PEPPERL+FUCHS

News for Factory Automation

2/2014

Intelligence Cleverly Used
The competence center for photoelectric sensors in Berlin opens up new dimensions in technology and application areas.

From Concept to Digital Screwdriver
With SmartBridge technology, sensors can now communicate, and be configured and maintained, using tablets.

Energy Efficiency Driving Economic Growth
How industry is driving energy-efficient production with custom automation solutions and the role Industry 4.0 is playing in this process.
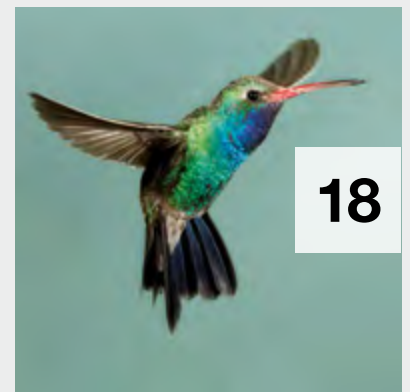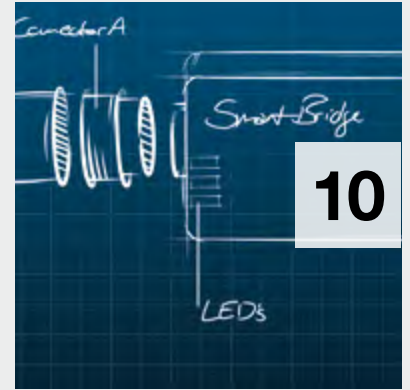
Dear Reader,

Energy costs have become a key factor in production, especially in energy-intensive industries. Industry is therefore focusing on energy-efficient automation solutions to rein in these costs. Increasingly, energy efficiency is one of the key goals in the design of plants and production processes. But plants are not only at their most efficient when they run continuously in their optimized standard operating mode. Energy efficiency also involves using energy when supply is plentiful and prices are lowest. Find out what role Industry 4.0 is playing, and why high levels of automation with customized sensors are the key to energy efficiency in industry, from page 19.

In our cover story, we take a look behind the scenes at our competence center for photoelectric sensors in Berlin. This center keeps its finger on the pulse of the latest trends in the sector and develops tried-and-tested technologies into new applications. Read more on page 4.

Happy reading,

Dr. Gunther Kegel
CEO

We look forward to receiving your feedback on this issue.
Please e-mail any comments to: **newsletter@pepperl-fuchs.com**

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Focus

Intelligence Cleverly Used

**Photoelectric sensors are indispensable when striving
for error-free production and logistics without time delays.
At the Pepperl+Fuchs competence center in Berlin, photoelectric
sensor technology is helping to open new dimensions.**
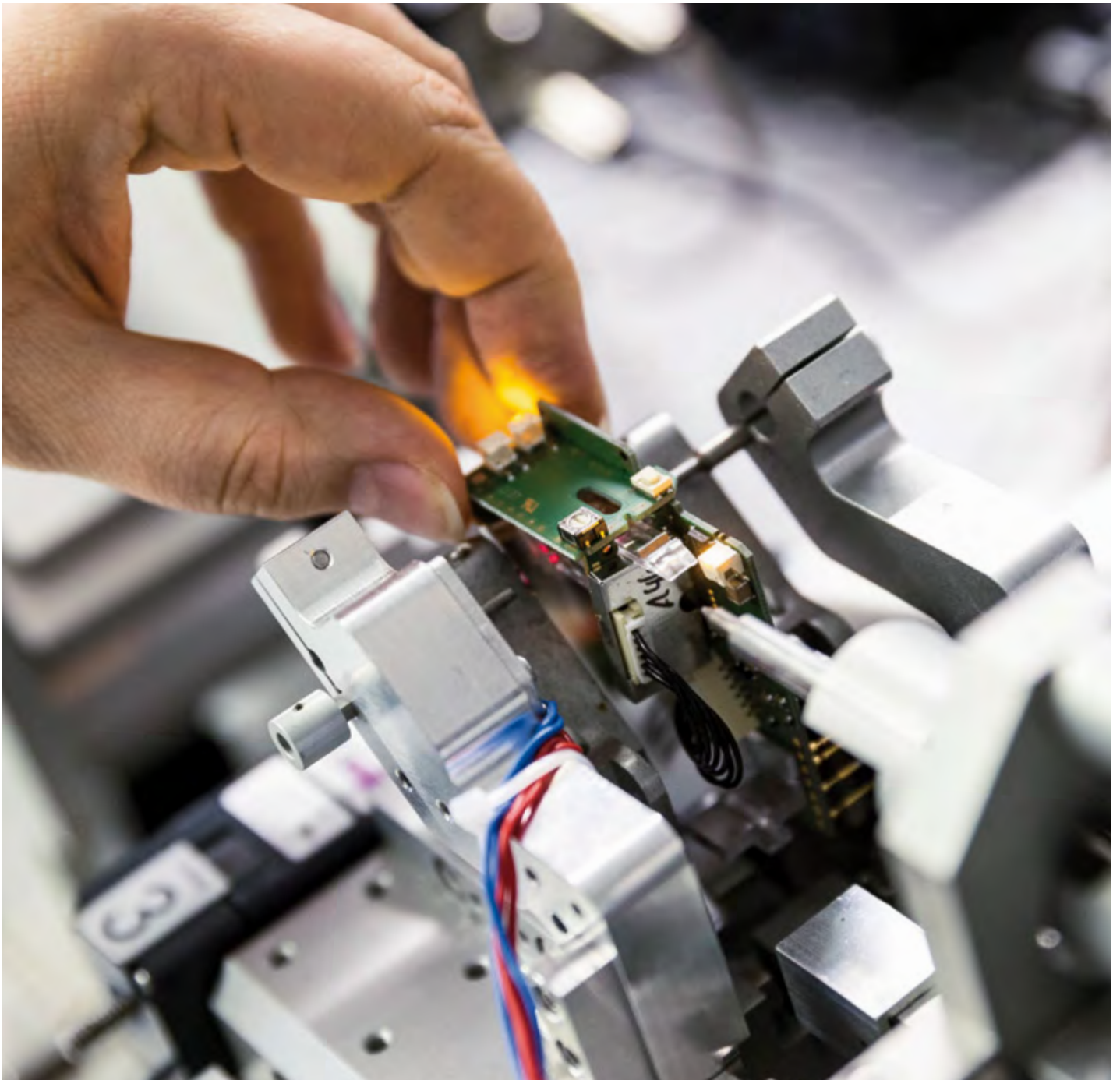
The larger distribution centers of DHL, UPS, and similar logistics companies currently handle 50,000 shipments an hour. The typical function of photoelectric sensors is the reliable detection of objects. Even simple photoelectric sensors use the speed of light to determine whether a package has arrived at a certain point or not.

"This binary switching signal is often no longer sufficient in many of today's applications," says Thorsten Schroeder, product manager for photoelectric sensors at Pepperl+Fuchs in Berlin, Germany. "Staying with the example of the distribution center, if the sensor not only detects the presence of the package, but also determines its dimensions, sorting can already start in the same step. This saves time, space, and costs. The combination of the yes/no signal with a differentiated measured value takes this process step to a higher level of intelligence. We are also extending the measuring range from 1D to 2D, giving us a much more detailed picture of the respective process situation." By intelligently using this measuring information, the Berlin competence center is one of the world's technological pioneers. Its experts and its products are far ahead of the competition particularly in terms of MPT and PRT processes. ≫

» Strong Across the Range

MPT stands for Multipixel Technology, which determines the distance to the object geometrically based on the light reflected by the object. PRT is another key abbreviation in the field of intelligent photoelectric sensors with an integrated measuring core: The Pulse Ranging Technology determines the distance based on the runtime of the reflected light. The design-specific advantages of PRT sensors allow high detection ranges, speeds, and measurement precision. The main

technical basis for this is the large signal-to-noise ratio: The extremely energetic light pulses create clear reflections, which can be clearly differentiated even in very unfavorable conditions of reflections and scattered light.

Generally, laser light is used which slightly limits applications. But Pepperl+Fuchs has found the solution. "We are the only manufacturer that can offer PRT with a standard LED light source," says Thorsten

More Dimensions

Hinrik Weber is the Business Unit Manager of the Pepperl+Fuchs competence center for photoelectric sensors in Berlin. We asked him about the structure of the branch and the most important trends in his field.

Mr. Weber, where is the field of photoelectronics heading?
In short, we are moving from one-dimensional to three-dimensional solutions. An individual measuring point is no longer sufficient in more and more applications; people want to detect surfaces and contours, but ideally, the whole object. This requires greater functionality and intelligence in sensor technology. At the same time, more intelligent sensor technology is supposedly being used in simple areas.

What does this mean for the development and manufacture of photoelectric sensors?
We need practical, robust, and affordable measuring methods. Multipixel Technology and Pulse Ranging Technology are two good examples. These technical principles allow precise measurements even in difficult conditions. We are among the technology leaders in both areas when it comes to industrial sensors. Measuring sensors offer more data; we have good solutions that allow the additional information to be forwarded
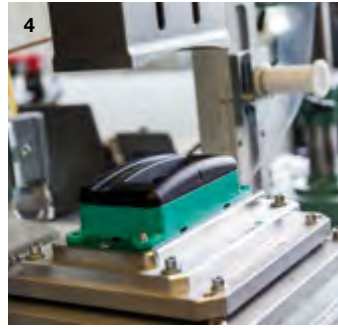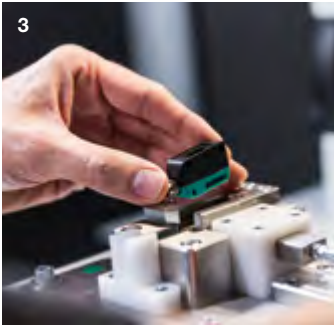
Schroeder. "With the Multi-Ray LED scanner R2100, our customers can use LED technology for two-dimensional distance measurement. The sensor has no moving parts that can wear out over time." Another highlight is the R2000 series 2D laser scanner. These offer a complete 360° all-round visibility with an unmatched stable scanning axis, practically without angular misalignment. The two examples show how the potential of the new technologies is continuously lever- aged and how the product portfolio is expanding for new, exciting applications. Thorsten Schroeder highlights: "Our 2D sensors not only allow completely new applications, but also new dimensions in automation." ◼

to the control interface without any obstacles or unnecessary effort. The challenge in manufacturing is the efficient calibration of the intel- ligence of each and every sensor.

What sets the Berlin site apart?
We take the phrase "competence center" very literally. About half of approximately 200 employees work in product development and in the technical center, a special manufacturing center for developmental production. The product management team keeps a close watch on the market and liaises with users to identify their needs and ensure these are incorporated into development. The entire team is focused on the further development of our products and on new developments.

### What are the technical challenges of photoelectronics?
Light has the highest speed and allows resolution even down to the nanometer range. The biggest challenge is to translate these physical strengths into functioning products that can be mass produced with reliably high quality. We therefore need creative ideas to fully leverage the physical benefits, as well as practical solutions for production and for calibration and testing processes. Often, it is a case of mastering highly complex mechanics and extremely high requirements where precise positioning to a thousandth of a millimeter is required.

How can such tasks be solved?
This is primarily the responsibility of our special production center – the technical center – which not only builds prototypes of the products, but also develops the necessary production and testing technology. Together with product development, engineering develops new pro- cess technology at the highest level.

Where do the ideas for product development come from?
Our team includes experts who follow the latest scientific and techno- logical developments in the area of photoelectronics and establish suitable approaches to improve existing products or develop new products. The other source, who are just as important, are our cus- tomers. For example, an application should become faster or more efficient, or the customer's process control section would like more precise information or further information in a certain work process – these are typical requests that trigger a new product development process. ◼
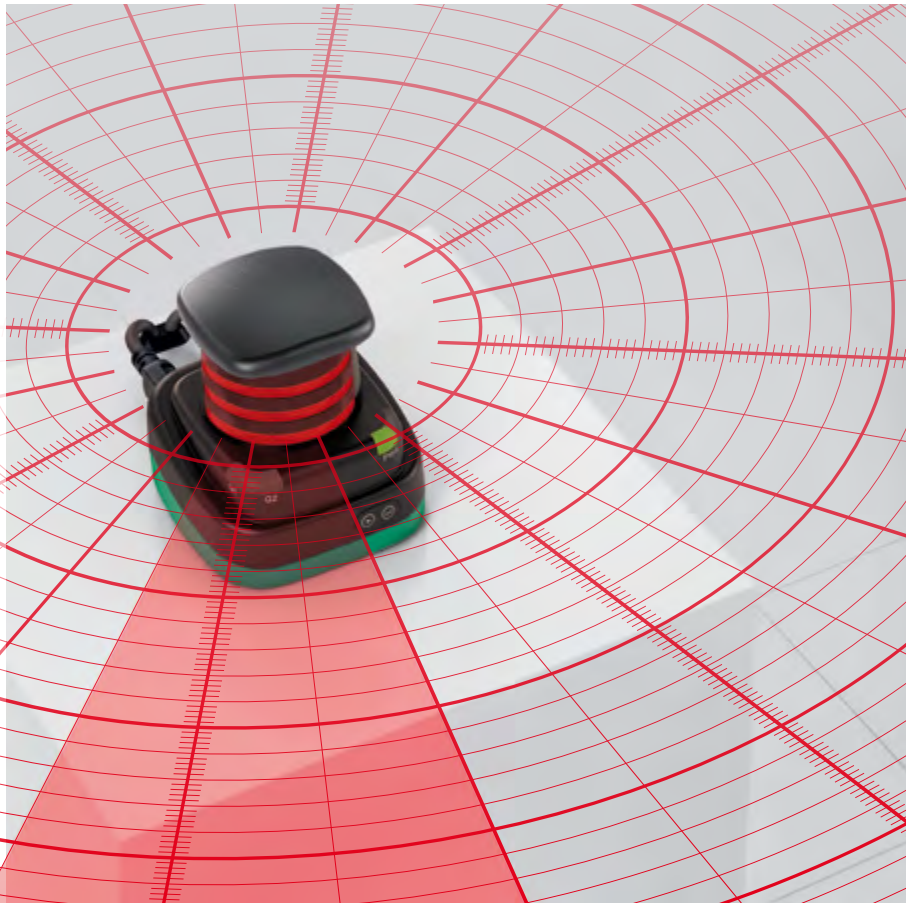
R2000

360° Absolute Precision Detection Above the Surface

Photoelectric Sensors   **The R2000 Detection 2D laser scanner features a stable scanning axis, enabling reliable object detection and field monitoring at a distance of just a few millimeters above the surface to be inspected.**
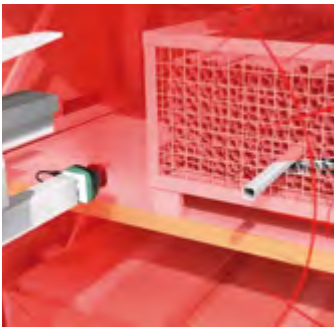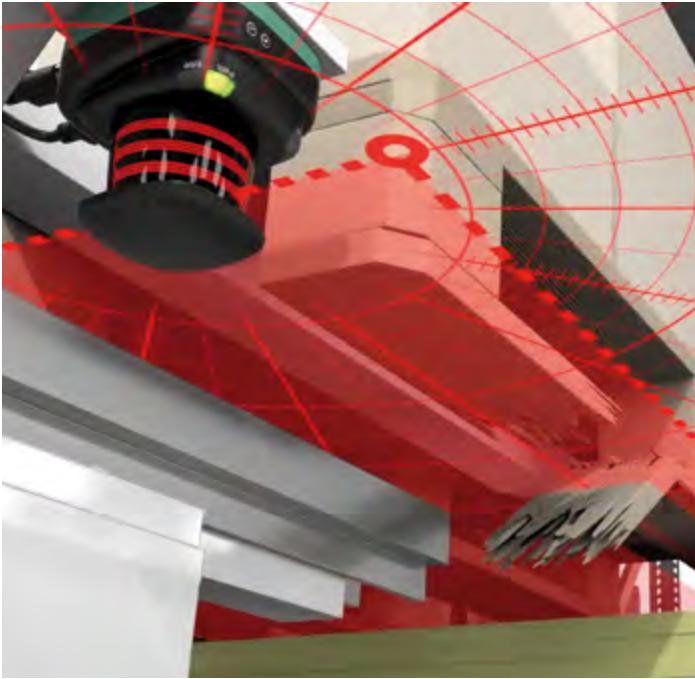
The R2000 Series on YouTube

With its compact design and continuous 360° all-round visibility, the R2000 2D laser scanner ensures maximum performance and precise measurements in a wide variety of applications.

Learn all about the highlights and the application range of the R2000 series on our YouTube video.

The special design ensures a continuous 360° all-round visibility. The combination of a compact design, optimum angle resolution, and ease of use enables the scanner to be used for a wide variety of applications, such as in intralogistics or material handling.

Defective pallets and protruding parts can result in collisions during automatic compartment assignment in high-bay warehouses, causing major property damage. As the first switching scanner, the R2000 Detection has a measuring module that rotates on a rigid axle, enabling reliable 360° measurements at the exact same level. Its compact design makes the device considerably smaller than comparable products. The sharp light spot passes directly under the cover, making it possible for the sensor to be positioned very close to the scan surface being monitored. Even the smallest objects and edges are reliably detected.

The R2000 Detection also ensures reliable collision protection for automated guided vehicles when driving in narrow warehouses. Its high angular resolution of up to 0.071° is unsurpassed in switching scanners and enables contours to be viewed to the nearest centimeter. Even the smallest of objects such as thin wires can be detected. With simple and intuitive programming, the monitoring area can be precisely determined. Four freely definable detection fields can be linked with the outputs in just a few steps.

Equipped with the innovative Pulse Ranging Technology (PRT) – the true time-of-flight measurement – the 2D laser scanner guarantees accurate and reliable measurements in various ambient and object conditions. This makes the R2000 Detection indispensable for detecting the smallest of objects in fast applications. ∎
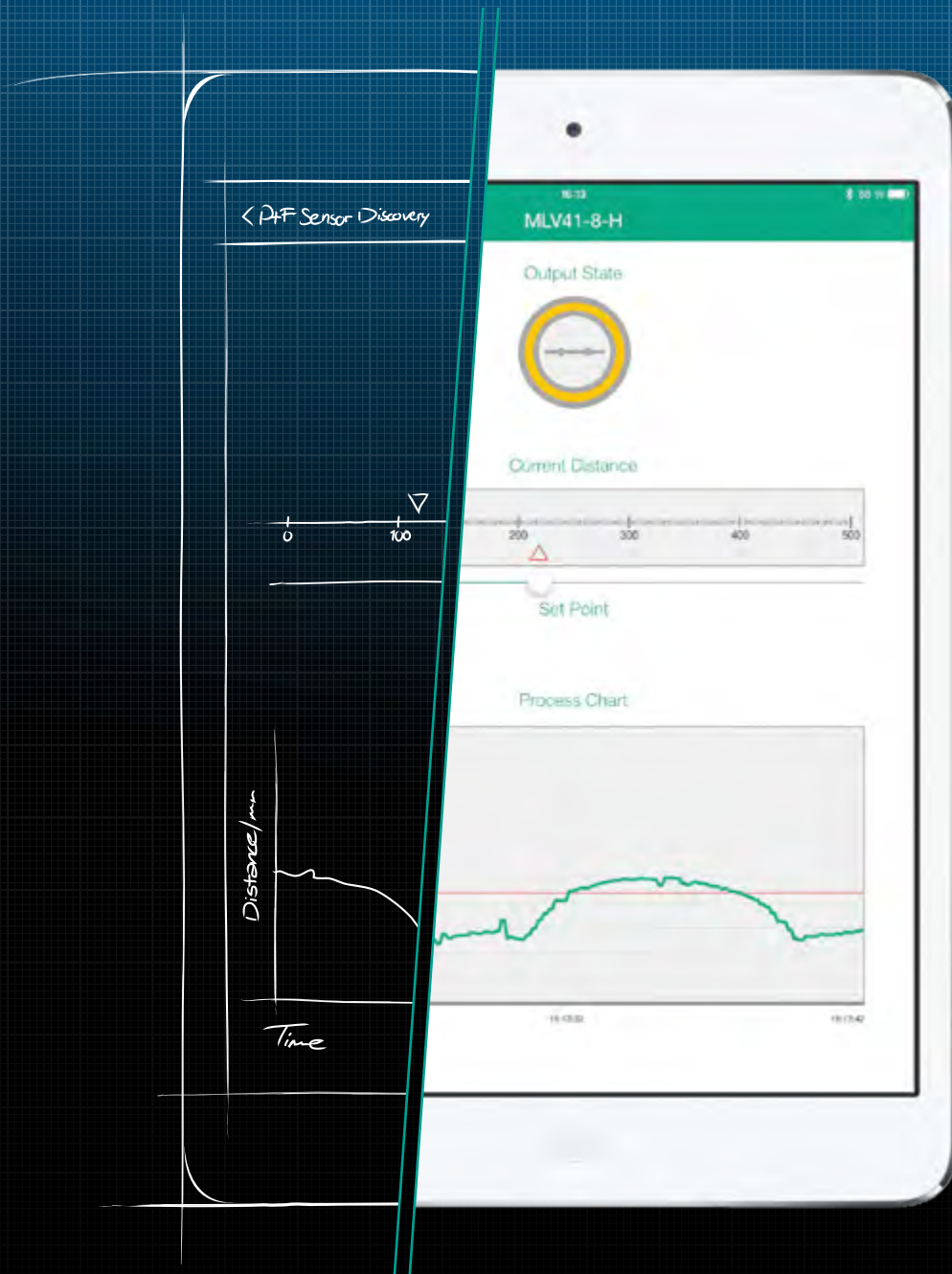
From Concept
to Digital Screwdriver

The conceptual study on SmartBridge caused a big sensation last year when it showed how to bridge the worlds of real machines and virtual data. Now Pepperl+Fuchs has developed the technology further and is taking a concrete step towards Industry 4.0. Using SmartBridge technology, even simple sensors can communicate with smartphones and tablets. The mobile devices can act as a display, parameterization aid, digital screwdriver, or web router.

Cable   Connector A   Smart Bridge   Connector B   Cable   LED's
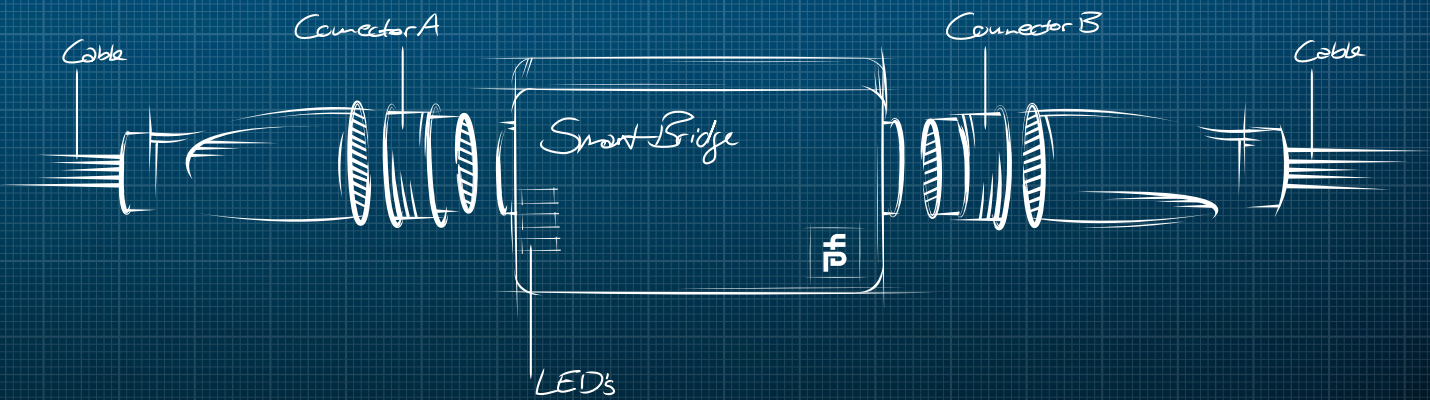
More intelligence is being shifted to the lower levels of the process. This has not just been a megatrend in automation since the establishment of Industry 4.0. However, even trends reach their limits. Simple components are not fitted with expensive accessories that would increase their price. Likewise, sensor information beyond the digital signal is not generally used and the intelligence is left to the control system.

Closing Digital Gaps
SmartBridge – the name says it all – intelligently bridges this digital gap. SmartBridge technology consists of two parts: an adapter and an app. The SmartBridge adapter collects data and parameters from the sensor via an IO-Link interface. This information is then visualized by the SmartBridge app, allowing access to the sensor. The app can also directly access units with Ethernet or WLAN connections. Other devices such as the RFID control interface IDENT*Control* Compact are already fitted with SmartBridge technology. When the SmartBridge app starts, a drop-down list appears, showing all sensors in range. Data is transferred to the mobile device wirelessly via Bluetooth.
"We decided on Bluetooth, not least for security reasons," says Benedikt Rauscher, head of the development group for vision sensors and SmartBridge Project Manager at Pepperl+Fuchs. "This point-to-point connection is a local connection and does not allow any outside interference. Viruses on the tablet or smartphone cannot cause any damage since it is not possible to transfer data to the controller."

App Becomes the Universal Tool
Many useful things are possible: The mobile device functions as an on-the-spot graphical user interface or display. The app allows easy parameterization or access to bills of material and operating instructions. At the same time, data sheets can be retrieved from the Internet. The data retrieval has no repercussions and does not impair production flows. As a "digital screwdriver", the app simplifies maintenance work by enabling easy access to the diagnostics data of the sensor during live operation.
A key advantage of SmartBridge technology is that the existing wiring is left completely untouched. Standard interfaces allow the system to use sensors produced by other manufacturers. "This means it can be used for higher-level automation functions. Essentially, SmartBridge means the sensors can be made Internet compatible," says Benedikt Rauscher. "Even if that is not the actual objective of SmartBridge technology, in doing this, we have virtually paved the way toward seamless communication and sensor technology 4.0." ■

➡   **www.pepperl-fuchs.com/smartbridge-technology**

Robustness Meets Precision

Rotary Encoders   The new magnetic rotary encoders achieve a new level of precision in the most diverse applications with an accuracy of < 0.1° to 1°. The contactless technology means they are maintenance-free and particularly durable in highly dynamic processes. They ensure data security even in the event of a power failure. The compact designs open up numerous application possibilities. Interfaces for EtherCAT, PROFIBUS, PROFINET, and SSI ensure seamless communication right through to the controller.

ENA58IL – The New Benchmark for Industry Standard Rotary Encoders

Precisely Positioned for Filling

Up to 90,000 bottles an hour can be filled with juice, beer, and sparkling mineral water in modern filling plants. Rotary encoders are used to place the containers right under the filling nozzles. The ENA58IL series magnetic rotary encoders are particularly suitable for this task because they deliver position data for the precise positioning of the bottles based on an accuracy of < 0.1°. The robust, wear-free rotary encoders ensure safe processes even during a power failure and are therefore ideal for the high standards in the food and beverage industry.

Safety in the Printing Process

Newsprint flies through offset printing machines at a speed of approximately 15 m/s. The rotation of the rollers must be precisely coordinated so that the paper does not tear or crinkle and the information is printed in the right place. The ENA58IL series rotary encoders enable precise control of the roller speed. With their high resolution and absolute accuracy of < 0.1°, they ensure maximum precision in the application. Their robust housing design means they are not affected by the machine's vibrations and that the ever-present dye and paper dust does not interfere with their function.

ENA36IL – The Compact Design for Tight Spaces

Small and Dynamic for Industrial Robots

Rotary encoders detect the movement of the individual axes of an industrial robot, which provides the basis for its own positioning. Smaller robots with low load capacities have very little space on the inside. Until now, it was difficult for manufacturers to choose the right rotary encoder: precise, robust, or compact. The ENA36IL series rotary encoders give them all this in one. The devices achieve a precision of < 0.1° and a resolution of up to 16 bits. The compact design of only 36 mm in diameter is ideally suited for tight mounting conditions inside the robot. They are extremely robust and therefore ensure reliable production flows.

42H – The Most Compact Heavy-Duty Rotary Encoder of Its Class

Extremely Robust in Outdoor Use

Safety and precision are crucial when positioning the boom on mobile cranes – people can get injured and property damaged if the movement of the crane boom goes too far. The extremely robust 42H series magnetic heavy-duty rotary encoders ensure the precise positioning of the crane boom even under high stresses and strong vibrations. The non-contact magnetic technology ensures absolute reliability and a long service life under the toughest conditions. As one of the most compact heavy-duty rotary encoders of its class, it can easily be integrated into mobile machines.

www.pepperl-fuchs.com/magnetic

Individual Series

Previously, terminal blocks could be produced cheaply as mass-produced goods by machine or individually configured by hand. In Industry 4.0, this contradiction is removed. The ClipX machine from automation specialist Phoenix Contact shows how this is possible. From a "digital item", the machine can make an automatically produced product – starting right from item number one. The F190 RFID UHF read/write head from Pepperl+Fuchs ensures that the components are correctly detected and that the required information is sent to the active manufacturing cell.

Terminal blocks make it all happen. They set the course for the flow of power and data, either in the home or in industry: Terminals are indispensable for ensuring that the refrigerator cools and the assembly line maintains its rate. The terminal has proven itself as a modular high-tech product in challenging applications.

"Our customers increasingly demand user and industry-specific solutions," says Frank Knafla from the Control Systems division of Phoenix Contact. "We need to be able to expand our product range, while at the same time offering smaller batch sizes cost-effectively. Things also need to move quickly, both in delivery and in the development of new products." »

Maximum Performance with UHF Technology

The F190 UHF read/write head is ideally suited to medium-range identification tasks and can be flexibly integrated into existing production and logistics processes. Country-specific frequency ranges allow worldwide use and simplify integration into the systems of global companies. In just one read process, the UHF read/write head can read up to 40 RFID tags at the same time. The F190 also has an integrated antenna with switchable polarization. This increases the read rate where RFID tags are arranged differently or close together and guarantees reliable process flows in each application.

www.pepperl-fuchs.com/UHF-F190

Seamless Engineering

Customized configuration of products and flexible yet automated production at the same unit cost as mass production are the key characteristics of Industry 4.0. The key to this is the comprehensive vertical integration of the engineering chain as well as the seamless connection of integrated automation processes. The customer can personally configure the product and data is automatically sent to production via the Internet without any manual involvement. The ClipX machine is a functioning prototype that uses this concept.

"The concept starts with the design of the circuit diagram for a switch cabinet," explains Olaf Graeser from the Manufacturing Solutions division. "The engineering data is gathered together in the 'digital product.' This tells the machine which production steps are necessary for its production. Once the terminals are attached on the mounting strip, the product is given a name. This ID is saved on the identifier label – the RFID tag. This forms the connection to the automatically generated production plan in the process control system. Based on the ID, the next processing cell determines how the item is to be further processed. The RFID tag can also include information about precisely where the terminal is to be attached. The assembler can then later read the information with a handheld device and no longer has to study circuit diagrams or assembly plans."

RFID Technology Allows Interaction

RFID systems play a crucial role in this process: They allow interaction between the machine and the intelligent digital product. The RFID tag must be read and described quickly and reliably, particularly where typical machine interferences or reflections from metallic surfaces make this more difficult. "For the ClipX machine, the RFID tag had to be very small and heat resistant, which was only possible with UHF technology," explains Olaf Graeser.

Field tests showed that the F190 read/write head from Pepperl+Fuchs is superior to other UHF devices in its transmitting power and receiving sensitivity. Its switchable antenna polarization ensures the reliable identification of the RFID tags in every application, regardless of their arrangement. Thus, it achieves a higher read rate than comparable devices. "This example shows that in an Industry 4.0 environment, reliable identification plays a particularly important role," explains Dr. Klaus Schmitt, Product Manager for RFID sensors at Pepperl+Fuchs. "With small batch sizes, any kind of readjustment becomes a critical cost factor. Reliable processes are a must." The F190 is very compact and can easily be integrated into the machine. In addition, it is highly flexible in its range of application worldwide. The country-specific frequency ranges of the F190 enable simple integration into the systems of global companies.

There is no alternative to RFID. By comparison, Dr. Schmitt refers to the earlier approaches to seamless automation such as computer integrated manufacturing (CIM), from which Industry 4.0 differs fundamentally on one point: "The whole concept is decentralized; as much intelligence as possible is relocated to the actual production process. The component itself includes the information for its processing steps and can record incoming information for the next step. RFID is the only available transfer technology that allows the RFID tag to be read and described. It is the sensor technology key to Industry 4.0." ■

The ClipX machine allows the automated manufacture of configured mounting rails in batch sizes of one. The order data is linked to the digital project information and transmitted to the machine's control system. The F190 UHF read/write head from Pepperl+Fuchs establishes the crucial connection between the components and the machine.

Did You Know That ...

… Australian scientists fitted 2.5 x 2.5 mm RFID tags onto the backs of 5,000 honey bees to research the worldwide problem of bees dying? The Commonwealth Scientific and Industrial Research Organization (CSIRO) hopes that this will help explain the behavior of the bees and shed new light on why the population is dying out around the world. The collected data is transmitted to a central location, where the scientists create 3D models of the movement patterns of the bees.

Source: Nicole Woerner,
computer-automation.de

www.youtube.com

Hummingbirds can beat their wings so fast that the flapping action is not visible to the human eye.

The tubular tongue of the hummingbird is so thin that capillary action causes it to fill with nectar when introduced to the calyx of a plant. The birds can flick out their tongue some 200 times a minute.

It is not unusual for a hummingbird to drink five times its body weight in nectar every day. The birds have a highly efficient metabolism that enables them to process this astonishing volume.

Hummingbirds have a big heart! Accounting for around 2.0% to 2.8% of the bird's body weight, the humming-bird heart is the biggest when compared with all birds in proportion to its overall size.

Hummingbirds can only perch with their very short legs; they cannot walk.

Natural Energy Efficiency

Hummingbirds are one of the most energy-efficient creatures in the natural world. The sophisticated way in which they metabolize and convert energy enables them to temporarily suppress the bodily functions that keep them alive, allowing them to operate at a minimal level. This state, known as "torpor", is a sleep-like condition in which animals can adapt their metabolic processes to the prevailing environmental conditions – to adapt to different nutrient levels during a period of drought, for example. When conditions improve, the animals become active again. Unlike hibernation, hummingbirds can enter a state of torpor at any time, without any preparation. The birds even lower their heart rate at night in order to conserve energy and can reduce their body temperature by up to 20°C. Adapting their metabolic processes in such a targeted way enables hummingbirds to efficiently regulate the substantial amount of energy they require.

Energy Efficiency Driving Economic Growth

Energy consumption is increasing globally – so CO_2 emissions are rising, too.
As a result, our world is facing the challenge of conserving resources and protecting
the environment while reducing costs wherever possible. To achieve all of these
objectives, we need to use energy as efficiently as we can. In this interview,
CEO Dr. Gunther Kegel explains why high levels of automation with
customized sensors are the key to energy efficiency in industry.

Is the outlook bleak for our future energy consumption?

Our world is currently undergoing an exciting process of rapid change. China is a prime example – around 20 years ago, the developing country became a hotbed of economic growth as a newly industrialized nation. Since then, it has developed into the world's second largest economy. We're expecting to witness similar patterns in many other countries. We're seeing strong industrial growth across the world, and the products and infrastructure being created as a result are making life easier, safer, and more comfortable for millions of people. With all of this going on, a significant rise in the demand for energy is inevitable, but at the same time resources are becoming increasingly scarce. But shortfalls like this are an opportunity for the automation industry; we help other industries to save energy by increasing their efficiency.

Why is energy efficiency in industry so important?

We need to think about future generations and use our planet's resources as carefully as possible. From a commercial perspective, energy efficiency is also steadily working its way up the agenda as energy prices are tending to increase over time.

How do we apply energy-efficient solutions to real-life, practical situations?

These days, if a customer automates specific processes or optimizes an existing system, one of the key objectives is to ensure that the new solution is as energy-efficient as possible. With intelligent automation solutions, we help our customers to make their systems and processes efficient. Devices with diagnostic functions, for example, can play a huge part in improving energy efficiency. »

How are diagnostic functions connected to energy efficiency?

Systems are efficient when they run constantly in their optimized standard operating mode, especially in process industries. The largest single cause of spikes in energy consumption in this sector is generally unplanned shutdowns and restarts. If we can use diagnostic functions and fieldbus technology to prevent just one single unplanned shutdown, we will have made a significant contribution to increasing energy efficiency.

The electrotechnical industry in Germany made the issue of energy efficiency a top priority in the mid-1990s. What has happened since then?

At that time, the policy already focused on replacing fossil fuels with renewable energy sources, predominantly solar and wind energy. The transformation of our energy supply – or energy transition, as it

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"As approximately half of the electrical energy consumed in manufacturing is used for internal transport and positioning tasks, this area is undoubtedly where we see the greatest potential." *Dr. Gunther Kegel, CEO*

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is known – is the culmination of these developments. We thought that we could produce more immediate, tangible results by first reducing energy consumption in machines and systems by making them more efficient. The simplest example is the conveyor belt. These belts used to run continuously, but you can achieve considerable savings if you limit belt movement to individual sections that move only when there is something that actually needs to be transported. Today, we have effective automation concepts for many applications like this.

Where do we still need to take action?

As approximately half of the electrical energy consumed in manufacturing is used for internal transport and positioning tasks, this area is undoubtedly where we see the greatest potential. In the process industries, products and pre-products are usually transported through piping. The task of the conveyor belt in this kind of application is fulfilled by electrically driven pumps. These pumps build up to maximum pressure and a choke valve then limits the pressure to the required level. But in modern motors and frequency converters, the power can be adjusted to the required level, depending on the actual requirements for the respective application. The required pressure can be set precisely and adjusted accurately. With these kinds of solutions, it is possible to reduce the electrical energy used for transport by 50% or more in many systems.

What role does sensor technology play in these kinds of energy efficiency concepts?

The first requirement for increasing efficiency is an intelligent sensor technology that is perfectly customized to the application. Conveyor belts that start only when incoming goods are present and shut down

automatically after transport require accurate positioning sensors along the full transport route. The sensors must be tailored to the specific features of the conveyor system. Compact designs, simple and precise adjustment, back- and foreground suppression are just a few examples of the typical characteristics of these sensor systems. In the example of the frequency converter-controlled pump, the generated pressure must be measured by sensors so that the pressure can be set at exactly the right level.

Is there a link between Industry 4.0 and energy efficiency?

Energy efficiency also means using energy when supply is plentiful and therefore prices are low. We are already seeing highly volatile pricing in the energy market because the supply of electrical energy fluctuates wildly; primarily because it is difficult to predict how much energy will be generated from renewable sources. In Industry 4.0, the field level of production will become intelligent. Equipment that does not have to be running constantly can switch itself on automatically when electricity is at its cheapest. A melting pot, for example, can keep material molten for some time without a constant supply of energy. With an automatic control system, the operating company can make significant energy savings by using the peaks and dips in demand to its advantage. In the energy-intensive factory of tomorrow, it will be crucial to have an energy management system that connects all energy consumers in a network, along with a central control system that can decide which consumers should be switched on and when. Of course, this kind of solution only works if

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"In the energy-intensive factory of tomorrow, it will be crucial to have an energy management system that connects all energy consumers in a network, along with a central control system that can decide which consumers should be switched on and when." *Dr. Gunther Kegel, CEO*

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you hold material in stock ready for production and actually have something to produce at these favorable points in time. These solutions greatly increase complexity in production planning, which can only be managed using a highly automated system.

How can Pepperl+Fuchs contribute to global energy efficiency?

Today, energy costs have become a key factor in production, especially in the energy-intensive industries. However, increasing energy efficiency in order to reduce energy costs is not being realized all over the world as it is in Germany – but that situation is changing appreciably. We already have tried-and-tested solutions and are in a position to offer them in Asia and Africa as well as in South America, where demand for automation technology is growing rapidly. Our products and solutions are part of this automation technology, which lets us contribute to reducing energy consumption, costs, and CO_2 emissions. ∎

Battle for the Golden Trophy

Brazil was not the only country to be gripped by soccer fever this past summer – the sound of the referee's whistle and cheering teams was heard in Poland, too. Pepperl+Fuchs hosted the first soccer championship of the Polish automation industry.

A total of eight teams from customers and partner companies battled for two days at "Pepperl+Fuchs Cup 2014". Their performance was perhaps not quite up to the standards set by the soccer teams in South America – but when it came to commitment and team spirit, the participants certainly measured up to the professionals. The special guest of the event was the former Polish international soccer player, Piotr Świerczewski. The winner of Pepperl+Fuchs Cup 2014: The Kirchhoff Polska team from Mielec, who was proud to hold the golden trophy aloft at the end of the tournament.

Alongside the athletic spirit, the event offered plenty of opportunities to strengthen the relationships with our customers and partners. Just like the FIFA World Cup itself, the Pepperl+Fuchs Cup is now planned to be held as a regular event. ■

From Singapore to Germany

Pepperl+Fuchs is breaking new ground in Singapore in its search for qualified young people.

Juergen Seitz, Managing Director of Pepperl+Fuchs Singapore (second from left) at the signing of the Memorandum of Understanding.

In April of this year, Pepperl+Fuchs Singapore signed a "Memorandum of Understanding" together with the Singapore Economic Development Board, Nanyang Polytechnic, Singapore Polytechnic, and three other German companies. Pepperl+Fuchs is now part of the academic program "Poly-goes-UAS" that gives the polytechnic graduates from Singapore a chance to pursue a three-year cooperative study program in Germany. First, the participants complete their engineering diploma at the Nanyang or Singapore Polytechnic. They then undergo a one-year intensive German language course, followed by a cooperative study program in mechatronics or electronics in Germany.

With this cooperative study program, Pepperl+Fuchs is aiming to attract and groom high potential employees in Singapore at an early stage and retain them in the company for the long term. For Juergen Seitz, Managing Director of Pepperl+Fuchs Singapore, this approach benefits both parties: "After they have completed their academic program coupled with targeted work curriculum at our headquarters in Mannheim, we will gain promising employees who have excellent language skills and are familiar with the German engineering practices and cultural differences. When it comes to smoother communication and mutual understanding, this is a big plus for all parties involved." ■

倍加福

Double Happiness

Pepperl+Fuchs started its business activities in China 20 years ago when the country was listed as an emerging market. Today, China is a leading power and the second largest economy in the world. It is also one of the most important markets for automation technology where Pepperl+Fuchs is well established.

"The Chinese say it is better to have old friends than new enemies. The Chinese transcription for Pepperl+Fuchs is Bei Jia Fu, meaning double happiness. We take that literally."

Matthias Gunkel,
Managing Director of Pepperl+Fuchs' Factory Automation division, Shanghai

When visitors at the wax museum in Hong Kong approach Queen Elizabeth II and her husband Prince Philip, trumpets suddenly start a royal fanfare. The days when visitors merely walk past silent, motion-less wax figures are well behind us. Today the museums are more like an amusement park with themed areas and interactive features. The acoustics that visitors hear as they approach the royal couple come from a sound system activated by an ultrasonic sensor from Pepperl+Fuchs. When a visitor steps into the sensor's detection range, the signal triggers the controller to start the royal fanfare. The customer has chosen ultrasonic technology as it provides accurate results regardless of a target material's shape, color, or surface contour. Even a camera flash does not affect the ultrasonic sensors.

The Early Years
Of course, wax museums are not among the wholesale buyers of automation technology in China. The high numbers are written elsewhere. "The automotive industry is our biggest market, closely followed by logistics, packaging, and the sector for doors, gates, and elevators," says Matthias Gunkel. Gunkel is Managing Director of Pepperl+Fuchs' Factory Automation division in China, head-quartered in Shanghai, and the company's pioneer there. "When we started out in Shanghai in 1994, we stood at the beginning of an amazing economic development. Foreigners like me could hardly believe what they saw, but the Chinese were assured that their country would very soon regain the leading role it had had for most of human history."

Facts + Figures

Capital	Beijing	*Head of government*	Prime Minister Li Keqiang
Area	9.6 million km²	*GDP*	9.2 trillion US dollars (2013)
Population	1.36 billion (2013)	*National anthem*	March of the volunteers
Form of government	People's Republic	*Internet TLD*	.cn
Head of state	President Xi Jinping	*Country calling code*	+86

Pepperl+Fuchs established a joint venture with a Chinese partner in 1994, the only way to start a business in those years. Ten years later, the laws had changed and the company became a WFOE – a wholly foreign-owned enterprise. "Many companies stumbled into considerable difficulties when they made this step because they managed the separation from their partners quite abruptly," Gunkel remembers. "The Chinese say it is better to have old friends than new enemies. Still today we cooperate closely with our former joint venture partner who is a respected distributor of our products."

Solutions, Service, and Seminars
The Pepperl+Fuchs division for Process Automation is headquartered in Beijing and has operated as a separate company since 1997. Andrew

Taylor, General Manager in Beijing, also agrees that good personal relationships are of utmost importance for successful business in China. But that's only one aspect among others: "Everybody can sell devices, but we offer components and solutions, and that's what the market requires. Our engineers do a great job in integrating our sensors and components into the plant environment, helping to optimize the customers' processes."

An extensive wealth of knowledge is another specialty of Pepperl+Fuchs, and this is being met with great demand. Taylor says, "Chinese industry has grown so tremendously in such a short time. Engineers are confronted with complex situations and often can't rely on their own long-standing experience. »

"China has a great hunger for energy, and we are dealing not only with traditional oil and gas processes but also with coal-to-oil and coal-to-gas technologies."

Andrew Taylor,
General Manager of Pepperl+Fuchs'
Process Automation division, Beijing

"As opposed to the export focus of the past decades, the growing domestic demand is driving business today."

Matthias Gunkel,
Managing Director of Pepperl+Fuchs'
Factory Automation division, Shanghai

In our seminars and workshops we provide them with the know-how, especially in the areas of fieldbus infrastructure and connectivity, functional safety, and hazardous area technology." He describes a gradual change from the "do-it-quick" thinking of the pioneer years to a long-term perspective. The focus is shifting from low purchase prices to life cycle costs. "The big, multinational companies have always had this priority, now also the smaller Chinese companies increasingly appreciate top-quality products with German technology."

Broad Network

With 24 offices, the Pepperl+Fuchs' Factory Automation division covers virtually all industrial centers of the country. The Process Automation division consists of five offices in Beijing, Shanghai, Guangzhou, Xi'an, and Chengdu, close to the biggest conglomerates of the process industries. Oil and gas as well as the petrochemical industry are the most important sectors here, with gross sales of more than 700 billion US dollars and annual growth rates around 17 percent since 2009. "China has a great hunger for energy, and we are dealing not only with traditional oil

and gas processes but also with coal-to-oil and coal-to-gas technologies," Andrew Taylor says. "The environment is also receiving more and more attention recently, which opens new opportunities for our products."

In factory automation, the growing domestic demand is driving business today – as opposed to the export focus of the past decades. Matthias Gunkel points out that "Rising domestic living standards combined with alternative energy sources and infrastructure investments are today's key growth factors in China. Take for example the high-speed train network: within six years China has built 11,000 kilometers of high-speed rail tracks, connecting all major cities. Today they successfully run the biggest and most heavily used high-speed rail network in the world." Matthias Gunkel emphasizes that not only our strong geographical presence but also the company's tradition of working closely with our customers makes Pepperl+Fuchs the market leader for industrial sensors in China's factory automation industry. With a smile he adds: "The Chinese transcription for Pepperl+Fuchs is Bei Jia Fu, meaning double happiness. We take that literally." ■
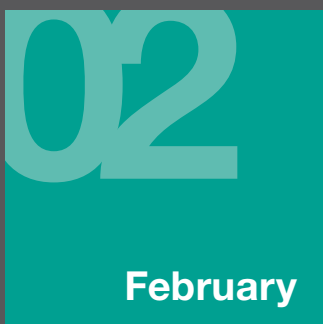
Fairs + Events

11

November

SPS IPC Drives
November 25–27, 2014 // Nuremberg, Germany
www.mesago.com/sps

01

January

BAU
January 19–24, 2015 // Munich, Germany
www.bau-muenchen.com

IFAM Slovenia
January 28–30, 2015 // Celje, Slovenia
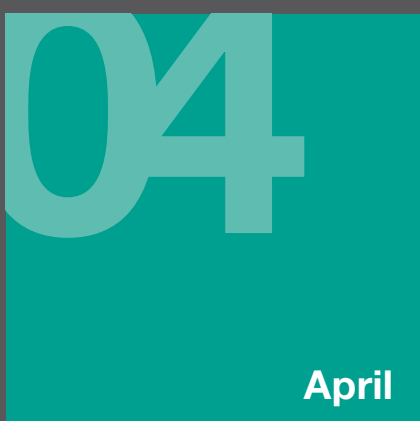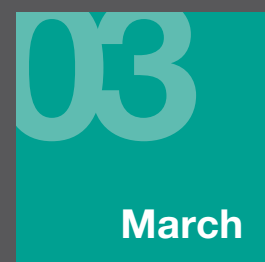www.icm.si

02

February

LogiMAT
February 10–12, 2015 // Stuttgart, Germany
www.logimat-messe.de

R+T
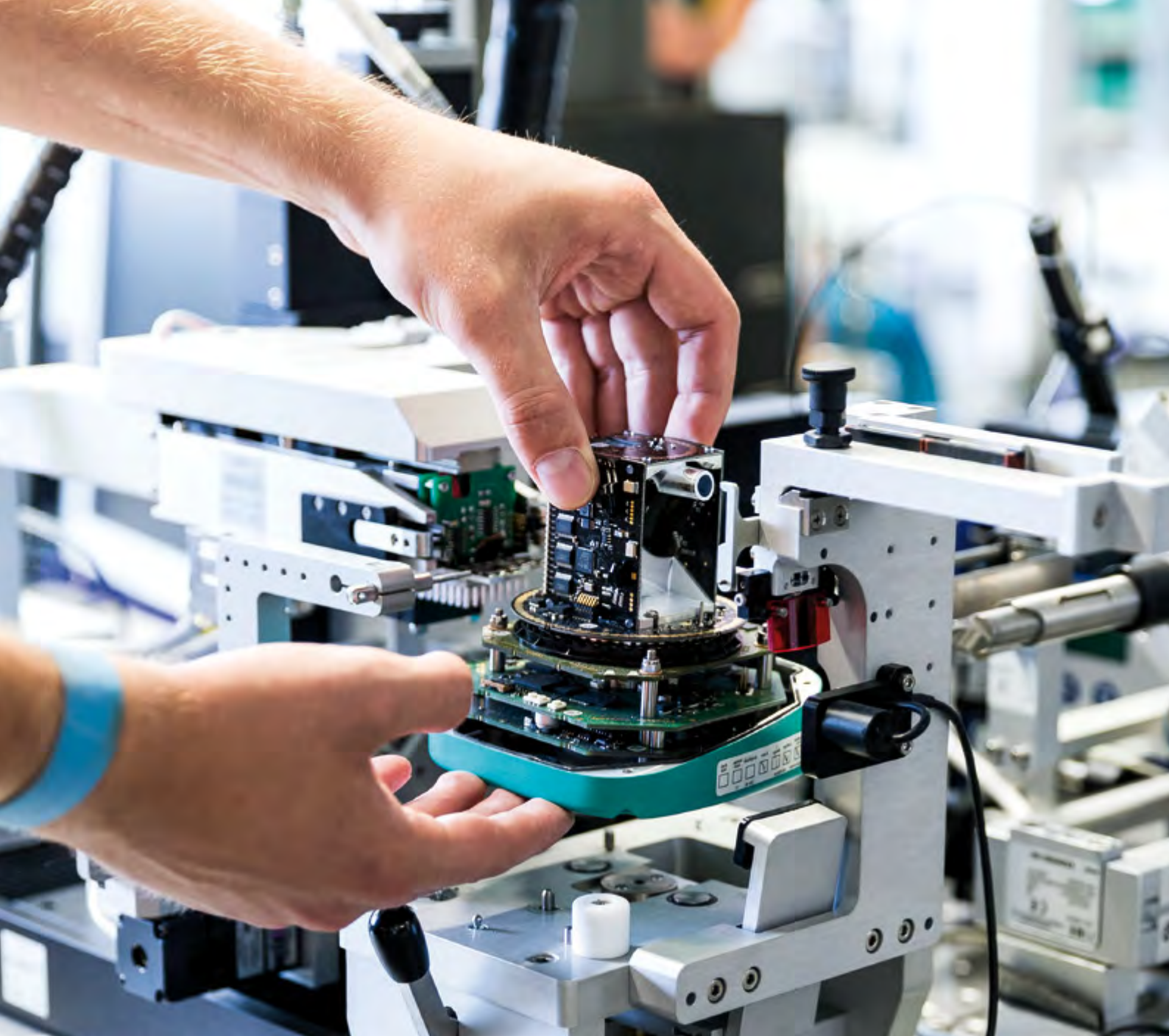February 24–28, 2015 // Stuttgart, Germany
www.messe-stuttgart.de/r-t

03

March

Automaticon
March 17–20, 2015 // Warsaw, Poland
www.automaticon.pl

04

April

Hannover Messe
April 13–17, 2015 // Hanover, Germany
www.hannovermesse.com

www.pepperl-fuchs.com/events

www.pepperl-fuchs.com

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