the Japanese parent company multiple times. At first, no one listens. Plus, she is lacking objective comparative data. The Bühler seed still hasn’t seen any sun.

To properly understand our story, we have to explain what quality means and where inks get their quality. First: Inks are an elixir of life. They are emotions captured visually. Flame-red sunsets, deep-green jungles, warm-brown wheat fields:

the richer and brighter the colors, the stronger the waves of emotion. Industrial chromatic printing requires another quality characteristic: flow properties. For all three characteristics – color saturation, gloss, color flow – there is one key criterion: the size of the pigment particles. The finer, the better.

The finer, the more light diffracts on the pigments and reflects the color waves to the eye of the observer; the finer, the better the ink flows, preventing the printing plates from clogging in production.

What others may tackle with grace, Bühler has elevated to a fine art. And what isn't ground, blended, and dispersed on Bühler grinders and mixers? Wheat, rye, corn, cocoa and coffee, plastics, silver, carbon, pigments. All of these raw materials are transformed into flour, powder, dough, bulk, pastes, and inks in Bühler's mills. Few have more knowledge of grinding. No one has over 150 years of Swiss tradition in grinding. No one invests up to 5% for research and development to continually optimize grinding processes – now more than ever with digital media. Bühler's exceptional technological position is no accident. The enterprise's global services, training, regional application centers, and solution expertise are just the icing on the cake.

HiTech still needs some time discover this hidden treasure for itself. Now queue the fourth stroke of luck: Iskandar Bongso enters the stage. As a new sales manager for ink machines in Indonesia, he brings with him fresh, new ideas. "I want to help our customers experience the values we create," states Bongso. We're now in the year 2007, a year of infinite expansion for the universe of ink.

Just as Rita Suzanna won't budge in convincing her Japanese parent company, sales genius Bongso sticks to his guns trying to convince HiTech of the advantages of Bühler technology. Both are united in their fierce efforts to produce the best inks with the best processes. Yet they are still lacking evidence that could help the parent company in Japan to reexamine its stance on working with Bühler.

Finally in 2012, after five long years, Bongso gets the idea to simply provide this potential customer with a test machine – a Cenomic 3 – for several months. Using their own formulas, HiTech will experience firsthand the difference in their own production environment.

Seeing is believing

And now it's more than obvious – Cenomic 3 simply grinds better. In these dimensions of the microcosm, this is not trivial. Better grinding means better dispersion color intensity – meaning that up to 20% less pigment (an expensive material) is required to achieve the same ink quality.

The first proven experiences have the executives in Tokyo listening. They become curious. For the first time, the Bühler seedling begins to grow. And Suzanna is gentle with the delicate little plant. Initially, she discreetly requests to purchase

Quality check. Getting the right color every time is essential for HiTech Ink.

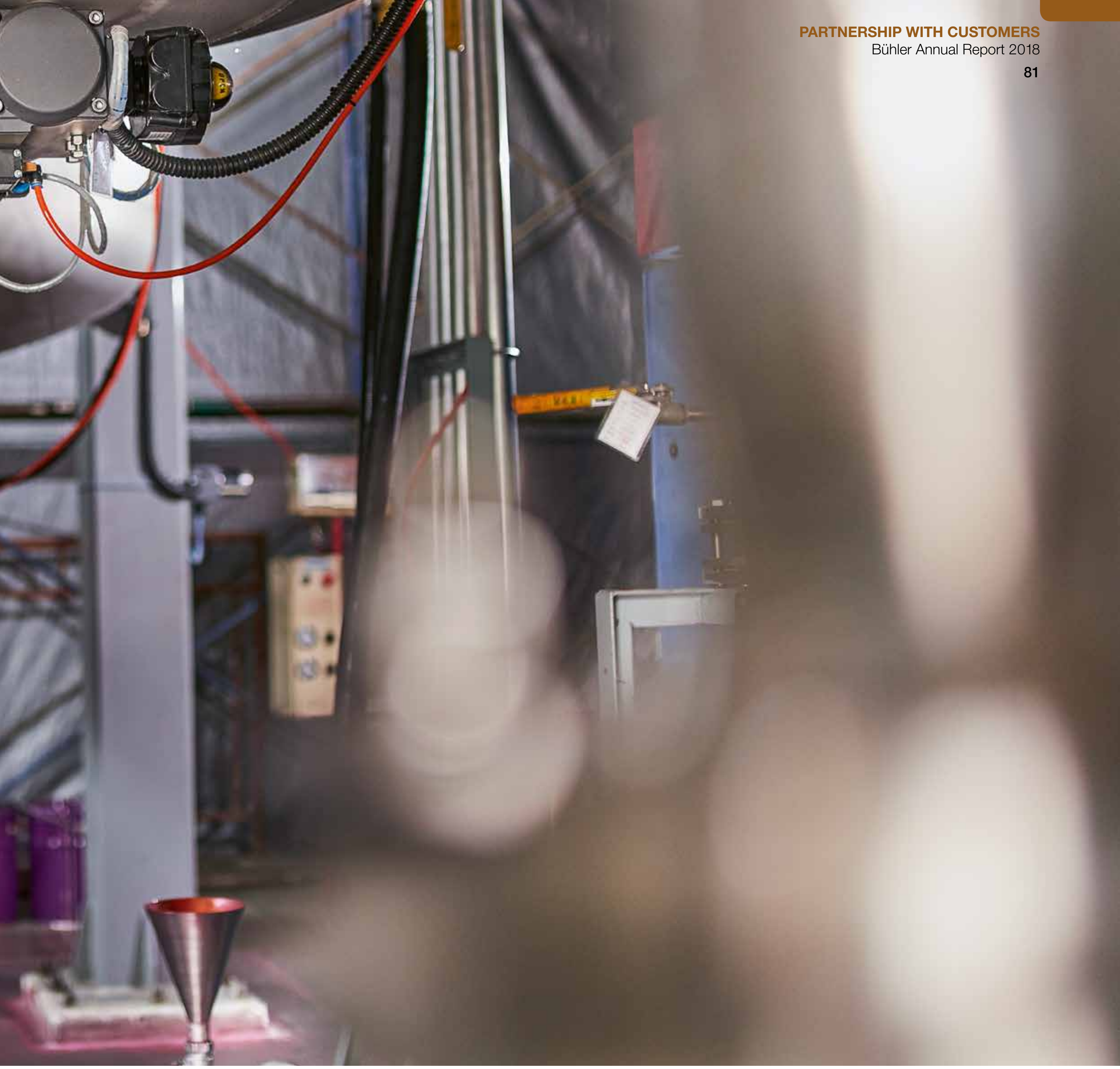
two different machines: one from Bühler and one from a competitor. Suzanna's plan is to keep a tight rein on the two machines as well as the existing equipment for one year – and then to decide.

May 23, 2013, is the moment of truth. Stroke of luck number five: Trust has set in. Dependable trust, between the Japanese mother company and its Indonesian daughter; and between HiTech and Bühler. The ice is broken. Suzanna may decide for herself on the equipment. They didn't have to tell her twice. Right away, she orders the Cenomic 3 from Bühler. "For me, this was one of the most exciting moments in my life," explains the HiTech Director.

Now, everything goes very quickly. HiTech orders exclusively from Bühler – two Cenomic 6 and one SuperFlow VCRZ200 in 2014, with additional Cenomic machines following in 2016. "Each new machine once again confirms that Bühler was the right choice for us," states Suzanna with excitement. Supported by Bühler equipment, HiTech has joined the highest ranks among Indonesian ink producers – and is by far the quality leader. Six tons of "okay" inks transform into

"I want to help our customers experience the values we create."

ISKANDAR BONGSO
Head of Sales, Advanced Materials,
Bühler Indonesia



Supported by Bühler, HiTech Ink. has become a quality leader in the Indonesian ink market.

1,000 tons of high-end finishing materials. The many orders and commissioning processes, the continual local support have another effect too: They have made the supplier a true partner. “HiTech and Bühler have become an unstoppable team,” says Suzanna. Is this the end to our story? It’s just getting started. It is early 2018, and HiTech continues to expand. The company is once again looking to invest, to take a leap – and if possible, not only boost its capacities, but its efficiency and quality as well. Along comes stroke of luck number six, and it has a name: SKID.

The concept revolution

“SKID is a technological leap, a concept revolution, an efficiency boost,” explains Bongso. To grind pigments even finer, Bühler has developed two completely new machines in the last few years: MacroMedia and MicroMedia. For the first step, MacroMedia grinds the rough pigments from 400 to 500 to less than 100 micrometers. Next, it’s MicroMedia’s turn, grinding them down to less than 5 micrometers. Bühler is the only supplier able to cover this range and freedom with only two grinding levels. Never before could inks shine with such richness. And that’s not all: Based on these two machines, Bühler is currently developing a modular solution with tanks, mixers, and automated systems.

For the first time, customers can take advantage of a standard solution for producing high-end inks that saves up to 10% raw materials thanks to finer grinding, one that requires up to 30% less energy, and cuts costs by up to 20%. SKID is not just a development in ink production – it’s a new generation. We will give you three guesses as to the first Bühler customer to order and use SKID across the globe. Stay tuned.

PINK, SWEET, AND LOVELY

Manner, Austria

Manner, the Austrian confectionery manufacturer, is as much a part of Vienna as the majestic St. Stephen's Cathedral or the carriages that take one back to the time of the Empress Sisi. The traditional company combines tried-and-trusted procedures with the latest production technologies and has progressed to the status of a cult brand. Manner is now looking forward to a bright future together with Bühler and Haas.

The wafer oven bakes and presses the wafer dough and moves it into the production cycle in the 17th district of Vienna. It is the largest of its type in the world, with a daily capacity of 49 tons. It was commissioned in 2004 and is the centerpiece of the Manner plant. With the precision of a Swiss watch factory, the wafer bases are covered with a soft hazelnut cocoa cream and then stacked just a few seconds after baking; the five-layer original wafers then go flying into the packing plant – in the same format and with the same recipe as when they first made the scene in 1898. At that time founder Josef Manner came up with the sweet pastry backed by the philosophy that has characterized the company since its start in 1890: "Chocolate for everyone – good and affordable!" With the growing population, the number of fans with an appetite for these snacks with the unmistakable pink package has also grown.


PRALINE

The claim “People just like Manner” still holds true: today, two packs of the wafer treats with the well-known blue Manner logo are eaten per second, leading to an annual consumption of over 63 million packs. The range includes numerous other classical products – from chocolate-banana to “Dekorhippen”, “Knusper Müsli”, and “Mozartkugeln.”

Manner is a serious heavyweight in the confectionery sector. And these quantities demand the corresponding infrastructure. “We have invested EUR 40 million in the Vienna site, among other things, in order to implement vertical production in the urban area,” says Thomas Gratzer, Director of Production and Technology at Manner.

He is proud of the modern production plant, and well aware of how vital it is to be able to rely on trouble-free processes in this highly competitive sector. “We are fortunate to have Bühler and Haas, two partners that have been supporting us for generations now and who share our values as family businesses.”

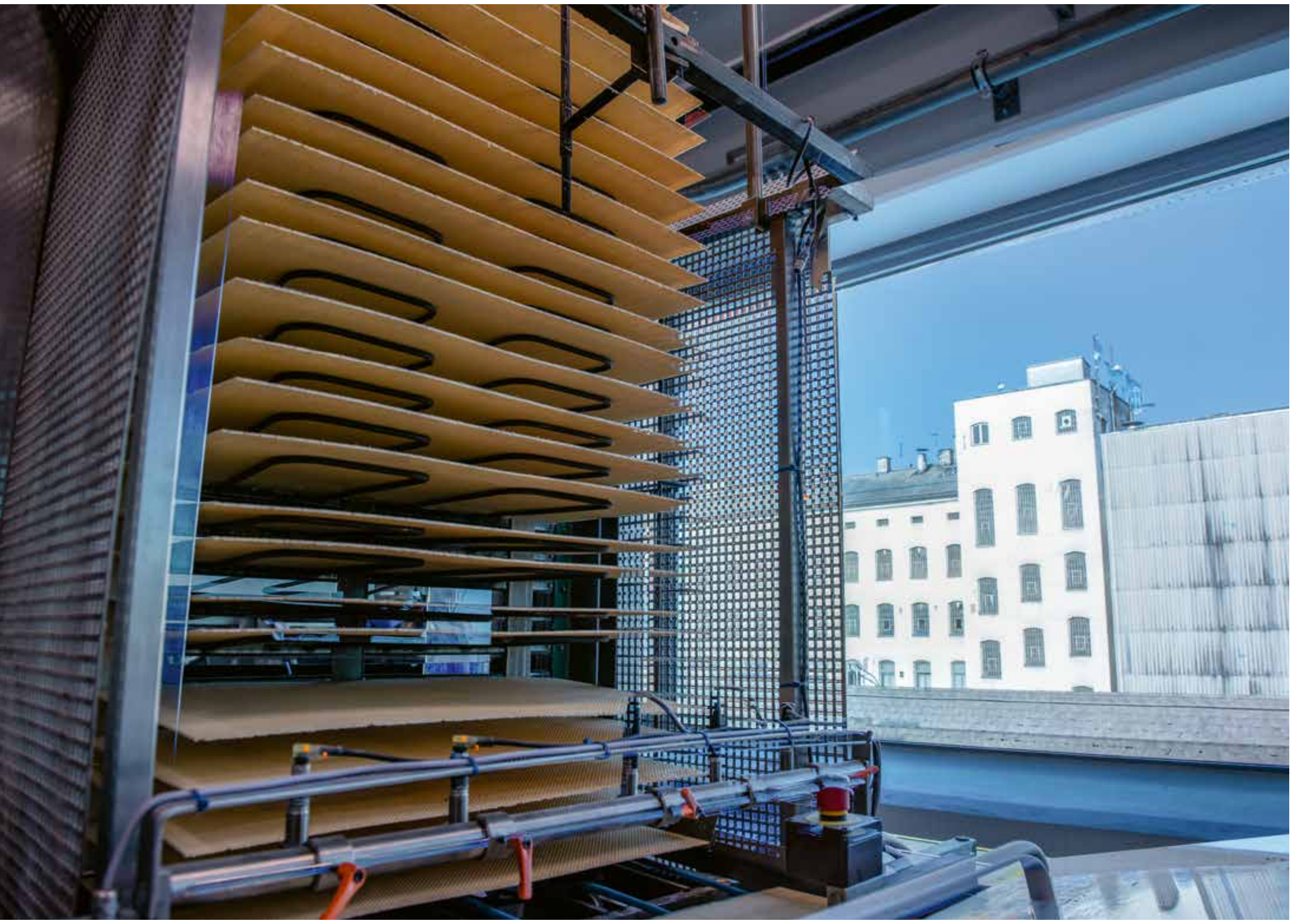
Manner Schnitte perfect for coproduction

It is this 10-year partnership and the successful cooperation that encourages trained confectioners to take an optimistic view of the future after the takeover of Haas by Bühler. “Of course, we were surprised at the start. However, after the initial meetings it was clear that the cooperation would not change and that we would continue the relationship that we value so highly.”

In practice, the Manner Schnitte stands out as the ideal coproduction between Haas and Bühler. Haas has been manufacturing wafer machines for the traditional Vienna company since the 1950s, while the consumer food sector has been supplying chocolate equipment from Bühler for more than 40 years. Nermin Alagic, Sales Manager at Bühler, likewise sees nothing but advantages in the new Bühler-Haas

> **“We are fortunate to have Bühler and Haas, two partners that have been supporting us for generations.”**
>
> **THOMAS GRATZER**
> Director of Production and Quality, Manner

The wafers move toward the next production step, where the first layer of chocolate is applied.



Thomas Gratzer, Director of Production and Quality at Manner.

Erich Walzer, Area Sales Manager at Haas.

team. "There will be fewer interfaces for the customer in the future. This means shorter communication channels, quicker service, and a bigger network thanks to the Bühler sales, service, and production sites in over 140 countries. Furthermore, now that Haas is on board, Bühler has an impressive range of specialist knowledge about confectionery production. We are able to pass on the resultant synergies directly to customers such as Manner." The substantial experience in the cocoa business plays an important part in Manner's impressive production volumes.

Approximately 7,000 tons of cocoa beans are processed in the main plant in Vienna every year. Manner produces 10,000 tons of chocolate and chocolate coating with the semifinished cocoa mass and cocoa butter at the Wolkersdorf suburb of Vienna.

"Bühler is now in a position to support its customers along the whole value chain."

ERICH WALZER
Area Sales Manager, Haas

Together with a workforce of approximately 250 people, Christoph Hirschbüchler of Manner manages the smooth production process just a stone's throw from the capital. "Of course, with the quantities we process here a high level of machine availability is the top priority. Bühler has been ensuring this for us for decades, and so they have become an important member of the continuously growing Manner family."

Manner and Vienna: through thick and thin

The overall package offered to customers by Bühler with Haas is also a convincing argument for Erich Walzer, Area Sales Manager at Haas. "Bühler is now in a position to support its customers along the whole value chain, from provision of raw materials to the end product." As a long-term supporter of Manner, he is more aware than anyone of its importance in the region and beyond.

The deep-rootedness is highlighted by an unfortunate but inspiring anecdote. In October 2014 part of the factory collapsed during construction. Fortunately, no one was hurt. However, as Christmas was rapidly approaching the accident couldn't possibly have occurred at a more unfortunate moment. All hands were mobilized, and the staff worked extra shifts at the plant in Perg, Upper Austria, to meet the demand for confectionery in all its conceivable variations successfully. Undeterred, Manner continued its course and

invested a total of EUR 40 million in the Vienna site to secure jobs in the city, modernize production, and make the plant operations more sustainable.

Baking wafers and heating homes

Erich Walzer remembers that time in autumn 2014 very well: "The reaction from the press and the public following the collapse proves that Manner is much more than a production plant in Vienna. It is a deeply rooted family business which has stood out with its social commitment for over 100 years and which is actively committed to sustainability." Thomas Gratzer cares deeply about sustainability. "In a globalized world sustainability is not a matter of price but of innovative capacity. In Vienna our solution to this has been, for example, that with our conversion and the vertical production we have placed all ovens on one floor, which means we are in a position to heat 600 homes in Vienna."

Also, over 70% of cocoa used by Manner comes from sustainable production. The aim is to cover the entire requirement for brand products with cocoa from sustainable production by 2020. In the case of palm oil – one of the most important ingredients – Manner likewise makes sure that people can enjoy their snacks with a good conscience. Since the second half of 2011 the company has only purchased

In the last step, the Viennese treat is wrapped in the iconic pink packaging.

segregated palm oil that comes from certified plantations and can be physically traced. But Manner has also been active much closer to home, on their own doorstep: Anyone who takes a tour around St. Stephen's Cathedral and is surprised to see a man in a pink uniform has probably encountered Manner-sponsored stonemason Christoph Getzner, who works to maintain the cathedral.

The future looks bright

The confectionery market is and remains agile by nature. Consumer demands are always changing, and the trick is to identify the demand at an early stage and to supply the corresponding products. At Manner people are aware of this challenge, and they meet it with a healthy degree of optimism. For Thomas Gratzer this comes primarily from the common values of the family businesses Manner, Bühler, and Haas with regard to the workforce: "You can now buy machines anywhere in the world, you can acquire raw materials around the world, and the processes are more or less the same – the one thing that makes the difference is the people."

As long as the people behind the Manner products continue to work with such dedication and innovation, we can look forward to lovely confectionery in the future from this capital city known for its refined taste.

Sustainability Report

We live a sustainable business policy. We strive to improve our solutions and services to generate long-term added value for our customers, feed the world's growing population, reduce energy consumption, and leave a healthier planet to future generations.

OUR KEY PERFORMANCE INDICATORS FOR SUSTAINABILITY

Reporting according to the guidelines of the Global Reporting Initiative.

To report accurately on sustainability, it is necessary to set measurable performance indicators and to define a transparent evaluation method to measure and compare yearly progress. Bühler's reporting is in accordance with the guidelines of the Global Reporting Initiative (GRI), which is the leading international standard. In particular, Bühler uses selected GRI Standards, or parts of their content, to report specific information.

Bühler continually strives to improve its sustainability reporting. At present, Bühler reports on 35 key performance indicators (KPIs). The 17 major Bühler sites, covering more than 87% of all productive hours, report on five specific environmental KPIs. The other 30 KPIs apply across the entire company, unless explicitly stated otherwise. The former Haas Group, which became part of the Bühler Group in 2018, is not integrated in the present reporting. Bühler aligned its sustainability KPIs with its Bühler 2020 strategy. The year 2015 forms the baseline for the performance evaluation by 2020.

The 2018 reporting represents an increase in data quality and a refinement of the data collection methodology. Important to note is the significant one-off perturbation introduced by investments in new buildings and facilities in Uzwil, Switzerland, that specifically contributed to the reported increases in the environmental indicators, material and hazardous waste, and energy and water consumption.

In alignment with the Group strategy:

– The number of work-related injuries per 100 full-time employees remained constant at 2.3, despite multiple building and renovation projects running across the globe.

– The percentage of top suppliers who have signed the Bühler Supplier Code of Conduct or have an equivalent code increased from 30% in 2017 to 40% in 2018.

– The Employee Performance Management process now covers 93% of employees, up from 89% in 2017.

– The scope of online training against corruption and bribery was increased to include all Bühler personnel with a Bühler e-mail address rather than only employees with sales, purchasing, and management functions.

– The number of employees trained in food safety since 2013 increased from 1,884 in 2017 to 2,284 in 2018, and R&D projects at Grains & Food with a focus on improving food safety increased from 34% in 2017 to 42% in 2018.

– R&D projects focusing on increasing product yield continue to increase, having almost doubled from 22% to 42% since 2015.

– Reflecting our strategy of collaborative innovation internally and externally at Bühler, 45% of employees engaged in the biennial Innovation Challenge in 2018, and the percentage of R&D projects run in collaboration with partners remains over 50%.

This material references as declared Disclosures 205-1 and 205-2 from GRI 205: ANTI-CORRUPTION 2016; Disclosure 302-3 from GRI 302: ENERGY 2016; Disclosure 303-1 from GRI 303: WATER 2016; Disclosure 305-4 from GRI 305: EMISSIONS 2016; Disclosure 306-2 from GRI 306: EFFLUENTS AND WASTE 2016; Disclosure 308-1 from GRI 308: SUPPLIER ENVIRONMENTAL ASSESSMENT 2016; Disclosure 401-1 from GRI 401: EMPLOYMENT 2016; Disclosure 403-2 from GRI 403: OCCUPATIONAL HEALTH AND SAFETY 2016; Disclosures 404-1, 404-2, and 404-3 from GRI 404: TRAINING AND EDUCATION 2016; Disclosure 405-1 from GRI 405: DIVERSITY AND EQUAL OPPORTUNITY 2016; Disclosure 416-1 from GRI 416: CUSTOMER HEALTH AND SAFETY 2016; Disclosure 419-1 from GRI 419: SOCIOECONOMIC COMPLIANCE 2016.

ECONOMIC SUSTAINABILITY

Key performance indicator (KPI)	Reference to GRI Standards	Target 2020	Base year 2015	2016	2017	2018
Number of Bühler sites audited on corruption prevention	Related to 205-1	10	8	9	11	4[1]
Number of Bühler sites audited on fraud prevention	Related to 205-1	10	8	9	11	4[1]
Percentage of employees with a Bühler e-mail address who have attended the online training against corruption and bribery	Related to 205-2	100%	97%	92%	87%	62%[2]
Number of whistle-blowing cases	Additional	Best practice in definition with peers	11	5	2	10
Number of all compliance cases	Additional	Best practice in definition with peers	64	47	11	45

1 Reason for decrease in 2018: Efforts were targeted toward upgrading Bühler's internal control system and launching a control self-assessment globally in order to improve identification of key risks and define risk-mitigation actions.

2 Reason for decrease in 2018: The target group increased to include all employees with a Bühler e-mail address. Previous years only covered employees with sales, purchasing, and management functions.

ENVIRONMENTAL SUSTAINABILITY

Key performance indicator (KPI)	Reference to GRI Standards	Target 2020	Base year 2015	2016	2017	2018
Energy consumption at the 17 major Bühler sites relative to productive hours (GJ/1,000 hrs)	302-3	30% reduction to base year	91.5	77.1	79.9	95.4[1, 2]
Water withdrawal at the 17 major Bühler sites relative to productive hours (m^3/1,000 hrs)	Related to 303-1	30% reduction to base year	84.1	89.5	55.5	73.5[1, 3]
CO_2 equivalents at the 17 major Bühler sites relative to productive hours (t/1,000 hrs)	305-4	30% reduction to base year	12.8	10.8	10.1	11.8[1, 2]
Amount of waste (including material collected for recycling) at the 17 major Bühler sites relative to productive hours (kg/1,000 hrs)	Related to 306-2	30% reduction to base year	3,715	3,178	2,266	3,038[1, 2]
Amount of hazardous waste at the 17 major Bühler sites relative to productive hours (kg/1,000 hrs)	Related to 306-2	30% reduction to base year	246	151	153	454[1, 2]
Percentage of top suppliers who have signed the Bühler Supplier Code of Conduct or have an equivalent code	Related to 308-1	100%	NA	NA	30%	40%
Percentage of R&D projects with a focus on improving energy efficiency per ton of end product or finished piece	Additional	70%	24%	29%	37%	35%
Percentage of R&D projects with a focus on improving product yield	Additional	50%	22%	29%	40%	42%

1 Reasons for increase in 2018: improved data collection and quality. The decrease in productive in-house hours from manufacturing is reported against total site resource use.

2 Additional reason for increase in 2018: significant construction and layout reorganization at the Bühler Uzwil site.

3 Additional reasons for increase in 2018: significant construction and layout reorganization at the Bühler Uzwil site. The exceptionally hot and long summer period in China increased water consumption at sites.

SOCIAL SUSTAINABILITY

Key performance indicator (KPI)	Reference to GRI Standards	Target 2020	Base year 2015	2016	2017	2018
Percentage of terminations within the first 12 months of employment (Bühler AG and Bühler Management AG in Switzerland only)	Related to 401-1	<5.0%	9.0%	3.0%	8.0%	5.8%[1]
Percentage of terminations during the probation period (Bühler AG and Bühler Management AG in Switzerland only)	Related to 401-1	<1.0%	1.0%	2.0%	4.0%	3.5%[1]
Percentage of employee turnover	Related to 401-1	<8.0%	8.0%	7.5%	8.3%	9.1%
Number of work-related injuries per 100 full-time employees	Related to 403-2	0	2.9	2.9	2.3	2.3
Sickness-related absenteeism (days per employee and year; Bühler AG and Bühler Management AG in Switzerland only)	Related to 403-2	0	2.0	3.8	2.4	5.8[1, 2]
Percentage of training costs over total personnel costs	Related to 404-1	1.0%	1.2%	1.9%	0.9%	1.5%
Number of training days per full-time employee per year	Related to 404-1	2.0	2.0	2.3	1.9	2.0
Number of employees who have received training in food safety since 2013	Related to 404-2	3,000	498	1,572	1,884	2,284
Percentage of employees who go through the Employee Performance Management process each year	404-3	80%	80%	86%	89%	93%
Percentage of employees who are high potentials	Related to 404-3	5.0%	2.8%	3.1%	3.2%	3.0%
Percentage of apprentices who are hired subsequent to their apprenticeship (Bühler AG in Switzerland only)	Related to 405-1	80%	77%	71%	73%	73%
Percentage of female employees	Related to 405-1	20%	15%	16%	15%	16%
Percentage of R&D projects at Grains & Food with a focus on improving food safety	Related to 416-1	50%	28%	29%	34%	42%
Percentage of R&D projects at Grains & Food with a focus on improving nutrition	Related to 416-1	20%	8%	10%	23%	13%
Percentage of R&D projects Group-wide with a focus on improving operational safety	Related to 416-1	50%	48%	43%	22%	24%
Number of relevant fines for compliance issues (>CHF 200,000)	Related to 419-1	0	0	0	0	0
The key positions for the senior functions at management level 1, 2, and 3 have been defined, and potential successors have been determined	Additional	100%	100%	80%	88%	90%
Percentage of employees participating in the Bühler Innovation Challenge (every two years)	Additional	60%	NA	32%	NA	45%
Percentage of implemented business ideas from the Bühler Innovation Challenge (every two years)	Additional	5.0%	NA	2.0%	NA	1.5%
Percentage of R&D projects run in collaboration with partners (suppliers, customers, universities)	Additional	50%	44%	47%	53%	51%
Number of applications received per open position (Bühler AG and Bühler Management AG in Switzerland only)	Additional	30	16	23	22	25[1]
Number of projects supported by Bühler employees in volunteer programs such as Partners in Food Solutions	Additional	10	NA	NA	12	22

[1] Explanation regarding the scope of KPIs: Due to globally heterogeneous human resource systems, the data for these KPIs are not reported across the entire company.

[2] Reason for increase in 2018: improved data quality and stricter reporting.

A pledge for diversity and inclusion

On International Women's Day 2018, Bühler CEO Stefan Scheiber proudly joined forces with CEOs from 50 Swiss-based companies to make a public pledge in support of gender equality. This pledge is part of an initiative launched by Advance Women in Swiss Business, an association founded by female executives with the mission to increase the share of women in leading positions in Swiss companies. Gender equality is important? Because over a century after the very first Women's Day, it is still an issue around the world. In Switzerland, for example, the share of women in leading positions falls below the international average at about 9%. Stefan Scheiber's pledge, however, is not limited to Switzerland – it is a global commitment, and it was the first step in initiating the company's Group-wide diversity and inclusion efforts launched in 2018.

Algae as a protein alternative

The use of algae as a food or dietary supplement is getting increased attention in light of the growing protein gap. Although microscopically small, single-cell organisms such as dunaliella, spirulina, and chlorella can consist of up to 70% protein, supplemented by polyunsaturated fatty acids, vitamins, and beta-carotene.

Currently only 15 of around 300,000 microalgae species are commercially used in food and feed, making the potential for further development immense. What's more, no arable land is required to cultivate them. Bühler is also looking at ways of integrating microalgae into other food products. One example is a partnership between Bühler and Swiss start-up Alver to develop them as an ingredient in the production of pasta products with a protein content of more than 60%.

Protein-rich algae have long been a part of daily cuisine in the form of seaweed and other dishes in Asia, and also on the European Atlantic coasts. Depending on the species, it can be farmed in both warm and cold climates. Bühler Aeroglide systems are already used in the production of seaweed products for a number of South Asian customers, with dried seaweeds also processed on Bühler roller mills in China.

ReNew – recycling and upcycling

Why dispose of a trusted machine that has been used in production for years just because it has reached a certain age? Instead, customers can find new homes for old machines by selling them via the 2018-launched Bühler Internet platform, ReNew. Customers registered on the ReNew website can sell used Bühler machines, for example, when they are planning to replace their production lines with new ones. Existing or new customers who are not in a position to invest in the newest and most expensive plants benefit twice from this: They can buy a secondhand machine at a reduced price, and it has been overhauled and certified by Bühler.

Bühler experts are on hand to lend support throughout the process, and even organize the logistics and all the necessary export and import formalities. Another feature is the Refurbish section. Here, customers who wish to continue using one of their existing machines can obtain a quote for an overhaul to give new vitality to machines designed to last. With ReNew, older machines can remain economically viable and not end up as scrap metal, thereby reducing waste.

Mill E3 – a new level of efficiency

Bühler is transforming the world of flour milling, with a step change. Imagine a flour mill, but with significantly lower investment and reduced energy consumption. This is the new Mill E3.

E3 stands for the three efficiency levels: building, installation, and energy. The benefits of this milling innovation are: building investment savings of 30%, a 30% shorter installation time, and energy savings of 10%. We are reducing the height of the building by half, to three floors. The compact design reduces the building investment costs by 30%.

Mill E3 consists of preassembled and pretested modules that are connected on-site, which in turn ensures faster installation of the mill. The installation is 30% faster than conventional flour mills. The reduced building size and other innovations save 10% energy with the same capacity. For instance, the TUBO tubular push conveyor replaces pneumatic transport on the break passages to reduce energy use, and the new, integrated grinding system Arrius reduces the energy consumption of the grinding by 10% compared with conventional roller mills. Mill E3 and Arrius were introduced by Bühler at the Ipack-Ima trade fair in 2018.

Innovation starts from within

The Innovation Challenge is a company wide competition held every two years. It presents an opportunity for all employees to put forward ideas that have the potential to make a real impact for Bühler's customers and its businesses. The challenge has taken place since 2012. Innovation Challenge 2018 saw nearly 350 teams submitting ideas – that's twice as many as in 2016. The challenge culminated in April, when the winning idea was chosen. The winning project has the potential to help ease the protein gap expected as the world population grows. Innovations from past winners have all been brought to market, including LumoVision, a sorting technology that will minimize toxic contamination in corn.

Governance

Bühler follows international standards of corporate governance. We base our corporate governance activities on the principles of the Swiss Code of Best Practice – a useful instrument for clearly defining internal powers and responsibilities and optimally designing the interaction between the Board of Directors, the Executive Board, and the Internal Audit Group.

GROUP STRUCTURE

Bühler follows international
standards of corporate governance.

As a non-listed, family-owned, but economically significant company, Bühler has decided to pay special attention to the design of its corporate governance. As a consequence, Bühler's corporate governance goes far beyond the statutory requirements of Swiss corporate law and incorporates, to a great extent, the recommendations contained in the Swiss Code of Best Practice for Corporate Governance issued by economiesuisse.

Bühler's Articles of Incorporation set the material parameters of the corporate governance system. The Articles of Incorporation are complemented by Bühler's Organizational Regulations, which further specify the responsibilities, competencies, and regulations of the governing bodies of the company. Unless prescribed by law or the Articles of Incorporation, the management is delegated by the Board of Directors, with the power to subdelegate to the Chief Executive Officer, the Executive Board, and its members. Separate charters specify the organization of the Nomination and Compensation Committee and the Audit Committee. The Board of Directors has also issued a regulation governing the cooperation between the Board of Directors, the CEO/Executive Board, and the Urs Bühler Innovation Fund.

Bühler remains a family-owned company

In 2014, Urs Bühler transferred his shares in Bühler to his three daughters, Karin, Maya, and Jeannine Bühler, each of whom now owns a third of the company. For the three sisters, continuity is the top priority, as they want to build on the strengths and values of Bühler. They continue to maintain optimal general conditions for the company to operate in: a stable shareholder structure, long-term orientation, steady company management that is not subject to the constraints of quarterly reporting – but nevertheless a management style pursuing business success. The three owners are represented on the Board of Directors and have a clear and unified voice in relation to the company.

BOARD OF DIRECTORS

Chairman
Calvin Grieder

Karin Bühler
Jeannine Bühler
Ruth Metzler-Arnold
Frank N.J. Braeken
Dr. Maya Bühler
Dr. Konrad Hummler
Linda Yang
Clemens Blum

EXECUTIVE BOARD

CEO
Stefan Scheiber

CFO
Andreas R. Herzog

Grains & Food
Johannes Wick

Consumer Foods[1]
Germar Wacker

Advanced Materials
Samuel Schär

CTO
Dr. Ian Roberts

Manufacturing, Logistics & Supply Chain
Dr. Holger Feldhege

Sales & Services
Dieter Voegtli

Human Resources
Dipak Mane

BUSINESSES

Grains & Food

Grain Quality & Supply
Milling Solutions
Value Nutrition
Digital Technologies

Consumer Foods[1]

Bakery
Wafer
Biscuit
Chocolate & Coffee
Confectionery
Haas Metal

Advanced Materials

Die Casting
Leybold Optics
Grinding & Dispersing

REGIONS

North America
South America
Europe
Middle East & Africa
Asia
South Asia

URS BÜHLER INNOVATION FUND

Founder
Urs Bühler

Chairman
Dr. Ian Roberts

Hal Gurley
Dr. Matthias Kaiserswerth
Prof. Dr. Edward S. Steinfeld
Prof. Dr.-Ing. Werner Bauer

[1] Effective January 2019

BOARD OF DIRECTORS

BOARD OF DIRECTORS

01 Calvin Grieder
Chairman

Calvin Grieder has held various executive positions at Swiss and German companies active in the areas of control technology, automation, and system engineering. In these roles, he was primarily responsible for successfully establishing and expanding international business. In 2001, Calvin Grieder moved from Swisscom to the Bühler Group, where he acted as CEO for 15 years. In February 2014, he was elected Chairman of the Board of Directors of the Bühler Group and named to the Board of Directors of Givaudan, becoming Chairman of the Board in 2017. Other roles include Chairman of the Board of Directors of AWK Group, member of the Advisory Board of ETH Zurich, Department of Mechanical and Process Engineering, as well as Member of the Board of Trustees of Avenir Suisse. Calvin Grieder has a Master of Science from ETH Zurich and has completed the Advanced Management Program (AMP) at Harvard University. He is a citizen of Switzerland and was born in 1955.

03 Karin Bühler
Member of the Board

After obtaining her university entry qualifications, Karin Bühler acquired a degree in Marketing. Following a number of activities in the fields of marketing, communications, and equestrian sports, she became General Manager of Horse Vision AG as owner in 2008. She has been with Uze AG since 2011, first as Manager Marketing, then as member of the General Management in charge of Human Resources & Marketing, and since 2014 as General Manager. Karin Bühler was re-elected to the Board of Directors in 2017. Karin Bühler was born in 1978 and is Swiss.

04 Linda Yang
Member of the Board

Linda Yang holds Bachelor's degrees in both Mathematics and Business/Finance from the Nankai University (Tianjin, China). She graduated from the Executive MBA program at China Europe International Business School (CEIBS) in 2009. Following various assignments in China in the fields of consumer insight, consulting, and marketing, at companies such as Procter & Gamble (China) Ltd., she acted from 2001 to 2004 for Nestlé (China) Ltd. as Head of Consumer Insight. Since then, she has been the General Manager of BSI (Tianjin) Foods Co. Ltd., a subsidiary of Savencia Fromage & Dairy (previously known as Bongrain SA) in China. Thanks to her experience and training, Linda Yang has a proven understanding of the Chinese market. She has been a Member of the Bühler Board of Directors since 2014. Linda Yang was born in 1971 and is Chinese.

05 Clemens Blum
Member of the Board

Clemens Blum has a degree in Electronic Engineering from Furtwangen University (Germany) and in Business Management from Pforzheim University (Germany). After holding various positions in sales in different companies, he joined the Swiss Industrial Group (SIG) as Sales Director of SIG Positec Automation in 1992 and was promoted to General Manager in 1997. In 2000, Schneider Electric acquired the SIG Positec activities from SIG. Clemens Blum then took on various executive positions within the Schneider Electric Group. From July 2010 until December 2016, he acted as Executive Vice President of the Industry Business, located in Foxborough (Massachusetts, US) for two years. Clemens Blum was responsible for specific merger and acquisition strategies and key executive customers in the industrial automation market until his retirement. He currently supports international private equity companies. Clemens Blum was elected a Member of the Board of Bühler in December 2015. Clemens Blum was born in 1955 and is German.

02 Dr. Maya Bühler
Member of the Board

Dr. Maya Bühler studied Veterinary Science at the University of Zurich. After completing her studies, she held various positions in the horse surgery department of the animal hospital in Zurich and became a Veterinary Specialist for Horses (FVH) in 2012. At the beginning of 2013, she became the owner and Managing Director of the company Pferdeklinik Thurland in Uzwil, Switzerland. Maya Bühler was re-elected to the Board of Directors of Bühler in 2017. Maya Bühler was born in 1981 and is Swiss.

09 Frank N.J. Braeken
Member of the Board

Frank N.J. Braeken graduated with a degree in Law and holds an MBA degree in Finance from the University of Leuven (Belgium). He is an alumnus of the Wharton Executive Program, Penn University (Philadelphia, US). In his professional career, he has specialized in finances and general management. From 1996 to 2013, he held various management functions in different countries for Unilever, including a position as Group Vice President of Unilever China (Shanghai), Executive Vice President of Unilever Namca (Dubai), and Executive Vice President of Unilever Africa (Dubai/Durban). After leaving Unilever, Frank N.J. Braeken acted as investment advisor and investor for large-scale agro and food enterprises on the African continent. In 2016, he was elected Chairman of the Board of Feronia Inc., a Toronto-listed palm oil producer in Africa. Frank N.J. Braeken is also a non executive board member of Marie Stopes International and AGRA, both non profit organizations, as well as of Blue Skies Holdings and Zambeef. He was elected to the Board of Directors of Bühler in 2014. Frank N.J. Braeken was born in 1960 and is Belgian.

06 Ruth Metzler-Arnold
Member of the Board

Ruth Metzler studied Law at the University of Freiburg i. Ue. and is a Federally Certified Auditor. From 1990 to 1999, she was active for Pricewaterhouse-Coopers in St. Gallen. In addition, she was a member of the Cantonal Government of Appenzell IR (Director of Finance) for three years. From 1999 to 2003, she was a Member of the Swiss Government and headed the Federal Department of Justice and Police. Ruth Metzler then held leading positions at Novartis and was a member of the board and of the audit committee of SIX Group. Ruth Metzler is Chairwoman of the Board of Switzerland Global Enterprise and the foundation of the Pontifical Swiss Guard. She is also a board member of AXA Switzerland, FehrAdvice & Partners AG, Reyl & Cie SA, and Swiss Medical Network SA. Ruth Metzler is a member of the council of the University of St. Gallen (HSG) and a member of the Board of Trustees of Avenir Suisse. She was elected as a Member of the Board of Bühler in December 2011 and as Chairwoman of the Audit Committee in February 2014. Ruth Metzler-Arnold was born in 1964 and is Swiss.

07 Dr. Konrad Hummler
Member of the Board

Dr. Konrad Hummler graduated in Law from the University of Zurich and in Economic Science from the US University of Rochester. In the eighties, he acted as the personal assistant to the Chairman of the Board of Directors of what is now UBS, Dr. Robert Holzach. From 1991 to 2012, he was Managing Partner with unlimited liability of Wegelin & Co. Private Bankers (St. Gallen, Switzerland). In addition to his bank activities, he was a member of the board of various companies, including the Neue Zürcher Zeitung (NZZ), Swiss National Bank (SNB), and the German Stock Exchange. Konrad Hummler heads M1 AG, a private think tank dealing with strategic issues of current interest, and is Chairman of the Board of Private Client Bank in Zurich. Konrad Hummler was appointed as a Member of the Board of Bühler in 2010 and as Chairman of the Nomination and Compensation Committee in 2016. He is strongly committed to cultural and social projects. Konrad Hummler was born in 1953 and is Swiss.

08 Jeannine Bühler
Member of the Board

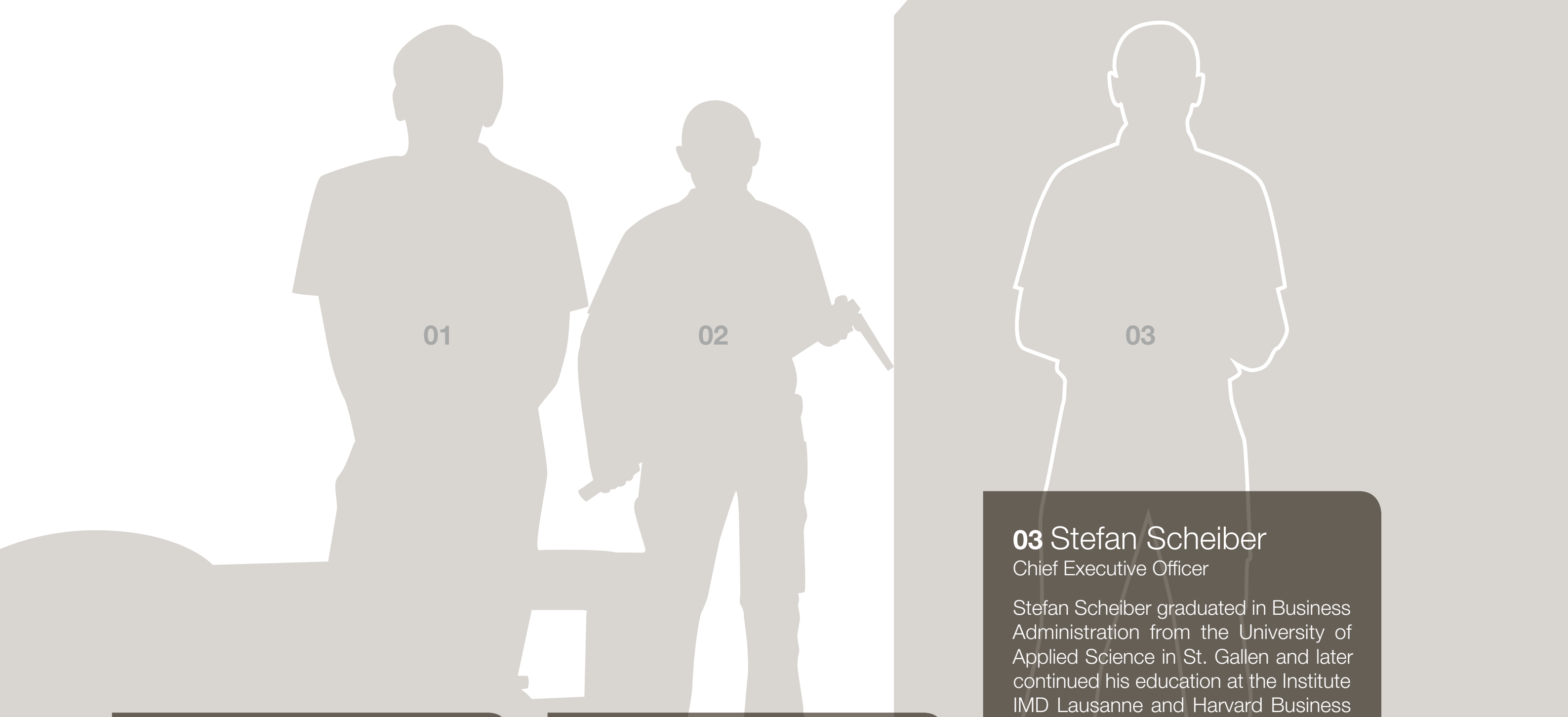
After successfully completing her federal vocational matriculation certificate and passerelle (supplementary exam certificate) in St. Gallen, Switzerland, Jeannine Bühler was awarded a Bachelor of Arts degree from the University of Zurich. She later received a Master of Arts in Social Sciences majoring in journalism, communication science, and political science. Following completion of her studies, she joined the development organization Helvetas Swiss Intercooperation. Since February 2018, Jeannine Bühler has acted as Junior Asset Manager for Swiss Prime Site Immobilien AG. Jeannine Bühler was elected to the Board of Directors of Bühler in 2016. Jeannine Bühler was born in 1986 and is Swiss.

EXECUTIVE BOARD

EXECUTIVE BOARD

04 Dieter Voegtli
President Sales & Services

Dieter Voegtli is a mechanical engineer (Swiss Federal Institute of Technology in Zurich, ETH) and holds an MBA from INSEAD. He started his career in global power plant commissioning and as a Software Development Manager for ABB. Following that, he worked for eight years as Technical Director of Roche China Ltd. Dieter Voegtli has been President of Bühler Group China and Asia Pacific since 2009, after serving as President of Bühler China since 2004. He was named President of the Sales & Services organization January, 2018. Dieter Voegtli was born in 1958 and is Swiss.



01 Johannes Wick
CEO Grains & Food

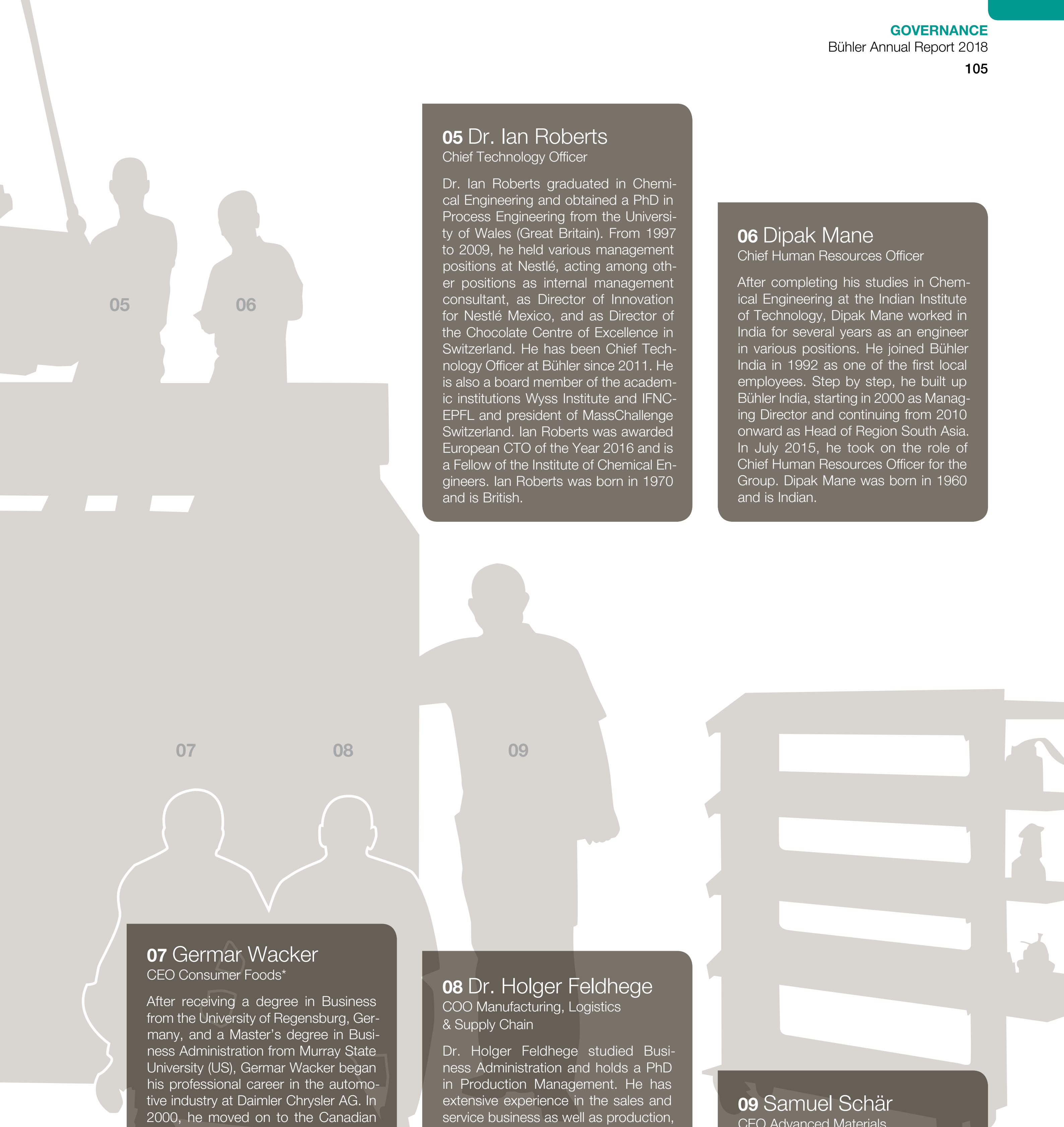
Johannes Wick joined Bühler in 2014 and took over the management of Grain Milling, the largest business area. He has led the Bühler Grains & Food business since April 1, 2016. Before joining Bühler, he worked for more than 20 years in different management positions in the energy and infrastructure sector at ABB, ABB Alstom Power, Iberdrola, and Alstom. Johannes Wick earned a Master’s degree in Engineering at ETH Zurich through an exchange at the Technical University in Madrid. He expanded his knowledge with an MBA from IESE in Barcelona through an exchange at Sloan Management School of Business at the Massachusetts Institute of Technology (MIT) in Boston. Johannes Wick was born in 1969 and is Swiss.

02 Andreas R. Herzog
Chief Financial Officer

After graduating with a degree in Business Administration, Andreas R. Herzog continued his studies in various postgraduate courses in marketing and finance management at business schools in France, Canada, and the US. He has held management positions at Ciba-Geigy, Swatch, and Swarovski. During his professional career, he has worked in Switzerland, Mexico, Colombia, Ivory Coast, and Germany. Andreas R. Herzog has been CFO of the Bühler Group since 2002. He is also a member of the board of CCS Holding AG, SeedCapital Invest AG, and the Swiss-Chinese Chamber of Commerce, as well as the advisory board of Commerzbank in Germany. Andreas R. Herzog was born in 1957 and is Swiss.

03 Stefan Scheiber
Chief Executive Officer

Stefan Scheiber graduated in Business Administration from the University of Applied Science in St. Gallen and later continued his education at the Institute IMD Lausanne and Harvard Business School. From 1988, he worked for 15 years in various international management positions worldwide, including East and South Africa, Eastern Europe, and Germany. In 1999, he took charge of the Brewing/Malting and Rice business units and thereafter assumed overall responsibility for Bühler in Germany. From mid-2005, Stefan Scheiber headed the Sales & Services division as a Member of the Executive Board. In 2009, he was assigned Division Manager of the Engineered Products Division, which he reorganized into the Food Processing and the Advanced Materials divisions. He led the Food Processing division as of 2009. In 2014, Stefan Scheiber integrated the Food Processing and the Grain Processing divisions, creating the Grains & Food business, which he led until 2016. He was appointed CEO of the Bühler Group on July 1, 2016. Stefan Scheiber was born in 1965 and is Swiss.



05 Dr. Ian Roberts

Chief Technology Officer

Dr. Ian Roberts graduated in Chemical Engineering and obtained a PhD in Process Engineering from the University of Wales (Great Britain). From 1997 to 2009, he held various management positions at Nestlé, acting among other positions as internal management consultant, as Director of Innovation for Nestlé Mexico, and as Director of the Chocolate Centre of Excellence in Switzerland. He has been Chief Technology Officer at Bühler since 2011. He is also a board member of the academic institutions Wyss Institute and IFNC-EPFL and president of MassChallenge Switzerland. Ian Roberts was awarded European CTO of the Year 2016 and is a Fellow of the Institute of Chemical Engineers. Ian Roberts was born in 1970 and is British.

06 Dipak Mane

Chief Human Resources Officer

After completing his studies in Chemical Engineering at the Indian Institute of Technology, Dipak Mane worked in India for several years as an engineer in various positions. He joined Bühler India in 1992 as one of the first local employees. Step by step, he built up Bühler India, starting in 2000 as Managing Director and continuing from 2010 onward as Head of Region South Asia. In July 2015, he took on the role of Chief Human Resources Officer for the Group. Dipak Mane was born in 1960 and is Indian.

07 Germar Wacker

CEO Consumer Foods*

After receiving a degree in Business from the University of Regensburg, Germany, and a Master's degree in Business Administration from Murray State University (US), Germar Wacker began his professional career in the automotive industry at Daimler Chrysler AG. In 2000, he moved on to the Canadian rail vehicle manufacturer Bombardier Transportation, where he held executive positions in the areas of restructuring, operations, project management, and service. From 2010, he was responsible for several divisions of the group, sustainably expanding its international market position. Among other things, he was also Chairman of the Supervisory Board of Bombardier Transportation Austria. From September 2017, Germar Wacker was CEO of the Haas Group, which became part of the Bühler Group in January 2018. He has led the Consumer Foods business at Bühler since January 2019. Germar Wacker was born in 1970 and is German.

08 Dr. Holger Feldhege

COO Manufacturing, Logistics & Supply Chain

Dr. Holger Feldhege studied Business Administration and holds a PhD in Production Management. He has extensive experience in the sales and service business as well as production, engineering, and logistics. He worked in various management positions at Mannesmann and ThyssenKrupp Elevator, spending more than seven years in Asia. Upon his return to Germany in 2010, Holger Feldhege took on the position of CEO Manufacturing for the business unit Central, Eastern, and Northern Europe and later Senior Vice President Manufacturing Elevator for the worldwide group. In 2014, Holger Feldhege joined Bühler as Head of Manufacturing & Logistics. In 2017, he was named Chief Operations Officer responsible for Manufacturing, Logistics & Supply Chain. Holger Feldhege was born in 1968 and is German.

09 Samuel Schär

CEO Advanced Materials

After obtaining a diploma as a Physics Engineer from the Swiss Federal Institute of Technology in Lausanne (EPFL) and accumulating three years of experience with the consultancy McKinsey, Samuel Schär joined Bühler in 2002. He took charge of the Nanotechnology business unit in 2005. From 2009 to 2012, he bore overall responsibility for the Grinding & Dispersing business area. Samuel Schär has headed the Advanced Materials business since 2013 and was appointed CEO of Advanced Materials as of September 2014. Samuel Schär was born in 1975 and is Swiss.

* Effective January 2019.

ADVISORY BOARD
Urs Bühler Innovation Fund

Urs Bühler
Founder

Hal Gurley
Automation intelligence expert

Dr. Matthias Kaiserswerth
Managing Director,
Hasler Stiftung

Urs Bühler graduated as a mechanical engineer from the Swiss Federal Institute of Technology in Zurich (ETH). After holding a number of positions in Switzerland and abroad, he was appointed to the Corporate Management of Bühler AG in 1975, in charge of sales and development. From 1980 to 1984, he was President of Bühler GmbH, Braunschweig (Germany). In 1986, Urs Bühler was appointed CEO of Bühler in Uzwil. He handed over the executive management duties of the company to Calvin Grieder at the beginning of 2001. Urs Bühler has been a Member of the Board since 1981, from 1991 as its Vice Chairman and from 1994 to 2014 as its Chairman. He was a member of the board of several Swiss companies. Urs Bühler was born in 1943 and is Swiss.

Hal Gurley holds Bachelor's and Master's degrees in Electrical Engineering from the Georgia Institute of Technology (US), and an Executive MBA from the Institute IMD (Switzerland). Before moving to Switzerland in 1995, Hal Gurley was President and Founder of Automation Intelligence, an advanced systems integration and software development firm based in the US specializing in real-time communications and control systems for industrial, robotic, and military applications. Prior to joining Cisco in 2000, Hal Gurley was Director Internet/IP at Swisscom. During his 17-year career at Cisco, Hal Gurley held executive leadership positions within its professional services, management consulting, and sales organizations. From 2013 until his retirement in late 2016, Hal Gurley had global responsibility for Cisco's Cloud/Network Management and Automation software sales and go-to-market execution. He also served as sole Managing Director and legal representative of Cisco Systems (Switzerland) GmbH. He is currently working as an independent IoT strategy consultant. Hal Gurley was born in 1955. He is Swiss and American.

Dr. Matthias Kaiserswerth studied Computer Science at Friedrich-Alexander University (FAU) in Erlangen-Nürnberg (Germany) and at McGill University in Montreal (Canada). He obtained his PhD in Engineering from Erlangen University. From 1988 to 2015, Dr. Matthias Kaiserswerth worked for IBM. He has spent almost his entire career as a researcher in the areas of high-performing communication and security in Switzerland and the US apart from mid-2002 to the end of 2005, whenhe was responsible for global IBM business relations with a large international industrial customer. For more than 11 years, Dr. Matthias Kaiserswerth was Director of the IBM Research Laboratory in Rüschlikon (Switzerland) until he became Managing Director of the nonprofit Hasler Stiftung in Bern, in May 2015. This foundation supports education, research, and innovation in information and communication technologies. Dr. Matthias Kaiserswerth was born in 1956. He is Swiss and German.

URS BÜHLER INNOVATION FUND

The Urs Bühler Innovation Fund (UBIF) was established in 2014 to support the company's innovation efforts. Bühler invests between 4% to 5% of its turnover in research and development every year – developing breakthrough technologies and services to strengthen Bühler's market position as well as exploiting new opportunities to stay ahead of the innovation curve. The Advisory Board, managing the UBIF, focuses on accelerating the innovation process within the company as well as on its advancements in the field of the Internet of Things (IoT).

Prof. Dr. Edward S. Steinfeld

Professor of Political Science;
Director, Thomas J. Watson,
Jr. Institute for International Public
Affairs, Brown University

Prof. Dr. Edward S. Steinfeld studied Government and Political Science at Harvard University (US) and holds a PhD in Political Science. From 1996 to 2013, he was a Professor of Political Economy and Management at the Massachusetts Institute of Technology (MIT, US). He also served as a visiting scholar at the Tsinghua University School of Public Policy and Management in Beijing from 2012 to 2013. From 2005 to 2013, he was Director of the China Energy Program at the MIT Industrial Performance Center. In 2013, he moved to Brown University (US), where he currently directs the Watson Institute for International and Public Affairs as well as the Brown China Initiative and is a Professor of the Department of Political Science. Beside his university engagement, Edward S. Steinfeld is a member of various boards of directors, and academic and advisory boards in the US, Asia, and Europe. In 2012, he was appointed as a member of the China Advisory Board of Bühler Group. Edward S. Steinfeld was born in 1966 and is American.

Dr. Ian Roberts

Chief Technology Officer,
Bühler

Dr. Ian Roberts graduated in Chemical Engineering and obtained a PhD in Process Engineering from the University of Wales (Great Britain). From 1997 to 2009, he held various management positions at Nestlé, acting among other positions as internal management consultant at Swiss headquarters, as Director of Innovation for Nestlé Mexico, and as Director of the Chocolate Centre of Excellence in Switzerland. He has been Chief Technology Officer at Bühler since 2011. He is also a board member of the academic institutions Wyss Institute and IFNC-EPFL. Dr. Ian Roberts was awarded European CTO of the Year 2016 and is a Fellow of the Institute of Chemical Engineers. Dr. Ian Roberts was born in 1970 and is British.

Prof. Dr.-Ing. Werner Bauer

Food science, biotechnology, and
R&D expert

Prof. Dr.-Ing. Werner Bauer started his career as a university professor in chemical engineering at the Technical University in Hamburg, Germany. After serving as Director of the Fraunhofer Institute for Food Technology & Packaging and as Professor in Food Bioprocessing Technology at the Technical University of Munich from 1985 to 1990, he joined Nestlé as Head of Nestlé Research worldwide in 1990. After commercially heading Nestlé South and East Africa, he joined general management as Executive Vice President in 2002, responsible for technical, production, environment, and R&D. In 2007 he became Chief Technology Officer and Head of Innovation, Technology, Research and Development, a post from which he retired in September 2013. Prof. Dr.-Ing. Werner Bauer holds mandates in companies that are quoted on an official stock exchange and in companies that are non-quoted. He received a diploma and a PhD in Chemical Engineering from the University Erlangen-Nürnberg (Germany). Werner Bauer was born in 1950 and is German and Swiss.

COLLABORATION
principles

Permitted external activities of the Board of Directors and the Executive Board

Bühler's Articles of Incorporation provide for a certain restriction of the permitted external activities of the Members of the Board of Directors. Members of the Board of Directors may not hold more than four additional mandates in listed companies, eight additional mandates against remuneration in unlisted companies, and eight unpaid additional mandates. Not included in these limitations are mandates in companies affiliated with Bühler, corporate mandates of Bühler, and mandates in associations, foundations, employee welfare foundations, charitable organizations, and other comparable structures. However, no Board Member shall hold more than 20 such additional mandates. Mandates refers to mandates in the supreme governing body of a legal entity registered in the commercial register in Switzerland or elsewhere.

Members of the Executive Board are limited to two mandates at public companies or other legal entities against remuneration and four unpaid mandates.

Elections and term of office of the Board of Directors

Bühler's Articles of Incorporation provide for the annual election by the General Assembly of all Board Members, its Chairman, and the members of its Nomination and Compensation Committee. Term of office shall be one year, starting with the General Assembly at which each individual member is elected and ending with the next following General Assembly. The members of the Audit Committee are annually elected by the Board of Directors.

Election date and attendance

For the year of first election to the Board of Directors, please refer to the individual curriculum vitae of each Board Member on pages 100–101. At the General Assembly, the Board of Directors gives account to the shareholders on the attendance of Board and Committee meetings by each individual Board Member.

Audit Committee

The Audit Committee shall monitor the integrity of the financial statements of the Company, including its Annual Report. It promotes effective communication between the management and internal and external auditors.

The Audit Committee regularly reviews the functionality and effectiveness of the internal control system. It supports the Board of Directors in corporate governance issues.

Nomination and Compensation Committee

The Nomination and Compensation Committee determines and agrees with the Board of Directors on the policy for the compensation of the Members of the Board of Directors and of the Executive Board. It approves the design of, and determines targets for any performance-related compensation schemes operated by the Company and approves the total annual payments made under such schemes. Within the parameters of the agreed policy the Nomination and Compensation Committee determines the total individual compensation package for each Member of the Board of Directors as well as of the Executive Board and prepares the remuneration report.

Work method of the Board of Directors and its Committees

Board meetings are held as often as matters require or upon the request of a Board Member, but at least four times per year. The agenda of the meeting shall be announced when it is convened, and pertinent information, if needed, shall be sent 10 days before the meeting to each Board Member. On unannounced items the Board can only decide if all Members of the Board are in attendance. Decisions may also be taken by circulation, provided that none of the Board Members request a formal meeting.

Meetings of the Board Committees are convened separately from the Board meetings and scheduled as often as business requires. The Board of Directors receives verbal updates after each meeting of its Committees by their Chairperson.

Areas of responsibilities

The Board of Directors is responsible for the ultimate direction, strategic supervision, and control of the management of the Company, and for other matters that are, by law, under its responsibility.

Such inalienable duties include, essentially, (i) the ultimate management of the Company, (ii) the determination of its organization, (iii) the structuring of its accounting system and of the financial controlling, (iv) financial planning, (v) the appointment, removal, and ultimate supervision of persons entrusted with the management and representation of the Company, (vi) the preparation of the business report as well as the General Assembly and the implementation of its resolutions.

Executive Board

The Executive Board is responsible for all areas of operational management of the Company that are not reserved to the Board of Directors. The Executive Board is chaired by the Chief Executive Officer.

Urs Bühler Innovation Fund (UBIF)

The Advisory Board of the Urs Bühler Innovation Fund supports and advises the Board of Directors in innovation strategy matters as well as in defining and executing an innovation strategy that provides future-oriented answers to market trends and the needs of current and future customers.

External auditors

The external auditors are appointed at the General Assembly and present the outcome of the audit to the Audit Committee.

COMPLIANCE

Effective corporate governance

Effective corporate governance is a precondition for Bühler to ensure a long-term and sustainable increase of its corporate value. We base this both on the Swiss Code of Best Practice for Corporate Governance and the OECD Principles of Corporate Governance. Corporate governance at Bühler is organized with the interests of its stakeholders in mind, including customers, employees, suppliers, and public communities. It also comprises compliance with environmental and social standards as well as an uncompromising commitment to financial integrity. As an international Swiss company, strict observation of local laws on a global scale and systematic and continuous monitoring of compliance in all markets are indispensable for Bühler. This is the only way to prevent operating risks and an impairment of reputation that might be caused by violation of compliance rules.

An active Code of Conduct

The Code of Conduct is part of the so-called Bühler Essentials. It serves all employees as a beacon, showing them how to live the Group's core corporate principles (Trust, Respect, Recognition, Involvement, and Passion) in their day-to-day jobs. It states what is expected of employees and business partners, defines the standards governing compliance with laws and regulations, and includes the fundamentals of communications, employee rights, health and safety, and financial integrity.

Bühler regularly reviews its own principles of corporate governance to ensure that they are up to date. Our Code of Conduct has been reviewed and now also includes binding standards for our business partners. The Code of Conduct is being continuously adjusted to ongoing changes in the environment. Furthermore, a new Supplier Code of Conduct has been introduced.

Clear rules against corruption and bribery

The so-called ABC (Anti Bribery & Corruption) rules against bribery and corruption unmistakably state that no violations will be tolerated. They concern, in particular, collaboration with agents. It is mandatory for all employees in procurement, sales, and management functions to undergo a comprehensive online training program (Web Based Training) after they have joined the company and to pass a final test.

Compliance organizational structure proves its effectiveness

Bühler further decentralized the organizational structure of its compliance function. In six Bühler regions a regional compliance officer acts as the first contact, except for compliance cases involving special risks, which are handled directly by the Compliance Board. This decentralization has greatly streamlined and accelerated the related processes. This is also because linguistic barriers have been eliminated, and the regional compliance officers are familiar with local regulations and conditions.

Compliance reporting

Clear accountability and defined actions ensure that compliance-related incidents are systematically reported to the central Compliance Board. This transparency is a precondition for ensuring that the company can gain the necessary insight from such incidents and take the required measures in response. We are happy to report that awareness of the benefits of a transparent compliance reporting system have become increasingly acknowledged.

Trade compliance

Free-trade agreements can offer advantages in cross-border traffic. In order to use these, high demands are placed on the organization and documentation of the supply chain. In addition, strict guidelines are set for the export industry in the fields of export control, sanctions, and customs. Accordingly, these tasks are steadily expanding and increasingly supported by technical systems.

Group Internal Audit

The Internal Audit Department reports functionally to the Board of Directors, represented by the Audit Committee and administratively to the Chief Financial Officer. Meetings between internal and external auditors take place on a regular basis. The audit plan is aligned with the strategy and key business risks. A yearly risk assessment is prepared by Group Internal Audit. It is the basis for the yearly audit plan, which is approved by the Audit Committee. The results of the audits are discussed with the management of the audited unit, and major topics are presented to the Executive Board and the Audit Committee and thereafter reported to the Board of

Directors. In 2018, four worldwide audits were carried out. Group Internal Audit is responsible for reviewing Group-wide compliance with the Code of Conduct. Violations are reported to the Audit Committee and the Executive Board.

Risk management

Bühler reviews the risk geography of the company on a regular basis. The objective of the established risk process is to review – on a continuous basis – the consequences, probabilities, impacts, and mitigation measures of the identified risks. This process is the responsibility of the Board of Directors.

Quality system

With the renewal of the certificates for another three years, Bühler continues to meet the highest internationally recognized quality and environmental standards. With the new ISO revision 2015, both the quality and environmental standards structures were harmonized with the focus on risk-based thinking in all business processes. This was the result of the multisite assessment sampling at our Bühler sites: Bühler AG (BUZ), Uzwil, Switzerland; Bühler Management AG (BMGT), Uzwil, Switzerland; Bühler + Scherler AG (SCHS), St. Gallen, Switzerland; Bühler CZ s.r.o. Zamberk (BZAM), Zamberk, Czech Republic; Bühler GmbH (BBIN), Reichshof, Germany; Buhler (China) Holding Co. Ltd. (BCHN), Wuxi, China; Wuxi Buhler Machinery Manufacturing Co. Ltd. (BWUX), Wuxi, China; Buhler (Wuxi) Commercial Co. Ltd. (BCOM), Wuxi, China, which all successfully passed SGS audits. The ISO 9001:2015 and ISO 14001:2015 certificates are valid until November 16, 2020.

SEDEX/SMETA 4 Pillars recertification

In addition, Headquarters Bühler AG (BUZ), Uzwil, Switzerland, successfully passed the SEDEX/SMETA 4 audit of the four main pillars (labor standards, health and safety standards, environmental standards, and business ethics). SGS granted the letter of conformity, which is valid until September 1, 2020.

REMUNERATION
report

Recruit, develop, and align

Bühler practices excellence in human resources to motivate and develop its employees and in order to achieve the Bühler mission. The Company wants to establish itself as the best in class for employee development, across the entire career span of its people. The Remuneration Policy is designed with this purpose in mind.

Remuneration governance

Overview

The members of the Nomination and Compensation Committee (NCC) are elected by the General Assembly. The Board of Directors (BoD) appoints the Chairperson from among the elected members. The NCC supports the BoD in the remuneration issues defined here, with responsibilities being retained by the BoD. The NCC is in charge of defining and periodically reviewing the Remuneration Policy. It prepares all the relevant decisions of the BoD in the area of remuneration, for the Members of the BoD and Members of the Executive Board (EB), and submits its proposals (remuneration type and annual remuneration) to the BoD. In addition, it submits proposals to the BoD defining the annual goals for success- and performance-related remuneration, and then defines the circle of potential recipients of this success- and performance-related remuneration.

Nomination and Compensation Committee

For the year under review, the members of the NCC were Dr. Konrad Hummler (Chairman), Frank N.J. Braeken, Karin Bühler, and Dr. Maya Bühler. Permanent invitees were Calvin Grieder, Chairman of the Board of Directors; Stefan Scheiber, CEO; Dipak Mane, Chief HR Officer; and Christof Oswald, Head of HR. Four meetings were held. The NCC Chairman reported to the BoD after each meeting, and the minutes were kept and distributed in a timely manner.

Authority chart

Subject	Recommendation	Final approval
Definition of Remuneration System and Policy for remuneration paid to the Board of Directors and the Executive Board	NCC	Board of Directors
Development of variable remuneration schemes plus approval of all annually paid performance-related remuneration at Bühler Group	NCC	Board of Directors
Definition of individual remuneration, including bonus, variable portion, shares-related remuneration, etc., to the Executive Board and the Board of Directors	NCC	Board of Directors General Assembly

Remuneration principles

Bühler is committed to performance- and market-related remuneration. Success as a result of sound individual performance plus the success of the organization will impact the remuneration.

All employees, including the Executive Board, shall undergo a formalized annual performance appraisal process (Employee Performance Management, EPM). The Individual Performance Goals are defined and agreed upon jointly with each employee at the start of the fiscal year. The financial success of the organization, which is measured on the basis of EBIT, also impacts performance-related remuneration.

Principles of Remuneration Policy

Fairness, consistency, and transparency	The remuneration schemes shall be simple, clearly structured, and transparent. They give consideration to the responsibilities and powers of the individual functions, thereby ensuring fair remuneration at all levels.
Performance-related remuneration	Variable remuneration is directly tied to the success of Bühler (EBIT) and to individual performance (EPM).
Long-term success sharing	Part of the remuneration of the Executive Board shall be paid in the form of blocked phantom options in order to ensure long-term sharing in the success of Bühler.
Orientation toward the labor market	In order to attract and retain talent, qualified and dedicated management staff and employees, remuneration shall be oriented toward the market environment and be regularly subjected to benchmarking.
Bühler values: TRRIP	The Remuneration Policy is oriented toward the Bühler values of TRRIP (Trust, Recognition, Respect, Involvement, Passion). These values are incorporated in the above-mentioned principles and determine the “Bühler way of doing business” in all respects.

REMUNERATION
elements

Overall remuneration model for employees and the Executive Board

	Instrument	Purpose	Influencing factors
Fixed annual basic salary	Monthly cash remuneration	Regular, predictable remuneration for the specific function	Sphere of work, complexity, and responsibility of the function, competencies, and experience of the function owner, benchmarks
Performance-related variable portion	Annual cash remuneration	Remuneration for performance	Success of the organization (EBIT) and individual performance (EPM) on an annual basis
Deferred compensation plan	Deferred compensation plan with a vesting period of three years	Sharing in long-term success	Hierarchical position of the function within the organization
Other employee benefits	Pension and insurance schemes; other fringe benefits	Protection against risks and coverage of expenses	Local legislation and market practice

Remuneration of the Board of Directors

The Members of the Board of Directors shall receive a fixed cash payment and be remunerated as Committee members (if applicable).

Basic remuneration	Membership in the Board of Directors
Additional remuneration	Chairmanship of the Board of Directors Vice Chairmanship of the Board of Directors
	Chairmanship of the Audit Committee Activity in the Audit Committee
	Chairmanship of the Nomination and Compensation Committee Activity in the Nomination and Compensation Committee
	Other Committee Chairmanship/Memberships Other activities
Expenses	Only expenses incurred are reimbursed

Remuneration of the Executive Board

The Members of the Executive Board shall receive a basic salary, a variable cash remuneration portion, employer contributions to pension funds and social security institutions, and long-term remuneration in the form of a deferred compensation plan with a vesting period of three years.

Financial report

Financial Report
Bühler Group

Consolidated income statement

	Notes	2018 CHF m	Restated* 2017 CHF m
Revenue	3.1	3,270.7	2,682.0
Other operating income	3.2	57.0	21.4
Total operating income		**3,327.7**	**2,703.4**
Cost of materials		–1,512.1	–1,237.2
Changes in inventories of finished goods and work in progress		23.6	55.2
Employee benefit expenses	3.3	–1,006.3	–825.7
Other operating expenses	3.4	–539.0	–441.3
Net result from associates	4.3	0.5	2.0
Operating result before interest, taxes, depreciation and amortization (EBITDA)		**294.4**	**256.4**
Depreciation and amortization	4.1/4.2	–63.7	–52.5
Operating result before interest and taxes (EBIT)		**230.7**	**203.9**
Interest income and expenses	3.5	–1.4	2.7
Other financial income and expenses	3.5	6.0	10.8
Financial result		**4.6**	**13.5**
Profit before taxes		**235.3**	**217.4**
Income taxes	3.6	–47.4	–43.9
Net profit		**187.9**	**173.5**
Attributable to:			
– Owners of the parent		183.5	167.5
– Non-controlling interests		4.4	6.0

*See Note 6.

Consolidated statement of other comprehensive income

	Notes	2018 CHF m	Restated* 2017 CHF m
Net profit		**187.9**	**173.5**
Other comprehensive income			
Translation differences of foreign operations		–47.6	5.7
Net gain (loss) on hedge of net investment		–11.5	20.9
– Tax effect		1.0	–1.6
Cash flow hedges			
– Changes recycled in the income statement		10.9	–1.8
– Changes recognized in OCI		–25.6	17.0
– Tax effect		2.3	–2.5
Other comprehensive income to be reclassified to profit or loss in subsequent periods		**–70.5**	**37.7**
Remeasurements of defined benefit plans	4.11.3	–8.2	101.4
– Tax effect		1.3	–18.4
Financial assets at fair value through OCI		–0.6	0.0
– Tax effect		0.1	0.0
Other comprehensive income not to be reclassified to profit or loss in subsequent periods		**–7.4**	**83.0**
Total other comprehensive income		**–77.9**	**120.7**
Total comprehensive income		**110.0**	**294.2**
Attributable to:			
– Owners of the parent		107.1	287.6
– Non-controlling interests		2.9	6.6

*See Note 6.

Consolidated balance sheet

Assets	Notes	Dec. 31, 2018 CHF m	Restated* Dec. 31, 2017 CHF m	Restated* Jan. 1, 2017 CHF m
Property, plant and equipment	4.1	564.7	471.8	415.1
Intangible assets	4.2	715.7	266.6	261.6
Investments in associates	4.3	27.6	27.5	33.5
Non-current financial and other assets	4.4	170.0	175.8	108.9
Deferred tax assets	3.6.4	55.5	46.4	43.0
Non-current assets		**1,533.5**	**988.1**	**862.1**
Assets classified as held for sale	4.3	0.0	25.7	0.0
Inventories	4.5	531.4	445.3	365.7
Contract assets relating to production orders in progress	3.1	381.3	344.6	296.9
Trade accounts receivable	4.6	702.3	583.9	532.3
Other receivables	4.6	176.8	137.8	131.0
Current income tax assets		3.5	3.7	6.6
Marketable securities	2.3.2	65.5	63.4	60.2
Cash and cash equivalents	4.7	417.4	832.5	431.3
Current assets		**2,278.2**	**2,436.9**	**1,824.0**
Total assets		**3,811.7**	**3,425.0**	**2,686.1**
Equity and liabilities				
Share capital	4.12	15.0	15.0	15.0
Capital reserves		185.1	185.1	185.1
Other reserves/retained earnings		1,377.4	1,294.5	1,022.9
Equity attributable to the owners of the parent		**1,577.5**	**1,494.6**	**1,223.0**
Non-controlling interests		**31.0**	**28.5**	**28.0**
Total equity		**1,608.5**	**1,523.1**	**1,251.0**
Non-current financial and other liabilities	2.2	526.9	530.8	122.7
Deferred tax liabilities	3.6.4	129.9	103.3	74.0
Defined benefit obligations	4.11.4	111.9	76.6	156.3
Non-current provisions	4.9	36.7	27.4	24.6
Non-current liabilities		**805.4**	**738.1**	**377.6**
Current financial liabilities	2.2	34.9	33.4	29.7
Trade accounts payable	4.8	354.8	266.8	242.2
Contract liabilities relating to production orders in progress	3.1	576.3	536.6	506.1
Current provisions	4.9	87.3	55.3	44.7
Other current liabilities	4.10	307.2	249.5	210.6
Current income tax liabilities		37.3	22.2	24.2
Current liabilities		**1,397.8**	**1,163.8**	**1,057.5**
Total liabilities		**2,203.2**	**1,901.9**	**1,435.1**
Total equity and liabilities		**3,811.7**	**3,425.0**	**2,686.1**

*See Note 6.

Consolidated statement of changes in equity

	Notes	Share capital CHF m	Capital reserve CHF m	Retained earnings CHF m
January 1, 2017, as previously reported		15.0	185.1	1,243.6
Impact of change in accounting policy (IFRS 15)				–25.3
January 1, 2017, restated*		15.0	185.1	1,218.3
Dividends paid	7.4			–18.0
Changes in non-controlling interests	1.5			2.0
Net profit				167.5
Other comprehensive income				83.0
December 31, 2017, restated*		**15.0**	**185.1**	**1,452.8**
Impact of change in accounting policy (IFRS 9)				0.8
January 1, 2018		15.0	185.1	1,453.6
Dividends paid	7.4			–21.0
Changes in non-controlling interests	1.5			–2.2
Net profit				183.5
Other comprehensive income				–6.9
December 31, 2018		**15.0**	**185.1**	**1,607.0**

*See Note 6.

Hedge reserve CHF m	Available-for-sale reserve CHF m	Financial assets at fair value through OCI CHF m	Foreign currency translation reserves CHF m	Total other reserves and retained earnings CHF m	Equity attributable to the owners of the parent CHF m	Non-controlling interests CHF m	Total equity CHF m
–1.8	0.8		–194.4	1,048.2	1,248.3	28.2	1,276.5
				–25.3	–25.3	–0.2	–25.5
–1.8	0.8		–194.4	1,022.9	1,223.0	28.0	1,251.0
				–18.0	–18.0	–4.1	–22.1
				2.0	2.0	–2.0	0.0
				167.5	167.5	6.0	173.5
12.7			24.4	120.1	120.1	0.6	120.7
10.9	**0.8**	**0.0**	**–170.0**	**1,294.5**	**1,494.6**	**28.5**	**1,523.1**
	–0.8			0.0	0.0	0.0	0.0
10.9	0.0	0.0	–170.0	1,294.5	1,494.6	28.5	1,523.1
				–21.0	–21.0	–1.9	–22.9
			–1.0	–3.2	–3.2	1.5	–1.7
				183.5	183.5	4.4	187.9
–12.4		–0.5	–56.6	–76.4	–76.4	–1.5	–77.9
–1.5	**0.0**	**–0.5**	**–227.6**	**1,377.4**	**1,577.5**	**31.0**	**1,608.5**

Consolidated statement of cash flows

	Notes	2018 CHF m	Restated 2017 CHF m
Profit before taxes		235.3	217.4
Financial result	3.5	–4.6	–13.5
Operating result before interest and taxes (EBIT)		**230.7**	**203.9**
Depreciation and amortization	4.1/4.2	63.7	52.5
Other items not affecting cash flow		–4.4	5.9
Changes in provisions		32.3	8.6
Changes in trade accounts receivable		–63.4	–46.6
Changes in inventories		–49.4	–68.4
Changes in trade accounts payable		55.5	24.1
Changes in contract assets/liabilities relating to production orders in progress		1.7	16.5
Changes in other net operating assets		–20.8	–5.8
Gains/losses on disposal of fixed assets		–12.4	2.0
Interest received		4.9	4.4
Interest paid		–4.3	–1.6
Income taxes paid		–32.3	–36.9
Cash flow from operating activities		**201.8**	**158.5**
Purchase of property, plant and equipment		–113.1	–93.1
Disposal of property, plant and equipment		29.5	7.9
Purchase of intangible fixed assets		–5.0	–6.7
Cash flow from acquisition of Group companies, net of cash acquired	1.5	–446.7	–18.0
Cash flow from disposals of Group companies	4.3	20.6	0.0
Purchase of marketable securities		–30.8	–21.5
Disposal of marketable securities		23.3	30.4
Purchase of non-current financial assets		–42.5	–47.2
Disposal of non-current financial assets		16.9	7.5
Dividends received		0.0	1.7
Cash flow from investing activities		**–547.8**	**–139.0**
Proceeds from financial liabilities	2.2	0.0	420.8
Repayment of financial liabilities	2.2	–34.0	–17.6
Dividends paid of Bühler Holding AG	7.4	–21.0	–18.0
Dividends paid to non-controlling interests		–1.9	–4.1
Acquisitions and other transactions with non-controlling interests		0.0	–1.9
Cash flow from financing activities		**–56.9**	**379.2**
Translation differences		–12.2	2.5
Changes in cash and cash equivalents		**–415.1**	**401.2**
Cash and cash equivalents at the beginning of period		832.5	431.3
Cash and cash equivalents at the end of period		417.4	832.5

Notes to the financial statements

1. Group information

1.1 General information

The consolidated financial statements of the Bühler Group and its subsidiaries (collectively, the Group) for the year ended December 31, 2018, were authorized for issue in accordance with a resolution of the Board of Directors on February 5, 2019. Bühler Holding AG (the Company or the parent) is a company incorporated and domiciled in Switzerland whose shares are privately held. The registered office is located in Uzwil, Switzerland.

The Group is a globally active solutions provider for the industrial manufacturing of food and advanced materials. The worldwide solutions portfolio contains engineering, application development, manufacturing, services, and training.

These financial statements are the consolidated financial statements of Bühler Holding AG and its subsidiaries. The list of significant Group companies can be found on page 130.

The consolidated financial statements of the Bühler Group have been prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) and comply with Swiss law. The consolidated financial statements are based on the single-entity financial statements of the Group companies, which are prepared in accordance with consistent accounting principles. The consolidated financial statements are prepared under the historical cost convention. Any exceptions to this general rule are outlined in the respective note. The overall accounting principles applied to the Annual Report as a whole are described below. The accounting policies related to specific line items are described in the notes to which they relate.

Due to rounding, the numbers do not necessarily correspond exactly with the totals.

1.2 Use of estimates

The preparation of the consolidated financial statements in accordance with IFRS requires management to make estimates and assumptions that affect the reported amounts of revenue, expenses, assets, and liabilities and the related disclosures at the date of the financial statements. These estimates are based on management's best knowledge of current events and possible future measures. However, actual results could differ from those estimates.

If in the future such estimates and assumptions, which are based on management's best knowledge at the date of the financial statements, deviate from the actual circumstances, the original estimates and assumptions will be modified as appropriate in the year in which the circumstances change.

The estimates and assumptions that may have a higher degree of uncertainty to cause a material adjustment to the carrying amounts of assets and liabilities within the next financial periods relate primarily to goodwill and intangible assets with an indefinite useful life (Note 4.2) and, to a lesser extent, revenue (Note 3.1) and defined benefit obligations (Note 4.11).

Estimates related to specific line items are described in the notes to which they relate.

1.3 Foreign currency translation

The individual financial statements of the Group companies are measured using the currency of the primary economic environment in which the entity operates (“the functional currency”) and are translated into Swiss francs for consolidation purposes. Year-end exchange rates are used for the balance sheet and the average exchange rate for the income statement, statement of other comprehensive income, and cash flow statement.

Differences resulting from the application of these different exchange rates for the balance sheet and the income statement and from equity transactions are recognized directly in the consolidated statement of other comprehensive income.

Goodwill arising on the acquisition of a foreign entity is expressed in the functional currency of the foreign operation and is translated at the closing rate.

Foreign currency transactions translated into the functional currency are accounted for at the exchange rates prevailing at the date of the transactions; gains and losses resulting from the settlement of such transactions and from the translation of monetary assets and liabilities denominated in foreign currencies are recognized in the income statement, except when they are deferred outside the income statement as qualifying cash flow hedges.

Foreign exchange differences arising on monetary items that form part of a company’s net investment in a foreign operation are reclassified to equity (currency translation adjustment) in the consolidated financial statements and are only fully recycled to the income statement when the Group loses control of a subsidiary or loses significant influence in an associate.

For foreign currency translation, the Bühler Group used the following exchange rates:

	Average exchange rates		Closing rates 31.12.	
	2018 CHF	2017 CHF	2018 CHF	2017 CHF
BRL	0.2692	0.3086	0.2550	0.2960
CAD	0.7553	0.7589	0.7250	0.7790
CNY	0.1481	0.1458	0.1435	0.1502
CZK	0.0450	0.0423	0.0437	0.0458
DKK	0.1550	0.1494	0.1510	0.1570
EUR	1.1551	1.1116	1.1280	1.1710
GBP	1.3058	1.2684	1.2470	1.3190
INR	0.0143	0.0151	0.0141	0.0153
JPY	0.0089	0.0088	0.0089	0.0087
MXN	0.0509	0.0522	0.0500	0.0499
SGD	0.7253	0.7132	0.7210	0.7337
THB	0.0303	0.0290	0.0303	0.0301
USD	0.9786	0.9846	0.9860	0.9820
ZAR	0.0743	0.0740	0.0683	0.0797

1.4 Principles of consolidation

Subsidiaries are all entities over which the Group has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power to direct the activities of the entity. The cost of an acquisition is measured at the fair value of the consideration transferred at the date of exchange. For each business combination, the acquirer measures the non-controlling interest in the acquiree either at fair value or at the proportionate share of the acquiree's identifiable net assets. Acquisition costs incurred are expensed in the income statement. Identifiable assets acquired and liabilities assumed in a business combination are measured initially at fair value at the date of acquisition, irrespective of the extent of any non-controlling interest assumed. When the Bühler Group acquires a business, it assesses the financial assets and liabilities assumed for appropriate classification and designation in accordance with the contractual terms, economic circumstances, and pertinent conditions as at the acquisition date.

If the business combination is achieved in stages, the acquisition date fair value of the Group's previously held equity interest in the acquiree is remeasured to fair value at the date control is obtained. Any gain or loss arising from such remeasurement is recognized in the income statement.

Any contingent consideration to be transferred by the Group is recognized at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration are recognized in the income statement.

Subsidiaries are consolidated from the date on which control is transferred to the Group and are no longer consolidated from the date that control ceases.

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction.

All intercompany transactions and balances between Group companies are eliminated in full.

Investments in associated companies are accounted for using the equity method of accounting. These are companies over which the Group generally holds between 20% and 50% of the voting rights and has significant influence but does not exercise control. Goodwill arising on the acquisition is included in the carrying amount of the investment in associated companies. The Group does not recognize further losses when the carrying amount of the investment together with any long-term interest in an associated company reaches zero, unless the Group has in addition either incurred or guaranteed additional obligations in respect to the associated company.

Investments below 20% are recognized at fair value and classified as financial assets at fair value through profit or loss. Changes in fair value are recognized in the income statement.

Any non-current assets held for sale and discontinued operations are presented separately on the face of the balance sheet. This includes all those assets associated with the discontinuation of entire lines of business or geographical areas of operation, which are to be realized through a sale transaction rather than through continued use. Reclassifications are only made if management is committed to the sale and has started seeking buyers. In addition, the asset or disposal group must be available for sale in its current condition and its sale must be highly probable within one year. Non-current assets or disposal groups classified as held for sale are no longer depreciated. If necessary, they are written down for impairment.

The income and expenses of discontinued operations are separated from ordinary income and expenses in the income statement for both the reporting period and the prior year down to the "profit after tax" level. The resulting gain or loss (after taxes) is presented separately in the income statement.

1.5 Additions and disposals of Group companies

Additions

2018

Acquisition of the Haas Group, Vienna, Austria. On January 9, 2018, the Group acquired 100% of the shares of Haas, Vienna. Haas is the world market leader of wafer, biscuits, and confectionery production systems. Haas is an extension of the Group's consumer food business and product portfolio, which enables the Group to generate additional customer value and strengthens the Group's position in various markets.

From the date of acquisition, the Haas Group contributed CHF 372.8 million of revenue. The amounts would be materially the same had the acquisition taken place at the beginning of the year.

Acquisition of Sputtering Components Inc., Owatonna, US. On September 30, 2018, the Group acquired 100% of the shares of Sputtering Components Inc., Owatonna. The entity is a manufacturer of precision vacuum components. This acquisition strengthens the Group's global sales and service network and its product portfolio.

From the date of acquisition, the entity contributed CHF 3.9 million of revenue. If the combination had taken place at the beginning of the year, revenue would have been CHF 17.2 million.

2017

Several small acquisitions are individually and in aggregate not significant.

Disposals

2018

Refer to Note 4.3 for transactions with associates.

2017

There was no significant disposal in 2017.

Identifiable assets and liabilities fair value at the acquisition date

	Haas Group 2018 CHF m	Sputtering Components 2018 CHF m
Cash and cash equivalents	41.4	1.8
Trade accounts receivable gross	79.2	3.4
Trade accounts receivable allowance	–10.1	–0.2
Other receivables	21.5	0.0
Inventories	55.8	1.5
Current assets	**187.8**	**6.5**
Property, plant and equipment	62.6	1.5
Intangible assets	118.9	9.5
Financial assets	5.7	0.0
Deferred tax asset	6.2	0.0
Non-current assets	**193.4**	**11.0**
Trade accounts payable	–23.2	–0.1
Net liabilities of production orders in progress	–0.2	0.0
Current provisions	–24.6	0.0
Other current liabilities, accruals and deferred income	–99.0	–0.7
Current liabilities and provisions	**–147.0**	**–0.8**
Deferred tax liabilities	–33.5	–2.6
Non-current liabilities and provisions	–43.0	–0.4
Non-current liabilities and provisions	**–76.5**	**–3.0**
Change in net assets	**157.7**	**13.7**
Goodwill arising on acquisitions	347.3	
Addition to the Group	**518.7**	
Cash disposed (–) / acquired (+)	43.2	
Cash flow from changes in the scope of consolidation	**–475.5**	
Thereof relating to the current year	–446.7	

The goodwill in the amount of CHF 330.4 million for the Haas Group and CHF 16.9 million for Sputtering Components Inc. comprise the value of the expected synergies from the acquisitions.

The acquisition-related costs of CHF 2.7 million (prior year: nil) were recognized as other operating expenses in the income statement.

1.6 Significant Group companies

Name of company	Country	Share capital in millions of local currency	Participation rate	Holding/ Financing Company	Held by
Switzerland					
Bühler Holding AG, Uzwil	**CH**	CHF 15.00		O	
Bühler AG, Uzwil	**CH**	CHF 30.00	100.0%		Bühler Holding AG, Uzwil
Bühler-Immo Betriebs AG, Uzwil	**CH**	CHF 0.10	100.0%		Bühler Holding AG, Uzwil
Bühler Management AG, Uzwil	**CH**	CHF 0.10	100.0%		Bühler Holding AG, Uzwil
UBIF AG, Uzwil	**CH**	CHF 4.00	100.0%		Bühler Holding AG, Uzwil
Bühler Insect Technology Solutions AG, Uzwil	**CH**	CHF 1.46	80.0%		Bühler Holding AG, Uzwil
Benlink AG, Zurich	**CH**	CHF 0.10	100.0%		Bühler Holding AG, Uzwil
Bühler + Scherler AG, St. Gallen	**CH**	CHF 0.80	60.0%		Bühler Holding AG, Uzwil
Europe					
Franz Haas Vermögens- und Beteiligungs Aktiengesellschaft, Leobendorf	**AT**	EUR 3.17	100.0%	O	Bühler AG, Uzwil
FHW Franz Haas Waffelmaschinen GmbH, Leobendorf	**AT**	EUR 0.04	100.0%		Haas Food Equipment GmbH, Leobendorf
Haas Food Equipment GmbH, Leobendorf	**AT**	EUR 4.00	100.0%		Franz Haas Vermögens- und Beteiligungs Aktiengesellschaft, Leobendorf
Metall- und Kunststoffwaren Erzeugungs-ges.m.b.H, Heidenreichstein	**AT**	EUR 2.91	100.0%		Franz Haas Vermögens- und Beteiligungs Aktiengesellschaft, Leobendorf
Bühler CZ s.r.o., Zamberk	**CZ**	CZK 265.20	100.0%		Bühler Holding AG, Uzwil
Bühler Deutschland GmbH, Beilngries	**DE**	EUR 0.03	100.0%		Bühler AG, Uzwil
Bühler GmbH, Beilngries	**DE**	EUR 16.00	100.0%		Bühler Deutschland GmbH, Beilngries
Bühler Deutschland Holding GmbH, Braunschweig	**DE**	EUR 0.03	100.0%	O	Bühler AG, Uzwil
Bühler Barth GmbH, Freiberg a.N.	**DE**	EUR 1.14	100.0%		Bühler Deutschland Holding GmbH, Braunschweig
Bühler GmbH, Reichshof	**DE**	EUR 0.28	100.0%		Bühler Deutschland Holding GmbH, Braunschweig
Bühler GmbH, Braunschweig	**DE**	EUR 12.63	100.0%		Bühler Deutschland Holding GmbH, Braunschweig
Leybold Optics Verwaltungs GmbH, Alzenau	**DE**	EUR 0.44	100.0%	O	Bühler Deutschland Holding GmbH, Braunschweig
Bühler Alzenau GmbH, Alzenau	**DE**	EUR 0.05	100.0%		Leybold Optics Verwaltungs GmbH, Alzenau
Bühler GmbH, Leingarten	**DE**	EUR 2.43	100.0%		Bühler Deutschland Holding GmbH, Braunschweig
Haas-Meincke A/S, Ballerup	**DK**	DKK 5.00	100.0%		Haas Food Equipment GmbH, Leobendorf
Buhler S.A., Madrid	**ES**	EUR 0.06	100.0%		Bühler Holding AG, Uzwil
Bühler Haguenau S.A.S., Haguenau	**FR**	EUR 0.20	100.0%		Bühler Holding AG, Uzwil
Buhler UK Holdings Ltd., London	**GB**	GBP 3.60	100.0%	O	Bühler Holding AG, Uzwil
Buhler UK Ltd., London	**GB**	GBP 1.25	100.0%		Buhler UK Holdings Ltd., London
Control Design & Development Ltd., Peterborough	**GB**	GBP 0.01	100.0%		Buhler UK Holdings Ltd., London
Buhler S.p.A., Milano	**IT**	EUR 2.67	100.0%		Bühler Holding AG, Uzwil
Haas-Mondomix B.V., Almere	**NL**	EUR 0.50	100.0%		Haas Food Equipment GmbH, Leobendorf
OOO Haas, Moscow	**RU**	RUB 3.21	100.0%		FHW Franz Haas Waffelmaschinen GmbH, Leobendorf

Name of company	Country	Share capital in millions of local currency	Participation rate	Holding/ Financing Company	Held by
North America					
Buhler US Holding Inc., Minneapolis	**US**	USD 0.05	100.0%	O	Bühler Holding AG, Uzwil
Buhler Aeroglide Corporation, Cary	**US**	USD 0.01	100.0%		Buhler US Holding Inc., Minneapolis
Buhler Inc., Minneapolis	**US**	USD 3.20	100.0%		Buhler US Holding Inc., Minneapolis
BuhlerPrince Inc., Holland	**US**	USD 0.38	100.0%		Buhler US Holding Inc., Minneapolis
Buhler Sputtering Components Inc., Owatonna	**US**	USD 0.02	100.0%		Buhler US Holding Inc., Minneapolis
Franz Haas Machinery of America Inc., Richmond	**US**	USD 0.01	100.0%		Haas Food Equipment GmbH, Leobendorf
Latin America					
Buhler S.A., Buenos Aires	**AR**	ARS 1.10	100.0%		Bühler Holding AG, Uzwil
Buhler S.A., Joinville	**BR**	BRL 20.69	100.0%		Bühler Holding AG, Uzwil
Buhler Sanmak Industria de Maquinas Ltda., Blumenau	**BR**	BRL 10.00	100.0%		Bühler Holding AG, Uzwil
Haas do Brasil Industria de Maquinas Ltda., Curitiba	**BR**	BRL 3.04	100.0%		Haas Food Equipment GmbH, Leobendorf
Buhler S.A. de C.V., Toluca	**MX**	MXN 50.00	100.0%		Bühler Holding AG, Uzwil
Haas Colombia S.A.S., Envigado	**CO**	COP 129.23	100.0%		FHW Franz Haas Waffelmaschinen GmbH, Leobendorf
Middle East and Africa					
Buhler Limited, Nairobi	**KE**	KES 900.00	100.0%		Bühler Holding AG, Uzwil
Buhler (Pty) Ltd., Johannesburg	**ZA**	ZAR 141.37	90.0%		Bühler Holding AG, Uzwil

Name of company	Country	Share capital in millions of local currency	Participation rate	Holding/ Financing Company	Held by
Asia					
Buhler (Changzhou) Machinery Co. Ltd., Liyang City	CN	CNY 320.00	100.0%		Buhler (China) Holding Co. Ltd., Wuxi
Buhler (China) Holding Co. Ltd., Wuxi	CN	USD 123.60	100.0%	O	Bühler Holding AG, Uzwil
Buhler (China) Machinery Manufacturing Co. Ltd., Wuxi	CN	CNY 150.00	100.0%		Buhler (China) Holding Co. Ltd., Wuxi
Buhler (Wuxi) Commercial Co. Ltd., Wuxi	CN	USD 5.50	100.0%		Buhler (China) Holding Co. Ltd., Wuxi
Buhler Aquatic Equipment (Changzhou) Co. Ltd., Liyang City	CN	CNY 10.00	100.0%		Buhler (China) Holding Co. Ltd., Wuxi
Buhler (Changzhou) Insect Technologies Co. Ltd., Changzhou	CN	CNY 10.00	100.0%		Bühler Insect Technology Solutions AG, Uzwil
Buhler Equipment (Xian) Co. Ltd., Xi'an	CN	CNY 28.00	100.0%		Bühler Holding AG, Uzwil
Buhler Food Ingredients (Guangzhou) Co. Ltd., Guangzhou	CN	USD 3.80	100.0%		Bühler Holding AG, Uzwil
Buhler Mechanical Equipment (Shenzhen) Co. Ltd., Shenzhen	CN	USD 4.00	100.0%		Bühler Holding AG, Uzwil
Wuxi Buhler Machinery Manufacturing Co. Ltd., Wuxi	CN	USD 23.00	51.0%		Bühler Holding AG, Uzwil
Buhler Leybold Optics Equipment (Beijing) Co. Ltd., Beijing	CN	CNY 10.10	100.0%		Bühler Alzenau GmbH, Alzenau
Franz Haas Food Machinery (Shanghai) Co. Ltd., Shanghai	CN	USD 1.50	100.0%		Haas Food Equipment GmbH, Leobendorf
Buhler (India) Private Ltd., Bangalore	IN	INR 100.00	100.0%		Bühler Holding AG, Uzwil
Buhler K.K., Yokohama	JP	JPY 250.00	100.0%		Bühler Holding AG, Uzwil
Buhler Ltd, Seoul	KR	KRW 250.00	100.0%		Bühler Holding AG, Uzwil
Buhler Asia Private Limited, Singapore	SG	USD 14.38	100.0%	O	Bühler Holding AG, Uzwil
Buhler Asia Vietnam Limited, Long An	VN	VND 149,815.50	98.0%		Buhler Asia Private Limited, Singapore
Buhler (Thailand) Limited, Bangkok	TH	THB 110.00	100.0%		Buhler Asia Private Limited, Singapore
PT Buhler Indonesia, Jakarta	ID	IDR 68,500.00	100.0%		Buhler Asia Private Limited, Singapore

The significant additions compared to prior year are disclosed in the Note 1.5.

2. Financial risk management

The Group is exposed to financial market risks (foreign exchange risk, interest rate risk, and price risk), credit risks, and liquidity risks as a result of its global activities. Financial risk management focuses on the management of foreign exchange risk, credit risk, and liquidity risk. The Group's risk management aims to minimize the potential adverse impact of developments on the financial markets on the Group's financial conditions and secure its financial stability.

The corporate treasury executes the risk management function in accordance with the directives issued by the Board of Directors. Financial risks are identified, evaluated, and mitigated in close cooperation with the Group's business units and subsidiaries.

Foreign exchange risk. Due to the nature of a global business, the Group is exposed to future business transactions or assets and liabilities recognized on the balance sheet denominated in another currency than the functional currency (transaction risk). The objective is to minimize transaction risks arising from sales contracts and purchase commitments in non-functional currencies. In order to hedge such transaction risks, subsidiaries use foreign currency contracts with the corporate treasury as counterparty, if permitted by local legislation. The corporate treasury manages these positions by entering into foreign currency spot, forward, swap, and derivative contracts with financial institutions.

The Group's main business is project-based with an execution over a longer period of time. Small projects and customer service transactions are continuously monitored and hedged based on the expected sales volume. Hedge accounting is applied.

Foreign exchange risks also arise from net investments in foreign Group companies (translation risk). Net investments in foreign Group companies are long term in nature. Their fair value changes with exchange rates. However, in the long run the spread in the inflation rate should match the corresponding exchange-rate movements, so that changes in the fair value of foreign net investments will offset the exchange-rate related changes in value. For this reason, the Group currently does not hedge its net investments in foreign Group companies.

The table below shows the changes in the key currency pairs on profit after taxes and equity, based on the assumption that all other variables remained constant. The volatility value used in the calculation is that of one-year historical volatility as per December 31.

2018	Currency pair	EUR/CHF	USD/CHF	CNY/CHF	GBP/CHF
Volatility		6.3%	7.6%	7.1%	11.1%
Effect on profit after taxes (rate increase) CHF m		1.6	0.3	3.9	1.4
Effect on profit after taxes (rate decrease) CHF m		–1.6	–0.3	–3.9	–1.4
Effect on equity (rate increase) CHF m		11.3	0.5	3.6	0.3
Effect on equity (rate decrease) CHF m		–11.3	–0.5	–3.6	–0.3

2017	Currency pair	EUR/CHF	USD/CHF	CNY/CHF	GBP/CHF
Volatility		6.2%	7.8%	7.0%	8.3%
Effect on profit after taxes (rate increase) CHF m		0.9	0.8	3.0	1.0
Effect on profit after taxes (rate decrease) CHF m		–0.9	–0.8	–3.0	–1.0
Effect on equity (rate increase) CHF m		40.6	–7.1	5.0	–0.1
Effect on equity (rate decrease) CHF m		–34.7	7.1	–5.0	0.1

Interest rate risk. The Group held, with the exception of cash and time deposits, no material interest-bearing assets during the reporting and the prior-year period. Both income and cash flow from operations are therefore unaffected by the market interest rates. The liabilities contain mainly two corporate bonds with a fixed interest rate, which are measured at amortized costs. Hence, the Group is not exposed to a fair value risk.

Price risk. Holding marketable securities exposes the Group to a risk of price fluctuation that can result in proportional changes in the carrying amount. The Group's balance of marketable securities was not material at the end of the reporting and the prior-year period.

Credit risk. Credit risks arise in connection with investments of liquid funds, derivative financial instruments, and receivables from customers. The Group does not expect to incur any material loss as a result of its counterparties being unable to meet their contractual obligations, nor does it have any cluster risks with respect to individual sectors or countries.

Financial institutions: The default risk on investments, derivative financial instruments, money market funds, deposits, and cash is minimized by selecting different counterparties with at least an investment-grade rating. The risks are monitored and kept within periodically reviewed and approved limits.

Receivables from customers: In order to minimize potential losses on customers' receivables, an Operational Risk Management (ORM) guideline has been implemented. The evaluation of our customers' financial reliability and/or the terms of payment and hedging on our deliveries are key concerns in this respect. In addition, it can be stated that none of our customers has outstanding payments accounting for more than 5% of total sales revenue. The nominal value of the trade accounts receivable less valuation allowances is considered an approximation of the receivables' fair value. The book value stated represents the maximum credit risk. Information on the analysis of outstanding receivables and allowance for bad debts is disclosed in Note 4.6.

Liquidity risk. Liquidity risk refers to the risk of the Group being unable to fulfill its obligations when due or at a reasonable price. The Group's liquidity risk management includes holding adequate reserves of cash and time deposits to ensure financial stability and to use free cash flows as a source of financing. If required, the Group could use bilateral credit facilities with banks. Group management monitors the Group's net liquidity position by means of ongoing forecasts based on expected cash flows.

Maturity analysis

2018	Book value Dec. 31, 2018 CHF m	Cash outflow Total CHF m	< 1 year CHF m	1–5 years CHF m	> 5 years CHF m
Trade accounts payable to third parties	350.9	350.9	350.9		
Liabilities to associates and related parties	128.3	128.3	7.0	82.3	39.0
Other liabilities (incl. derivative financial instruments through profit or loss)	313.4	313.4	312.9	0.5	
Corporate bonds	420.8	432.2	1.6	186.3	244.3
Derivative financial instruments held for hedging	10.4	10.4	10.1	0.3	
Total	**1,223.8**	**1,235.2**	**682.5**	**269.4**	**283.3**

2017	Book value Dec. 31, 2017 CHF m	Cash outflow Total CHF m	< 1 year CHF m	1–5 years CHF m	> 5 years CHF m
Trade accounts payable to third parties	264.6	264.6	264.6		
Liabilities to associates and related parties	124.8	124.8	5.6	76.2	43.0
Other liabilities (incl. derivative financial instruments through profit or loss)	440.3	440.3	439.8	0.5	
Corporate bonds	420.8	433.9	1.6	186.5	245.8
Derivative financial instruments held for hedging	7.5	7.5	7.5		
Total	**1,258.0**	**1,271.1**	**719.1**	**263.2**	**288.8**

Capital management. The Group's objectives in relation to capital management are to safeguard the Group's financial stability, its financial independence, and its ability to continue as a going concern in order to generate returns for shareholders and benefits for all other stakeholders. In addition, capital management aims to maintain an optimal capital structure. As at December 31, 2018, the equity ratio amounts to 42.2% (prior year: 44.5%).

2.1 Financial assets

IFRS 9 was implemented as of January 1, 2018. At initial recognition, financial assets are measured at fair value plus transaction costs that are directly attributable to the acquisition of the asset, except for financial assets held at fair value through profit or loss where the transaction costs are expensed immediately to the income statement.

The subsequent valuation depends on the Group's business model for managing the respective asset and the cash flow characteristics of the assets:

→ Cash, time deposits, receivables, non-current interest-bearing receivables, and other financial assets are valued at amortized costs.
→ Debt instruments are valued at fair value through profit or loss due to the irrevocable election of the fair value option.
→ Equity instruments acquired with the intention of generating a profit or compensatory effect from short-term price fluctuations are considered operational investments and are valued at fair value through profit or loss.
→ Equity instruments acquired for long-term strategic reasons are considered strategic investments and are valued at fair value through other comprehensive income with no future recycling to the income statement.

As of December 31, 2018, all non-current private equity investments were considered strategic investments and their fair value amounted to CHF 16.4 million.

Credit risks relating to debt instruments valued at amortized cost are considered to be low. The Group therefore determines the impairment allowance as the credit losses expected in the next 12 months. Lifetime expected credit losses would be recognized when the credit risk is no longer regarded as low risk.

For trade receivables and construction assets, allowances are calculated in the amount of the expected credit losses over the term. The Group analyses the credit losses incurred in the past and also estimates anticipated credit losses based on the economic conditions. Due to the customer structure, prefinancing for construction contracts, and financial guarantees (e.g., letters of credit) the implementation of this new model had no material impact on the Group.

As at December 31, 2018, capital commitments of CHF 14.9 million (prior year: 13.4 million) had not yet been drawn.

Information on derivative financial instruments is disclosed in Note 2.3.

2018	Cash and cash equivalents CHF m	Marketable securities CHF m	Non-current financial assets CHF m	Receivables and accruals CHF m	Total book value CHF m	Total market value CHF m
Financial assets at amortized costs	417.4		121.9	879.1	1,418.4	1,418.4
Financial assets at fair value through profit or loss		56.1	15.1		71.2	71.2
Financial assets held for hedging		9.4	0.2		9.6	9.6
Financial assets at fair value through OCI			16.4		16.4	16.4
Total financial assets	**417.4**	**65.5**	**153.6**	**879.1**	**1,515.6**	**1,515.6**

IAS 39 was applied until December 31, 2017. A distinction was made between the following three categories:

- Financial assets “at fair value through profit or loss” were generally acquired with the intention of generating a profit from short-term price fluctuations.
- “Loans and receivables” included loans granted and accounts receivable.
- All other financial assets were classified as “available for sale.”

Financial assets “at fair value through profit or loss” were recognized on acquisition at cost and subsequently measured at fair value, with fair value changes recognized in the financial result in the period in which they arose.

“Available for sale” financial assets were measured subsequent to their initial recognition at fair value, with unrealized gains and losses recognized in other comprehensive income. When the financial asset was either impaired or disposed of, the cumulative gain or loss previously recognized in the other comprehensive income was reclassified from equity to the income statement. Provided that fair value cannot be reliably determined, available-for-sale financial assets were measured at cost. This applied to financial assets that did not have a quoted market price in an active market and decisive parameters could not be reliably estimated to be used in valuation models for the determination of fair value.

Purchases and sales were recognized at the trade date rather than at the settlement date.

2017	Cash and cash equivalents CHF m	Securities CHF m	Receivables and accruals CHF m	Financial assets CHF m	Total book value CHF m	Total market value CHF m
Cash and cash equivalents	832.5				832.5	832.5
Financial assets at fair value through profit or loss		50.2			50.2	50.2
Loans and receivables			721.7	93.0	814.7	814.7
Financial assets available for sale		47.4		3.5	50.9	50.9
Derivative financial instruments held for hedging		13.2			13.2	13.2
Total financial assets	**832.5**	**110.8**	**721.7**	**96.5**	**1,761.5**	**1,761.5**

2.2 Financial liabilities

Financial liabilities consist mainly of the dual tranche bonds issued in 2017, which were initially recognized at fair value, net of transaction cost incurred. Subsequently, financial liabilities are measured at amortized cost using the effective interest method with any difference between net proceeds and the principal value due on redemption being recognized in the income statement over the term of the borrowings. Financial liabilities are de-recognized when the contractual obligations are discharged, cancelled, or expired.

2018	Current financial liabilities CHF m	Non-current financial liabilities CHF m	Payables/ accruals CHF m	Total book value CHF m	Total market value CHF m
Financial liabilities at amortized costs	18.6	526.6	662.0	1,207.2	1,197.2
Financial liabilities at fair value through profit or loss	6.2			6.2	6.2
Financial liabilities held for hedging	10.1	0.3		10.4	10.4
Total financial liabilities	**34.9**	**526.9**	**662.0**	**1,223.8**	**1,213.8**

2017	Financial liabilities CHF m	Payables/ accruals CHF m	Total book value CHF m	Total market value CHF m
Financial liabilities at amortized costs	543.2	685.2	1,228.4	1,228.8
Financial liabilities at fair value through profit or loss	13.5		13.5	13.5
Financial liabilities held for hedging	7.5		7.5	7.5
Total financial liabilities	**564.2**	**685.2**	**1,249.4**	**1,249.8**

Corporate bonds

	Company	Term	Currency	Nominal value CHF m	Effective interest rate	2018 CHF m	2017 CHF m
Bond, Switzerland 0.1%	Bühler Holding AG	12/2017 – 12/2022	CHF	180.0	0.11%	179.9	179.9
Bond, Switzerland 0.6%	Bühler Holding AG	12/2017 – 12/2026	CHF	240.0	0.55%	240.9	240.9
Total corporate bonds						**420.8**	**420.8**

The corporate bonds are listed on the SIX Swiss Exchange.

Reconciliation of liabilities arising from financing activities

	2017 CHF m	Cash flows CHF m	Noncash changes Acqui-sition CHF m	FX move-ment CHF m	Reclassifi-cation CHF m	2018 CHF m
Current borrowings	33.4	–14.9	9.1	–0.1	7.4	34.9
Non-current borrowings	530.8	–19.1	14.9	–0.1	0.4	526.9
Total liabilities from financing activities	**564.2**	**–34.0**	**24.0**	**–0.2**	**7.8**	**561.8**

	2016 CHF m	Cash flows CHF m	Noncash changes Acqui-sition CHF m	FX move-ment CHF m	Reclassifi-cation CHF m	2017 CHF m
Current borrowings	29.7	–7.5			11.2	33.4
Non-current borrowings	122.7	410.7			–2.6	530.8
Total liabilities from financing activities	**152.4**	**403.2**	**0.0**	**0.0**	**8.6**	**564.2**

2.3 Marketable securities and derivative financial instruments

Derivative financial instruments and hedge accounting. Derivative financial instruments with banks are mainly concluded to hedge foreign exchange risks. They are initially recognized at cost and are subsequently measured at fair value (replacement cost). The method applied for recognizing the resulting profits or losses depends on whether a derivative was designated for hedging, and if so, on the type of position being hedged. Certain derivatives may be used to hedge foreign exchange risks in connection with a transaction that is highly likely to take place in future, or to hedge a fixed commitment (hedging of cash flows). When the hedge is implemented, the Group documents the relationship between the hedging instrument and the risk being hedged, as well as setting out risk management objectives and strategies. Furthermore, the Group records its assessment of the effectiveness of the hedging instrument with respect to the hedged cash flows, both when the hedging transaction is concluded and on an ongoing basis.

The fair value of a hedging derivative is classified as a non-current asset or liability when the remaining maturity of the hedged item is more than 12 months; it is classified as a current asset or liability when the remaining maturity of the hedged item is less than 12 months. Trading derivatives are classified as a current asset or liability.

The hedging of cash flows is undertaken for certain anticipated Group-internal transactions as well as for the foreign exchange risk of firm commitments. The effective portion of the change in fair value of derivatives used for the hedging of cash flows is recognized in other comprehensive income. The ineffective portion of the hedging instrument is immediately recognized in the income statement.

Amounts accumulated in other comprehensive income are recycled in the income statement in the periods when the hedged item affects profit or loss. When a forecasted transaction is no longer expected to occur, the cumulative gain or loss that was recorded in other comprehensive income is immediately transferred to the income statement.

Derivatives not designated as hedging instruments are accounted for at fair value through profit or loss. Changes in the fair value of these derivative instruments are recognized immediately in the income statement.

Futures and options were entered into with banks mainly to hedge foreign exchange risks. The following positions were open as of December 31, 2018:

	Contract or underlying principal amount		Positive fair values		Negative fair values	
2.3.1 Derivative financial instruments	**2018 CHF m**	**2017 CHF m**	**2018 CHF m**	**2017 CHF m**	**2018 CHF m**	**2017 CHF m**
Currency-related instruments						
Forward foreign exchange rate contracts	2,052.0	1,599.0	14.2	16.3	16.6	21.0
– held for trading	856.0	786.0	4.6	4.2	6.2	13.5
– cash flow hedges (effective part)	1,196.0	813.0	9.6	12.1	10.4	7.5
Over-the-counter currency options	0.0	174.5	0.0	1.1	0.0	0.0
Total of currency-related instruments	**2,052.0**	**1,773.5**	**14.2**	**17.4**	**16.6**	**21.0**
Equity-related instruments						
Over-the-counter equity options	0.0	10.0	0.0	0.0	0.0	0.0
Total of equity-related instruments	**0.0**	**10.0**	**0.0**	**0.0**	**0.0**	**0.0**
Options	0.0	184.5	0.0	1.1	0.0	0.0
Futures	2,052.0	1,599.0	14.2	16.3	16.6	21.0
Sum of derivative financial instruments	**2,052.0**	**1,783.5**	**14.2**	**17.4**	**16.6**	**21.0**
Thereof included in securities and in current financial liabilities	2013.2	1773.5	14.0	17.3	16.3	21.0
Thereof included in other non-current financial assets and financial liabilities	38.8	10.0	0.2	0.1	0.3	0.0

	USD CHF m	EUR CHF m	Other currencies CHF m	Total 2018 CHF m	Total 2017 CHF m
Currency-related instruments					
Forward foreign exchange rate contracts	557.8	1,181.8	312.4	2,052.0	1,599.0
– held for trading	300.0	407.0	149.0	856.0	786.0
– cash flow hedges	257.8	774.8	163.4	1,196.0	813.0
Over-the-counter currency options	0.0	0.0	0.0	0.0	174.5
Total of currency-related instruments	**557.8**	**1,181.8**	**312.4**	**2,052.0**	**1,773.5**
Equity-related instruments					
Over-the-counter equity options	0.0	0.0	0.0	0.0	10.0
Total of equity-related instruments	**0.0**	**0.0**	**0.0**	**0.0**	**10.0**
Options	0.0	0.0	0.0	0.0	184.5
Futures	557.8	1,181.8	312.4	2,052.0	1,599.0
Sum of derivative financial instruments	**557.8**	**1,181.8**	**312.4**	**2,052.0**	**1,783.5**

Positive replacement values are included in securities or non-current financial assets and negative replacement values are included in financial liabilities.

2.3.2 Marketable securities	2018 CHF m	2017 CHF m
Equity securities	5.3	5.5
Bonds	0.0	6.2
Derivative financial instruments	14.0	17.3
Other securities	46.2	34.4
Total marketable securities	**65.5**	**63.4**

2.4 Estimation of fair values

The fair values of financial instruments that are actively traded on markets are based on the relevant trading exchange prices (offer prices) on the balance sheet reference date. Instruments of this nature are classified as Level 1. The fair values of financial instruments that are not actively traded on markets (e.g., derivative OTC instruments) are determined using valuation models. If all the parameters required for the valuation are based on observable market data, the instrument in question is classified as Level 2. If one or more parameters are based on unobservable market data, the instrument is classified as Level 3. In the period under review as well as in the prior year no transfer occurred within the levels.

2018	CHF m	Level 1	Level 2	Level 3	Total
Financial assets at fair value through profit or loss		56.4	10.6	4.2	71.2
Derivative financial assets held for hedging			9.6		9.6
Financial assets at fair value through OCI				16.4	16.4
Total financial assets		**56.4**	**20.2**	**20.6**	**97.2**
Financial liabilities at fair value through profit or loss			6.2		6.2
Financial liabilities held for hedging			10.4		10.4
Total financial liabilities		**0.0**	**16.6**	**0.0**	**16.6**

2017	CHF m	Level 1	Level 2	Level 3	Total
Financial assets at fair value through profit or loss		46.2	4.1		50.3
Derivative financial assets held for hedging			13.2		13.2
Financial assets available for sale			36.3	14.6	50.9
Total financial assets		**46.2**	**53.6**	**14.6**	**114.4**
Derivative financial liabilities			21.0		21.0
Total financial liabilities		**0.0**	**21.0**	**0.0**	**21.0**

3. Detailed information on consolidated income statement

3.1 Revenue

Revenue is measured based on the consideration specified in the contract with a customer and excludes amounts collected on behalf of third parties. Depending on the specific contractual circumstances, the Group recognizes revenue over time or when it transfers control over a product or service to a customer, at a point in time.

The input method is used to measure progress for each performance obligation satisfied over time. Revenue recognition over time requires the use of estimates and forecasts concerning future costs that affects the stage of completion. Thus, there is a higher degree of uncertainty that actual costs in the next financial periods may differ from these estimates. The forecasts are reviewed on a regular basis and adjusted if necessary.

These adjustments affect costs, the stage of completion, and both realized and anticipated profits. Any changes in estimates are recognized in the period in which they occur. Losses can occur when the expected contract costs exceed the expected revenue. Losses are recognized as an expense immediately when identified.

Revenue recognized at a point in time also requires the use of estimates regarding the exact time when control transfers to a customer. Thus, there is an uncertainty that the point in time when control actually transfers deviates from these estimates.

The following is a description of the principle activities of the Group, segregated by business type:

Business type	Nature, timing of satisfaction of performance obligations, and significant payment terms
Project/Plant	Projects with a higher degree of complexity or customization usually have no alternative use. The general contract terms do not include a right of return and require a down payment upon contract signing with a letter of credit covering the remaining amount. This constitutes a right to payment. Revenue for these projects is recognized over time. Revenue for all other projects is recognized at a point in time.
Single Machines	The Group recognizes revenue when the customer takes possession of the goods. This is usually when the goods arrive at the customer site. The general contract terms do not include a right of return and require a down payment upon contract signing with a letter of credit covering the remaining amount in some cases.
Customer Service	The Group recognizes revenue for spare parts when the customer takes possession of the goods. This is usually when the goods are shipped. The general contract terms do not include a right of return. Revenue for service contracts is recognized over time.

In the following table, revenue is disaggregated by primary geographical market, major products/service lines, and timing of revenue recognition. The table also includes a reconciliation of the disaggregated revenue with the Group's two businesses, which are its reportable segments (see Note 5).

Disaggregation of revenue 2018	Grains & Food CHF m	Advanced Materials CHF m	Corporate Functions CHF m	Group CHF m
North America	304.3	150.6	0.1	455.0
South America	173.5	8.9	–0.1	182.3
Europe	735.9	238.9	26.1	1,000.9
Middle East and Africa	424.5	26.9	–0.5	450.8
South Asia	143.5	27.1	0.9	171.5
Asia	752.4	252.9	4.8	1,010.2
Total revenue by geography	**2,534.1**	**705.3**	**31.3**	**3,270.7**
Revenue recognized at a point in time	1,111.5	621.2	31.3	1,764.0
Revenue recognized over time	1,422.6	84.1	0.0	1,506.7
Total revenue by timing of revenue recognition	**2,534.1**	**705.3**	**31.3**	**3,270.7**
Revenue Project/Plant	1,737.7	537.5	24.1	2,299.3
Revenue Single Machines	292.5	4.3	0.5	297.3
Revenue Customer Service	503.9	163.5	6.7	674.1
Total revenue by product	**2,534.1**	**705.3**	**31.3**	**3,270.7**

Disaggregation of revenue 2017	Grains & Food CHF m	Advanced Materials CHF m	Corporate Functions CHF m	Group CHF m
North America	318.3	121.7	–0.0	440.0
South America	158.8	11.2	–0.3	169.7
Europe	504.8	247.9	28.6	781.3
Middle East and Africa	379.9	33.7	4.6	418.2
South Asia	129.3	22.0	0.7	152.0
Asia	487.9	231.3	1.6	720.8
Total revenue by geography	**1,979.0**	**667.8**	**35.2**	**2,682.0**
Revenue recognized at a point in time	694.0	593.1	35.2	1,322.3
Revenue recognized over time	1,285.0	74.7	0.0	1,359.7
Total revenue by timing of revenue recognition	**1,979.0**	**667.8**	**35.2**	**2,682.0**
Revenue Project/Plant	1,285.0	520.2	31.1	1,836.3
Revenue Single Machines	280.8	0.0	0.6	281.4
Revenue Customer Service	413.2	147.6	3.5	564.3
Total revenue by product	**1,979.0**	**667.8**	**35.2**	**2,682.0**

The following table provides the information about receivables, contract assets, and contract liabilities from contracts with customers.

Contract balances	2018 CHF m	Restated 2017 CHF m
Trade accounts receivable	**702.3**	**583.9**
Production orders in progress	680.6	594.5
Advance payments from customers	–299.3	–249.9
Contract assets relating to production orders in progress	**381.3**	**344.6**
Production orders in progress	75.7	3.2
Advance payments from customers	–652.0	–539.8
Contract liabilities relating to production orders in progress	**–576.3**	**–536.6**
Accumulated costs and recognized profits	2,051.5	1,923.0

The contract assets primarily relate to the Group's rights to consideration for work completed but not invoiced at the reporting date. The contract assets are transferred to receivables when the rights become unconditional. The contract liabilities primarily relate to the advanced consideration received from customers, for which revenue is recognized on completion or if the advanced consideration received exceeds the work completed. The complete prior-year contract liability balance of CHF 536.6 million was recognized in the income statement in the current year (prior year: CHF 506.1 million).

The following table includes revenue expected to be recognized in the future related to performance obligations that are unsatisfied (or partially unsatisfied) at the reporting date.

Performance obligation	2019 CHF m	2020 CHF m	2021 CHF m	2022 CHF m
Project/Plant	1,461.2	206.6	12.5	4.7
Single Machines	103.5	0.3	0.0	0.0
Customer Service	134.2	0.0	0.0	0.0

Management does not expect commission fees paid to intermediaries to be recoverable. The Group therefore recognizes the incremental costs of obtaining contracts as an expense when incurred.

3.2 Other operating income

	2018 CHF m	2017 CHF m
Earnings from coordination of consortium business	2.0	1.4
Interest income from trade finance	0.8	1.4
Rental income	1.6	1.2
Gains from sale of fixed assets	14.0	2.4
Gains from sale of part of businesses	0.8	0.0
Other operating income related parties	0.8	2.0
Dividend income	0.4	0.4
Gains from sale of scrap materials	3.1	2.7
Supplier discounts	1.7	1.4
Government grants	5.8	2.0
Others	26.0	6.5
Total	**57.0**	**21.4**

Others comprises a number of individually immaterial items.

3.3 Employee benefit expenses

	2018 CHF m	2017 CHF m
Wages and salaries	767.8	640.8
Social security and employee benefit expenses	146.0	117.1
Other personnel expenses	92.5	67.8
Total	**1,006.3**	**825.7**

3.4 Other operating expenses

	2018 CHF m	2017 CHF m
Administration expenses	119.1	108.1
Rental and leasing expenses, dues	41.8	31.8
Energy, maintenance and repairs	39.9	32.6
Travel expenses	95.8	82.8
Outbound freight costs	89.7	76.0
Consultancy fees	26.2	15.1
Marketing costs	22.1	21.1
Agency fees	27.9	13.3
Warranty costs, loss orders	12.3	0.0
Other operating expenses related parties (Note 7.2, Related parties)	22.2	23.9
Losses on sales of fixed assets	3.2	5.0
Fixed assets < 10 kCHF	3.4	2.3
Contributions and memberships	3.6	2.3
Losses on accounts receivables and inventory	2.6	0.4
Others	29.2	26.6
Total	**539.0**	**441.3**

3.5 Financial result

	2018 CHF m	2017 CHF m
Interest income	4.6	3.8
Interest income from related parties	0.7	0.6
Interest expenses	–5.2	–0.3
Interest expenses from related parties	–1.5	–1.4
Total interest income and expenses	**–1.4**	**2.7**
Total other financial income	**6.0**	**10.8**
Total financial result	**4.6**	**13.5**

The interest expenses of CHF –5.2 million (previous year: CHF –0.3 million) include the interest payments to bond holders and interest components from pension fund obligations in accordance with IAS 19. Other financial income mainly includes foreign currency gains.

3.6 Taxes

Income taxes comprise the tax expense in respect of all recognized profits for the reporting period. They include current and deferred income taxes. Current income taxes are calculated on taxable profit. Provisions for deferred taxes are calculated according to the liability method. Deferred taxes are recognized for temporary differences between the carrying amounts of assets and liabilities in the balance sheet and their tax base, taking into account actual or substantively enacted tax rates. Changes in deferred tax balances are recognized in the income statement, except when they relate to items recognized outside the income statement, in which case the deferred tax is treated accordingly.

Current income tax relating to items recognized directly in equity is recognized in equity.

Deferred tax assets are only recognized for temporary differences and unused tax loss carry-forwards to the extent that it is probable that future taxable profit will be available against which temporary differences or unused tax losses can be utilized. This assessment is based on estimates, which could differ from actual results and require a valuation allowance.

The IASB issued IFRIC 23, which became effective on January 1, 2019. The interpretation clarifies how to apply the requirements in IAS 12 when there is uncertainty over income tax treatment. The Group does not expect a significant impact from this clarification.

3.6.1 Income taxes	**2018 CHF m**	**Restated 2017 CHF m**
Income taxes relating to the reporting period	–49.7	–39.6
Income taxes relating to prior periods	–6.0	0.4
Deferred taxes due to temporary differences	6.6	–11.0
Deferred taxes due to recognition of tax loss carry-forwards	1.7	0.9
Deferred taxes due to changes in tax rates	0.0	5.4
Total	**–47.4**	**–43.9**
Deferred taxes recognized in other comprehensive income	4.7	–22.5

3.6.2 Reconciliation of income taxes	**2018 CHF m**	**Restated 2017 CHF m**
Profit before taxes	235.3	217.4
Components of tax expenses:		
Income taxes at anticipated tax rate	–49.6	–48.6
Income and expenses not subject to tax	–2.3	1.3
Income taxes relating to prior periods	–6.0	0.4
Deferred taxes due to changes in tax rates	0.0	5.4
Effect of tax loss carry-forwards	2.9	1.9
Effect of losses without recognition of deferred tax assets	–1.6	–2.0
Other impacts	9.2	–2.3
Income taxes disclosed (current and deferred)	**–47.4**	**–43.9**
Total income taxes in % of profit before taxes	**20.1%**	**20.2%**

The anticipated tax rate was 21.1% (prior year: 22.3%) and consisted of the weighted average of the applicable local tax rates for income taxes. The tax rate decreased slightly to 20.1% in 2018 from 20.2% in 2017. Contributory factors for the resulted tax rate included sustainable tax management and a special effect in Switzerland.

3.6.3 Tax loss carry-forwards	2018 CHF m	2017 CHF m
Expiry		
Unlimited	88.4	93.0
In more than five years	27.4	22.2
In two to five years	27.2	30.1
Within one year	4.7	1.9
Total	**147.7**	**147.2**
Tax loss carry-forwards accounted for in deferred taxes	124.3	116.4
Tax loss carry-forwards not accounted for in deferred taxes	23.4	30.8
Tax effect on tax loss carry-forwards unaccounted for	5.8	7.7

The change in tax loss carry-forwards results from the use of tax losses in particular in Germany, China, and Singapore, as well as from the impact of additional tax loss carry-forwards in particular in Germany, China, and Switzerland.

3.6.4 Breakdown of deferred taxes per line item	2018 CHF m Assets	2018 CHF m Liabilities	Restated 2017 CHF m Assets	Restated 2017 CHF m Liabilities
Property, plant and equipment	6.3	22.1	6.5	16.2
Post-employment benefits	15.5	6.8	16.1	12.8
Provisions	6.2	6.7	3.2	7.9
Other items (mainly inventory, construction contracts, and other current liabilities)	99.4	199.3	109.9	187.1
Tax loss carry-forwards	33.1	0.0	31.4	0.0
Total deferred taxes gross	**160.5**	**234.9**	**167.1**	**224.0**
Offset	–105.0	–105.0	–120.7	–120.7
Total deferred taxes net	**55.5**	**129.9**	**46.4**	**103.3**

Deferred tax assets and liabilities are offset if there is a legally enforceable right to set them off and if the calculations of income taxes relate to the same taxation authority.

3.7 Research and development costs

Research costs are recognized in the income statement in the period in which they are incurred. Development costs are capitalized only if, and to the extent that, the IFRS criteria are met and it is probable that the present value of the expected returns will exceed the development costs. Capitalized development costs are amortized on a systematic basis over the period in which the returns are expected to flow to the Group.

Research and development costs directly charged to the income statement in the reporting period amounted to CHF 144.7 million (prior year: CHF 119.0 million).

4. Detailed information on consolidated balance sheet

4.1 Property, plant and equipment

Property, plant, and equipment is valued at acquisition or construction cost less depreciation and write-downs for impairment. Items of property, plant, and equipment are depreciated on a straight-line basis over their estimated useful life, except for land, which is not depreciated. Estimated useful lives of major classes of depreciable assets are as follows:

→ Building shell:	40–80 years
→ Installations/extensions:	20–25 years
→ Machinery and technical equipment:	10 years
→ Other tangible fixed assets:	3–10 years

The estimated useful life of the assets is regularly reviewed and, if necessary, the future depreciation charge is accelerated.

Costs are only included in the asset's carrying amount when it is probable that economic benefits associated with the item will flow to the Group in future periods and the cost of the item can be measured reliably.

Borrowing costs. Borrowing costs that are directly attributable to the acquisition, construction, or production of a qualified asset are capitalized as part of the cost of that asset.

Impairment of assets. At each reporting date, the Group assesses whether there is any indication that an asset may be impaired. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss, if any. Where it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the smallest cash-generating unit to which the asset belongs. The recoverable amount is the higher of an asset's or cash-generating unit's fair value less costs to sell and its value in use. If the recoverable amount of an asset or cash-generating unit is estimated to be less than its carrying amount, the carrying amount of the asset or cash-generating unit is reduced to its recoverable amount. Impairment losses are recognized immediately in the income statement.

Where an impairment loss is subsequently reversed, the carrying amount of the asset or cash-generating unit is increased to the revised estimate of its recoverable amount. However, this increased amount cannot exceed the carrying amount that would have been determined had no impairment loss been recognized for that asset or cash-generating unit in prior periods. A reversal of an impairment loss is recognized immediately in the income statement.

Acquisition cost	Land and buildings CHF m	Machinery and technical equipment CHF m	Other tangible assets CHF m	Assets under construction CHF m	Total CHF m
January 1, 2017	335.0	286.8	142.1	26.9	790.8
Additions	7.8	23.7	10.9	50.6	93.0
Disposals	–1.4	–22.1	–8.5	–2.3	–34.3
Reclassifications	40.5	4.1	3.4	–48.0	0.0
Translation differences	11.9	7.6	3.9	0.0	23.4
December 31, 2017	**393.8**	**300.0**	**151.8**	**27.2**	**872.8**
Additions	6.5	12.9	18.1	75.6	113.1
Disposals	–13.5	–13.5	–7.1	–2.8	–36.9
Changes in the scope of consolidation	49.5	11.6	2.8	0.2	64.1
Reclassifications	8.7	10.5	2.1	–21.3	0.0
Translation differences	–15.1	–9.7	–4.6	–0.9	–30.3
December 31, 2018	**429.9**	**311.8**	**163.1**	**78.0**	**982.8**
Depreciation					
January 1, 2017	–93.7	–171.3	–110.3	–0.4	–375.7
Additions	–10.4	–19.4	–9.9	–0.1	–39.8
Disposals	1.3	15.5	7.7	0.0	24.4
Impairment	0.0	0.0	0.1	0.0	0.1
Reclassifications	0.2	1.1	–1.0	–0.3	0.0
Translation differences	–2.5	–5.0	–2.8	0.3	–10.0
December 31, 2017	**–105.2**	**–179.1**	**–116.2**	**–0.5**	**–401.0**
Additions	–14.2	–24.0	–11.3	–0.2	–49.7
Disposals	3.2	10.7	5.9	0.0	19.8
Impairment	0.0	0.0	0.0	0.0	0.0
Reclassifications	0.0	–0.3	0.3	0.0	0.0
Translation differences	3.5	6.0	3.3	0.0	12.8
December 31, 2018	**–112.7**	**–186.7**	**–118.0**	**–0.7**	**–418.1**
Net book values					
January 1, 2018	288.6	120.9	35.6	26.7	471.8
December 31, 2018	317.2	125.1	45.1	77.3	564.7

As in the previous year, the Group did not enter in financial lease contracts as lessee. Net gain on disposal of tangible fixed assets amounted to CHF +12.4 million (prior year: net loss CHF –2.0 million). Commitments relating to property, plant, and equipment, which are not shown in the balance sheet, amounted to CHF 13.7 million (prior year: CHF 33.6 million) and are mainly related to application centers (in the US) and office renovation (in the US and China).

Off-balance sheet obligations under operating leases

	2018 CHF m	2017 CHF m
Leasing obligation up to one year	25.9	20.3
Leasing obligation from one to five years	41.5	25.5
Leasing obligation over five years	14.4	14.2
Total	**81.8**	**60.0**

Leases. Leases of property, plant, and equipment where the Group has substantially all the risks and rewards of ownership are classified as finance lease. Property, plant, and equipment acquired through a finance lease are capitalized at the date of the commencement of the lease term at the present value of the minimum future lease payment or, if lower, at the amount equal to the fair value of the leased asset as determined at the inception of the lease. The associated liabilities are recognized as either current or non-current financial liabilities, depending on their due dates.

Leases where substantially all the risks and rewards of ownership are not transferred to the Group are classified as operating leases. Payments under operating leases are charged to the income statement on a straight-line basis over the period of the lease.

Assets under finance leases where the Bühler Group acts as lessor are recognized as receivables in the amount of the net investment. The risks and rewards incidental to ownership are transferred to the lessee. Lease income from these finance leases is subsequently recognized over the term of the lease based on the effective interest method.

In 2016, the IASB issued the final version of IFRS 16 Leases, which replaces IAS 17. IFRS 16 is effective for annual periods beginning on or after January 1, 2019. The standard introduces a single lessee accounting model and requires a lessee to recognize assets and liabilities for almost all leases, and will therefore result in an increase of total property, plant, and equipment and total liabilities of approximately CHF 76.8 million. Ceteris paribus, under the new standard EBIT would increase by approximately CHF 0.6 million due to the replacement of the operating lease expense with amortization of the lease assets. This increase would be partially or entirely offset by higher interest expense, resulting in an insignificant impact on net profit. This standard is mandatory for the accounting period beginning January 1, 2019.

4.2 Intangible assets and goodwill

Goodwill represents the excess of the aggregate of the consideration transferred and the amount recognized for the non-controlling interest over the fair value of the net identifiable assets acquired and liabilities assumed. Goodwill on acquisitions of subsidiaries is included in intangible assets. Goodwill on acquisitions of associates is included in investments in associates.

Goodwill and intangible assets with indefinite useful life are tested annually for impairment or whenever there are impairment indicators, and is carried at cost less accumulated impairment losses.

If the consideration transferred is less than the fair value of the net assets of the subsidiary acquired, the difference is recognized directly in the income statement.

On disposal of a subsidiary, associate, or joint venture, the related goodwill is included in the determination of profit or loss on disposal.

Goodwill on acquisitions of subsidiaries and interests in joint ventures is allocated to cash-generating units for the purpose of impairment testing. Impairment losses relating to goodwill cannot be reversed in future periods.

Acquired patents, licenses, and similar rights are initially recorded at cost and amortized on a straight-line basis over their estimated useful life or a period not exceeding 15 years. Acquired trademarks with a Group-wide purpose, well established umbrella trademarks, can have an indefinite useful life. All other trademarks are amortized as described above. Intangible assets acquired through business combinations are carried in the balance sheet at the fair value allocated in the acquisition accounting and amortized over their estimated useful life.

Other intangible assets mainly comprise customer relationships, technologies, patents, and software.

Acquisition cost	Goodwill CHF m	Trademarks CHF m	Other intangible assets CHF m	Total CHF m
January 1, 2017	260.3	0.0	157.4	417.7
Additions	0.0	0.0	6.8	6.8
Disposals	0.0	0.0	–4.6	–4.6
Reclassifications	0.0	0.0	–0.1	–0.1
Translation differences	11.3	0.0	7.1	18.4
December 31, 2017	**271.6**	**0.0**	**166.6**	**438.2**
Additions	0.0	0.0	5.0	5.0
Disposals	–1.2	0.0	–41.6	–42.8
Changes in the scope of consolidation	347.3	113.2	15.2	475.7
Reclassifications	0.0	0.0	0.0	0.0
Translation differences	–15.0	–2.6	–4.3	–21.9
December 31, 2018	**602.7**	**110.6**	**140.9**	**854.2**
Amortization				
January 1, 2017	–28.2	0.0	–127.9	–156.1
Additions	0.0	0.0	–12.7	–12.7
Disposals	0.0	0.0	4.6	4.6
Reclassifications	0.0	0.0	0.1	0.1
Translation differences	–0.9	0.0	–6.6	–7.5
December 31, 2017	**–29.1**	**0.0**	**–142.5**	**–171.6**
Additions	0.0	0.0	–14.0	–14.0
Disposals	1.2	0.0	41.6	42.8
Reclassifications	0.0	0.0	0.0	0.0
Translation differences	0.6	0.0	3.7	4.3
December 31, 2018	**–27.3**	**0.0**	**–111.2**	**–138.5**
Net book values				
January 1, 2018	242.5	0.0	24.1	266.6
December 31, 2018	575.4	110.6	29.7	715.7

Impairment test

Goodwill and other intangible assets with an indefinite useful life are allocated to the identifiable cash-generating units of the Group, which were defined based on a business perspective.

The recoverable amounts have been determined based on a value-in-use calculation per cash-generating unit. This calculation uses cash flow projections based on financial budgets approved by management covering a five-year period.

Key assumptions used in value-in-use calculations. The calculations of values in use are most sensitive to the following assumptions:

→ Discount rate
→ Growth rate
→ Revenue growth
→ EBIT margin growth

Discount rate – The discount rates that are used to calculate the discounted present value of the future cash flows are derived from a capital asset pricing model using market data such as the yield on a 10-year government bond of the respective country or specific country risk premiums. The review of our peer group and other parameters resulted in overall lower discount rates in the reporting period.

Growth rate – The assumptions used in the calculation reflect the long-term expected growth rate of the operational business and are based on the growth strategy of the Group.

Revenue growth – The assumptions used in the calculation reflect the expected order backlog at year-end as well as the expected market development based on the strategic priorities set by the Group.

EBIT margin growth – The EBIT margin growth used in the calculation reflects the margin goal as defined in the Group's vision and is based on the margin improvement projects initiated.

Result of the impairment test. The impairment tests performed on December 31, 2018, support the value of the carrying amount. As in the prior year, no impairment was recognized.

Sensitivity to changes in assumptions. For all cash-generating units, a possible increase in the discount rate of 1 percentage point or a drop in revenue of 5 percentage points would not result in an impairment.

Goodwill and trademarks 2018	Goodwill CHF m	Trademarks CHF m	Base data used Discount rate	Long-term growth rate	Revenue growth	EBIT margin growth
Milling Solutions	11.8	0.0	8.6%	2.4%	5.3%	0.3%
Grain Quality & Supply	38.6	0.0	9.1%	3.2%	9.8%	0.1%
Digital Technologies	6.9	0.0	8.6%	2.7%	8.8%	0.8%
Feed	3.3	0.0	8.1%	1.9%	7.6%	1.8%
Pasta & Noodles	2.3	0.0	6.1%	1.3%	5.9%	1.2%
Nutrition	5.8	0.0	7.7%	2.0%	5.7%	1.2%
Aeroglide	61.2	0.0	7.6%	2.6%	8.5%	1.1%
Consumer Foods	343.6	107.1	6.9%	1.9%	6.3%	0.9%
Die Casting	1.7	0.0	8.3%	1.4%	6.2%	0.6%
Grinding & Dispersing	0.7	0.0	8.9%	1.5%	9.8%	1.5%
Leybold Optics	99.5	3.5	8.6%	2.1%	5.8%	0.4%
Total at December 31, 2018	**575.4**	**110.6**				

Goodwill 2017	Book value CHF m	Base data used Discount rate	Long-term growth rate	Revenue growth	EBIT margin growth
Milling Solutions	12.3	10.7%	1.5%	4.4%	0.9%
Grain Quality & Supply	40.1	10.6%	2.0%	8.6%	0.9%
Digital Technologies	7.2	13.4%	2.1%	6.9%	0.1%
Feed	3.4	11.1%	1.4%	13.2%	2.0%
Pasta & Noodles	2.5	9.5%	0.7%	7.0%	1.0%
Nutrition	6.1	10.7%	1.6%	3.5%	0.9%
Aeroglide	60.9	10.1%	1.8%	10.6%	1.1%
Consumer Foods	22.0	9.4%	1.0%	6.0%	1.6%
Die Casting	1.8	9.3%	0.8%	6.4%	0.2%
Grinding & Dispersing	0.7	9.6%	0.9%	8.1%	1.0%
Leybold Optics	85.5	9.8%	1.7%	4.9%	1.1%
Total at December 31, 2017	**242.5**				

4.3 Investments in associates

Net book values	Share in equity CHF m	Goodwill CHF m	2018 CHF m	2017 CHF m
January 1	18.7	8.8	27.5	33.5
Additions	1.0	0.0	1.0	0.0
Reclassifications	0.0	0.0	0.0	–9.3
Share of net profit	0.5	0.0	0.5	2.0
Dividends received	–0.5	0.0	–0.5	–0.9
Translation differences	–0.6	–0.3	–0.9	2.2
December 31	**19.1**	**8.5**	**27.6**	**27.5**

Translation differences are recognized in other comprehensive income. Cumulative values of the associated companies are disclosed as only one of the associated companies is material to the Group.

Cumulative values of the associated companies	2018 CHF m	2017 CHF m
Share of revenue	25.3	23.3
Share of net profit	0.5	2.0
Balance sheet values:		
Non-current assets	16.6	10.7
Current assets	25.0	11.7
Non-current liabilities	0.3	1.3
Current liabilities	3.7	2.5
Shareholders' equity	37.6	18.6

The associated companies comprise two companies located in South Europe and one in East Asia. The Group has a shareholding of 26%, 49%, and 44%, respectively. The figures are based on available preview closing data as of December 31, 2018.

The interests in Polymetrix Holding AG were classified as held for sale and valued at fair value as of December 31, 2017. On March 22, 2018, the Group sold 80% of Polymetrix Holding AG at the corresponding book value.

4.4 Non-current financial and other assets

December 31, 2018	Due 1–5 years CHF m	> 5 years CHF m	Total CHF m
Securities	0.0	25.2	25.2
Other non-current financial assets	117.3	11.1	128.4
Overfunding of post-employment benefit plans	0.0	16.4	16.4
Total	**117.3**	**52.7**	**170.0**

December 31, 2017	Due 1–5 years CHF m	> 5 years CHF m	Total CHF m
Securities	0.0	47.5	47.5
Loans to associated companies	12.3	0.0	12.3
Other non-current financial assets	80.7	3.5	84.2
Overfunding of post-employment benefit plans	0.0	31.8	31.8
Total	**93.0**	**82.8**	**175.8**

4.5 Inventories

Inventories are carried at the lower of cost or net realizable value. The cost of finished goods, semi-finished goods, and work in progress includes raw materials, direct labor, and other directly attributable costs and overheads based on the normal capacity of production facilities, excluding borrowing costs. Cost is determined using the standard cost method. Standard costs are regularly reviewed and, if necessary, revised in light of current conditions. Net realizable value is the estimated selling price less cost to completion and selling expenses. Obsolete inventories and goods with a low rate of inventory turnover are written down.

In prior year, value adjustments deducted from inventories amounted to CHF -40.0 million. No material reversals of value adjustments of the prior year were recognized in the reporting year.

Advance payments to suppliers are also included in inventories.

	Gross value CHF m	Value adjustments CHF m	2018 CHF m	2017 CHF m
Raw materials and supplies	250.6	–33.8	216.8	119.6
Unfinished goods	72.9	–13.3	59.6	51.4
Finished goods and merchandise	80.6	–5.6	75.0	99.5
Work in progress	126.1	–0.8	125.3	124.4
Advance payments to suppliers	54.7	0.0	54.7	50.4
Total	**584.9**	**–53.5**	**531.4**	**445.3**

4.6 Trade and other accounts receivable

Trade and other accounts receivable are carried at the original invoice amount less allowances made for doubtful accounts, trade discounts, volume rebates, and similar items. Financing of customer orders using the Group's own funds as part of its treasury strategy is included in this item.

Trade accounts receivable include supplier credits of CHF 68.6 million (prior year: CHF 60.1 million), which are financed in accordance with the treasury strategy.

	2018 CHF m	2017 CHF m
– from third parties	716.3	591.1
– from associates	0.2	0.1
– from related parties	0.0	1.5
Allowance for bad debts	–14.2	–8.8
Total trade accounts receivable	**702.3**	**583.9**

	2018 CHF m	2017 CHF m
Value added tax credits	58.8	47.5
Other accounts receivable		
– from third parties	80.7	52.8
– from associates	0.0	0.2
Prepayments and accrued income	37.4	37.4
Allowance for bad debts	–0.1	–0.1
Total other accounts receivable	**176.8**	**137.8**

Receivables outstanding analysis

2018	Total book value Dec. 31, 2018 CHF m	Not due CHF m	Overdue < 3 months CHF m	4–6 months CHF m	7–9 months CHF m	10–12 months CHF m	> 12 months CHF m
Accounts receivable trade and other	893.2	677.0	102.4	37.1	24.3	15.9	36.5
Allowance for bad debts	–14.3	0.0	–1.5	–0.1	–0.3	–0.2	–12.2
Associated companies and other related parties	0.2	0.2					
Total accounts receivable, net	**879.1**	**677.2**	**100.9**	**37.0**	**24.0**	**15.7**	**24.3**

2017	Total book value Dec. 31, 2017 CHF m	Not due CHF m	Overdue < 3 months CHF m	4–6 months CHF m	7–9 months CHF m	10–12 months CHF m	> 12 months CHF m
Accounts receivable trade and other	728.8	553.1	87.3	24.5	17.8	7.9	38.2
Allowance for bad debts	–8.9	0.0	–0.5	0.0	0.0	0.0	–8.4
Associated companies and other related parties	1.8	1.8					
Total accounts receivable, net	**721.7**	**554.9**	**86.8**	**24.5**	**17.8**	**7.9**	**29.8**

Allowance for bad debts

	2018 CHF m	2017 CHF m
January 1	–8.9	–10.2
Additions	–1.1	–2.1
Consumption	4.7	2.9
Release	1.5	1.1
Changes in scope of consolidation	–10.3	0.0
Translation differences	–0.2	–0.6
December 31	**–14.3**	**–8.9**

4.7 Cash and cash equivalents

In the consolidated cash flow statement, cash and cash equivalents includes cash in hand, deposits held at call with banks, other current highly liquid investments with original maturities of three months or less, and bank overdrafts. In the consolidated balance sheet, bank overdrafts are shown within borrowings in current liabilities.

Cash and cash equivalents include bank accounts and time deposits with an original maturity of a maximum of three months.

4.8 Trade accounts payable

	2018 CHF m	2017 CHF m
– to third parties	350.9	264.6
– to associates	1.3	0.7
– to related parties	2.6	1.5
Total	**354.8**	**266.8**

4.9 Provisions and contingent liabilities

Provisions are recognized when the Group has a legal or constructive obligation arising from past events, an outflow of resources embodying economic benefits to settle the obligation is probable, and a reliable estimate can be made of this amount. Actual expenses may differ from the accrued amounts.

A contingent liability is disclosed when there is a possible obligation that arises from a past event and whose existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group. A contingent liability is also disclosed when there is a present obligation that arises from past events but is not recognized, because an outflow of resources embodying economic benefits to settle the obligation is not probable, or the respective amount of the obligation cannot be measured with sufficient reliability.

When the Group expects some or all of a provision to be reimbursed, for example, under an insurance contract, the reimbursement is recognized as a separate asset, but only when the reimbursement is virtually certain. The expense relating to a provision is presented in the income statement net of any reimbursement.

If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects, when appropriate, the risks specific to the liability. When discounting is used, the increase in the provision due to the passage of time is recognized as a finance cost.

Warranty provisions are created with a view to meet potential guarantee obligations arising from the sale of machinery and technical equipment. The calculation is based on historic values as well as recognized claims.

Provisions for personnel expenses mainly include long-term employee benefits, such as long-service benefits, partial retirement, jubilee benefits, and deferred compensation plans.

Among other things the other provisions include provisions for pending legal cases, other project risks, as well as a provision for restructuring of CHF 0.1 million (prior year: CHF 0.2 million).

Approximately 37% (prior year: 43%) of the cash outflows of the non-current provisions are expected to materialize within the next three years.

The Group recognizes a collective valuation allowance based on its past experience of warranty costs on projects with similar conditions. Other known risks and risks related to projects with special conditions are estimated on a case-by-case basis and measured individually. The actual warranty costs incurred may differ from the costs provided for.

	Provisions for warranties CHF m	Provisions for personnel expenses CHF m	Other provisions CHF m	2018 CHF m	2017 CHF m
January 1	33.2	41.0	8.4	82.6	69.3
Additions	34.2	23.3	17.8	75.3	64.7
Utilization	–31.6	–11.1	–12.2	–54.9	–47.3
Release	–6.2	0.0	–2.4	–8.5	–5.7
Changes in the scope of consolidation	19.3	7.9	5.0	32.2	0.0
Translation differences	–1.3	–0.7	–0.6	–2.6	1.7
December 31	**47.6**	**60.4**	**16.0**	**124.0**	**82.7**
Thereof current	42.8	29.7	14.8	87.3	55.3
Thereof non-current	4.8	30.7	1.2	36.7	27.4

Contingent liabilities

	2018 CHF m	2017 CHF m
Sureties, guarantees and other obligations	14.3	1.6
Total	**14.3**	**1.6**

4.10 Other current liabilities

	2018 CHF m	2017 CHF m
Value added tax owed	16.8	18.3
Other liabilities		
– to third parties	80.8	53.7
– to related parties	0.6	0.6
Personnel-related accruals	98.7	90.4
Other accruals	110.3	86.5
Total	**307.2**	**249.5**

4.11 Defined benefit obligations

The Group's main defined benefit pension plans are in Switzerland, Austria and Germany. The defined benefit plans in Switzerland are funded through legally separate trustee administered funds. The cash funding of these plans, which may from time to time involve special payments, is designed to ensure that present and future contributions should be sufficient to meet future liabilities. The defined benefit plans in Germany and Austria are partially unfunded.

Pension plans in Switzerland. The Group's Swiss pension plans contain a cash balance benefit formula, accounted for as a defined benefit plan. Employer and employee contributions are defined in the pension fund rules in terms of an age-related sliding scale of percentages of salary. Under Swiss law the pension fund guarantees the vested benefit amount as confirmed annually to members. Interest may be added to member balances at the discretion of the Board of Trustees. At retirement date members have the right to take their retirement benefit as a lump sum, an annuity, or part as a lump sum with the balance converted to a fixed annuity at the rates defined in the fund rules. The Board of Trustees may change the annuity at their discretion subject to the plan's funded status, including sufficient free funds as determined according to Swiss statutory valuation rules.

Swiss pension law requires the Board of Trustees to take measures to resolve a statutory underfunding. The possible measures affect both employers and employees (risk sharing).

Pension plans in Austria. The Group's Austrian pension plans are based on individual pension commitments starting upon leaving the company or reaching a certain age. The employer promises to pay out lifelong pensions as contractually agreed that are adjusted annually based on changes in the consumer price index. The Group is furthermore required by Austrian law to pay a lump sum amount to its employees upon retirement or for other important reasons (e.g. invalidity). The lump sum amount increases with the length of service. All pension promises are funded via book reserve accruals.

Pension plans in Germany. The Group's German pension plans have defined benefit rights based on their length of service and/or final pensionable pay. The employer gives a direct promise to the employee to pay him a certain amount once he retires. At retirement date the value of the employee's benefits is paid as an annuity. The Group is required by German law to increase pensions all three years according to price inflation, as measured by the Consumer Price Index or according to comparable pay grades. Direct pension promises are usually funded via book reserve accruals. In 2008, the Group set up a trust fund to fund their pension liabilities for Bühler GmbH, Braunschweig. No material business combinations/curtailments/settlements occurred during the reported financial period.

Status of the Group's defined benefit plans. The status of the Group's defined benefit plans using actuarial assumptions determined in accordance with IAS 19 is summarized below.

Employee benefits – defined benefit plans. These plans are generally funded through payments to legally independent pension or insurance funds.

The aggregate of the present value of the defined benefit obligation and the fair value of plan assets for each plan is recorded in the balance sheet as net defined benefit liability or net defined benefit asset under non-current financial assets. The defined benefit obligation is determined annually by independent actuaries using the projected unit credit method. If the fair value of the plan assets exceeds the present value of the defined benefit obligation, only a net pension asset is recorded, taking account of the asset ceiling.

Pension costs consist of three elements: service costs, net interest, and remeasurements of employee benefits.

Service costs are part of personnel expenses and consist of current service costs, past service costs (including gains/losses from plan amendments or curtailments) and gains/losses from plan settlements.

Net interest is recorded as part of financial expenses and is determined by applying the discount rate to the net defined liability or net defined asset that exists at the beginning of the year.

The gains and losses resulting from the actuarial valuation are immediately recorded in other comprehensive income as remeasurements of employee benefits. The return on plan assets (excluding interest based on the discount rate) and any change in the effect of an asset ceiling are also recorded in this item. Remeasurements of employee benefits are not recycled through the income statement at any later point in time.

Pension assets and pension liabilities in different defined benefit plans are not offset unless the Group has a legally enforceable right to use the surplus in one plan to settle obligations in the other plan.

Employee benefits – defined contribution plans. In addition to the defined benefit plans described above, some Group companies sponsor defined contribution plans based on local practices and regulations. The Group's contributions to defined contribution plans are charged to the income statement to which the contributions relate.

Employee benefits – other long-term employment benefits. Other long-term employment benefits include jubilee, early retirement, or other long-term service benefits, as well as deferred compensation, if not due to be settled within 12 months after the year-end.

The obligations for other long-term employment benefits are disclosed as provisions for personnel expenses. The measurement of these obligations differs from defined benefit plans in that all actuarial gains and losses are recognized immediately in the income statement.

4.11.1 Actuarial assumptions	2018	2017
Discount rate (weighted)	1.0%	0.8%
Future salary increases	1.0%	1.0%
Future pension increases	0.2%	0.2%

The discount rates are determined by referencing market yields at the end of the reporting period on AA- and AAA-rated corporate bonds. In recent years, longevity has increased in all major countries in which the Group sponsors pension plans. The Group sets mortality assumptions after considering the most recent statistics available and uses generational mortality tables to estimate probable future mortality improvements.

Risk sharing. As in the prior year the defined benefit obligation was valued using a risk-sharing approach. This approach reflects the shared burden among employer and employees to keep the pension fund balanced in case this is necessary. The assumptions remained unchanged compared to the prior year.

Sensitivities of significant actuarial assumptions. The discount rate and the future increase in salaries were identified as significant actuarial assumptions. The following impacts on the defined benefit obligation are to be expected:

- 0.25% increase/decrease in the discount rate would lead to a decrease of 3.2% (prior year: 3.3%)/ an increase of 3.4% (prior year: 3.6%) in the defined benefit obligation.
- 0.25% increase/decrease in the expected increase in salaries would lead to a decrease of less than 0.2% (prior year: 0.2%)/increase of less than 0.2% (prior year: 0.2%) in the defined benefit obligation.

The sensitivity analysis is based on realistically possible changes as of the end of the reporting year.

The average duration of the defined benefit plan obligation at the end of the reporting period is 13.1 years (prior year: 13.8 years).

The cost of defined benefit pension plans and other long-term employee benefits is determined using actuarial valuations. Actuarial valuations involve making assumptions about discount rates, future salary increases, mortality rates, and future pension increases. Due to the long-term nature of these plans, such estimates are subject to significant uncertainty.

4.11.2 Reconciliation of defined benefit obligation and fair value of plan assets	2018 CHF m	2017 CHF m
Defined benefit obligation at January 1	1,394.1	1,391.1
Interest costs	11.1	9.4
Current service costs (employer)	25.5	22.6
Contributions by plan participants	18.1	17.6
Past service costs	–0.1	–2.6
Benefits (paid)/deposited	–64.1	–71.1
Business combinations	32.3	0.0
Other effects	2.0	0.9
Remeasurements on obligations	–24.8	17.6
Currency translation adjustments	–5.3	8.6
Defined benefit obligation at December 31	**1,388.8**	**1,394.1**
Reconciliation of the fair value of plan assets		
Fair value of plan assets at January 1	1,349.3	1,241.7
Interest	9.9	8.1
Contributions by the employer	12.6	28.1
Contributions by plan participants	18.1	17.6
Benefits (paid)/deposited	–61.7	–71.1
Return on plan assets (excluding interest)	–31.8	119.0
Currency translation adjustments	–3.1	5.9
Fair value of plan assets at December 31	**1,293.3**	**1,349.3**
Actual return on plan assets	–21.9	127.1

4.11.3 Remeasurements of defined benefit plans	2018 CHF m	2017 CHF m
Return on plan assets excluding interest income	31.8	–119.0
Current-year actuarial loss (gain) on benefit obligation:		
– change in demographic assumptions	–6.4	–0.2
– change in financial assumptions	–40.2	–29.7
– experience adjustments	23.0	47.5
Remeasurements recognized in other comprehensive income	**8.2**	**–101.4**
Cumulative amount recognized in other comprehensive income	**192.8**	**184.6**

4.11.4 Reconciliation of the amount recognized in the balance sheet at year-end	2018 CHF m	2017 CHF m
Present value of funded defined benefit obligation	1,388.8	1,394.1
Fair value of plan assets	1,293.3	1,349.3
Deficit/(surplus)	95.5	44.8
Liability (asset) recognized in the balance sheet	**95.5**	**44.8**
Thereof recognized as separate asset	–16.4	–31.8
Thereof recognized as separate liability	111.9	76.6

4.11.5 Pension expenses recognized in the income statement	2018 CHF m	2017 CHF m
Current service costs (employer)	25.5	22.6
Net interest employee benefit	1.2	1.3
Past service costs	–0.1	–2.6
Other effects	0.7	0.8
Expenses recognized in the income statement	**27.3**	**22.1**
Thereof service costs and administration costs	26.1	20.8
Thereof net interest on the net defined benefit liability (asset)	1.2	1.3

4.11.6 Best estimate of contributions	2019 CHF m
Contributions by the employer	**29.1**

4.11.7 Plan assets at fair value consist of	2018 CHF m	2017 CHF m
Equity instruments third parties	417.4	391.9
Debt instruments third parties	435.3	374.5
Real estate	373.0	378.2
Cash and cash equivalents	22.6	63.2
Others	45.0	141.5
Total plan assets at fair value	**1,293.3**	**1,349.3**
Thereof quoted	1,155.2	1,209.3
Thereof unquoted	138.1	140.0

4.11.8 Information about significant plans	2018 Switzerland	2018 Austria	2018 Germany	2017 Switzerland	2017 Germany
Discount rate	0.9%	2.0%	2.1%	0.7%	1.9%
Future salary increases	1.0%	2.5%	1.5%	1.0%	1.5%
Costs of defined benefit plans	24.0	1.5	1.3	19.8	1.5
Remeasurements employee benefits	12.1	–0.4	–0.1	–82.1	–15.0

4.11.9 Defined contribution plan	2018 CHF m	2017 CHF m
Expenses for defined contribution plan	**8.2**	**6.2**

4.12 Share capital

As of December 31, 2018, share capital amounted to CHF 15.0 million (prior year: CHF 15.0 million) and consisted of 105,000 (prior year: 105,000) registered shares with nominal value of CHF 100 each and 112,500 (prior year: 112,500) with nominal value of CHF 40 each.

5. Segment reporting

Segment information. The Group consists of two reportable segments which are identified on the basis of internal business updates that are regularly reviewed by the Chief Executive Officer (CEO). The CEO, being the Chief Operating Decision Maker, regularly reviews the allocation of resources to the two reportable segments. The Group is managed under its businesses Grains & Food and Advanced Materials.

Grains & Food: Engineering and sale of industrial process technologies and solutions for the food and feed industry, such as the processing of grains, rice, cocoa, coffee, and other raw materials for intermediate and finished products.

Advanced Materials: Engineering and sale of solutions for die-casting, grinding and dispersion, and surface-coating technologies in high-volume application areas such as automotive, optics, inks, and batteries.

5.1 Segment reporting

Segment reporting 2018	Grains & Food CHF m	Advanced Materials CHF m	Corporate Functions CHF m	Group CHF m
Segment revenue	2,535.4	706.2	31.3	3,272.9
Less intersegment revenue	–1.3	–0.9	0.0	–2.2
Total segment revenue third parties	**2,534.1**	**705.3**	**31.3**	**3,270.7**
EBIT	159.8	66.4	4.5	230.7
in % of revenue	6.3%	9.4%	14.4%	7.1%
Non-current assets	**1,018.7**	**202.0**	**87.3**	**1,308.0**

Segment reporting 2017, restated	Grains & Food CHF m	Advanced Materials CHF m	Corporate Functions CHF m	Group CHF m
Segment revenue	1,979.8	668.6	35.2	2,683.6
Less intersegment revenue	–0.8	–0.8	0.0	–1.6
Total segment revenue third parties	**1,979.0**	**667.8**	**35.2**	**2,682.0**
EBIT	129.1	63.7	11.1	203.9
in % of revenue	6.5%	9.5%	31.5%	7.6%
Non-current assets	**532.7**	**173.0**	**60.2**	**765.9**

Internal and external reporting are both based on the same valuation and accounting principles, and there is therefore no need to provide a reconciliation.

The business results are carried over to the Group's consolidated figures by including the results of units with no market operations as well as consolidation effects.

5.2 Geographical information

Segment revenue	2018 CHF m	Restated 2017 CHF m
North America	455.0	440.0
South America	182.3	169.7
Europe	1,000.9	781.3
Middle East and Africa	450.8	418.2
South Asia	171.5	152.0
Asia	1,010.2	720.8
Total	**3,270.7**	**2,682.0**
- thereof Switzerland	69.9	48.6
- thereof US	319.5	293.5
- thereof China	551.9	420.0

Segment non-current assets	2018 CHF m	2017 CHF m
North America	135.0	101.4
South America	8.1	3.9
Europe	962.6	443.5
Middle East and Africa	14.3	16.6
South Asia	11.3	12.6
Asia	176.7	187.9
Total	**1,308.0**	**765.9**
- thereof Switzerland	177.8	134.8
- thereof US	131.2	100.7
- thereof China	166.4	178.8

The information about geographical areas is determined based on the Group's operations. The Group operates in six geographical areas: North America, South America, Europe, Middle East & Africa, South Asia, and Asia. Revenues are shown based on the physical location of the equipment.

6. Effect of changes in accounting policies

The Group started to apply IFRS 15 as of January 1, 2018, using the full retrospective approach. The Group's customer contracts for single machines or project/plant with a lower degree of complexity/customization have an alternative use and therefore no longer met the standard's requirement for revenue recognition over time. Accordingly, accounting for these projects was changed to revenue recognition at a point in time. Contract assets and liabilities were restated accordingly. Advance payments from customers were reclassified to construction liabilities as required by the standard.

The Group started to apply IFRS 9 as of January 1, 2018, using the prospective approach. The implementation resulted mainly in a change of the classification with only an immaterial income statement impact.

6.1 Consolidated income statement

	Presented 2017 CHF m	IFRS 15 CHF m	Restated 2017 CHF m
Revenue	2,671.7	10.3	2,682.0
Other operating income	21.4		21.4
Total operating income	**2,693.1**	**10.3**	**2,703.4**
Cost of materials	–1,226.0	–11.2	–1,237.2
Changes in inventories of finished goods and work in progress	55.2		55.2
Employee benefit expenses	–825.7		–825.7
Other operating expenses	–441.3		–441.3
Net result from associates	2.0		2.0
Operating result before interest, taxes, depreciation and amortization (EBITDA)	**257.3**	**–0.9**	**256.4**
Depreciation and amortization	–52.5		–52.5
Operating result before interest and taxes (EBIT)	**204.8**	**–0.9**	**203.9**
Interest income and expenses	2.7		2.7
Other financial income and expenses	10.8		10.8
Financial result	**13.5**	**0.0**	**13.5**
Profit before taxes	**218.3**	**–0.9**	**217.4**
Income taxes	–44.1	0.2	–43.9
Net profit	**174.2**	**–0.7**	**173.5**
Attributable to:			
– Owners of the parent	168.3		167.5
– Non-controlling interests	5.9		6.0

6.2 Consolidated statement of other comprehensive income

	Presented 2017 CHF m	IFRS 15 CHF m	Restated 2017 CHF m
Net profit	**174.2**	**–0.7**	**173.5**
Other comprehensive income			
Translation differences of foreign operations	6.2	–0.5	5.7
Net gain (loss) on hedge of net investment	20.9		20.9
– Tax effect	–1.6		–1.6
Cash flow hedges			
– Changes recycled in the income statement	–1.8		–1.8
– Changes recognized in OCI	17.0		17.0
– Tax effect	–2.5		–2.5
Other comprehensive income to be reclassified to profit or loss in subsequent periods	**38.2**	**–0.5**	**37.7**
Remeasurements of defined benefit plans	101.4		101.4
– Tax effect	–18.4		–18.4
Other comprehensive income not to be reclassified to profit or loss in subsequent periods	**83.0**	**0.0**	**83.0**
Total other comprehensive income	**121.2**	**–0.5**	**120.7**
Total comprehensive income	**295.4**	**–1.2**	**294.2**
Attributable to:			
– Owners of the parent	289.0	–1.4	287.6
– Non-controlling interests	6.4	0.2	6.6

6.3 Consolidated balance sheet

Assets	Presented 31.12.16 CHF m	IFRS 15 CHF m	Restated 1.1.17 CHF m	Presented 31.12.17 CHF m	IFRS 15 CHF m	Restated 31.12.17 CHF m	IFRS 9 CHF m	Restated 1.1.18 CHF m
Non-current financial assets	108.9		108.9	175.8		175.8	0.0	175.8
– Loans and receivables	84.1		84.1	93.0		93.0	–93.0	
– Financial assets available for sale	17.9		17.9	51.0		51.0	–51.0	
– Overfunding of post-employment benefit plans	6.9		6.9	31.8		31.8		31.8
– Financial assets at amortized costs			0.0				93.0	93.0
– Financial assets at fair value through profit or loss			0.0				36.4	36.4
– Financial assets at fair value through OCI			0.0				14.6	14.6
Other non-current assets	753.2		753.2	812.3		812.3		812.3
Non-current assets	**862.1**	**0.0**	**862.1**	**988.1**	**0.0**	**988.1**	**0.0**	**988.1**
Inventories	365.7		365.7	445.3		445.3		445.3
Contract assets relating to production orders in progress	326.8	–29.9	296.9	376.1	–31.5	344.6		344.6
Marketable securities	60.2		60.2	63.4		63.4		63.4
– At fair value through profit or loss	56.9		56.9	50.2		50.2	–50.2	
– Derivative financial instruments held for hedging	3.3		3.3	13.2		13.2	–13.2	
– Financial assets at fair value through profit or loss			0.0				50.2	50.2
– Financial assets held for hedging			0.0				13.2	13.2
Trade accounts receivable*	532.3		532.3	583.9		583.9		583.9
– Loans and receivables	532.3		532.3	583.9		583.9	–583.9	
– Financial assets at amortized costs			0.0				583.9	583.9
Other accounts receivable, prepayments and accrued income*	131.0		131.0	137.8		137.8		137.8
– Loans and receivables	131.0		131.0	137.8		137.8	–137.8	
– Financial assets at amortized costs			0.0				137.8	137.8
Cash and cash equivalents	431.3		431.3	832.5		832.5		832.5
– Loans and receivables	431.3		431.3	832.5		832.5	–832.5	
– Financial assets at amortized costs			0.0				832.5	832.5
Other current assets	6.6		6.6	29.4		29.4		29.4
Current assets	**1,853.9**	**–29.9**	**1,824.0**	**2,468.4**	**–31.5**	**2,436.9**	**0.0**	**2,436.9**
Total assets	**2,716.0**	**–29.9**	**2,686.1**	**3,456.5**	**–31.5**	**3,425.0**	**0.0**	**3,425.0**

*Disclosed in sum in Note 2.1.

Equity and liabilities	Presented 31.12.16 CHF m	IFRS 15 CHF m	Restated 1.1.17 CHF m	Presented 3 1.12.17 CHF m	IFRS 15 CHF m	Restated 31.12.17 CHF m	IFRS 9 CHF m	Restated 1.1.18 CHF m
Share capital and capital reserves	200.1		200.1	200.1		200.1		200.1
Other reserves/retained earnings	1,048.2	–25.3	1,022.9	1,321.2	–26.7	1,294.5		1,294.5
Equity attributable to the owners of the parent	**1,248.3**	**–25.3**	**1,223.0**	**1,521.3**	**–26.7**	**1,494.6**	**0.0**	**1,494.6**
Non-controlling interests	**28.2**	**–0.2**	**28.0**	**28.5**		**28.5**		**28.5**
Total equity	**1,276.5**	**–25.5**	**1,251.0**	**1,549.8**	**–26.7**	**1,523.1**	**0.0**	**1,523.1**
Long-term financial liabilities*	122.7		122.7	530.8		530.8		530.8
– Financial liabilities at amortized costs	122.7		122.7	530.8		530.8		530.8
Deferred tax liabilities	78.4	–4.4	74.0	108.1	–4.8	103.3		103.3
Other non-current liabilities	180.9		180.9	104.0		104.0		104.0
Non-current liabilities	**382.0**	**–4.4**	**377.6**	**742.9**	**–4.8**	**738.1**	**0.0**	**738.1**
Contract liabilities relating to production orders in progress	366.0	140.1	506.1	367.7	168.9	536.6		536.6
Current financial liabilities*	29.7		29.7	33.4		33.4		33.4
– Financial liabilities at amortized costs	12.4		12.4	12.4		12.4		12.4
– Financial liabilities at fair value through profit or loss	10.4		10.4	13.5		13.5		13.5
– Financial liabilities held for hedging	6.9		6.9	7.5		7.5		7.5
Trade accounts payable*	242.2		242.2	266.8		266.8		266.8
– Financial liabilities at amortized costs	242.2		242.2	266.8		266.8		266.8
Other short-term liabilities, accruals and deferred income*	210.6		210.6	249.5		249.5		249.5
– Financial liabilities at amortized costs	210.6		210.6	249.5		249.5		249.5
Other current liabilities	209.0	–140.1	68.9	246.4	–168.9	77.5		77.5
Current liabilities	**1,057.5**	**0.0**	**1,057.5**	**1,163.8**	**0.0**	**1,163.8**	**0.0**	**1,163.8**
Total liabilities	**1,439.5**	**–4.4**	**1,435.1**	**1,906.7**	**–4.8**	**1,901.9**	**0.0**	**1,901.9**
Total equity and liabilities	**2,716.0**	**–29.9**	**2,686.1**	**3,456.5**	**–31.5**	**3,425.0**	**0.0**	**3,425.0**

*Disclosed in sum in Note 2.2.

7. Other disclosures

7.1 Assets pledged or assigned to secure own liabilities

In connection with the long-term loan from related parties of CHF 39.0 million and open legal cases, assets of CHF 45.0 million and CHF 1.1 million, respectively (prior year: CHF 45.0 million and CHF 1.2 million) serve as collateral for own liabilities where the right of disposal is limited.

7.2 Related parties

Related-party transactions. A loan toward the shareholders in the amount of CHF 95.8 million (prior year: CHF 74.5 million) is disclosed under other non-current financial assets. Loans from the shareholders of CHF 105.5 million (prior year: CHF 109.5 million) are disclosed under non-current financial liabilities and of CHF 18.5 million (prior year: CHF 12.4 million) under current financial liabilities.

Lease payments to related parties amounted to CHF 22.2 million (prior year: 23.9 million) and are included in other operating expenses. Other related-party positions are disclosed separately in the notes.

Liabilities to pension plans amounted to CHF 0.1 million as per 2018 (prior year: CHF 0.2 million). This amount is included in other current liabilities.

Key management compensation. Key management (defined as Group Management and Board of Directors) received a total current compensation of CHF 8.9 million (prior year: CHF 7.7 million). In addition, pension and social security contributions of CHF 1.1 million (prior year: CHF 1.0 million) are recorded as expense. The provisions for other long-term benefits amount to CHF 27.0 million (prior year: CHF 17.5 million).

The Bühler Group operates deferred compensation plans for members of the management. The deferred compensation plans comprise a vesting period of 3 years and an execution period of 10 years from the grant date. The amounts are charged to the income statement over the relevant vesting periods and are adjusted to reflect actual and expected levels of vesting. The value of the deferred compensation is determined annually based on the Group's net profit for the 3 preceding years and equity at year-end.

7.3 Government grants

Government grants are offset with the items of expense which they finance. Government grants related to assets are deducted from the assets in deriving the carrying amount of the asset. In 2018 the Group received government grants of CHF 5.8 million (prior year: CHF 2.0 million).

7.4 Proposal of the Board of Directors

At the General Meeting, the Board of Directors proposes a dividend of CHF 23.0 million (prior year: CHF 21.0 million) or CHF 153.3 (prior year: CHF 140) per registered share with a nominal value of CHF 100 and CHF 61.3 (prior year: CHF 56) per registered share with a nominal value of CHF 40. The dividend payment to the shareholders of Bühler Holding AG amounted to CHF 21.0 million in the financial year 2018 (prior year: CHF 18.0 million).

7.5 Release for publication of the consolidated financial statements

The consolidated financial statements were released for publication by the Board of Directors of Bühler Holding AG on February 5, 2019.

7.6 Subsequent events

No material events have occurred after the balance sheet date.

Report of the statutory auditor

to the General Meeting of Bühler Holding AG

Uzwil

Report on the audit of the consolidated financial statements

Opinion

We have audited the consolidated financial statements of Bühler Holding AG and its subsidiaries (the Group), which comprise the consolidated income statement and consolidated statement of comprehensive income for the year ended December 31, 2018, the consolidated balance sheet as at 31 December 2018 and consolidated statement of changes in equity and consolidated statement of cash flows for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the consolidated financial statements (pages 119 to 174) give a true and fair view of the consolidated financial position of the Group as at 31 December 2018 and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with the International Financial Reporting Standards (IFRS) and comply with Swiss law.

Basis for opinion

We conducted our audit in accordance with Swiss law, International Standards on Auditing (ISAs) and Swiss Auditing Standards. Our responsibilities under those provisions and standards are further described in the "Auditor's responsibilities for the audit of the consolidated financial statements" section of our report.

We are independent of the Group in accordance with the provisions of Swiss law and the requirements of the Swiss audit profession, as well as the IESBA Code of Ethics for Professional Accountants, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our audit approach

Overview

Overall Group materiality: CHF 11,765,000

We concluded full scope and specified accounts audit work at 25 reporting units in 13 countries. Our audit scope addressed over 74% of the Group's revenue.

As key audit matters the following areas of focus have been identified:

Accounting of production orders (Project/Plant)

Impairment testing of goodwill and intangible assets with indefinite useful life

Acquisition Haas Group

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Materiality

The scope of our audit was influenced by our application of materiality. Our audit opinion aims to provide reasonable assurance that the consolidated financial statements are free from material misstatement. Misstatements may arise due to fraud or error. They are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the consolidated financial statements.

Based on our professional judgement, we determined certain quantitative thresholds for materiality, including the overall Group materiality for the consolidated financial statements as a whole as set out in the table below. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures and to evaluate the effect of misstatements, both individually and in aggregate, on the consolidated financial statements as a whole.

Overall Group materiality	CHF 11,765,000
How we determined it	5% of profit before tax
Rationale for the materiality benchmark applied	We chose profit before tax as the benchmark because, in our view, it is the benchmark against which the performance of the Group is most commonly measured, and it is a generally accepted benchmark.

We agreed with the Audit Committee that we would report to them misstatements above CHF 550,000 identified during our audit as well as any misstatements below that amount which, in our view, warranted reporting for qualitative reasons.

Audit scope

We tailored the scope of our audit in order to perform sufficient work to enable us to provide an opinion on the consolidated financial statements as a whole, taking into account the structure of the Group, the accounting processes and controls, and the industry in which the Group operates.

The audit strategy for the audit of the consolidated financial statements was determined taking into account the work performed by the component auditors. As Group auditor, we performed the audit of the consolidation, disclosures and presentation of the consolidated financial statements, of the impairment testing of goodwill and intangible assets with indefinite useful life and the most important areas of the opening balance sheet for the acquisition accounting of the Haas Group. Where audits were performed by component auditors, we ensured that, as Group auditor, we were adequately involved in the audit in order to assess whether sufficient appropriate audit evidence was obtained from the work of the component auditors to provide a basis for our opinion. Our involvement comprised communicating the risks identified at Group level, specifying the audit procedures relating to the accounting of production orders (Project/Plant), specifying the materiality thresholds to be applied, making visits to selected subsidiaries and component auditors abroad, conducting telephone calls with the component auditors during the interim audit and the year-end audit and reviewing the reporting.

Key audit matters

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Accounting of production orders (Project/Plant)

Key audit matter	*How our audit addressed the key audit matter*
The Bühler Group has production orders, where the performance obligations are satisfied either over time or at a point in time in accordance with IFRS 15 'Revenue from contracts with customers'. In the year under review, revenue from production orders in the amount of CHF 2,299.3 million were recorded on the basis of these methods. Thereof CHF 1,506.7 million were recorded over time using the input method to measure the satisfaction of the performance obligation. Management measures the progress as of the balance sheet date based on relative costs incurred to the total costs expected to fulfil the performance obligation. An incorrect estimate of the expected costs could have a significant impact on the recorded revenue and the net profit of the Group. Please refer to pages 125 (Use of estimates) and pages 143 - 145 (Revenue) in the notes to the consolidated financial statements.	Our audit of the production orders mainly comprised of the following procedures: • We assessed the design and the existence of the key controls regarding the production orders and tested the effectiveness of selected controls. • We assessed whether the internal guidelines regarding the approval of the costs and margins had been adhered to. • We selected a number of production orders based on the contract volumes, the contribution margin and changes in the margin compared with prior year and the planning phase, and focussed our testing on the following, in particular: – We assessed the contracts in respect of the classification of revenue recognition. – We assessed whether the contractual terms and the approved planned costs had been recorded appropriately in the project accounting system. – We discussed with the project controllers and project managers the progress of the projects based on the latest project accounts, the costs still to be incurred until their completion and changes in the margin. • We obtained written information from the legal representatives of the Group. We inspected this written information with regard to indications of potential quality deficiencies or penalties for non-performance and assessed whether these matters were recorded appropriately in the consolidated financial statements. • For the production orders completed during the year under review, we compared various final parameters with the estimates made in the planning phase or those as of the previous balance sheet date in order to assess, with hindsight, the accuracy of the estimates made by Management. • In addition, we tested the first time adoption of IFRS 15 and analysed Management's assessment regarding the impact of the new standard,

	the correct restatement of the comparative financial information and the completeness of disclosures required. Our audit approach allowed us to make an adequate assessment of the accounting applied to the production orders (Project/Plant).

Impairment testing of goodwill and intangible assets with indefinite useful life

Key audit matter	*How our audit addressed the key audit matter*
The impairment testing of goodwill and intangible assets with indefinite useful life was deemed a key audit matter for the following two reasons: Goodwill and intangible assets with indefinite useful life are significant items on the consolidated balance sheet (CHF 686 million); they are not amortised but tested for impairment at least annually. In calculating the value-in-use for these tests, the Board of Directors and Management have significant scope for judgement in defining the cash-generating units (CGUs), in allocating the goodwill and net operating assets to the CGUs and in determining the underlying assumptions (discount rate, royalty rates, growth rates, revenue growth and EBIT margin growth). Management adopted an established process in order to forecast the cash flows. The Board of Directors monitored adherence to this process. Please refer to page 125 (Use of estimates) and pages 153 - 156 (Intangible assets) in the notes to the consolidated financial statements.	In our audit of the impairment testing of goodwill and intangible assets with indefinite useful life, we performed audit procedures including the following: • We assessed the design and the existence of the key controls regarding the impairment testing of goodwill and intangible assets with indefinite useful life. Furthermore, we checked whether the Board of Directors reviewed the impairment tests. • We assessed how the CGUs were defined, taking into account the accounting standards and our knowledge of the organisation of the Group. • We assessed the appropriateness of the procedure for allocating goodwill and net operating assets to the CGUs. • We compared the revenue and the EBIT of the year under review with the budget approved by the Board of Directors in order to identify, in retrospect, any forecasts that were too optimistic and to assess the accuracy of the estimates that were made. • We performed plausibility checks on the key assumptions Management used for the impairment tests as well as on the changes in net working capital resulting from the application of these assumptions. To this end, we involved our internal valuation experts, who compared the assumptions with data from analogous companies and market data. Furthermore, we assessed the technical and arithmetical correctness of the valuation model. • In addition, we assessed the sensitivity analyses carried out by Management. Besides, we performed our own sensitivity analyses using different discount rates, revenues and gross profit margins. These analyses enabled us to

	assess any potential impairment of the goodwill and intangible assets with indefinite useful life. • We assessed the appropriateness of the disclosures in the notes to the financial statements in accordance with IAS 36 'Impairment of Assets'. We consider the valuation process and the assumptions applied by Management to be an appropriate and adequate basis for the impairment testing of the goodwill and intangible assets with indefinite useful life.

Acquisition Haas Group

Key audit matter	*How our audit addressed the key audit matter*
On 9 January 2018, Bühler Group acquired 100% of the shares of Haas Group, headquartered in Vienna, Austria. The assessment of the acquisition of the Haas Group was deemed a key audit matter because of the critical estimates made by Management concerning the purchase price allocation in the opening balance sheet. In particular, the identification and valuation of intangible assets involved significant scope for judgment. Please refer to pages 128 - 129 (Additions and disposals of Group companies) in the notes to the consolidated financial statements.	We assessed whether amounts reported on the opening balance sheet as at 9 January 2018 had been identified in line with the purchase agreement and recognized according to the provisions of IFRS 3 "Business Combinations". We performed procedures including the following: • We identified significant components within the Haas Group and performed procedures in order to assess the existence, completeness and valuation of the net assets. Furthermore, we assessed the adjustments between the book values determined under the accounting framework previously applied by Haas Group and those in accordance with IFRS. • We assessed the completeness of identified intangible assets against our own expectations, formed from discussions with the Management as well as the industry expertise of our valuation experts. • To assess the valuation models included in the valuation report, we involved our internal valuation experts, who specifically performed the following: – Review of the purchase price consideration. – Assessment of the reasonableness of the most significant assumptions (revenue growth and margin) applied in the valuation models. – Assessment of the reasonableness of the discount rate.

– Comparison with analogous transactions and available market data of the royalty rates used to value brands.

– Assessment of the technical and arithmetical correctness of the valuation report.

- We assessed the qualification and independence of the expert engaged by Bühler Group to prepare the valuation report.
- In addition, we assessed whether the transaction was accounted for and disclosed in the financial statements in accordance with the provisions of IFRS 3 "Business Combinations".

Our audit procedures are appropriate to corroborate Management's allocation of the purchase price to the identifiable assets and liabilities measured at fair value and Management's disclosure of the purchase of the Haas Group in the 2018 consolidated financial statements.

Other information in the annual report

The Board of Directors is responsible for the other information in the annual report. The other information comprises all information included in the annual report, but does not include the consolidated financial statements, the stand-alone financial statements of Bühler Holding AG and our auditor's reports thereon.

Our opinion on the consolidated financial statements does not cover the other information in the annual report and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information in the annual report and, in doing so, consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the Board of Directors for the consolidated financial statements

The Board of Directors is responsible for the preparation of the consolidated financial statements that give a true and fair view in accordance with IFRS and the provisions of Swiss law, and for such internal control as the Board of Directors determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the Board of Directors is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Board of Directors either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Auditor's responsibilities for the audit of the consolidated financial statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Swiss law, ISAs and Swiss Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

A further description of our responsibilities for the audit of the consolidated financial statements is located at the website of EXPERTsuisse: http://expertsuisse.ch/en/audit-report-for-public-companies. This description forms part of our auditor's report.

Report on other legal and regulatory requirements

In accordance with article 728a paragraph 1 item 3 CO and Swiss Auditing Standard 890, we confirm that an internal control system exists which has been designed for the preparation of consolidated financial statements according to the instructions of the Board of Directors.

We recommend that the consolidated financial statements submitted to you be approved.

PricewaterhouseCoopers AG

René Rausenberger	Philipp Gnädinger
Audit expert Auditor in charge	Audit expert

Zürich, 5 February 2019

Financial Statements Bühler Holding AG

Income statement Bühler Holding AG

	Notes	2018 CHF m	2017 CHF m
Investment income	11	51.0	58.3
Financial income	12	19.4	19.8
Exchange gains on foreign currency valuation	13	0.0	16.7
Other operating income	14	7.2	10.3
Total operating income		**77.6**	**105.1**
Investment expenses	15	–14.9	–11.6
Financial expenses	16	–2.3	–7.1
Exchange losses on foreign currency valuation	13	–16.7	0.0
Other operating expenses	17	–5.7	–8.0
Operating expenses		**–39.6**	**–26.7**
Profit before taxes		**38.0**	**78.4**
Taxes		–0.2	–1.8
Net profit		**37.8**	**76.6**

Balance sheet Bühler Holding AG

Assets	Notes	2018 CHF m	2017 CHF m
Cash and cash equivalents		16.0	440.4
Other accounts receivable third parties		0.4	0.2
Other accounts receivable Group	5	136.2	97.7
Current loans third parties		0.2	0.2
Current loans Group	5	12.2	49.4
Accrued income and prepaid expense		0.1	0.1
Current assets		**165.1**	**588.0**
Non-current securities		4.6	4.3
Other financial assets third parties		18.2	2.3
Other financial assets related parties	8	88.8	82.3
Other financial assets Group	6	675.3	377.2
Investments	18	783.1	706.3
Non-current assets		**1,570.0**	**1,172.4**
Total assets		**1,735.1**	**1,760.4**

Equity and liabilities	Notes	2018 CHF m	2017 CHF m
Financial liabilities Group	7	6.3	22.2
Accounts payables related parties		0.6	0.6
Accounts payables Group	7	113.1	134.2
Current provisions	10	22.8	26.0
Deferred income and accrued expense		1.1	3.0
Current liabilities		**143.9**	**186.0**
Financial liabilities third parties	9	420.0	420.0
Financial liabilities related parties	8	66.5	66.5
Non-current provisions	10	2.5	2.5
Non-current liabilities		**489.0**	**489.0**
Total liabilities		**632.9**	**675.0**
Share capital		15.0	15.0
Legal reserves		7.5	7.5
Other free reserves		275.6	275.6
Available earnings brought forward from prior year		766.3	710.7
Net profit		37.8	76.6
Shareholders’ equity		**1,102.2**	**1,085.4**
Total shareholders’ equity and liabilities		**1,735.1**	**1,760.4**

Notes to the financial statements Bühler Holding AG

1 General information

The financial statements of Bühler Holding AG, domiciled in Uzwil SG, were prepared in accordance with the regulations of Swiss financial reporting law.

Bühler Group prepares consolidated financial statements on a Group level according to International Financial Reporting Standards (IFRS). Therefore, Bühler Holding AG does not publish additional notes, a cash flow statement, and management reporting according to article 961d of the Swiss Code of Obligations.

2 Valuation principles

The financial statement accounting policies meet the requirements of Swiss financial reporting law. The main financial statement line items are accounted for as described below.

The balance sheet positions in foreign currency have been valued at the following closing rates:

	2018 CHF	2017 CHF
CNY	0.1435	0.1502
EUR	1.1280	1.1710
GBP	1.2470	1.3190
USD	0.9860	0.9820

Loans to Group subsidiaries are recorded at their nominal value. If necessary, value adjustments are made for potential impairment losses.

3 Number of full-time equivalents

The number of full-time equivalents is on average less than 10 employees (prior year: less than 10 employees).

4 Definition of related parties and Group companies

Related parties are companies that are directly or indirectly owned by the Bühler family. Also included are members of the Bühler family as well as the Board of Directors and companies owned by Members of the Board of Directors of the Bühler Group.

Group companies are companies in which the Bühler Group holds direct or indirect investments and are included in the consolidated Group financial statements.

5 Other accounts receivable and current loans Group

Accounts receivable and current loans Group mainly include current loans to Group companies for working capital financing purposes.

6 Other financial assets Group

Financial assets mainly include loans to Group companies, which are granted at market conditions and are non-current (more than one year).

7 Liabilities Group

Liabilities Group consist primarily of current liabilities related to cash pooling (mainly Bühler AG, Uzwil) as part of the Group's cash management.

8 Other financial assets/liabilities related parties

These loans are owed from and to the shareholders as well as from other related parties (associates).

9 Financial liabilities third parties

This position contains corporate bonds issued to third parties.

Nominal amount in CHF m	Valor	Interest rate	Period of validity	Expiration nominal value
180	38‘960‘607	0.10%	12/21/2017 – 12/21/2022	12/21/2022
240	38‘960‘608	0.60%	12/21/2017 – 12/21/2026	12/21/2026

10 Provisions

This item mainly includes provisions for currency risks relating to loans to Group companies and accounts receivable from Group companies.

11 Investment income

This position mainly contains dividend income from subsidiaries and other participations.

12 Financial income

Financial income mainly includes interest income on loans to Group companies.

13 Exchange gains/losses on foreign currency valuation

Exchange gains/losses on foreign currency valuation contains currency gains and losses.

14 Other operating income

Other operating income contains licence fee income.

15 Investment expenses
Investment expenses include the liquidation loss of a Group company and impairments.

16 Financial expenses
Financial expenses primarily include interest on foreign expenses paid to Group companies and interest payments for corporate bonds issued to third parties.

17 Other operating expenses
Other operating expenses predominantly include negative value adjustments of loans as well as service fee expenses.

18 Investments
Investments are recorded at cost less economically necessary adjustments. The principal investments that are held directly or indirectly by Bühler Holding AG are shown in the table on page 130. The participation rate is equal to the voting rights and share in capital.

19 Contingent liabilities

	2018 CHF m	2017 CHF m
Sureties, guarantees and other obligations in favor of Group companies	584.6	548.4
Sureties, guarantees and other obligations in favor of third parties	126.2	84.4

20 Proposal of the Board of Directors for the appropriation of available earnings

	2018 CHF m	2017 CHF m
Balance brought forward from prior year	766.3	710.7
Net profit of the year	37.8	76.6
Available earnings at the disposal of the General Meeting	**804.1**	**787.3**
The Board of Directors proposes to the General Meeting:		
- The distribution of a dividend	23.0	21.0
- Allocation to other reserves	0.0	0.0
- Carry forward to new accounting period	781.1	766.3

The statutory obligation of appropriation to reserves is waived as the legal reserve amounts to 50% of the paid-in share capital.

21 Letter of comfort
Bühler Holding AG issued a letter of comfort for Bühler Barth GmbH, Germany, on August 17, 2017. With this letter of comfort, Bühler Holding AG commits itself to financially support Bühler Barth GmbH in order that Bühler Barth GmbH is able to meet its current and future obligations at all times. The issued letter of comfort is valid as long as Bühler Barth GmbH belongs to the Bühler Group, at the latest until December 31, 2020.

22 Significant events after the balance sheet date
No material events have occurred after the balance sheet date.

Report of the statutory auditor

to the General Meeting of Bühler Holding AG

Uzwil

Report on the audit of the financial statements

Opinion

We have audited the financial statements of Bühler Holding AG, which comprise the income statement for the year ended December 31, 2018, the balance sheet as at 31 December 2018 and notes for the year then ended, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements (pages 183 to 186) as at 31 December 2018 comply with Swiss law and the company's articles of incorporation.

Basis for opinion

We conducted our audit in accordance with Swiss law and Swiss Auditing Standards. Our responsibilities under those provisions and standards are further described in the "Auditor's responsibilities for the audit of the financial statements" section of our report.

We are independent of the entity in accordance with the provisions of Swiss law and the requirements of the Swiss audit profession and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Our audit approach

Overview

Overall materiality: CHF 17'350'000

We tailored the scope of our audit in order to perform sufficient work to enable us to provide an opinion on the financial statements as a whole, taking into account the structure of the entity, the accounting processes and controls, and the industry in which the entity operates.

As key audit matter the following area of focus has been identified:

Impairment of investments in subsidiaries

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Materiality
The scope of our audit was influenced by our application of materiality. Our audit opinion aims to provide reasonable assurance that the financial statements are free from material misstatement. Misstatements may arise due to fraud or error. They are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

Based on our professional judgement, we determined certain quantitative thresholds for materiality, including the overall materiality for the financial statements as a whole as set out in the table below. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures and to evaluate the effect of misstatements, both individually and in aggregate, on the financial statements as a whole.

Overall materiality	CHF 17'350'000
How we determined it	1 % of total assets
Rationale for the materiality benchmark applied	We chose total assets as the benchmark because, in our view, it is a relevant benchmark against which holding companies can be assessed, and it is a generally accepted benchmark with regard to materiality considerations in holding companies.

We agreed with the Audit Committee that we would report to them misstatements above CHF 870'000 identified during our audit as well as any misstatements below that amount which, in our view, warranted reporting for qualitative reasons.

Audit scope
We designed our audit by determining materiality and assessing the risks of material misstatement in the financial statements. In particular, we considered where subjective judgements were made; for example, in respect of significant accounting estimates that involved making assumptions and considering future events that are inherently uncertain. As in all of our audits, we also addressed the risk of management override of internal controls, including among other matters consideration of whether there was evidence of bias that represented a risk of material misstatement due to fraud.

Report on key audit matters based on the circular 1/2015 of the Federal Audit Oversight Authority
Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the financial statements of the current period. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Impairment of investments in subsidiaries

Key audit matter	*How our audit addressed the key audit matter*
Investments in subsidiaries represent a significant balance sheet line item (CHF 783.1 million). The Board of Directors uses business valuations in order to test these investments for impairment. The company valuations are prepared using the 'practitioner's method'. In cases were indications of impairment exist, the book values of the investments were compared with the impairment test prepared to assess the goodwill at the Group level. In calculating these company valuations, there is significant scope for judgement in determining the underlying assumptions, particularly with regard to the future business results and the discount rate to apply to the forecast cash flows. Management adopts a specified impairment testing process to identify the potential need for the impairment of investments. Please refer to pages 186 (Investments) in the notes to the financial statements.	In our audit of the investments in subsidiaries, we performed audit procedures including the following: • We assessed the design and the existence of the key controls regarding the valuation of the investments. • We compared the book value of the investments in the year under review with the results from using the practitioner's method of valuation. If there were indications of impairment, the book values of the investments were compared with the impairment test applied to assess the goodwill at the Group level. • We performed plausibility checks on the key assumptions applied by Management used for the impairment tests (discount rate, growth rates, revenue growth and EBIT margin growth). To this end, we involved our internal valuation experts, who compared the assumptions with data from analogous companies and market data. Further, we assessed the technical and arithmetical correctness of the valuation model. We consider the valuation process and the assumptions used to be an appropriate and adequate basis for the impairment testing of investments in subsidiaries as at 31 December 2018.

Responsibilities of the Board of Directors for the financial statements

The Board of Directors is responsible for the preparation of the financial statements in accordance with the provisions of Swiss law and the company's articles of incorporation, and for such internal control as the Board of Directors determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors is responsible for assessing the entity's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Board of Directors either intends to liquidate the entity or to cease operations, or has no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Swiss law and Swiss Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located at the website of EXPERTsuisse: http://expertsuisse.ch/en/audit-report-for-public-companies. This description forms part of our auditor's report.

Report on other legal and regulatory requirements

In accordance with article 728a paragraph 1 item 3 CO and Swiss Auditing Standard 890, we confirm that an internal control system exists which has been designed for the preparation of financial statements according to the instructions of the Board of Directors.

We further confirm that the proposed appropriation of available earnings complies with Swiss law and the company's articles of incorporation. We recommend that the financial statements submitted to you be approved.

PricewaterhouseCoopers AG

René Rausenberger	Philipp Gnädinger
Audit expert Auditor in charge	Audit expert

Zürich, 5 February 2019

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