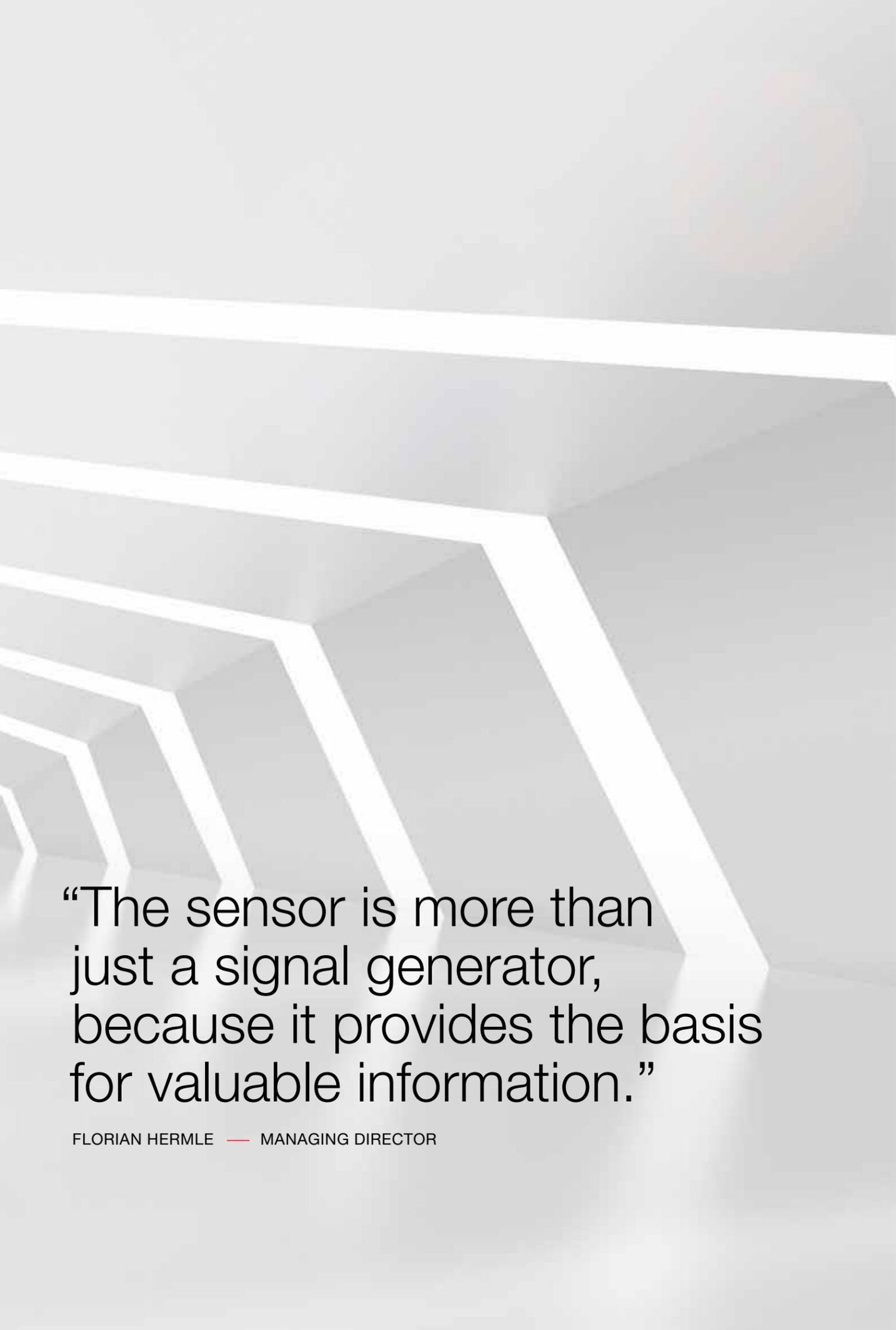


 *innovating automation*

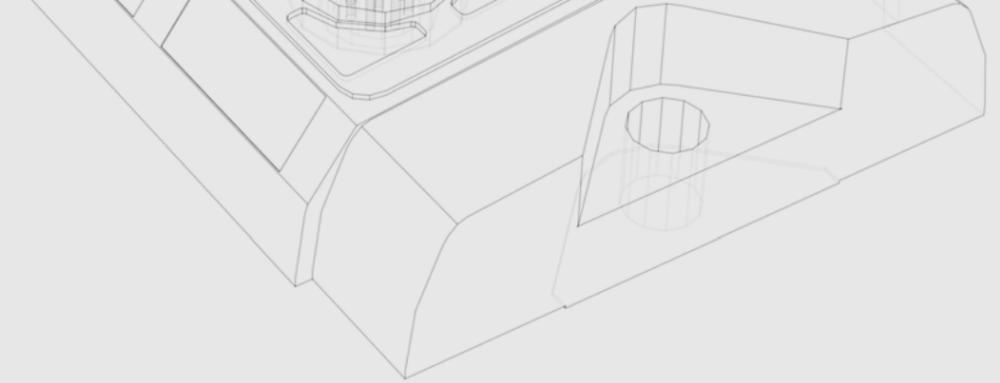
ANNUAL REPORT 2018.

# TOGETHER DIGITAL CONNECTED



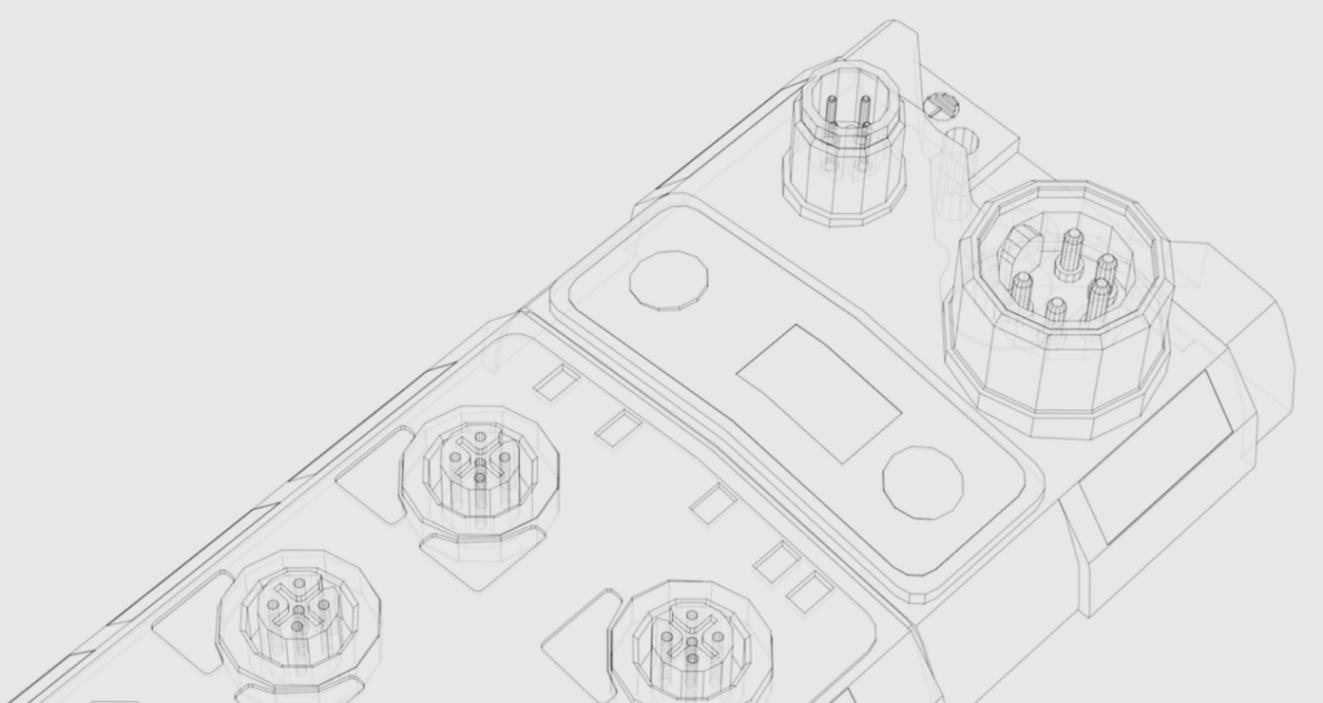
“The sensor is more than just a signal generator, because it provides the basis for valuable information.”

FLORIAN HERMLE — MANAGING DIRECTOR



## CONNECTED COOPERATION

**Collaboration** In a digitalized and highly connected world, better solutions can be developed quickly and efficiently in conjunction with the right partners — the approach is both innovative and agile and offers the customer significant benefits. To this end, employees, suppliers, customers, and technology partners must work collaboratively and embrace new ideas.



## GROWTH RECORD 2017

Ever increasing requirements in the area of automation and the resulting high demand for automation solutions in the industry led to the Balluff Group achieving record growth in 2017. Together with the turnover generated by the two companies integrated in 2017, iss innovative

software services and Matrix Vision, Balluff reported a 21.4 percent increase in turnover. The companies integrated into the Balluff Group in the past financial year were responsible for around 20 million euros of the additional turnover.

Turnover  
in euros



### 2015

The Americas and the Asia-Pacific region are responsible for around 41 percent of the Balluff Group's total turnover. Europe continues to generate the greatest share of the turnover.

### 2016

Steady turnover growth on the previous year in all three regions. The main growth markets were Europe and Asia-Pacific.

### 2017

Turnover increases on the previous year in all three regions. The Balluff Group records growth on almost every market. The main drivers of growth were Europe and Asia-Pacific.

Growth by  
region in  
€M



## FIVE REASONS FOR STRONG GROWTH

In addition to the integration of iss innovative software services (iss) and Matrix Vision into the Balluff Group and the good delivery performance, there are three further reasons for the strong growth: positive global market developments, particularly strong growth in key industries such as the automotive and packaging, food and beverage industries, and the impact of a general rise in the pressure to automate in many other sectors.



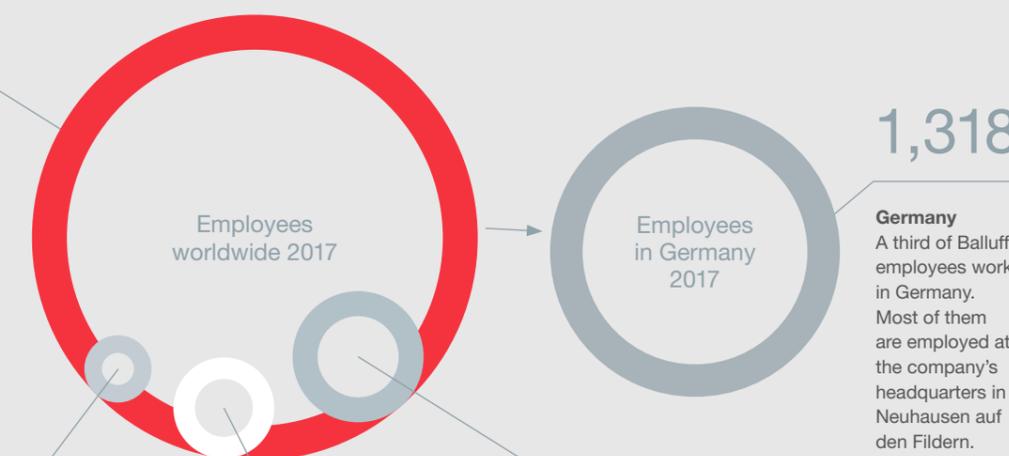
## GROWING TOGETHER

However good the structures, technology, and tools may be, it is difficult for a company to grow without people who work well together. With a global workforce of 3,598 people at the end of 2017, Balluff employed 335 more people than the previous year. In the first six months of 2018 alone

Balluff took on 231 new employees in order to keep pace with the growth at the production sites in particular. This provides a good basis for the future and is also the reason why Balluff is constantly on the lookout for talent and strong personalities.

3,598

**Worldwide** With 37 subsidiaries, Balluff operates a global production, sales, development, and service network. Almost 4,000 employees now work around the globe.



25 apprentices

**Apprentices** A total of 25 apprentices and work-based university students started their professional careers at Balluff in 2017.

80 developers

**Software expertise** Around the world, 80 developers work in Balluff's software center of expertise on software solutions for the Industrial Internet of Things.

160 new employees

**Growth** An extra 160 employees joined the workforce in September 2017 following the integration of the companies Matrix Vision and iss innovative software services.

1,318

**Germany** A third of Balluff's employees work in Germany. Most of them are employed at the company's headquarters in Neuhausen auf den Fildern.

## BIG POTENTIAL

Turnover growth



Profit margin



Equity ratio



R&D share



## STRONG PROSPECTS

The Balluff Group is on an extremely stable financial footing, having doubled its turnover in the last seven years. In 2017, Balluff recorded a 16 percent increase in turnover. Including the two integrated companies, overall turnover even rose by more than 21 percent to 459 million euros. The profit margin accordingly improved again slightly in 2016 from nine percent to the current figure of 10.5 per-

cent. Balluff continued to record consistently high growth of around nine percent in the first quarter of 2018. At 75 percent, the equity ratio is still extremely high. Furthermore, by setting aside a 13.3 percent share for research and development, Balluff is investing a great deal in future success. With such strong foundations, Balluff is well positioned for the future.

# Together, digital, connected

These three watchwords define the path taken by Balluff and the one that we will continue to follow. Our success as a company is determined by the way we work together. Cooperation within our corporate culture is based on being open to new ideas, demonstrating the right commitment, and aspiring to develop advanced solutions for our customers. The challenges presented by the Industrial Internet of Things cannot be mastered through a silo mentality and solo action. This goes for cooperation between departments as well as project partnerships when developing new customer solutions. The contributions of everybody involved and partnerships on an equal footing turn products into solutions to meet the challenges of Industry 4.0 and generate the greatest possible customer benefits.

Balluff has been advancing the development of intelligent products for a number of decades in its role as an automation specialist. Processes must be digitally modelled in order to exploit the full potential of these products. Our sensor, identification, and network solutions and our software provide the necessary transparency. As a data supplier, we make sure that all relevant data is easily accessible at field level.

Ensuring that the various elements are connected is an essential factor for our success. As a specialist in industrial network technology, the interconnection of individual systems and entire factories and companies plays an important role for Balluff. This is how relevant data can be viewed in real time from anywhere in the world and on any end device. Our success as a company is equally determined by bringing together the right employees, customers, and partners. The interconnection of the various elements results in faster and better solutions for our customers.

The second issue of the Balluff annual report therefore looks at how we work together with our customers and partners, optimally exploit the potential of digitalization, and establish networks based on partnerships. You can find out how we achieve this on the following pages.

We hope you enjoy reading this annual report.

Katrin Stegmaier-Hermle, Florian Hermle, Michael Unger  
The Management

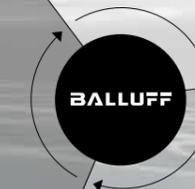
## 01 TOGETHER

Realizing Industry 4.0 together  
— p. 4

Side by side in Neuhausen  
— p. 6

Automobile production of the future  
— p. 8

“Focused on what lies ahead”  
— p. 10



## 02 DIGITAL

More than just a signal  
— p. 12

“Rooted in our DNA”  
— p. 16

Software for the solutions of the future  
— p. 18

The path towards intelligent production  
— p. 21

Mission Vision  
— p. 29

## 03 CONNECTED

The future is connected  
— p. 30

Turning the IIoT into reality  
— p. 32

Seeing and understanding tools  
— p. 34

Customer focus embraced worldwide  
— p. 36

More room for innovation  
— p. 42

“A careful approach to change”  
— p. 46

Set up for our customers  
— p. 48

# REALIZING INDUSTRY 4.0 TOGETHER

Balluff is committed to partnership on an equal footing when it comes to developing integral automation solutions. From long-standing customers and manufacturers of industrial robots to social organizations, the company relies on mutual synergies to bring the Industrial Internet of Things to life.

Big things can happen as soon as players are brought together who are open to new ideas and combine a desire to innovate with in-depth knowledge of their specialist field. "This equally applies to cooperation at a global company like ours and our long-standing customer relationships and development partnerships," explains Michael Unger, managing director at Balluff. "Open collaboration produces innovative automation solutions for our customers, perfectly tailored to the demands of the respective industries."

## Trusting partnerships

Customers such as Brose, Bosch, and Fanuc are a testament to the high standard of Balluff's solutions and the quality of the company's products and services. In July 2018, Brose, whose mechatronic systems for doors, seats, and electric motors are fitted in every other new car, named Balluff "Key Supplier 2018" for its collaboration. Factors such as good sharing of information on new developments and technical innovations and fast and expert support with technical matters play a big role in deciding who receives the award. Aspects such as globality and fast and straightforward assistance are also taken into consideration. The automotive sup-

plier Bosch presented Balluff with the "Bosch Global Supplier Award" for the third time in succession the previous year. Another example of a trusting working relationship is the close cooperation with Fanuc, a manufacturer of industrial robots, when establishing a new training center in Neuhausen auf den Fildern.

## For apprentices with disabilities

Balluff is not only committed to cooperating with customers and development partners, but also fostering cooperation partnerships with social organizations such the vocational training center in Neckargemünd known as the SRH Berufsbildungswerk (BBW). The BBW provides training for young people with disabilities in more than 40 different careers, ranging from industrial management assistant and electronics engineer specializing in automation technology to automotive mechatronics engineer. Balluff has been supporting this private organization since 2015 with its own solutions such as RFID and IO-Link. In addition, Balluff advised the BBW so that it was able to equip its training workshop with the latest technology and upgrade it to meet the demands of Industry 4.0, thereby ensuring that the apprentices are optimally prepared for the start of their careers.

The apprentices at the BBW in Neckargemünd have the opportunity to work with state-of-the-art automation solutions from Balluff.



## TRAINING COOPERATION

# SIDE BY SIDE IN NEUHAUSEN

Industrial robots that can work alongside people in a safe environment are especially in demand in the automotive industry. Yet demand for industrial robots is also increasing year on year in other growth sectors.

Fanuc and Balluff have been working together for more than 20 years.

Industrial robots are a key element of automated production and make considerable demands on the automation technology. Rotating motion sequences, mobile production units, and little space all call for flexible system solutions that must simultaneously meet the highest safety standards. Balluff's comprehensive product portfolio and its sensor and network expertise make the company the ideal partner when developing integral automation solutions for industrial robots. A testament to this fact is the customer relationship Balluff has maintained for more than 20 years with Fanuc, a manufacturer of industrial robots. Fanuc is the world's biggest manufac-

turer in the field of robotics and control systems, producing 48,000 robotic systems annually.

#### Training concept based on cooperation partnerships

Cooperation between the two companies based in Neuhausen auf den Fildern has been stepped up even further since 2014. That was when Fanuc announced its aim of building a new training center — the biggest of its kind in Europe in the field of industrial automation — at its German headquarters. "It was clear to us from the beginning that

At the heart of the cooperation: the functional unit consisting of a Fanuc robot and automation technology from Balluff



the company wouldn't be able to achieve such an aim single-handedly," explains Jens Mühlegg, who coordinated the project together with Marco Fischer. "We cooperated with suitable partners from the very start in order to devise and present training concepts together." The idea was to show customers and others who attended the training courses that it is not just the robot that significantly contributes to the overall success when designing a system, but also the associated sensors and highly performant data transmission. "It wasn't just our geographical proximity to Fanuc, but also our long-standing experience and extensive portfolio that made it clear to us that we should get involved as a cooperation partner" says Karl-Heinz Purucker, head of customer support and training at Balluff. After initial talks in the fall of 2014, the starting signal for the cooperation was given in May 2016 following a resolution passed by the Balluff executive board and the management of the Fanuc Academy.

#### Cell-based learning

The key element of the training concept consists of a cell of robots and automation technology that uses a production-based approach to demonstrate how a complete system works. The team devised five teaching modules with different learning objectives for the course participants, each of which looked at a specific functioning automation unit. "Different

Balluff technologies are used here," explains Purucker. "In the robot cell used for training sessions, for example, standard sensors, network technology, IO-Link, and RFID are fitted. SmartLights and Balluff's Mold ID technology are used on the injection molding machines that Fanuc also has in its portfolio. The course participants are thus familiarized with the latest sensor technologies and are also able to see the intelligent automation solutions up-close — from smart data visualization to the right safety solution and the use of RFID.

#### Spin-offs in Belgium, Japan, and Poland

The cooperation is going down well among customers and project partners in equal measure. "Balluff has always been one of our strongest and most reliable cooperation partners since the beginning," stresses Mühlegg. "Besides the course participants, international guests attending events organized by both companies are frequently also shown around the training campus and are always impressed." As a result of this success, further cooperation models have been set up in Belgium, Japan, and Poland. "We want to increase the cooperation even further, which is why we already have the next projects in our sights," says Purucker. "We have already managed to link up several robots. Now we want to link up several production cells (based on the Industry 4.0 standard) whose data is visualized via dashboards in a suitable IIoT software solution."



Balluff teamed up with other project partners at the two-day event überMORGEN on the ARENA2036 campus to demonstrate how production processes will work in the future.

JOINT RESEARCH

# AUTOMOBILE PRODUCTION OF THE FUTURE

When science and business earnestly cooperate, they push boundaries. That is why Balluff is active on ARENA2036, Germany's biggest research campus, with its sensor technology and automation expertise.

For decades, one of Balluff's greatest strengths has been its power to innovate. This is also demonstrated by the ARENA2036 research initiative, which Balluff joined in November 2017. A total of 31 partners from the world of business and science cooperate here and develop processes for the automotive industry of the future. "The ARENA2036 initiative has the biggest research campus for mobility in Germany. This is where we work with experts from various disciplines, sharing ideas on the future of production processes and redesigning them," says Dr. Thomas Meißner, research coordinator at Balluff.

**ARENA2036 — phase two begins**

The research campus is located in Stuttgart and is funded by Germany's Federal Ministry of Education and Research as well as the European Union. The research projects are divided into three project phases, each lasting five years. "Phase one has already been completed; the second begins in October. Each of the three phases consists of several basic projects and follow-up projects," says Dr. Meißner. "There are currently two or three Balluff employees working on ARENA2036 projects, but we

will involve further colleagues as soon as the basic projects really get under way in October." In terms of content, the focus of the second project phase is on adaptable production, flexible vehicle concepts, the manufacturing of such vehicles, and the Digital Shadow for the production plant. The latter refers to a digital model of all the data needed for production, development, and adjacent areas, providing the basis for real-time evaluation.

**Automobile production of the future**

Balluff is contributing its expertise in the areas of sensor technology and automation to the basic projects in the second project phase. "Of most relevance to us is how the car of the future will be manufactured," says Dr. Meißner. "The many different car types currently present a big challenge. As a consequence, the production lines are no longer profitable, because the cars are being produced in insufficient quantities." In the future, however, it should be possible to build different car models on the same production lines within the factories. This means that sensors must be able to take different measurements when the conditions change — a huge technical challenge. "In specific terms, distance requirements and object recognition are especially important to us, because they provide the foundations for the automation of the future," says Dr. Meißner.

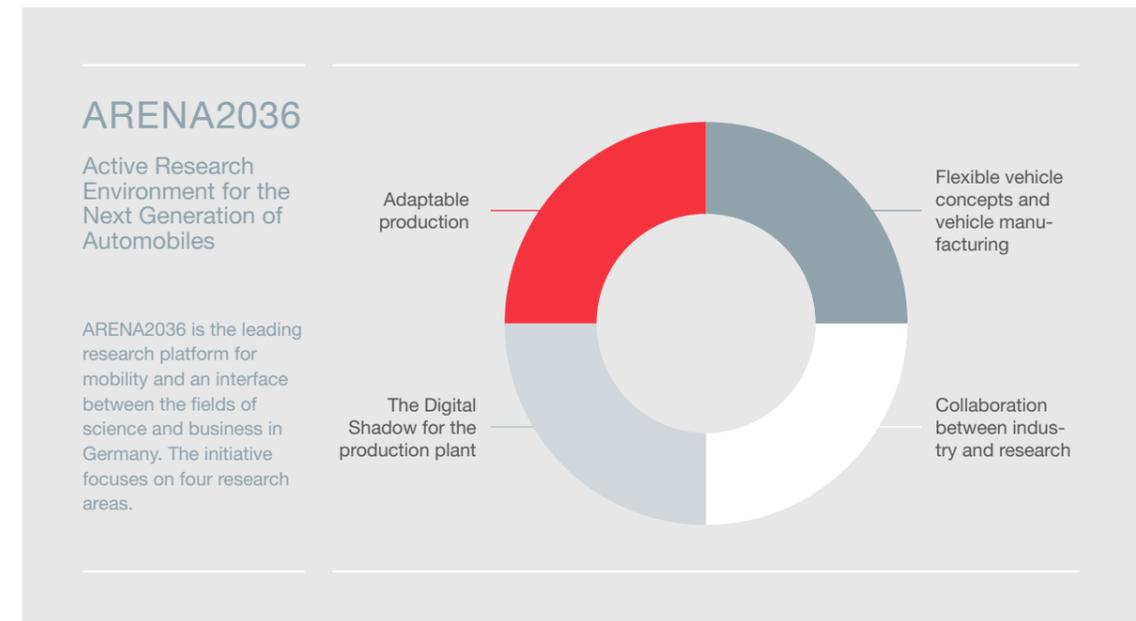
**Innovative vehicle concepts**

In another basic project Balluff is working on a form of intelligent production that will make it possible to produce innovative vehicle concepts. "Autonomous driving will significantly reduce the number of accidents in the long term and thus open up new design possibilities for cars, because they will no longer have to be designed to withstand a number of different accident scenarios," explains Dr. Meißner. Experts also predict that established manufacturing processes will become less prevalent as new production methods such as 3D printing take over.

**Tracking individual parts**

It is becoming more important for companies to be able to track individual parts. "This represents a big opportunity for Balluff. Such parts can be tracked at all times if we integrate RFID tags. Furthermore, the components then know which individual manufacturing steps they have already undergone and which are yet to follow," says managing director Michael Unger. "These intelligent components will represent a milestone in automation. The work being done as part of the ARENA2036 initiative is therefore incredibly valuable to everyone involved. We are not reacting to trends, but working together to shape the car manufacturing process of the future."

A total of 31 partners from the world of business and science are currently working together as part of the ARENA2036 initiative.



## FUTURE VISION

# “FOCUSED ON WHAT LIES AHEAD”

With a 21 percent rise in turnover, 2017 was a very successful year for Balluff. The company has managed to double group turnover in the space of seven years. Managing director Michael Unger explains the strategy guiding the company's success today and in the future.



**Mr. Unger, how do you wish to ensure that the company's growth trend continues?**

We are convinced that we can achieve further success by adhering to our strategy. At the heart of this strategy is our focus on three industrial areas: mobility; packaging, food & beverage and machine & plant engineering. We want to provide excellent solutions in these industries, develop an industry-specific portfolio, and offer the best possible service. In concrete terms, this means that we have formed industry divisions that concentrate very specifically on the interests and needs of our focus industries and drive the business forward worldwide.

**Where do you see the specific additional benefit of the new divisions?**

The clear advantage lies in the closer interplay between the right industry strategy, the key account management, and the corresponding portfolio management. The employees in each of the divisions can concentrate directly on the needs of the industries worldwide. Very close communication with development partners helps here. The automotive supplier Bosch, for instance, is a key customer for us. We have specialists who work very closely with such customers. They know what we have to do now and in the future in the respective industries to enable us to be an important partner, although we have also been doing this for the past 30 years. We want to use the central responsibility of the industrial divisions to take the knowledge acquired from the markets and focus it even more systematically into industry expertise. Every single customer will benefit from this.

**What kind of feedback have you received from the industries on this new organization?**

It has been resoundingly positive. Long-standing customers are very pleased that we are now focusing even more on their individual interests. There are certainly also industries in which we still have to

prove ourselves, such as the packaging, food, and beverage industry, where the focus remains relatively new to us. Balluff is already known in these industrial areas, which are still young to us in a sense, but we must demonstrate that our company can live up to its good reputation and competently meet the demands of the industries.

**How is Balluff making sure that the demands in the respective industries are being translated into solutions quickly and comprehensively?**

Customers get complete solutions from us. We are one of the few companies to cover the entire automation process. This broad product portfolio combined with our focus on special industry profiles and requirement specifications will continue to bring us success in the future. We want to continue to build on this total solution concept. This is evident in the integration of our new subsidiaries' innovative software services and Matrix Vision, for example, which have bolstered our software and image processing expertise. We will also set up so-called Vision Labs at some of our global sites, where we can test our developments together with the customers.

**While we're on the subject of vision, let's take a look into the future. What's next for Balluff?**

As an automation specialist, we are convinced that we are operating in an up-and-coming environment with a really promising future. The megatrend of digitalizing production processes in practically all industries suits us nicely. We are self-confident and also proud that our development work, our portfolio, and the right acquisitions have laid the foundations for being a competent supplier and partner in the field of integral automation solutions. This will continue to give us a massive boost. We want to double our group turnover again within the next five to seven years. After all, we managed to achieve this over the last seven years — and with our consistent industry focus, we now have even greater drive, so to speak.

# MORE THAN JUST A SIGNAL

“The sensor is more than just a signal generator, because it provides the basis for valuable information. We create transparency by processing the sensor data and developing our automation solutions — that is our domain.”

FLORIAN HERMLE — MANAGING DIRECTOR

**Digitalization** The Industrial Internet of Things is not possible without sensors. That's because the data gathered from the systems and machines helps to optimize processes in the industrial manufacturing environment, thereby improving the efficiency of the entire production operation.

## DIGITALIZATION

# GENERATE, TRANSPORT, PROCESS

The merging of automation technology with suitable software produces integral automation solutions in the context of the Industrial Internet of Things (IIoT) from one single source. In-house software expertise and the right partners are indispensable here.



Balluff is positioning itself as a data supplier and is boosting its customers' competitive edge with its intelligent solutions.

## Transferring automation experience to the IIoT

Industrial automation is a growth market. Balluff is also benefiting from this and was able to record a 21.4 percent rise in turnover last year. "However, Balluff is not resting on its laurels. Our domain — the generation, transporting, and processing of data — creates transparency in the production operations of our customers. We can only continue to actively shape the fascinating path toward the Industrial Internet of Things if we use our decades of experience acquired in the area of automation to develop user-friendly software," stresses managing director Florian Hermle. "That is why Balluff has stepped up its efforts in the field of software development over the

past year," explains Hermle. The aim is to position Balluff as a data supplier, make the information easy for customers to use across different sites, and thus boost their competitive edge.

## Building on software expertise

In 2017, Balluff integrated the Stuttgart-based software company iss innovative software services and the machine vision pioneer Matrix Vision into the group to bolster its capacity to build on this development. The expertise of the new employees has enhanced Balluff's core competencies in two key areas: software development — particularly in the area of embedded systems in the automotive industry — and

machine vision. More than 80 developers around the world are now working on Balluff software solutions. "We are delighted that the new employees have settled in at our company within the shortest space of time," says Hermle. "The open way in which people interact with one another in conjunction with a carefully planned integration process and a clear vision have certainly made the entire process easier."

## Data supplier for the ecosystem

The development of new software at Balluff is now managed centrally from a software center of expertise. The aim is to develop a universal ecosystem for the IIoT, in which Balluff positions itself as a data supplier.

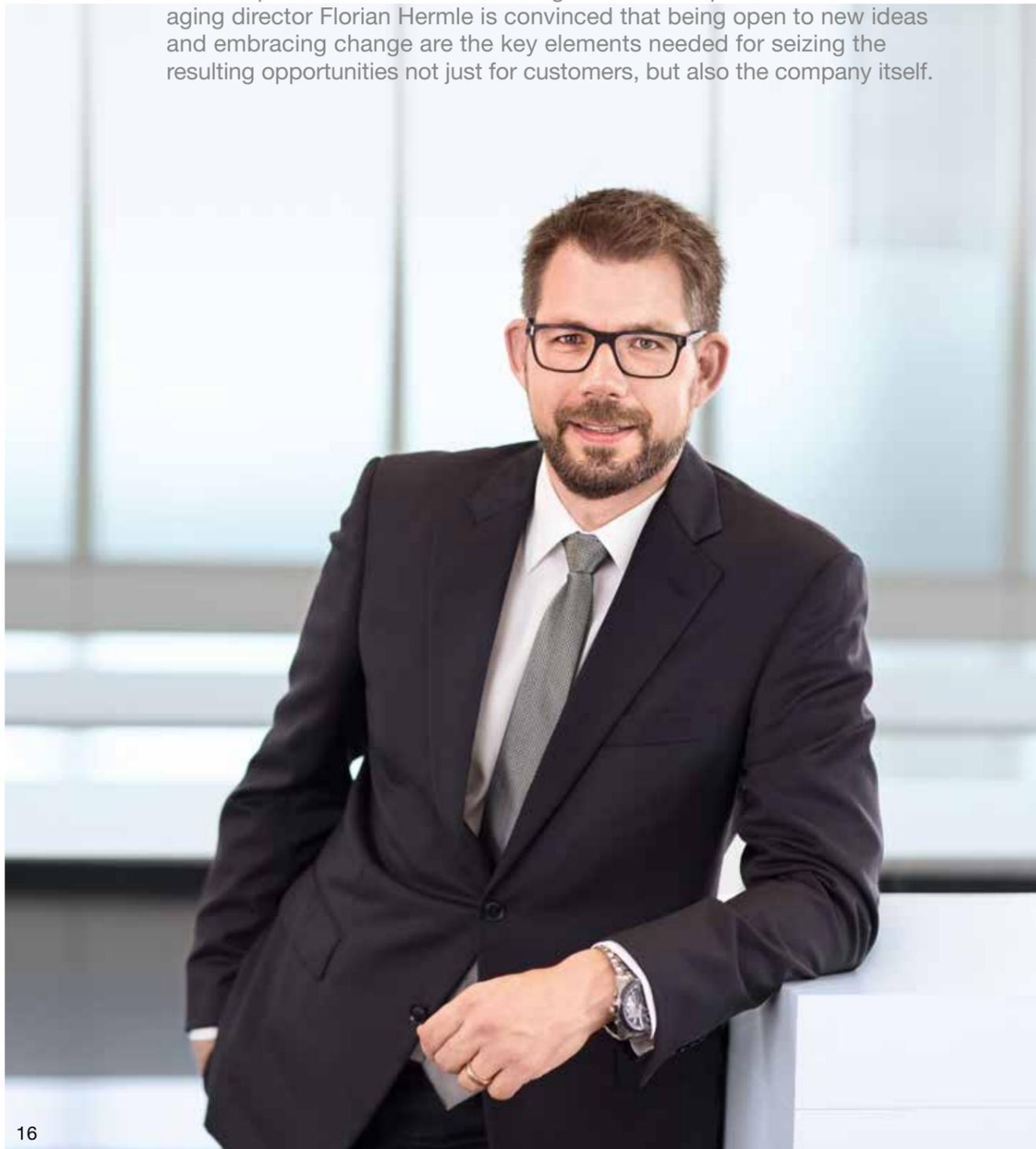
It should be as simple as possible to process the data. "We are convinced that a closed system won't prevail, which is why we are involving various partners — such as big data specialists, suppliers, and component manufacturers — in the development and aiming for the greatest possible compatibility and openness," says Hermle. This is how Balluff is supporting its customers in all areas, from the integration and analysis of the data to the diagnosis, and using the right hardware and software to cover every aspect of the value creation process, including warehouse management, procurement, asset management, and smart production. "The customer is always master of the situation here and — even more importantly — master of their own data," stresses Hermle.

Balluff positions itself as a data supplier.

## DIGITALIZATION

# “ROOTED IN OUR DNA”

Digitalization is part of Balluff's DNA, because the data generated by the sensors provides the basis for intelligent industrial production. Managing director Florian Hermle is convinced that being open to new ideas and embracing change are the key elements needed for seizing the resulting opportunities not just for customers, but also the company itself.



**Mr. Hermle, digitalization is often described as a disruptive process. Do you also see it that way?**

Digitalization has undoubtedly led to a paradigm shift in the industry. All the same, I don't see it as a disruptive revolution, but rather as a kind of digital transformation toward the smart factory. We have been on this fascinating path with our customers for a number of years, because our sensor and automation solutions play a key role here.

**Which of Balluff's divisions has changed most in recent years as a result of digitalization?**

The manufacturing division. Here we turned our belief in digitalized production into reality within our own company — industrial automation is always based on existing processes. Inefficient and error-prone processes remain inefficient and error-prone processes, not even Industry 4.0 can change anything in this regard. That is why we set up a lean project. Our IIoT solutions then rely on these lean processes. The degree of controllability and transparency that we have achieved for our own manufacturing operation shows how much potential lies in digitalizing production. However, we also wish to improve the sales and marketing experience for our customers and make it simpler and more digital.

**What role does software play here?**

It naturally plays a key role. This is doubly the case for us: as a data supplier that provides its customers with the desired data in a straightforward manner using software, and as an organization that can work more efficiently with the right software. We are currently making preparations for a larger ERP changeover that will have an impact on many day-to-day processes, ranging from approvals via mobile end devices to the visualization of key performance indicators. It goes without saying that smartphones and tablets are used for e-mails and calls these days, but we can also reduce bureaucracy by making things digitally available that currently rely on lots of paperwork and enquiries to sort out. Preventing unnecessary paperwork not only saves resources, but also helps us to optimize our processes by digital

means. For example, our customers should be able to view important information, such as orders and product information, around the clock.

**How exactly is the working relationship changing here?**

It is becoming more decentralized and based more on collaboration. That is why we are currently also working on an internal communication platform to better support collaboration digitally. This will allow teams to share content more easily and make it available globally. I am convinced that our company has taken the right path and our employees are demonstrating a real open-minded attitude to new ideas and change. We are responsible for using our good judgment to drive the process forward. Not everything has to be digital. We will initiate changes wherever we assume tangible benefits. The important thing here is to support people and dispel fears, because our digitalization projects are not about cutting jobs, but improving processes. The aim is to be able to take on even more business in the future as a result of more efficient processes and collaboration in a growing market.

**So are you increasingly opting for collaboration?**

Our customers already expect a high degree of collaboration from us. In the fast-changing IIoT environment in particular, people must be open to new technologies, partners, and standards. This is why we are committed to an open ecosystem that will enable us to develop market-based IIoT solutions in an agile manner and significantly reduce the time to market for our customers. This collaboration is mostly taking place in the virtual space today. We have partner companies in various locations. Together with partners and colleagues, we go through our digital project handbooks, product data and schematic diagrams online. And all of this happens within a global production and development network. The fact that Balluff has been investing in its international setup since the 1980s is paying off. We are able to present our global network as a strength and thus create added value for our customers.



At Hannover Messe, Baden-Württemberg's Minister for Economic Affairs, Dr. Nicole Hoffmeister-Kraut, took a look at Balluff's control panel as an example of how distributed production is visualized.

## SOFTWARE

“THE SIMPLEST WAY OF PREDICTING THE FUTURE IS TO IMPLEMENT IT.”

Balluff is also adhering to the motto of Danish programmer David Heinemeier Hansson as it develops intuitive and easy-to-use software for the automation solutions of the future.

“We want to transfer the convenience familiar to us from the USB mouse to our components.”

PHILIPP ECHELER — IIOT STRATEGY MANAGER AT BALLUFF

Predicting the future is not a reliable business. Prognoses, projections, and forecasts are always beset by uncertainties and tend to be a reflection of the current situation. “And the current situation for the automation industry allows us to look toward the future with some optimism,” says managing director Michael Unger. “Companies all over the world are sensing an increasing amount of pressure to automate. Our key industries — mobility; packaging, food & beverage; machine & plant engineering — are growing. As such, we are also experiencing high demand for innovative solutions in the area of industrial automation.” The fusion of automation technology and the right software solutions is already a key competitive advantage. “So we are not reading the tea leaves when we say that our ability to develop intuitive and easy-to-install software solutions is a key factor when it comes to continuing to actively shape the future of industrial automation.”

### Simplicity creates a competitive edge

Regardless of the industry, the key factor for the customer is how intuitively and easily they can access the data needed to solve their problem from a single machine, a complete system, or an entire factory. Valuable digital models of the production facilities can be produced with the right data. These models can then provide details on their status and behavior in real time. “We want to make this as easy as possible for our customers. We want to transfer the convenience, the reliability, and the experience familiar to us from the USB mouse to our components, for example,” explains Philipp Echter, IIoT strategy manager at Balluff. “Automatic recognition,

absolute reliability, even the openness to integrate other products, and easy and intuitive operation are all part of our vision — our aspirations for the digital automation of the future.”

### Pooling expertise

In order to live up to these aspirations, Balluff is pooling its software development expertise under one roof — known as the software center of expertise, which is part of the technology division. The employees in this division develop uniform methods and tools and central standards. This also includes the standard software components such as basic communication, security mechanisms, micro-services, and graphic interfaces. “These standards help us to realize our vision of an IIoT interface,” says Echter. “This interface is designed to be the link between the automation technology and the IT world, enabling us to make the data from our sensors available at field level even more easily.” Depending on the application area, the gathered data can then be accessed, irrespective of the location or the end device used. Processed worldwide in a visually appealing manner, the information can be displayed in dashboards and then used to continually improve processes. In this way, the user can get information on the status of the system, the degree of wear of a particular tool, or the temperature of a casting mold, for example.

### Modular structure

Around 30 additional specialists joined the team of developers at Balluff following the integration of the software company's innovative software services

Balluff is working on a universal communication interface for simple data handling.

Balluff has become a data supplier for intelligent production.

in 2017. “The extra manpower and the long-standing experience of the new colleagues in areas such as embedded systems in the automotive industry help us to develop a clear strategy for our software division,” explains Joachim Mettenleiter, head of software expertise at Balluff. “We use a modular framework in the interests of the manufacture of carry-over parts.” The aim is to standardize the elements, functions, and interfaces in order to offer the customer a set of building blocks from which they can select the desired functions. Thanks to the standard user interface, for example, it makes no difference whether the IP address of a network module, smart camera, or RFID device is set up. The user experience and the interface are the same with all three devices.

**An initial look**

For the first time at Hannover Messe, Balluff presented its control panel as an example of how distributed production is visualized. It wasn't just

customers who were given the opportunity to see the standard user interface in action with the aid of real machine and system data from various Balluff locations around the world. Baden-Württemberg's Minister for Economic Affairs, Employment and Housing, Dr. Nicole Hoffmeister-Kraut, was also able to get an initial look at everything and see for herself the benefits the customer enjoys as a result of the improved transparency.

**Balluff as a data supplier**

Usability plays a major role when visualizing data on a standard user interface. The same elements in different applications should be structured in the same way, enabling users to navigate their way around intuitively so that they know what needs to be done. The result could be a Software-as-a-Service solution (SaaS), for example, which allows customers to get more from their data, turning Balluff into a data supplier for intelligent production.

**LEAN, DIGITAL, INTELLIGENT**

Lean manufacturing processes provide the foundations of intelligent production on which the right

automation solution is based. After all, an automated inefficient process remains an inefficient process.

**Intelligent production**

How can production be optimized?  
“(Self-)optimizing”

| Computerization               | Connectivity              | Visibility         | Transparency         | Predictive ability |
|-------------------------------|---------------------------|--------------------|----------------------|--------------------|
| How do things become digital? | How are things connected? | What is happening? | Why is it happening? | What will happen?  |
| “Digitally”                   | “Connecting”              | “Seeing”           | “Understanding”      | “Be prepared”      |

**Lean concepts**

How do I get better processes?  
“Make them lean”

**WALK OF AUTOMATION** – Gathering, processing, evaluating, and visualizing data and then reaching conclusions: The aim of the Walk of Automation is to exploit the full potential of digitalization, automation, and Industry 4.0 for the company's own manufacturing operation.



As a lean manager, Andreas Schönle works on the vision of the smart factory by intelligently combining lean processes and Industry 4.0.

# THE PATH TOWARDS INTELLIGENT PRODUCTION

As an automation specialist, the global production and logistics network also has to keep up with the latest technological advancements, which is why Balluff is showcasing the solutions it uses at its headquarters in Neuhausen auf den Fildern to exploit the full potential of intelligent production. The aim is to improve the efficiency of the supply chain on a lasting basis and thereby turn its own manufacturing operation into a smart factory.

The Walk of Automation is part of the digitalization strategy within Balluff's "Lean & Digital Transformation" program and demonstrates the possibilities of Industry 4.0 using various use cases. This is not some detached showroom. Instead, all of the use cases shown at the various stations are running as part of real operations. The transparency gained from the company's own production processes helps to continually improve them and thus firmly establish the associated lean philosophy throughout the entire company. "Behind each Walk of Automation use case is a ready-to-use Industry 4.0 solution from Balluff, so this is not just an informative tour, but also the visible result of our own digitalization strategy," explains Andreas Schönle, lean manager responsible for supply chain management at Balluff. "We can turn our vision of intelligent production into reality here."

## **Preventing waste**

The applications help the factory workers to perform their tasks in the production and the improved processes for man and machine make the company even more competitive, because the Walk of Automation shows how process-related waste can be further eliminated by Industry 4.0. This cuts costs and simultaneously raises awareness among employees of the opportunities presented by digitalization.

The use cases shown within the Walk of Automation pass through different production and logistics areas that all have one thing in common: the Industry 4.0 idea — from a kanban control unit for packaging material and intelligent tool management with Tool ID to the monitoring of the fill level of tanks. "The tour in Neuhausen is a flagship project for the other Balluff locations," says Schönle. The supply chain management division got together with colleagues from technology and communication to initiate the Walk of Automation in October 2016.

## **Young support**

Several students helped to create the use cases and wrote papers on individual application fields. Balluff is thus integrating the future topics of digitalization and Industry 4.0 at the learning and training stage. It is a win-win situation for everybody involved. The students and apprentices clearly benefit from working on interesting projects and the company gains additional insights into its own products and processes as a result of the academic papers. "The entire project encapsulates our vision of a smart factory," explains Schönle. "We want to show what is possible with Industry 4.0 and impress our customers. The Walk of Automation allows us to demonstrate our systems in action — and not just in the form of an individual sensor or individual components, but as a complete solution."

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## LEAN AND DIGITAL

The Walk of Automation is part of the global "Lean & Digital Transformation" program at Balluff. The aim of this program is to use an integral, global approach to firmly establish the lean philosophy within the company and improve it even further with digitalization and automation measures.

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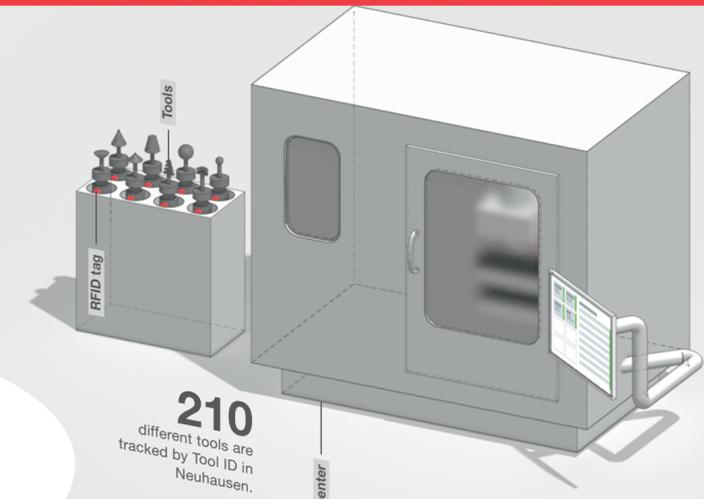


**WAREHOUSE**  
**Digital warehouse with Balluff sensor technology**  
 Florence, USA

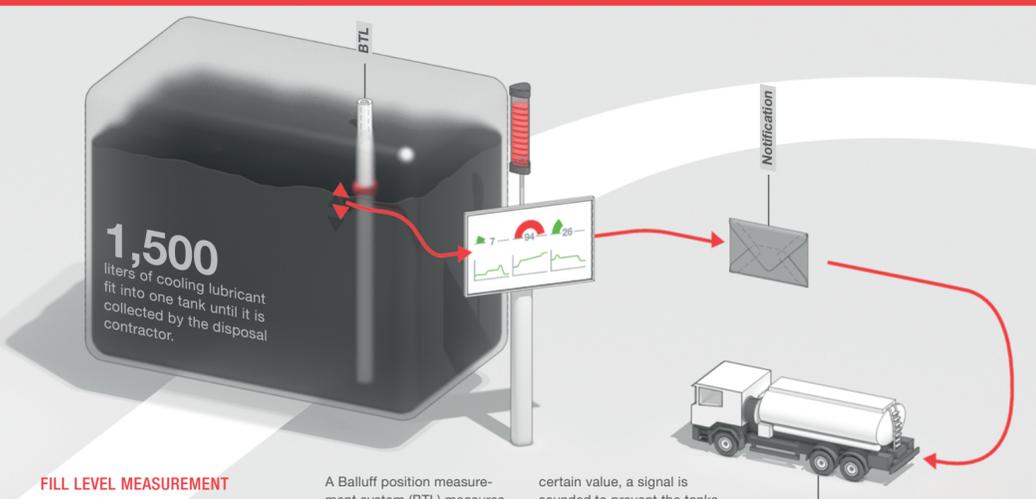
A screen shows in real time the load factor of three conveyor belts in the warehouse, on which the material is distributed. The consignments from Neuhausen arrive on the first line, the products are sent to the packing center on the second line, and the empty containers are returned to the warehouse on the third line. One SmartLight per line indicates the current status of the line. The relevant data is gathered by Balluff sensors fitted to the lines. Further sensors gather additional process data from the conveyor belts in order to monitor their functionality and plan servicing work based on their condition.

**TOOL**  
**Intelligent tool management with Tool ID**

Tool data is stored directly on the tool using RFID technology. The automatic transmission of information links the sensor level to the control level and makes it possible to service the tools based on their condition. This allows the Balluff employees to make optimal use of the tools and avoid errors. Setting-up times are also cut thanks to the paperless tool identification. Usage data can be analyzed and improvements can be implemented by transmitting the data to higher-level systems.

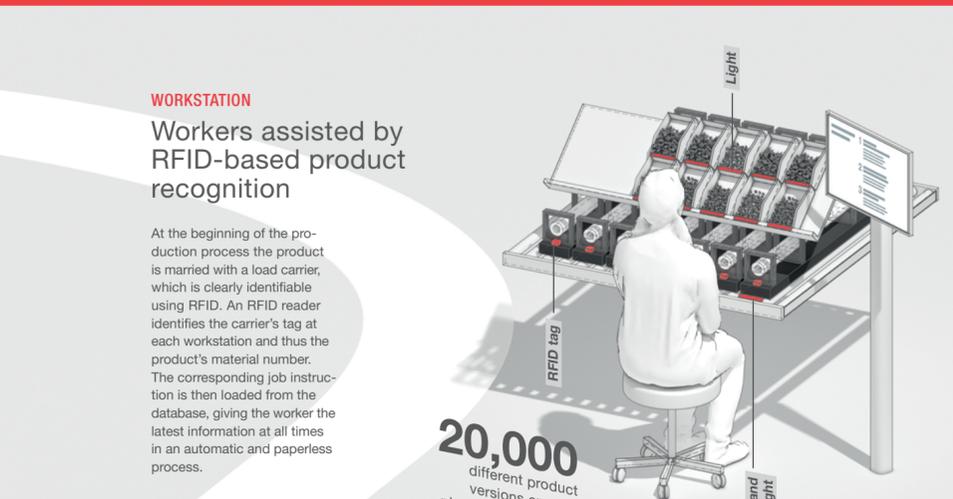


**210** different tools are tracked by Tool ID in Neuhausen.



**FILL LEVEL MEASUREMENT**  
**Fill level monitored by Balluff sensor technology with notification function**

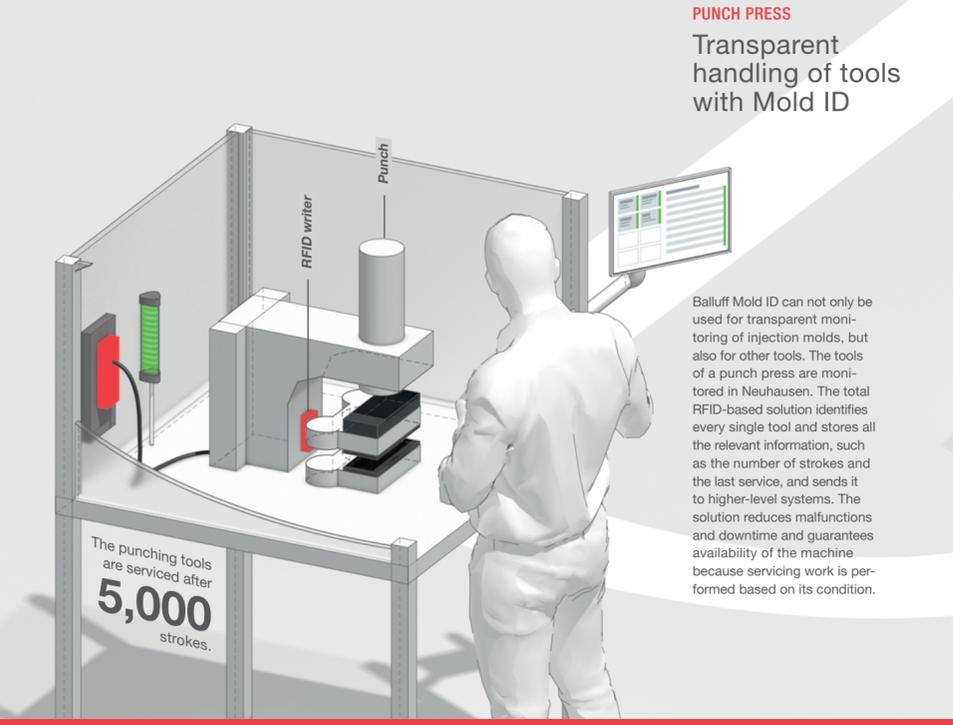
A Balluff position measurement system (BTL) measures the fill level of the cooling lubricant and fresh oil in the tanks. The current status is displayed in real time via SmartLight and on a screen. If the fill level rises above a certain value, a signal is sounded to prevent the tanks from overflowing. Following the sensor signal, the system automatically initiates communication with external companies via e-mail, thereby preventing bottlenecks.



**WORKSTATION**  
**Workers assisted by RFID-based product recognition**

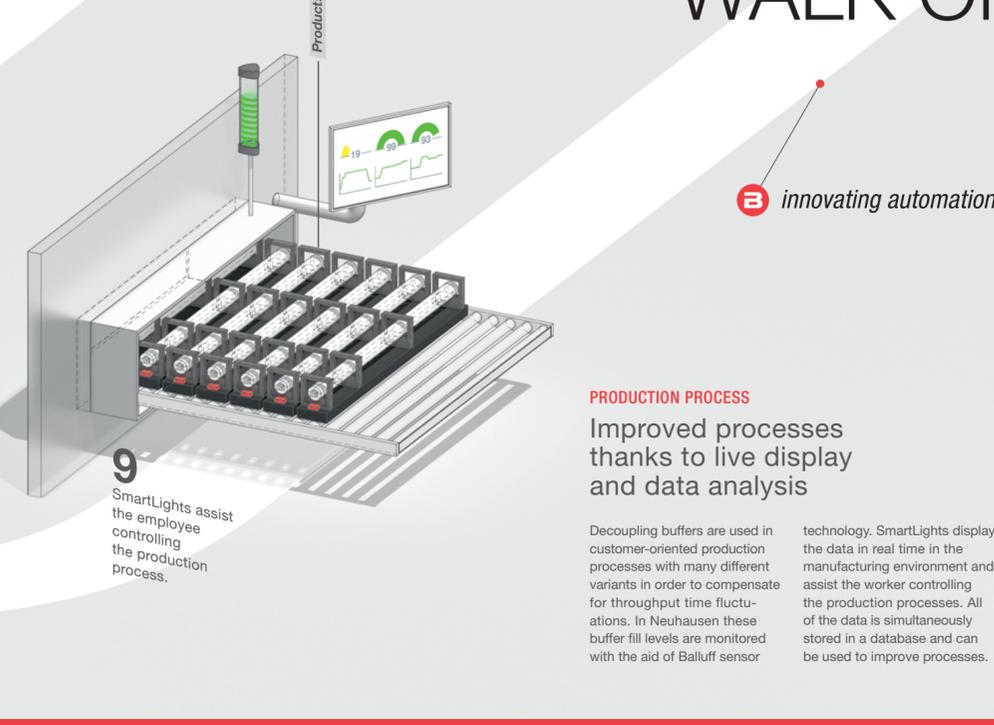
At the beginning of the production process the product is married with a load carrier, which is clearly identifiable using RFID. An RFID reader identifies the carrier's tag at each workstation and thus the product's material number. The corresponding job instruction is then loaded from the database, giving the worker the latest information at all times in an automatic and paperless process.

# WALK OF AUTOMATION



**PUNCH PRESS**  
**Transparent handling of tools with Mold ID**

Balluff Mold ID can not only be used for transparent monitoring of injection molds, but also for other tools. The tools of a punch press are monitored in Neuhausen. The total RFID-based solution identifies every single tool and stores all the relevant information, such as the number of strokes and the last service, and sends it to higher-level systems. The solution reduces malfunctions and downtime and guarantees availability of the machine because servicing work is performed based on its condition.



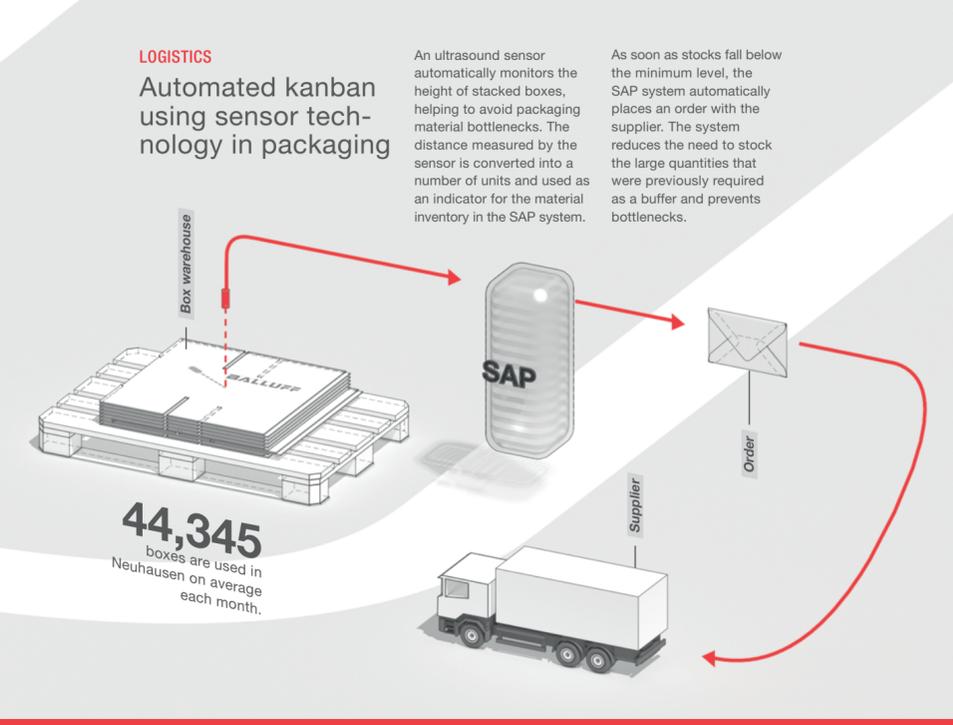
**PRODUCTION PROCESS**  
**Improved processes thanks to live display and data analysis**

Decoupling buffers are used in customer-oriented production processes with many different variants in order to compensate for throughput time fluctuations. In Neuhausen these buffer fill levels are monitored with the aid of Balluff sensor technology. SmartLights display the data in real time in the manufacturing environment and assist the worker controlling the production processes. All of the data is simultaneously stored in a database and can be used to improve processes.



**AUTOMATION SYSTEM**  
**Improved system availability and OEE**  
 Veszprém, Hungary

The automation system in Veszprém consists of a pre-assembly cell and the final assembly line. Coil cores are made here, which serve as the basis for the platform production. The system thus has a key function and that is why availability and OEE are of essential importance. For this reason, several hundred pieces of operating, machine, and process data are gathered during the production process and written into a database fully automatically. The data is evaluated to stabilize the system and guarantee availability and OEE.

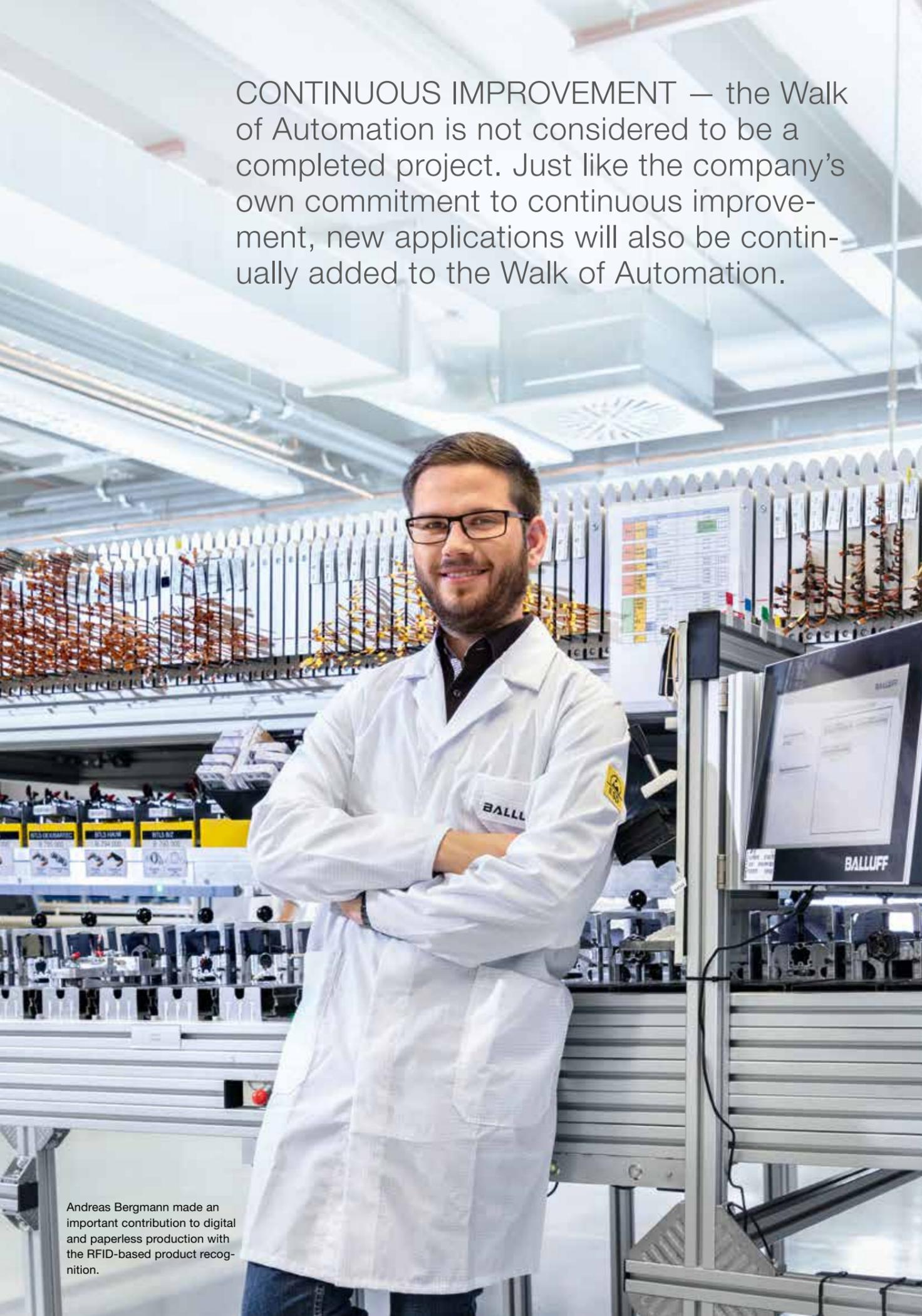


**LOGISTICS**  
**Automated kanban using sensor technology in packaging**

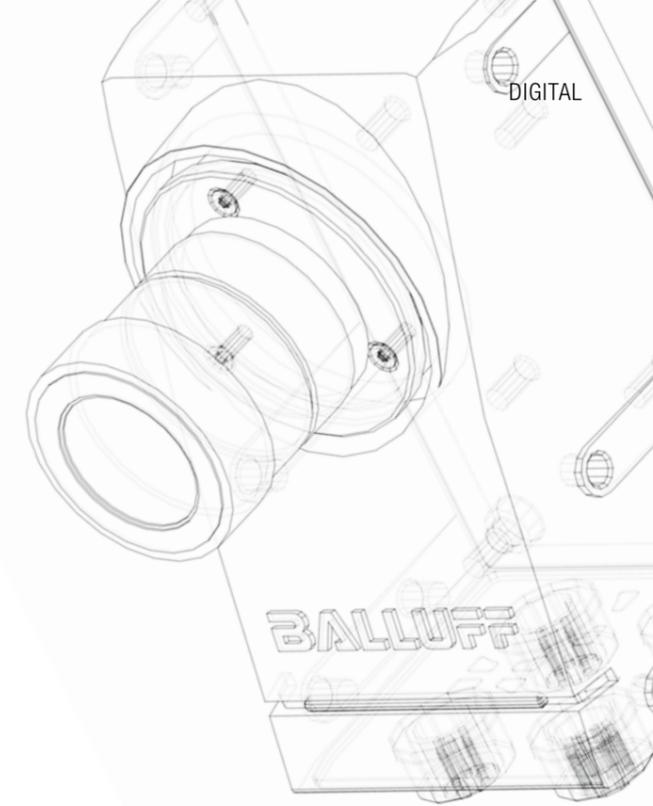
An ultrasound sensor automatically monitors the height of stacked boxes, helping to avoid packaging material bottlenecks. The distance measured by the sensor is converted into a number of units and used as an indicator for the material inventory in the SAP system.

As soon as stocks fall below the minimum level, the SAP system automatically places an order with the supplier. The system reduces the need to stock the large quantities that were previously required as a buffer and prevents bottlenecks.

CONTINUOUS IMPROVEMENT — the Walk of Automation is not considered to be a completed project. Just like the company's own commitment to continuous improvement, new applications will also be continually added to the Walk of Automation.



Andreas Bergmann made an important contribution to digital and paperless production with the RFID-based product recognition.



## TECHNOLOGY

# MISSION VISION

The machine vision pioneer Matrix Vision is enhancing the Balluff Group's expertise in the field of camera-based sensor technology and the associated software. This allows Balluff to supply even better integral automation solutions from a single source.

"A production plant is blind without eyes," says Uwe Furtner, managing director of Matrix Vision. The camera-based sensor technology and image processing specialists from Oppenweiler are the aforementioned eyes — and have added the important and growing field of camera-based sensor technology known as machine vision to the Balluff portfolio. Matrix Vision employs around 100 people and has officially been part of the Balluff Group since the end of 2017. The long-standing partnership had already been in existence for a number of years before that. In the past, for example, Matrix Vision developed the SmartCamera and the associated software for Balluff. "This is how we already knew that we worked very well together and perfectly complemented one another's product ranges," says Balluff managing director Florian Hermle. The growing digitalization trend is also a driving force in this field. "Camera systems are important providers of information within Industry 4.0," explains Uwe Furtner.

### Software expertise for image processing

Besides the SmartCamera, Matrix Vision has also brought other products and technologies to the group, including industrial cameras, smart vision controllers, and software solutions. The subject of

software is particularly important at Matrix Vision. "The control software must regularly compare with reality, otherwise it cannot perform its task," says Furtner. Approximately 30 of the 100 employees work on software development in the field of image processing in an industrial setting. "A standard product whose aim is to cover a large number of use cases is a particular challenge in the area of development and one that hardly anybody has addressed on this market to date," explains Furtner. That's because there is generally a predetermined image of a test component.

### Smart testing

The most suitable algorithms are then selected by an image processing expert for the testing stage. The developers at Matrix Vision have integrated this step directly into the product and further simplified it. "Depending on the situation and image, the software then decides which are the best algorithms and automatically parameterizes them," says Furtner. "We are constantly developing these smart functions. In doing so, we always ask ourselves: Have we taken enough different cases into consideration? There is no definite answer to this question. Our work is never complete."

Matrix Vision has brought the SmartCamera, industrial cameras, smart vision controllers, and software solutions to the Balluff Group.

# THE FUTURE IS CONNECTED

From Balluff's connection technology and connectivity solutions to the interconnection of entire value chains, the future of the Industrial Internet of Things lies in being connected.

This is not only the case from a technological point of view. Balluff's global production and logistics network shows that the connection of different areas of expertise is the key to success. Optimal coordination between the individual locations enables sales, production, logistics, and development to react to demand in an efficient and forward-looking manner.

"Each production site must meet the most diverse customer demands, while also guaranteeing speed and consistently high quality," says managing director Michael Unger. "At the same time, the factories must cater to local and regional needs on the market and still offer customers competitive prices." In order to structure this process in the best possible way, Balluff worked with the plant managers at the various locations to develop a global production and logistics network aimed at preventing unnecessary waiting times and additional costs. "Our aim is to model the group's constant growth and the associated rise in production at the factories," says Unger. To this end, each factory produces precisely what is best for the production and logistics structure in order to perfectly meet customer demands. The factories assume different roles within the Balluff network based on what they bring to the network. There are make-to-stock factories, make-to-order factories, and centers of expertise.

#### Stock and order

Products in high demand are made in large quantities in make-to-stock (MTS) factories. The MTS products are then sent to global and local distribution centers where they are ready to be delivered to the customer. This ensures that they are always available at short notice. Make-to-order (MTO) products are produced as and when needed in accordance

with individual customer requirements. These MTO products are made in the MTO factories in the respective regions. The factories must be in a position to manufacture the goods quickly and flexibly. From here the products are sent to the customers via local distribution centers.

#### Centers of expertise

New products are developed in centers of expertise. From here they are delivered to the customers when needed. Steady series production then takes place later on in an MTO or MTS factory. Everyone benefits from the factories communicating with one another: the customers, the factories themselves, and Balluff as a group. "Our precisely coordinated production and logistics structures improve our delivery reliability, speed up delivery times, create coherent material flows, and assign clear responsibilities," says Michael Schneider, Senior Vice President Supply Chain. Balluff's internal connections project an efficient and forward-looking image outwardly and allow the company to react quickly to market and customer demands. Such connections are thus so much more than a mere technical factor — they permeate all areas of the group, thereby securing Balluff's continued growth.

BTL manufacturing in the production facilities at the headquarters in Neuhausen



## MANUFACTURING 4.0

# WORKING TOGETHER ON THE CONNECTED WORLD

Different partners have to work together on an equal footing to turn the IIoT into reality. One company that has embraced this principle is Bosch, the world's biggest automotive supplier. The annually held Bosch Connected World event, in which Balluff is also involved as an enabler, is evidence of this.

With more than 3,800 delegates, Bosch Connected World is one of Europe's biggest IoT conferences. The IoT industry gathered here in February for the fifth time to discuss trends in the connected world of the future. "The most important aim of the format is to bring together people and companies who share a passion for the Industrial Internet of Things," explains Tammo Schwindt, senior IIoT solution architect at Bosch. "It allows us to give people the opportunity to turn visions into reality instead of just showing them endless strategy slides. The collaboration promotes a trend toward greater openness in the industry and simultaneously subjects ideas to a reality test." The new insights and the resulting partnerships accelerate the development of the IIoT and create real solutions. Balluff is also adhering to this principle of openness and demonstrated this at the event with applications for predictive maintenance and by participating in the associated hackathon as a hack enabler.

## Open industry standard: the PPM protocol

The presented applications communicate via a Balluff IO-Link master and the PPM protocol (PPMP, Production Performance Management Protocol) developed by Bosch. The open-source IIoT pro-

ocol enables small and medium-sized companies to transmit their sensors' data to the production systems of large companies quickly, simply, and securely. "Our sensors serve as data sources. The acquired data is transported via our connection technology and the PPMP and can then be viewed and evaluated," explains project manager Philipp Ehteler. "This gives the machinery and plant manufacturers the opportunity to carry out predictive maintenance and replace worn parts in good time, thereby preventing machine breakdowns and significantly reducing costs."

## Real IIoT data sources

IO-Link played a key role in Berlin. A lathe identified the required tools with an RFID system from Balluff and IO-Link. In a machine bed, a Balluff IO-Link master served as a data collector for the cloud via the PPMP interface. IO-Link has considerable advantages when connecting intelligent sensors or actuators. "The more sensors users want to connect, the more evident the advantages: Installation is simple, quick, and above all error-free. In addition, IO-Link is synonymous with lean wiring and system concepts and also saves space in the control cabinet," explains Dr. Elmar Büchler, industrial manager



In the panel discussion on production performance, Balluff managing director Florian Hermle (center) sets out the benefits of an IO-Link gateway for monitoring and controlling the system status.

"The Balluff team embodies the same values of openness and innovative spirit that are a key element of collaboration within such a community."

TAMMO SCHWINDT — SENIOR IIOT SOLUTION ARCHITECT AT BOSCH

at Balluff. Sensors can be used as real IIoT data sources thanks to IO-Link. The added value for IIoT applications is created by the bidirectional communication with the sensor. Internal data covering aspects such as temperature, service life, and switching functionality is now available thanks to IO-Link.

## Balluff as a hack enabler

Balluff supported the conference's accompanying hackathon event by providing three of its own employees as so-called hack coaches in the field of connected manufacturing. In just two days, the combination of Balluff's products and the participants' development expertise led to the creation of innovative applications for predictive maintenance,

condition monitoring, and data analysis. The Weld-Done team, for example, which came first in the Manufacturing 4.0 hackathon, developed a solution for inspecting welded seams. This involved using an optical laser sensor from Balluff to detect the welded seam. "The hackathon gives us the opportunity to see how our robust industrial products are able to unleash their potential within the context of the Internet of Things and create completely new business models," says managing director Florian Hermle. "It was also a very special experience for us to witness 700 hackers, automation specialists, and business model experts testing the boundaries of existing technology over the course of two days," says Hermle, summarizing his impressions of the hackathon.

INDUSTRY 4.0

# SEEING AND UNDERSTANDING TOOLS

Tools are subject to wear and must therefore be regularly maintained. Tool management systems are the first choice if companies do not wish to make the regularity of inspections dependent on the accounts of individual employees or handwritten notes. This is the approach taken by the SMS group. The plant and machinery manufacturer from Mönchengladbach uses a Tool ID system from Balluff.



Photo: SMS group

Balluff Tool ID ensures that the entire tool data needed at each location is correct and always available in its most up-to-date form.

There are 10,000 technologically and geometrically different tools in circulation at the SMS group's factory. Balluff RFID data carriers provide the necessary overview. In a contactless process, the relevant tool parameters are transmitted to the RFID data carrier in the tool holder while being measured. Accordingly, every single tool can be clearly identified with all its parameters by all machines.

But first things first: The SMS group's heavy machinery includes a boring machine, a double-ended boring machine with two traveling columns and combinable multiple tables, portal milling machines, vertical turret lathes, and flatbed lathes. These are used to manufacture all kinds of complex parts from steel and hardened steel with workpieces weighing up to 200 metric tons. This generally involves the production of single parts or small batches of no more than ten components, often running continuously on a machine for a number of hours or sometimes even several weeks. The overarching tool management system based on Balluff's Tool ID is a key element of the SMS group's new organizational and automation concept. One person certain of this is Judith Schmitt, operations manager in the SMS group's mechanical production division: "Tool management without the RFID data carriers would neither be economically justifiable nor conceivable nowadays in terms of ensuring process reliability and preventing errors such as incorrect allocation or mistyping when entering tool parameters."

### Higher productivity, faster delivery times

The subject of modernizing the production operation at SMS has been on the agenda for quite some time — long before Industry 4.0 became a watchword within the industry. The aim is to increase productivity on a lasting basis and cut delivery times in order to secure jobs at the Mönchengladbach site for the long term. Within the space of just over three



years, all of the machines have been replaced while operations continued.

In most cases, the machines are now supplied with tools fully automatically, including the heart of the production operation with its four machining centers and adjoining high-bay warehouse for workpiece pallet automation. On average, it takes two hours to machine each part in this production area. Between 70 and 80 different tools are often needed here.

### Balluff involved in every stage

The tool data identified using RFID technology is sent to the EXAPT tool and production data management system, which covers the entire process

chain from the gathering and management of the data to its use during production. The system guarantees continuous processes, higher transparency, and an overall increase in production efficiency. It makes it possible to track the use of tools while ensuring optimal utilization capacity and helping to avoid unnecessary downtime. The entire tool data is always available at each location in its correct and most up-to-date form, including the idle times written back in the machines. This reliable and error-free transmission of data via RFID read/write devices to all machines is of great importance primarily in production areas where tools are delivered manually — in the machines' tool magazines, for example, or in associated magazine systems. At every stage, however, a Balluff read/write device is involved.

Left: There are around 10,000 different tools in the tool presetting area at the SMS factory in Mönchengladbach.

Right: The SMS group has been modernizing its production operation for a number of years.

“Tool management without the RFID data carriers would neither be economically justifiable nor conceivable nowadays in terms of ensuring process reliability and preventing errors.”

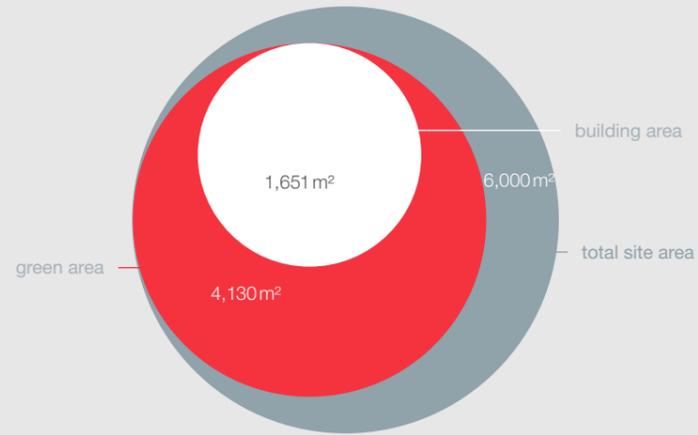
JUDITH SCHMITT — OPERATIONS MANAGER FOR MECHANICAL PRODUCTION AT SMS GROUP

FACTS AND FIGURES

**50**  
Balluff employees work in Wrocław.

**6–8**  
A Balluff training course in Poland has between six and eight participants.

**4**  
It is only 4 kilometers away from Wrocław Airport.



STATE-OF-THE-ART TECHNOLOGY AND APPLICATION CENTER IN POLAND

# CUSTOMER FOCUS EMBRACED WORLDWIDE

Balluff Poland was established 20 years ago in Warsaw. The subsidiary is now based in the western Polish city of Wrocław. Service is the number one priority here thanks to the state-of-the-art technology and application center as well as the outstanding infrastructure.

Wrocław is a picturesque city in the west of Poland. The River Oder flows through the historical center of the country's fourth-biggest city, with its population of 640,000. In 2016, the EU named Wrocław the European Capital of Culture, not least due to its rich history, which dates back more than 1,000 years. In 2018, it also won the Best European Destination award. Yet the city is not just content to look back on its illustrious past. More than 130,000 students make the region, whose most important economic factors are software engineering and the automotive sector, one of the youngest and most progressive in Poland. "Digital change is a decisive factor for the future of Wrocław. It therefore stands to reason that this city is an interesting place for Balluff, which is why we opted to move in the year 2008. The constant growth of our subsidiary has proved that we made the right decision," says CEO Michael Unger.

with the customers is immediately noticeable." Eight colleagues work in the area of sales operations and logistics, while a further ten employees are based in the service center. "Our greatest strength in Poland is the highly motivated and competent team, which concentrates fully on the customers' needs, whether it involves selecting the right sensors for special applications or managing complex projects with RFID, IO-Link, and vision technology," says Pawel Stefański. The focus is constantly on offering the best products and services.

Balluff Poland opened the new technology and application center in 2015.

**A focus on service and closeness to the customer**

After opening a sales office with three employees in the capital Warsaw in 1998, in 2008 Balluff Poland moved to the western Polish city of Wrocław. Managing director Pawel Stefański and 50 other Balluff employees now work there. "Service and closeness to the customer are our focus areas and are critical to our success," says Pawel Stefański, who has worked in the field of industrial automation for 25 years and has been at Balluff Poland ever since the subsidiary was established. "Our close contact





Left: There is painstaking attention to detail on the training courses.



Below: Customer applications are tested in the vision lab and observed using highly sensitive cameras.



Experienced instructors, outstanding equipment, small class sizes — training courses at Balluff Poland

## REGIONAL RESPONSIBILITY

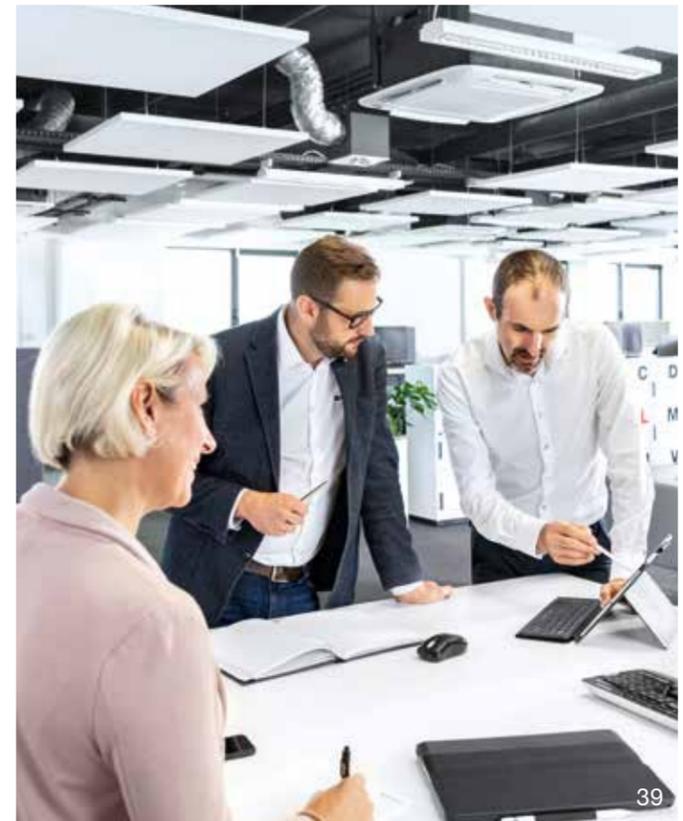
The new sales structure is benefiting customers in terms of service. That's because as managing director of Balluff Poland, Pawel Stefański is also vice president of the Central Eastern Europe region, which includes the Czech Republic, Russia, Hungary, and Slovakia as well as Poland itself.

One office, many ways of individually organizing the work



Right: A modern approach to teamwork in the open-plan office

Below: Modern shop floor management



### New technology and application center

Balluff began building its own technology and application center in Wrocław back in 2013. Its role is to give customers in Poland and northern Europe comprehensive support and advice. Among other things, this is where solutions are developed for issues relating to modern production and better use of the company's own technical and organizational potential. "Our aim is always to strengthen our customers' ability to compete. The concept was so well received that we quickly needed a special building to ensure that we were able to continue to support our customers to the best of our ability." The newly built technology and application center located west of the old town was completed by 2015 and it was once again time for Balluff Poland to move. Thanks to its immediate proximity to the expressway as well as the airport, which is just four kilometers away, the new site is really accessible.

### Modern training facilities

People attending training courses and workshops at the technology and application center can expect state-of-the-art rooms and optimal training facilities, because this is where the training center and the large showroom are located. The conference room on the ground floor accommodates up to 50 people and can be divided into three smaller rooms thanks to movable walls. Located on the same floor is the modern service laboratory, where Balluff Poland offers practical training sessions. "The thing that differentiates us from our competitors is the fact that Balluff has more than just modern solutions. In addition to the best technology on the market, we also offer individual advice and intensive training courses precisely tailored to the needs of the users," stresses Stefański. Furthermore, Balluff is continuously upskilling its employees at the training center to ensure that users always get the best service.

Committed to service, closeness to the customer, and training: Paweł Stefański, managing director of Balluff Poland



"Anyone who wishes to develop innovative solutions and wants to improve continuously must have the courage to stray off the beaten track. The introduction of the lean methods is a good example of this."

PIOTR TAJAK — HEAD OF SUPPLY CHAIN AND OPERATIONAL SALES SUPPORT AT BALLUFF POLAND

### Practice-based training courses and new technologies

Customers gain insights into the latest Balluff solutions on the training courses, including IO-Link, RFID technology, and vision systems and there are also foundation courses on sensors. "Our seminars are always firmly rooted in practice and have between six and eight people at most enrolled on them. That is the optimal size for learning," says Wojciech Roczon, head of the technology and application center at Balluff Poland. The training courses are run by qualified and experienced Balluff engineers, who know the precise needs of the customers very well. Balluff Poland works closely with the Balluff Group's international training and professional development department to ensure that the content of these training courses is always up to date. "We have also developed a special piece of equipment at the Wrocław service center to make the training courses particularly realistic. On training courses involving RFID or IO-Link systems, for example, every participant uses their own PLC." The many different matters dealt with at the service center range from simple appointment inquiries to the creation of tracking systems on production lines.

### Modern working methods produce innovative solutions

"Anyone who wishes to develop innovative solutions and wants to improve continuously must have the courage to stray off the beaten track. The introduction of the lean methods is a good example of this," says Piotr Tajak, head of supply chain and operational sales support. "That is why all colleagues, including the managers, work in an open-plan office designed according to the principles of activity-based working on the first floor of the technology

and application center. Instead of working at the same desks, we choose the optimal setup depending on the task in hand — this may be separate meeting rooms, open meeting places, the quiet room, or the open-plan workspace."

### New regional structure

Poland, the Czech Republic, Russia, Hungary, and Slovakia have been organized within the "Central Eastern Europe" region since 2018. As managing director of Balluff Poland, Paweł Stefański is also vice president of the region. The new structure has many advantages for both customers and employees: The various locations can provide mutual support more effectively when dealing with inquiries, excellence standards and expertise spread across the network more quickly, and the locations can tailor their business models precisely to the important industries. That is why customers and colleagues in the entire region benefit from the worldwide experience.

### Working together for the future

Balluff Poland also works closely with educational institutions in and around Wrocław and throughout the entire country. "We have entered into many agreements to ensure that we support schools and universities with the latest Balluff technology," says Magdalena Jurek, head of digital sales and marketing communications at Balluff Poland. "This allows schoolchildren and students to use state-of-the-art technology to gain practical experience and learn how the digital transformation process really works in the industrial sector. It is very important to us to do something for the next generation of scientists and engineers in this way. After all, these young people will be shaping our future at some point."

Managing director Paweł Stefański has been working at Balluff Poland for 20 years.



A new landmark on Plieninger Straße:  
The new building is open and inviting.  
Image: Grüntuch Ernst Architects

## BALLUFF IS GROWING

# MORE ROOM FOR INNOVATION

In a two-stage concept, the company headquarters in Neuhausen auf den Fildern is getting an extension and a new building to create more space for the employees.

The Balluff Group is growing — and needs more space. “Within the last five years alone, our workforce in Neuhausen has grown by around 38 percent to more than 1,000 employees,” says managing director Katrin Stegmaier-Hermle. That is why an office and development building had to be added to the company headquarters on Schurwaldstraße. “It is a light and airy building that provides plenty of space to innovate,” explains Stegmaier-Hermle. “In the long term, it will create a positive working atmosphere and satisfy the future requirements of a modern workplace.” With its hall-like design, the new building on Schurwaldstraße, which will be up to twelve meters tall, evokes the typology of a technical production location. A broad middle ramp, which serves as an indoor street, open communication zones, and the new staff restaurant provide central places for Balluff employees to meet. Balluff’s main site is thus being reordered.

### Modern working environments

Once the extension on Schurwaldstraße has been completed, an imposing new building will be constructed on Plieninger Straße, which will feature a customer and training center in addition to contemporary office space. The open space near the Esslingen/Neuhausen exit of the A8 autobahn is still a green field at present, but an innovative building is set to be built here on an area measuring 1,000 square meters. Flexible conference, event,

office, and meeting spaces are being created within the building with its contrasting introverted, enclosed rooms and extroverted communication areas. Together with the new building and extension on Schurwaldstraße, this new building will provide workspace for a total of 1,250 employees. The different company divisions, which are currently spread across various locations in Neuhausen, will then be grouped together on one campus.

“In terms of architecture, both buildings follow a similar fundamental idea: the alternation between

formal office areas and more informal spaces where people can move around, seek inspiration, and interact with one another for the purposes of team building and collaboration,” says Armand Grüntuch, co-partner of Grüntuch Ernst Architects in Berlin. The company’s design emerged as the clear winner in a tendering process involving eight other competitors. “This concept perfectly reflects our growth and our forward-looking approach, with modern working environments that promote communication and collaboration,” says Balluff managing director Katrin Stegmaier-Hermle, explaining the decision.

“Modern working environments that promote communication and collaboration.”

KATRIN STEGMAIER-HERMLE — MANAGING DIRECTOR



With the new office and development building at the company’s headquarters, Balluff employees will also benefit from a meeting area with terrace, a new staff restaurant, and an integrated green space. Image: Grüntuch Ernst Architects

## LEADERSHIP CULTURE

# “A CAREFUL APPROACH TO CHANGE”

Managing director Katrin Stegmaier-Hermle believes that anyone who wants to seize the opportunities presented by change needs an open and clear leadership approach. She knows when employees have to be given structure during such processes — and when it is necessary to listen to your own gut instinct.



**Ms. Stegmaier-Hermle, change processes within a company are generally far-reaching and protracted. This calls for values that provide stability and allay fears amid such change. Which values and ideas do you impart on a day-to-day basis in your role as managing director?**

Clarity. The clearer we are at management level, the easier it is for our employees to embrace the changes. Openness is also required; the ability to listen and exercise care. Then I am able to make reliable decisions. I am someone who needs reliability and structure. I believe this is something I can authentically pass onto my employees. They need continuity to be able to handle the changes well. But intuition is also important, the gut instinct. Reason and rationality may be key aspects, but sometimes you just have to trust your feelings.

**Which changes are currently on the horizon and is openness required here?**

Well, there is the change process concerning our internal processes, for example, which we initiated at the end of last year. Regardless of the area in which we are working as managers, we all agree that these changes help us to achieve a clear industry focus, which ultimately leads to better solutions for our customers. As managers, we must do everything we can to make sure that this industry focus is evident within the company. There has been plenty of preparation work to date — now we have to prove that we are able to work better with the new structure and make sure that the employees can actually see it.

**How do you wish to incorporate this new structure into the company?**

On a day-to-day basis, it means we must exercise greater care. We have to take the time to listen carefully to our employees and ask them how things are going. And then we also want to convey a certain sense of composure and patience to the managers. After all, a change process as big as this can never go completely smoothly. There will be friction and lively discussions — this is also part of the change process. To this end, we have come up with formats

designed to support our colleagues throughout the change process. For instance, we have organized an international managers' meeting that focuses on the subject of management and cooperation among managers and empowers us as managers in our role as important pillars of change. Everyone actively shapes this cooperation and plays a part.

**How would you say the Balluff employees are dealing with change within the company?**

Many colleagues have been very open in embracing the changes. They tell us that this is the right step for us as a company and is helping us to make Balluff fit for the future. This reflective feedback is very important to us. It is nice when the employees trust us and go along with the developments. They want to play an active part and help to shape the company. This is a fantastic basic attitude and places Balluff on a firm footing. I get a sense of this conviction in many different areas and it makes me proud.

**What effect has the growth in recent years had on the management of employees?**

The demands have grown considerably — on the employees and the managers in equal measure. We have seen a large number of changes in a wide range of areas. In my view, it is becoming ever more important and simultaneously more challenging to explain the benefits of the changes to the employees. As an employee, if I don't get an explanation, then I am unable to embrace change. And our job as managers is to create the conditions that allow the employees to accept the changes. The teams are also becoming more global as a result of increasing internationalization. This also presents the management with another challenge: We deal with very different people, different characters, and different cultures. It is about identifying and nurturing the employees' individual skills and conveying the basic attitude across national borders and language barriers. All employees appreciate openness and reliability, whether they are in Shanghai, Wrocław, or here in Neuhausen. Every single person has a contribution to make and every single person is important. Bringing it all together in a team is both a challenge and an opportunity.

# SET UP FOR OUR CUSTOMERS

With its seven new divisions, Balluff is consistently gearing its organization toward the needs of its key industries. The three new industrial divisions form the link between market and technology and ensure an innovative and tailored product portfolio. Besides monitoring specific market developments the industry teams identify megatrends and their impact on the digitalization and automation of our customers' manufacturing processes. All divisions work on improving the competitiveness of customers around the world and use a worldwide network to contribute to Balluff's global performance.

## MARKETING & SALES

The job of the marketing and sales division is to be close to the customer. International campaigns, product communication, and sales all converge here. With 37 subsidiaries and other offices in a total of 68 countries, Balluff is globally positioned and thus guarantees fast availability of its products all over the world and high-quality sales advice and service wherever the customer is based.



**“Our customer focus secures the lasting success of the Balluff Group and is the basis of our growth strategy.”**

FLORIAN HERMLE —  
MANAGING DIRECTOR

## PACKAGING, FOOD & BEVERAGE

Greater organizational importance has been attached to the packaging, food, and beverage industry in the form of its own dedicated division as a result of Balluff's strategic reorganization. The job of the new division is to develop this high-potential market segment even better by adopting a global strategy and creating the right solution portfolio.



**“The division embodies Balluff's new beginnings. We are curious, agile, and keen to be an innovative partner to our customers.”**

DR. MARTIN OSTERFELD —  
SENIOR VICE PRESIDENT  
INDUSTRY PACKAGING, FOOD &  
BEVERAGE

## MOBILITY

E-mobility, battery production, and autonomous driving are trends that occupy the mobility division. The company's traditional business activities in the automotive sector are established here. In this industry Balluff is a global partner to the carmakers' factories and Tier 1 suppliers. The term "mobility" considerably expands this core business, with a focus on other means of transport such as automated guided vehicles, railroad technology, and aviation.



**“The focus on our key industries strengthens our global network.”**

JÜRGEN GUTEKUNST —  
SENIOR VICE PRESIDENT  
INDUSTRY MOBILITY

## MACHINE & PLANT ENGINEERING

This new division covers eight different industrial segments: energy, metalworking, metallurgy, plastics and rubber, semiconductors, life science, general drive technology, and general factory automation. The industrial managers and their wealth of experience in the individual segments guarantee an innovative and industry-specific product portfolio.



**“Our thoughts and actions are driven by and based on the industry focus.”**

ANKE J. RÜTTGERS —  
SENIOR VICE PRESIDENT  
INDUSTRY MACHINE & PLANT  
ENGINEERING

## SUPPLY CHAIN

Lean, digital, highly automated: The supply chain division is responsible for the entire order fulfillment process from the time the order is received to the point at which the product is delivered to the customer. The division oversees purchasing, material planning, and the global production and logistics network under one roof to ensure maximum delivery performance and quality.



“Supplying the desired quantity of the ordered product in perfect quality, at the right price, on schedule, to the right customer.”

MICHAEL SCHNEIDER —  
SENIOR VICE PRESIDENT  
SUPPLY CHAIN

## TECHNOLOGY

The technology division develops the right product portfolio of automation technology and software for the various industries. This is where we plan the product program, manage the development projects, and accompany the products throughout their entire life cycle. The technology division is also responsible for tracking down and evaluating technological trends. We lend impetus to the enhancement of products and pursue the research and development of new technologies.



“Developing the best solution for our customers — on time, in line with the specifications, and within budget.”

MICHAEL UNGER —  
MANAGING DIRECTOR

## SERVICES, FINANCE & QUALITY

The services, finance, and quality division is central to everything and embraces controlling, bookkeeping, facility management, human resources, the entire IT operation, and the management systems and processes department. This division also oversees the central quality and environmental management and the accredited test campus.



“Anyone can purchase hardware, software, and machinery. The way we collaborate as a team sets us apart from the competition.”

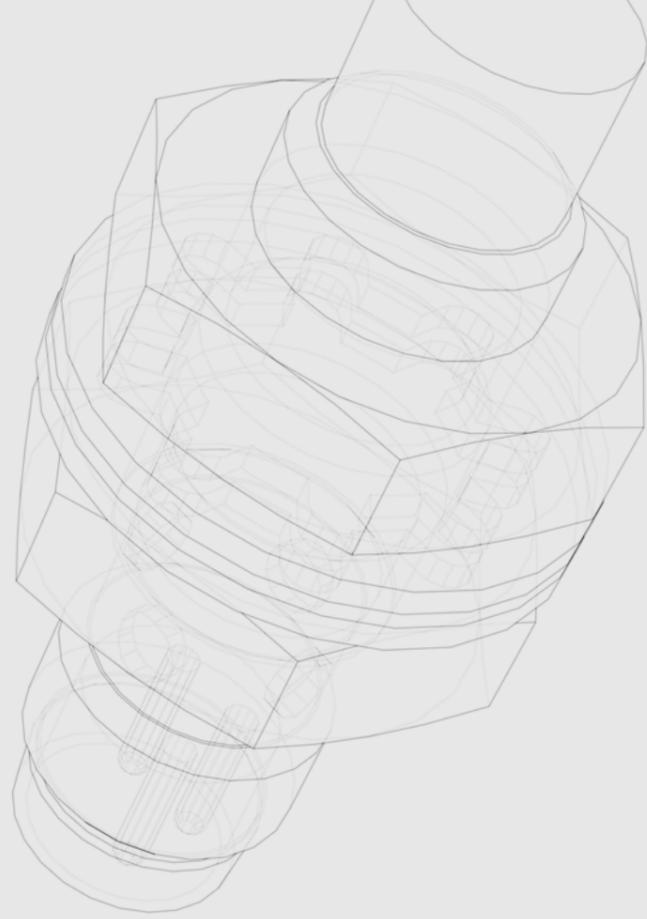
CHRISTIAN MAIR —  
SENIOR VICE PRESIDENT  
SERVICES, FINANCE & QUALITY

“We are embracing the industry focus following our realignment and making it tangible for our customers.”

FLORIAN HERMLE — MANAGING DIRECTOR

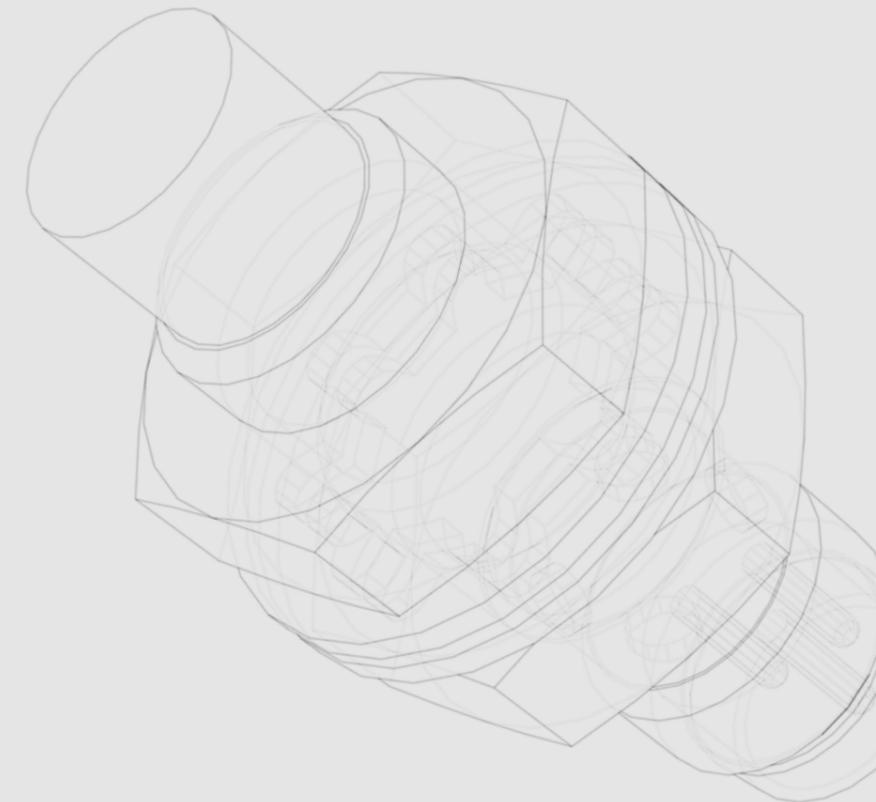


The new, extended Management Board and the respective divisions are making sure that the organization remains focused on the needs of the customers.



“I am proud of the fact that we are able to offer our customers integral automation solutions from a single source through a combination of our development work and the right partners.”

MICHAEL UNGER — MANAGING DIRECTOR



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## IMPRINT

### Publisher

Balluff GmbH  
Schurwaldstrasse 9  
73765 Neuhausen a. d. F.  
Germany  
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### Concept and creation

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Stuttgart  
Balluff Marketing  
Communications

### Photography

Jürgen Altmann

### Printing

Druckhaus Waiblingen  
Remstal-Bote GmbH

The paper used to produce this document has been made from raw materials sourced from responsibly managed forests and the ink used is also eco-friendly.





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