SICK insight MAGAZINE

: FOCUS **TRANSPARENCY IN THE SUPPLY CHAIN**

PRODUCTION NETWORKS

SENSOR INTELLIGENCE OPTIMIZES DATA AVAILABILITY ACROSS THE ENTIRE SUPPLY CHAIN

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DIGITIZING AND OPTIMIZING PRODUCTION PROCESSES

Dear Readers,

The industry is facing the challenge of networking machines and comprehensive IT systems in the production processes. The reason behind this is the necessity to have an overview of all production and logistics processes across the entire supply chain right through to order fulfillment stage and delivery to the customer. In this respect, it is essential to ensure that all available data is transparent so that goods can be produced individually to suit customer needs right through to batch size 1, or adapted to suit fluctuations in demand as flexibly and efficiently as possible.

Data quality is a key contributing factor to whether or not the objective is actually achieved. Within the production processes, sensor technology takes care of measurement, testing, and monitoring tasks, and records the necessary data. Just like before, this data is then transferred to the control for the production machine itself, directly to the production control system (for example, for improving formulas), in parallel to higher-quality IT systems, or even to the cloud for comprehensive track-and-trace monitoring tasks. Sensor intelligence from SICK supports and relieves data processing tasks by using intelligent functions to evaluate measurement data directly in the sensor, and transferring the relevant user data in the form of prepared information.

In practice, the ability to transform existing plants and systems so that they are fit for this new world is a considerable challenge. This is why, at SICK, we place great emphasis on ensuring that our concepts are backwards compatible. As a result, our products can be integrated into existing machines. At the same time, they are ready for connection to higher-quality data systems. What's great about this is that this proven technology can continue to be used going forward and you can take advantage of the additional benefits on a gradual basis.

We offer a large range of application-specific sensor and system solutions – including those for identifying and tracing materials and products – making it possible to reduce stock levels and throughput times. Our Smart Sensor Solutions for process monitoring and quality control offer added flexibility through autonomous adaptation in the case of changes to quality and products. As a result, they offer resource efficiency, a lower reject rate, and a high level of throughput. Our application specialists work with you to develop individual concepts for optimizing your production processes. After all, we're working hard at SICK to enable Industry 4.0 and we're more than happy to take you along the way.

We hope you find this issue informative.

Dr. Robert Bauer
Chairman of the Executive Board of SICK AG

SICK Sensor Intelligence.
Sensor intelligence increases transparency: Communication-enabled sensors preprocess and filter data from the data flood.

Preventing the falsification of pharmaceutical packaging
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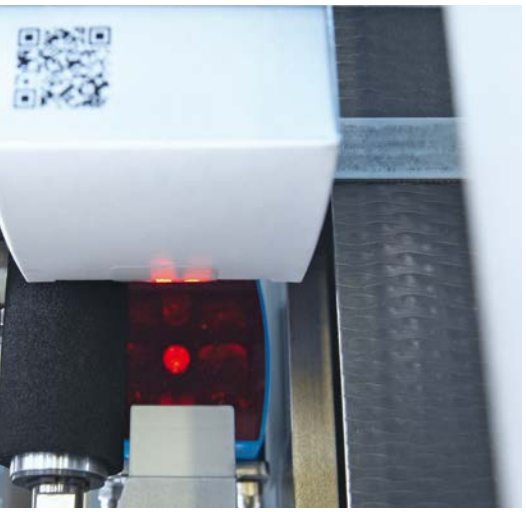

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PROSENSE RESEARCH PROJECT IMPROVES PRODUCTION PLANNING AND CONTROL

KEEPING TURBULENCE TO A MINIMUM

Industrial manufacturing processes have to be as flexible and efficient as possible, which has resulted in an increase in the level of production complexity. This is largely due to the demand for investment goods in ever more varied designs and quantities to suit customer requirements. Furthermore production processes have to be constantly readjusted depending on unpredictable fluctuations in demand while also ensuring maximum utilization of resources and machines at the same time. The ProSense research project supported by the German Federal Ministry of Education and Research (BMBF) is in the process of investigating and developing a high-definition production control system based on intelligent sensor technology. SICKinsight spoke to Dr. Bastian Franzkoch (member of the management board at Ortlinghaus-Werke GmbH), Dr. Christian Stimming (Industrial Applications Team Leader, Research & Development SICK AG), and Dr. Christian Rapp (Development Engineer, Research & Development SICK AG) about the paradigm shift in production processes.

SICKinsight: The entire industrial sector is seeing groundbreaking changes right now. In fact, if you consider the way production, information, and communication technologies are merging closer and closer together as time goes on, you could even say we have the fourth industrial revolution on our hands. To what extent, then, can small to medium-sized enterprises start benefiting from these developments already?

B. Franzkoch: At Ortlinghaus, we're very much open to these new developments, and this is exactly why we chose to get involved in the ProSense research project supported by the BMBF. Alongside the additional funding, a research project also brings with it completely new impetus from outside. The project is investigating and developing a high-definition production control based on cybernetic support systems and intelligent sensor technology. What we need is a direct connection between our actual production and a piece of software for production planning that is capable of illustrating the complexity of material flows, machine and staff utilization, and the current status of all orders as close to real time as possible. And this is exactly where Industry 4.0 comes into play. The ProSense project has seen us work together with the Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University to develop an innovative production information system for our production process that can map the range of additional data which is relevant for production planning and control. For us, the ability to request and visualize an up-to-date status overview for all production orders at the touch of a button is completely revolutionary. This is down to the fact that if we are able to do this, then we are also able to react immediately to any turbulence in the production process. ProSense aside, implementing Ethernet connections between all key production machinery was a basic investment for Industry 4.0. After all, communication is king on the way toward Industry 4.0. To stay up to date with the latest technolo-

Dr. Bastian Franzkoch

Dr. Bastian Franzkoch is a member of the management board at Ortlinghaus-Werke GmbH. This mechanical engineering company is a leading specialist in the field of couplings, brakes, chain drives, and compact drives, including hydraulic units and control units. Ortlinghaus employs 550 people worldwide across seven different sites.
More about the customer at:
www.ortlinghaus.com

> "To stay up to date with the latest technologies, it was essential to use the 'information superhighway' as a basis for production from the outset."
>
> *Dr. Bastian Franzkoch, Ortlinghaus-Werke GmbH*

gies, it was essential to use the "information superhighway" as a basis for production from the outset. Even today, however, the ability to ensure data security and production availability still represents a new challenge.

SICKinsight: So what exactly are the complexities surrounding production processes at Ortlinghaus and what type of turbulence do you face?

B. Franzkoch: Before we developed the new production information system, our production teams used state-of-the-art, centrally controlled planning systems such as APS (Advanced Planning and Scheduling) for organizing deadlines and details, and ERP (Enterprise Resource Planning) for planning our resources. This involved working out and updating all of our manufacturing orders overnight, so every 24 hours. As we offer a highly diverse range of products and the majority of these are produced as single units or small batches, our production processes are organized in line with conventional workshop principles. Furthermore, we don't just combine prototype production, series production, and projects, but also production processes which are either specific to an order or completely independent. In doing so, we cover sectors such as forming technology, marine technology, structural engineering machines, and mining, and it goes without saying that each of these has its own requirements of our products. The diverse batch and product sizes right through to batch size 1 entail that order and processing times vary considerably, as do the necessary resources. As you can see, there are many levels to the production processes at Ortlinghaus, involving a wide range of material flows which come together and go off their separate ways again. A 24-hour update for all production orders simply isn't enough given the level of complexity involved. Missing components, manual interruptions, rush orders, or order changes are incorporated much too late in the planning process. This means that the response time to changing framework conditions for production processes is much too high. You can clearly see, then, how difficult it is to meet delivery deadlines on a specific date. But thanks to the new production information system, we can now display the current machine utilization status every 15 minutes.

Dr. Christian Stimming,
Industrial Applications Team Leader,
Research & Development SICK AG.

Dr. Christian Rapp,
Development Engineer,
Research & Development SICK AG.

SICKinsight: And what contribution has SICK made to the ProSense research project with regard to improving the Ortlinghaus production processes?

B. Franzkoch: Our couplings and brakes, for example, are installed based on the fixed-station assembly principle. We manufacture the individual components for this as part of our in-house production processes. Not only this, but we also carry out a pre-completion phase for each assembly order to reduce throughput times during assembly and even out

our storage capacity. This means that we "park" the assembly order components which are already available in pre-completion zone using one or more material trolleys per order. The production information system lists all missing components which are yet to be produced for each order. And as soon as a missing component is completed, the production information system prints out a supply note. This contains all information about the relevant assembly order so that the missing component can be fed through to the assembly order waiting in the pre-completion zone so that it can be completed. That said, warehouse supervisors won't know which pre-completion zone or area the relevant material trolley is in with the pre-completed assembly order. This means they have to start looking for the assembly order manually, which is naturally very time consuming. As a ProSense project partner, SICK has fortunately come up with a solution to this problem.

The IDM16x reads the bar codes on the printed assembly orders and the RFU62x transfers the data to a tag.

SICKinsight: Dr. Stimming, can you describe this solution for us?

C. Stimming: It's an identification solution for identifying materials based on RFID technology (radio-frequency identification). We have installed one of these RFID systems at Ortlinghaus as an access gate on the way from the warehouse to the pre-completion zones. This comprises an RFU63x RFID read/write device in conjunction with an external RFA63x antenna. The components are simply installed above a transport route in the production area so that they do not affect production processes.

SICKinsight: And how is this solution incorporated into the production process?

C. Stimming: At Ortlinghaus, they start by pre-completing the parts required for an assembly order in the warehouse. Each assembly order has a unique confirmation number which is encrypted in the form of a bar code on the printed production order. Warehouse supervisors carry out the pre-completion process before using an additional sensor installation comprising an IDM16x hand-held scanner and an RFU62x RFID read/write device. The hand-held scanner allows warehouse supervisors to read the order bar code, while the RFU62x read/write device transfers the decoded confirmation number to a passive RFID tag. Warehouse supervisors then secure the tag to the material trolley which is brought into a pre-completion zone. On the way there, warehouse supervisors make sure to pass through the RFID gate with both the shuttle and the tag. With the help of antennae, the RFU63x read/write device reads the order data on the tag without making direct physical or visual contact and transmits this information to the new production information system using the intelligent functions integrated within the sensor. This allows the system software to identify the position of the material trolley. If the missing component is not completed until later, then warehouse supervisors can determine the position of the material trolley and the accompanying components using the relevant pre-completed assembly order. In short, it is much easier than before to find the trolley. Warehouse supervisors can then add the relevant missing component to the pre-completed assembly order, complete the order, and then feed it into the assembly line without further delay.

Material trolley with pending assembly orders in the pre-completion zone.

SICKinsight: Dr. Rapp, how would you describe the intelligent functions which are integrated into the sensor?

C. Rapp: Well, we refer to them as intelligent sensor technology. At Ortlinghaus, we are tasked with implementing and testing intelligent sensors for recording high-definition data as part of our involvement in the research project. Intelligent sensors are capable of using information from measurement data to establish whether an object is moving or when it has fallen short of a critical minimum distance to the sensor, for example. And to be able to make such quantitative or qualitative statements in the first place, an intelligent sensor is fitted with components which integrate intelligent functions or algorithms for preprocessing the measurement data. Sensors from SICK are intelligent sensors.

The RFU63x RFID read/write device is installed alongside an external RFA63x antenna above the transport route of the material trolley. It records this information on its way from the warehouse to the pre-completion zones and back.

SICKinsight: Using Ortlinghaus as an example, could you perhaps explain what's so special about intelligent sensor technology in more detail?

C. Rapp: In concrete terms, intelligent sensors have enhanced computing capacity with algorithms for processing measurement data, and as a result, they are able to output sensor events. In this particular application of the ProSense project, sensor events represent the high-definition feedback data. And with regard to the production processes at Ortlinghaus, there is a strong focus on feedback data surrounding the production orders. Here, we have integrated algorithms for calculating the following sensor events into the sensors: Firstly, a material trolley with RFID tag enters the measuring range of the RFID gate, a material trolley with RFID tag then leaves the measuring range of the RFID gate, and finally, the material trolley with RFID tag moves in a calculated direction. As part of this process, our intelligent sensors filter repeated measurement results, link the measurement data together, evaluate the content of the user memory for the RFID tag, and determine the current position of the material trolley using the measurement data. The sensors then transfer the end results as high-definition return data directly to the interface of the higher-level production information system. Intelligent sensors from SICK no longer rely on a PLC or middleware to transfer data. Intelligent sensors communicate not only with each other,

> "Intelligent sensors communicate not only with each other, but also directly with the software for a system or plant. This enables them to provide feedback data in as close to real time as possible."
>
> *Dr. Christian Rapp, SICK AG*

but also directly with the software for a system or plant. This enables them to provide feedback data in as close to real time as possible. With this in mind, intelligent sensor technology can therefore be considered an enabler of Industry 4.0. Sensor technology is the interface between industrial production and data processing, whereby intelligent sensor technology has already taken over data processing to some extent.

SICKinsight: Dr. Franzkoch, would you say you're happy with the results of the research project?

B. Franzkoch: ProSense has made a substantial contribution to increasing the transparency of our complex production sequences. The ability to understand these better is essential when it comes to sound and efficient production planning and control. The new production information system visualizes the current machine utilization status every 15 minutes. This offers manufacturing planners a greater level of planning security and gives them more timing control when producing individual components while also ensuring maximum machine utilization. By localizing production orders with the help of cost-effective and low-maintenance RFID technology, non-productive times are reduced significantly for warehouse supervisors. This is due to the fact that they no longer need to waste time searching for the material trolleys containing the pre-completed assembly orders. The production information system, which displays the current status of all orders, provides warehouse supervisors with detailed information such as the production status of missing components and the position of pre-completed assembly orders. As a result, warehouse supervisors can piece assembly orders together far quicker, thereby reducing throughput times in the assembly process and ensuring orders are completed on time. Even our administrative teams can use the production information system to request up-to-date information about the status of a production order at any time. This means they're in a position not only to provide our customers with accurate information relating to their delivery date, but also to stick to it.

SICKinsight: Thank you all for your time.

Theory and practice in partnership

Cluster Logistik am RWTH AACHEN Campus

SICK is an official partner of RWTH Aachen University. SICK has a long tradition of working closely with science and research. Its partnership with RWTH Aachen University, a technology leader and one of the 11 German "Universities of Excellence," is now official: SICK has been designated a partner in the Smart Logistics Cluster at the RWTH Campus Aachen, and is therefore enrolled at the university. Intelligent interconnectivity in production is the main focus of this collaboration. The ProSense project aims to develop high-definition, adaptive production control based on cybernetic support systems and intelligent sensor technology.

www.prosense.info

INTELLIGENT PREPROCESSING DIRECTLY IN THE SENSOR

QUALITY NOT QUANTITY: WHEN DATA BECOMES INFORMATION

With Industry 4.0 and an increasing number of communication-enabled sensors, transparency is on the increase, opening up new possibilities for both quality assurance and process optimization in the production process. However, much more information is vital so that the right decisions can be made. One consequence of this is that higher-level systems find themselves faced with a massive flood of data. Sensor intelligence evaluates the data right away in the sensor and undertakes preprocessing accordingly: only the information that is actually relevant is forwarded.

>> Whether raw data or preprocessed information: Neither data transmission nor bidirectional communication is possible without an appropriate industrial interface. However, new production and logistics concepts in the context of Industry 4.0 are demanding more and more communication-enabled sensors. Accordingly, there has been a tangible increase in demand for IO-Link-enabled solutions. In response, SICK is offering a wide portfolio of sensors that are fitted with an IO-Link interface as standard, thus opening up the possibility of establishing complete transparency and monitoring up to and including the sensor level. With IO-Link, sensors are able to send information for process monitoring in addition to just detection and process data. This information is important for predictive maintenance as well as for process optimization with a view to implementing safe and rugged detection. Even new setup parameters can be transmitted via this route.

SICK's solutions support all standard interfaces for factory, logistics, and process automation, making them accessible for virtually every system environment. In the context of Industry 4.0 in particular, this variability is the key to better investment security.

Complete with intelligent automation functions

Reliable data acquisition and the conversion of the data obtained into the information that is relevant to the application and actually necessary directly in the sensor: This is what is at the heart of the Smart Sensor Solutions based on IO-Link. Equipped with intelligent automation functions, these sensors enable self-contained secondary tasks to be managed more quickly, more precisely, and more efficiently than in the machine controller.

The advantages of this are:

- Condition monitoring in the sensor facilitates active self-monitoring and thus predictive maintenance.
- The process speed of the machine increases and with it its output. The information required for the control process is obtained by the sensor directly and forwarded to the machine controller.
- More efficiency from one end of the system to the other: Instead of large volumes of CPU- and time-intensive data, preprocessed information is sent to the controller. There is no need for data to be processed in the controller.
- Measured values are more precise, since the jitter caused by reading pulses into the controller cyclically no longer has to be contended with. The sensor calculates the measured values independently and precisely.
- The sensor takes over some of the tasks involved in data processing, thus relieving the load on the machine controller.

More transparency, more control

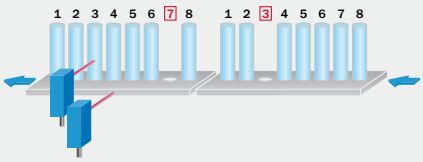
Full transparency of the automation functions and parameters of a sensor – at all levels of the automation pyramid – also improves control over the processes involved. In addition to the data that is related solely to the process and the information associated with the application functions (these are constantly available to the controller in real time), Smart Sensors can supply additional information for process monitoring and analysis. This information can be polled by the controller if necessary, enabling faults to be analyzed or a secondary process to be monitored simultaneously.

More control also means that deviations occurring at any point within a workflow can be monitored and if necessary displayed. SICK's WFS fork sensors, for example, can be relied upon not only to detect labels but also to supply information about the actual number of labels on a sleeve. As a result, deviations can be identified and brought to the attention of the label manufacturer.

Monitoring speed and acceleration

The SAM function (SAM = speed and acceleration monitor) calculates the current rotary speed of a cam wheel directly in the sensor and monitors the required upper and lower limit values. The sensor sends a signal if the defined limit values and the current rotary speed are exceeded or undershot. Without this automated function, each individual pulse must be sent to the machine controller so that the speed can be calculated there, involving a complex process.
The SAM function is even able to monitor the acceleration (positive or negative) of the rotational movement – a very intensive task in terms of both CPU resources and time.

Determining the position of a missing object on a workpiece carrier



An integrated automation function enables the position of a missing object on a workpiece carrier to be identified directly in the sensor. When a new workpiece carrier is detected, counting of the objects restarts from zero. The sensor sends the necessary information about the position of the missing object directly to the next unit downstream in the process (a gripper robot, for example) or to the machine controller. This relieves the load, in particular if belts are running at high speeds.

INDUSTRIAL IMAGE PROCESSING IN THE CONTEXT OF INDUSTRY 4.0

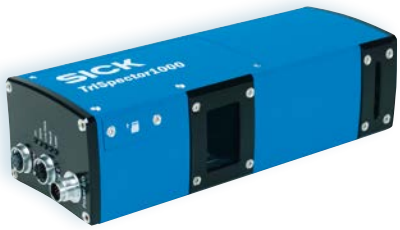
Solutions from the field of 2D and 3D vision are used wherever checking, measuring, localizing, or identifying is the order of the day. Industrial applications have high expectations of these solutions: detection of the surrounding area, immediate data analysis, and immediate delivery of results so that specific action can be identified and taken, even under the most difficult of conditions. Alongside reliable image acquisition, efficient data processing directly in the sensor is decisive.

Diversity versus efficiency?

In the context of Industry 4.0, new challenges are arising all the time. Significant diversity of variants is a consequence of the desire for flexible, customer-specific production (“batch size 1”), for example. However, high machine availability and production efficiency must also be ensured. 3D vision sensors in particular have a significant advantage in this context. Even if objects vary in size, height, or shape, the sensor can be relied upon to detect them and provide the necessary information about them. Once the parameters of a machine or plant have been configured, this process does not need to be repeated. In practice, production efficiency also means high throughput. Vision sensors with ever higher resolution, faster detection speeds, and maximum detection accuracy are essential if this is to be achieved. With more than 25 years' experience in the field of machine vision, SICK leads the way in the development of powerful industrial CMOS sensors with integrated 3D processing.

TriSpector1000: 3D image processing, intuitive operation

Powerful technology, easy commissioning, intuitive operation: With the TriSpector1000, the benefits of 3D vision really are at your fingertips. Integrated image analysis makes configuration easy. On request, SICK can even supply the TriSpector1000 with precalibrated 3D data (output in millimeters). Intensity values are overlaid on the 3D data. This enables the sensor to reliably check the presence and position of labels or printed patterns. The TriSpector1000 is thus a versatile stand-alone vision sensor for cost-effective 3D inspections such as checking the content of totes or quality control of consumer goods.



3D vision sensor TriSpector1000.

Completeness check

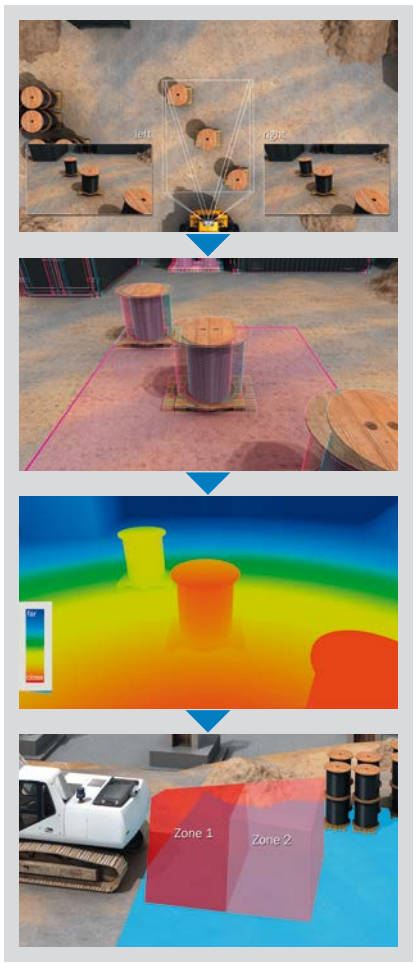
Counting and positioning

Volume measurement

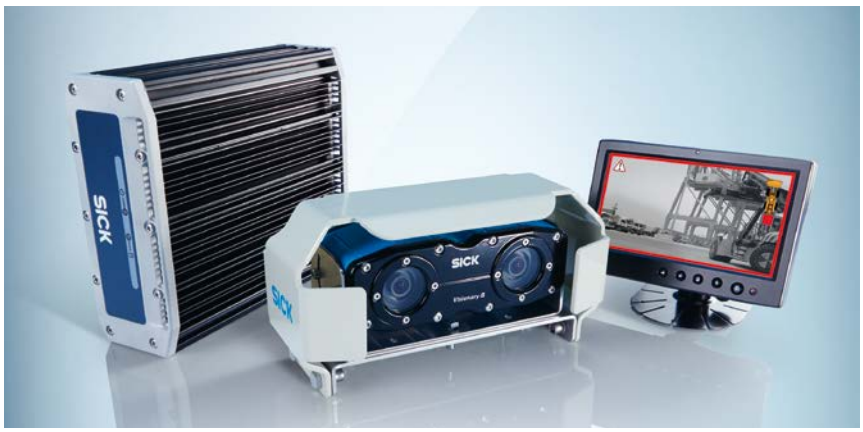
TriSpector1000: Example applications.

Visionary-B and Visionary-T: 3D AT A GLANCE

With the new 3D vision sensors in the Visionary-B and Visionary-T product families, SICK is offering innovative 3D snapshot technologies for use in industrial applications. The Visionary-B CV uses stereoscopy to calculate the space and depth information for the objects located around it in real time (this even includes stationary objects). Thanks to intelligent data evaluation, the Visionary-B CV is ideal for assisting drivers in difficult off-road commercial vehicles such as those found in ports and mines or on construction sites. If an object is located in one of the two preconfigured alarm zones, the sensor will trigger an audiovisual alarm via the display if the situation is critical. The Visionary-B CV supplies fully preprocessed information and digital signals with significant data compression for this purpose. The sensor, the display, and the evaluation unit are a "turnkey" total package: easy to configure, ready for operation in next to no time, and easy to use. Both high reliability for data acquisition and the mechanical ruggedness of the sensor head are ensured. The sensor also boasts a high temperature range.



Visionary-B: The sensor calculates one stereo image from two images. A 3D image is produced from this in the next stage of the process. This enables the distance and position of the objects located inside the detection zone to be determined. If an object is located in one of the two configured alarm zones, an audiovisual signal is output.



Efficient plug-and-play solution for outdoor use: Visionary-B.

Tailor-made: Data quantity and required information

The Visionary-T delivers full flexibility for all manner of indoor applications: Based on time-of-flight measurement, the sensor provides depth information for every pixel in real time. Up to 30 three-dimensional images are made available per second. Whether in stationary applications or industrial vehicles, depending on the product – Visionary-T CX or Visionary-T AG – all 3D raw data or preprocessed information that is relevant to the application is delivered. The Visionary-T AG is able to calculate what information is actually needed directly in the sensor and, thanks to data reduction, is perfect for vehicle applications such as collision awareness, obstacle awareness, or navigation assistance. The Visionary-T CX delivers all of the 3D raw data for processing and evaluation item by item. The result: Tailor-made solutions that deliver precisely the information that is truly relevant to the application. *(tm)*

Visionary-T: Delivering all 3D raw data or pre-compressed 3D information that is relevant to the application.

INTELLIGENT RFID TECHNOLOGY CLOSES GAPS IN THE AUTOMOTIVE SUPPLY CHAIN

REDUCING COMPLEXITY, INCREASING TRANSPARENCY

The automotive industry takes advantage of tailor-made solutions for the automated identification of objects in virtually every process in the production and supply chain. RFID (radio-frequency identification) has been used successfully for many years in practical applications to optimize the efficiency of processes in production. These positive experiences serve to recommend RFID technology for other applications within the overall process both upstream and downstream of production itself. There are probably other possible applications for intelligent RFID systems such as those supplied by SICK in inbound logistics between supplier and OEM (original equipment manufacturer) as well as in downstream distribution processes. RFID technology can close gaps in the supply chain.

>> The use of RFID technology by German OEMs in the automotive industry is already well advanced. According to Oliver Huther, RFID Business Development Manager at SICK Vertriebs-GmbH, "We have been involved in thousands of UHF (ultra high frequency) RFID installations, providing support and assistance with our sensor know-how. UHF RFID hardware by SICK is used by various OEMs to control their production processes. However, our systems now continue to be used even after a vehicle has left the assembly line. RFID is used in distribution to ensure that vehicles are loaded and shipped correctly to dealers all over the world. At the same time, RFID makes it easier to locate vehicles that have been put into temporary storage should rework need to be carried out."

The RFU63x read/write device by SICK can be used to identify bodyparts in the production of cars, for example.

Closing gaps at both ends of production

RFID has been used by some OEMs to close gaps between production and distribution not only in initial projects but also in applications that have already been implemented. "We are currently seeing a rapid increase in comparable activities on the other side of production, i.e., in inbound processes. In these activities, the bar code dominates data exchange between supplier and OEM. If it's the case that RFID – with continuously advancing sensor technology – is bringing benefits to the processes from supplier to manufacturer, its use is also set to increase at this point of the added-value chain in the automotive industry. The signs are there and the demand for RFID-based solutions is increasing dramatically," Oliver Huther tells us.

Interleaving of suppliers and OEMs

The more customized the assembly of the individual devices that make up a vehicle, the more customized is production. Something that sounds so simple actually represents a huge challenge to everyone involved in vehicle manufacture. Andreas Behrens, Head of Marketing & Sales Barcode – RFID – Vision at SICK AG explains: "Making it easier for customers to configure their vehicles goes hand in hand with greater individualization on the production line. Innovative technological solutions must combine with intelligent systems to assist companies in managing the increasing complexity. One of the possible technologies is RFID, as it is able to respond to the questions that are arising from a production process that is increasingly based on individual orders, right down to the individual parts. Suppliers and OEMs must brace themselves for these challenges, ideally by deploying systems that can be used across companies in all stages of the process and thereby increasing efficiency." The interleaving of OEMs and their suppliers is already far advanced in any case and could increase still further in the future.

> “Innovative technological solutions must combine with intelligent systems to assist companies in managing the increasing complexity.”
>
> *Andreas Behrens, SICK AG*

If a technology makes sense, it will be deployed

RFID technology can be found in an incredibly wide range of applications in the automotive industry. “The possibilities it is opening up are too wide and varied to single out just one process,” explains Huther. ”Today's OEMs and suppliers apply labels and markings to all manner of individual parts, assemblies, and load carriers. Rather than whether an object is easy or difficult to label or mark, what we need to be asking ourselves is how complexity can be reduced and transparency increased in processes. However, ultimately, customers always decide which identification technology is most likely to optimize their processes by weighing up the costs against the benefits. At SICK, we have the advantage that we can advise our customers independently of the technology.”

Flexibility in terms of the selection of technology to secure future viability

“Companies are often more interested in the solution that meets their requirements than they are in the technology,” explains Huther. It is for this reason that identification solutions from SICK feature uniform connectivity, an identical user interface, and a uniform accessory concept. SICK calls this compatibility 4D*pro*. “For our 4D*pro* auto ID platform, it really doesn't matter if the identification data is acquired from an RFID read/write device or by scanning a 1D or 2D bar code,” Huther tells us. “This independence in terms of the selection of technology also future-proofs the systems used. If a company uses a bar code scanner and in the future wishes to switch to an RFID read/write device to perform the same task, the acquisition devices can simply be swapped. The existing system does not need to be adapted. Migration can be completed with plug and play. These capabilities mean that a reliable business case can be formulated in virtually any process with the appropriate technology.”

Intelligent RFID solutions with Industry 4.0 potential

Supply chain integration in the automotive industry across companies offers extensive and as yet untapped potential for the use of RFID technology. “If developments in the context of Industry 4.0 mean that more extensive automation and communication between all of the companies involved in a production process are the order of the day, there couldn't be a better match than RFID. It's a technology that is suitable for universal use. Objects with labels can be detected both individually and in bulk, depending on requirements,” Huther points out. “RFID adds value in all crucial processes, regardless of whether objects are to be detected as single parts or on load carriers in open cycles between suppliers and OEMs. At SICK, we have invested heavily in research into the development of our read/write devices. Our know-how is at work, for example, in systems that enable specific information to be assigned to a tag in a bulk read operation. Numerous factors that would have prevented the use of RFID just a few years ago are no longer an obstacle – on the contrary, in fact. When working with today's RFID hardware,

Andreas Behrens, Head of Marketing & Sales Barcode – RFID – Vision at SICK AG.

Oliver Huther, RFID Business Development Manager at SICK Vertriebs-GmbH.

reflection and false-positive reads are no longer a reason not to use RFID." For Behrens, these challenges have already been overcome by the R&D department at SICK: "We have equipped read/write devices with intelligent functions and are integrating the devices into comprehensive end-to-end systems with communication capabilities." Intelligent read/write devices by SICK are capable of generating high-resolution feedback data from measured data for transfer via an interface to appropriate software where it can then be visualized.

Feasibility studies and simulations

In order to provide OEMs and suppliers who are planning to use RFID technology with relevant information to assist their decision-making processes, SICK will carry out investigations in advance of a project in order to thoroughly assess feasibility. "We run a number of technology centers where we can carry out feasibility studies under real conditions," explains Huther. "We can also set up tests on customer sites or combine these two elements. Simulations can supplement the analysis data obtained by doing this." Behrens goes on, "Tests and simulations make it possible to produce reliable results so that a business case can be assessed. They also provide clear evidence of the added value that can be expected. Once a decision has been made to roll out the technology, we provide support during commissioning and fine-tuning as well as for the training of the employees who will look after the system." *(ro)*

Dream car: Custom orders require flexibility in production and logistics. Full report including video at: **www.sickinsight.com/dreamcar**

Radio equipment type approvals

RFID read/write devices from SICK have obtained radio equipment type approvals for many continents and countries.

Radio equipment type approvals for the RFU63x read/write device:
Australia, Brazil, Canada, China, Europe, India, Indonesia, Japan, Korea, Mexico, Russia, Saudi Arabia, Singapore, South Africa, USA

EFFICIENT MATERIAL FLOW IN TIRE MANUFACTURING

TRACEABILITY IN ALL DIRECTIONS

Drivers fit summer or winter tires to their vehicles as appropriate for the time of year. They expect suitable and safe tires that will exhibit ideal rolling, grip, and endurance characteristics at all speeds and temperatures – and all of this must, of course, be combined with optimum energy efficiency. Tires for trucks and aircraft must also meet these requirements, as must those for many types of construction vehicles, heavy-duty vehicles, and industrial vehicles. This is why the product portfolios of tire manufacturers are so wide and varied. As a consequence, they manage and work with a whole range of very different materials on a daily basis. So, given this mix of materials, how can maximum efficiency be achieved in the material flow in tire production, and is it possible to combine this with an assurance of traceability without identification procedures and processes becoming overbearing and unwieldy? SICK offers automated identification solutions designed specifically for the tire industry which can be relied upon to keep the complex tire manufacturing process running smoothly.

>> Raw materials including rubber, textiles, and steel (for reinforcing support) are used in the production of tires, along with various chemicals and fillers. The composition of the individual components varies depending on the type and size of the tire being produced. Accordingly, the "recipe" for a summer tire for a passenger car is not the same as the one used for a winter tire. Similarly, as tires are categorized by speed, their composition will also vary depending on the speed class to which they are assigned. Numerous production stages involving a variety of machines are necessary in order to manufacture tires from this large number of materials. So that each production stage can be completed, it must be ensured that the correct material or the correct component is available at each machine in the required processing state. If the material and the tires produced can be reliably identified and traced at each and every stage of the production cycle, the tire manufacturing process is sure to go in the right direction. After all, end-to-end identification processes for materials and products combined with seamless documentation of all stages in the process are the key to high process quality. Established identification solutions such as hand-held scanners, bar code scanners, image-based code readers, and RFID read/write devices can be used in such applications. Identification solutions from SICK can be relied upon to identify tires and the materials used in tire manufacturing and guarantee seamless traceability. They also contribute to making just-in-time delivery of the correct tires a reality. All of SICK's identification solutions feature uniform connectivity, an identical user interface, and a uniform accessory concept. What's more, the devices are compatible and interchangeable. This is indicated by SICK's 4D*pro* label. 4D*pro* reduces the time and effort involved in integration and provides flexibility in terms of the selection of technology.

Identification of materials and tire components

Individual tire components such as treads, inner linings, and inlays are manufactured in preproduction. Each tire component goes through specific production stages. Treads are shaped and cut from raw rubber in an extruder, for example. Inner linings are produced from textile fabric and raw rubber in a calendering machine before being cut to size and spliced in a second machine. The materials required for the production of the tire components are readily available at the corresponding machines. The totes the materials are made available in vary depending on material and machine: Natural rubber and raw rubber are transported inside cages and on pallets; countless rolls of materials inside cassettes are used for textiles and calendered materials. Narrow material treads are wound up and transported on bobbins; shelf trolleys are available for tire treads.

Before materials are fed into a machine for processing, they must be uniquely identified. The identification process must be repeated once the materials have been processed into tire components. In the past, manual identification based on hard copy lists and bar codes

which encrypted the part numbers was standard practice. Bar code labels are affixed to the material carriers. At each machine, the bar codes are decoded with mobile hand-held scanners from the IDM16x product family by SICK. These very rugged scanners are available as hardwired variants or wireless Bluetooth or WLAN devices. Yet this method of identification brings with it a number of challenges: The bar code label must be resistant in order to remain legible in the face of the harsh ambient conditions that are typically encountered in tire building. As well as taking up machine operators' time, manual data capture also represents a potential error source. Machine operators are constantly having to pull together many different materials and tire components quickly and make them available at the corresponding machines at the right time.

Automated identification with passive RFID technology offers an alternative approach. Each of the various material carriers features an RFID tag which is identified by an RFID read/write device. Information about the last or next stage in the process can be written to the tag at the output of each machine. The MES (Manufacturing Execution System) supports combined centralized and remote materials management, so that process information can also be stored remotely on the product. Both HF and UHF technology can be used in this context. All standard passive tags are now available for both technologies in both hard and paper formats or in the special "on-metal" design. Tags that are resistant to temperature and solvents are also available. All tags are rugged and durable. In recent times, there has been an increasing trend toward the use of UHF technology, which has a number of advantages over HF technology. It supports larger sensing ranges, for example, and can, therefore, provide solutions for new applications. It is flexible enough to be relied upon to identify tags even if they are located on a variety of material carriers. Bulk reading is supported for multiple tags, saving machine operators secondary processing time. The UHF solution can be enhanced with the addition of direction-detecting RFID read/write devices installed in RFID systems with standard sensing ranges up to 2.5 m. These devices support material traceability across a plant – including in bulk – thereby providing a detailed overview of the current position of the various materials. This ensures that time spent searching is a thing of the past.

SICK's IDM16x hand-held scanner is available in three variants.

Various RFID read/write devices from SICK's RFU62x product family can be used for the purpose of material identification in the different machines. The RFU62x is equipped with all industry standard interfaces and has a long reading distance. With the Power over Ethernet variant of the RFU62x, connection is possible with just one connecting cable. The identification status is displayed by easily visible LEDs on the corners of the RFU62x.

SICK's RFU62x read/write device has a long reading distance for material identification.

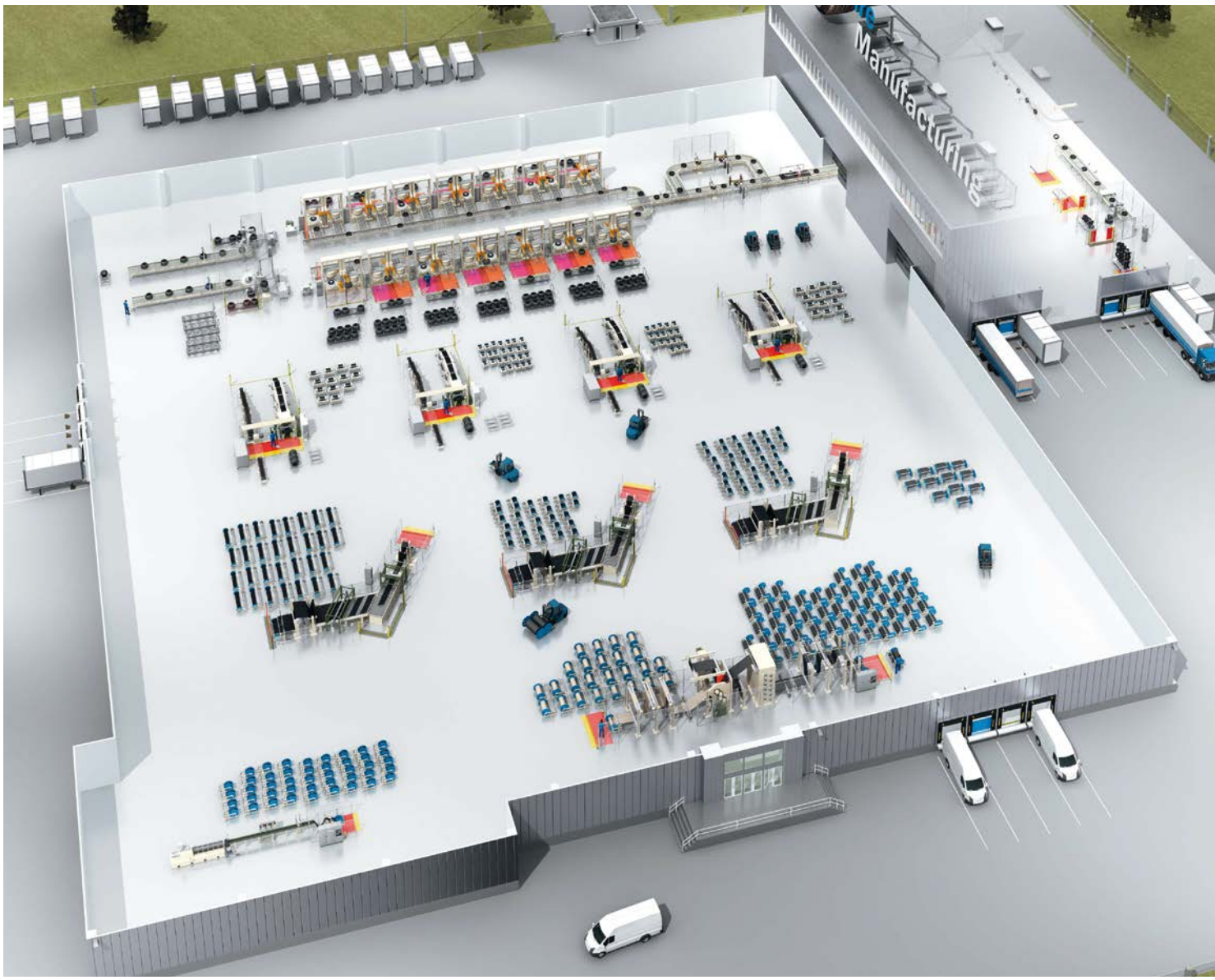
Tire identification for tire building, vulcanization, and quality control

All of the tire components are brought together in the tire building machine, where the "raw tires" are produced. During its production and until shipping, a tire goes through additional process stages and quality checks. So that all of the stages in the tire building process can be documented and traced, a tire must be uniquely identified at every station.

For the purpose of identification downstream in the production process, a bar code label is affixed to the raw tires in the tire building machine either manually or automatically. The tire ID number is encrypted on the label as a bar code.

SICK's CLV61x bar code scanner checks the bar code in order to uniquely assign the tire to the ID number. The CLV61x is characterized by its reliable reading performance and compact construction in an industrial design, and delivers an ideal cost-benefit ratio. It also features all of the integration interfaces that are standard in the industry and makes connecting to control systems easy.

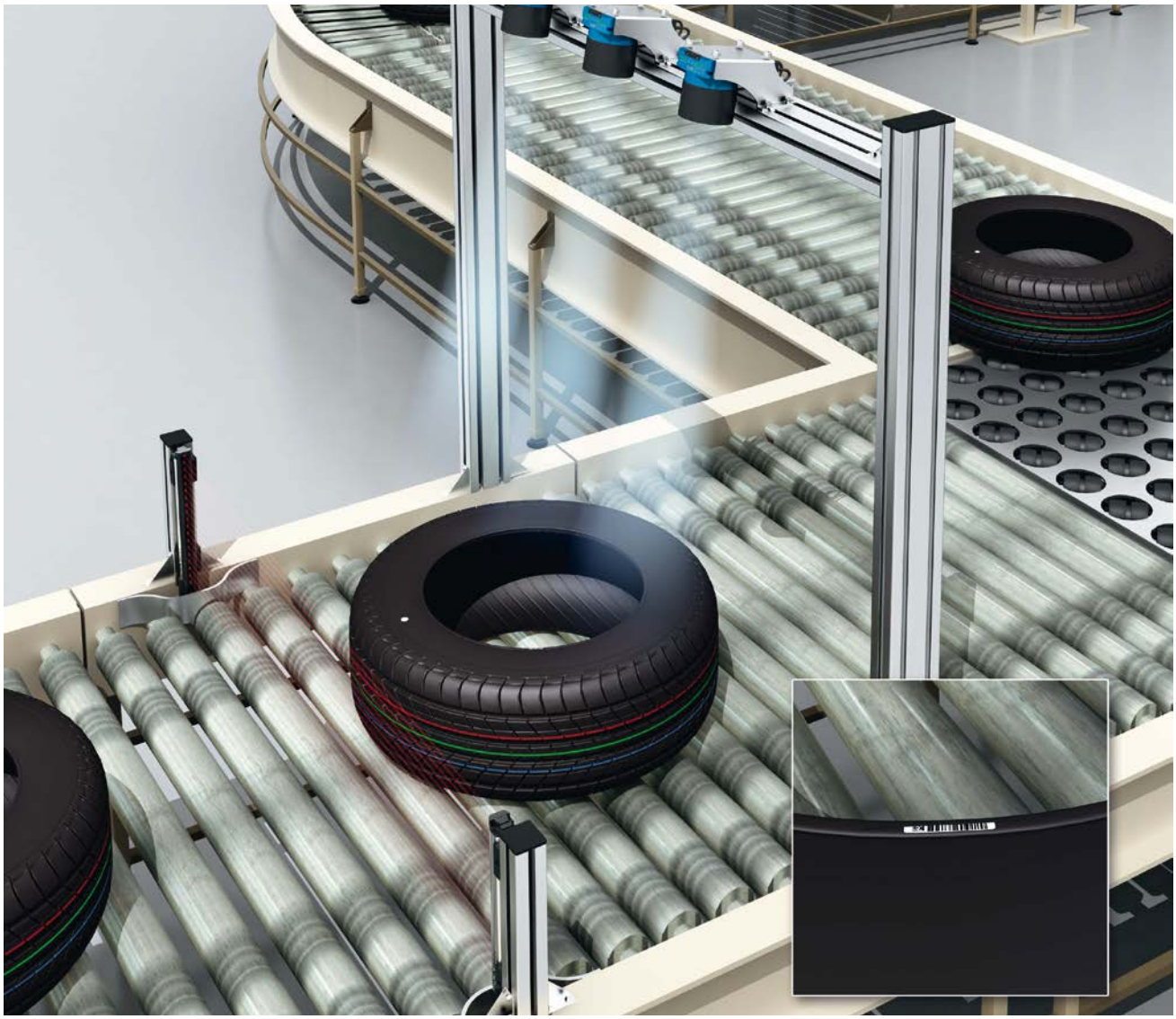
The Tire Lector Array tire code reading system is used in conveyor technology to identify raw and finished tires regardless of their size. The modular system consists of high-resolution Lector65x image-based code readers and can be individually adjusted to the width of the conveyor. The Lector65x can be relied upon to identify and decode all standard 1D and 2D codes, even if they are of poor quality. The code reader is also available as a matrix camera with dynamic focus which is capable of producing high-resolution uniform images even if the tires are of different heights (as is the case with truck tires, for example). The Tire Lector Array code reading systems can be relied upon to identify bar codes on tires absolutely regardless of how the tires are positioned and aligned on the



Overview of the individual stations in tire production.

conveyor. The sophisticated design of the Tire Lector Array facilitates individual preassembly as well as easy installation and maintenance. The system is capable of a throughput of up to several thousand tires per shift and delivers maximum reliability in tire identification. What's more, it is compatible for use in all standard applications in conveyor technology. It can read from above and below, for example, or read tires transported on hooks. As the Tire Lector Array code reading system is able to decode content so quickly, very narrow band gaps can be achieved, in particular for reading from below. The protective cover can be replaced inexpensively, since none of the active elements (the illumination and lenses, for example) have to be changed. As such, the Tire Lector Array delivers high system throughput and is very easy to service and maintain.

A raw tire is given its ultimate shape and tread in a curing press, where it is vulcanized. Heat and air pressure are applied from inside to "bake" together the individual layers for a specific period of time. A raw tire must fit inside the corresponding tire mold, where the external features such as the tread are generated. To ensure that the right tire type is vulcanized in the correct composition, the IDM162 mobile hand-held scanner reads the bar code on the raw tire. The scanner does much more than just identify the tires. It sends the production data wirelessly to the base station, allowing the entire pro-



The Tire Lector Array tire code reading system from SICK has three high-resolution Lector65x image-based code readers for the identification of bar codes on tires.

duction history of the blank to be traced. The operator of the IDM162 can read all the information required for the further processing of the tire on the integrated display.

Quality control is required to ensure the consistent quality of the tires and thus their reliability and safety. The quality checks that are carried out in the production process include measuring web thickness during the extrusion and calendering process, edge guiding and surface inspection, as well as 3D measurement of the tire shape. After this, the finished tires undergo final tire inspection. As part of this process, the tires are tested for variations in strength, X-rays are taken and checks to identify imbalance are carried out.

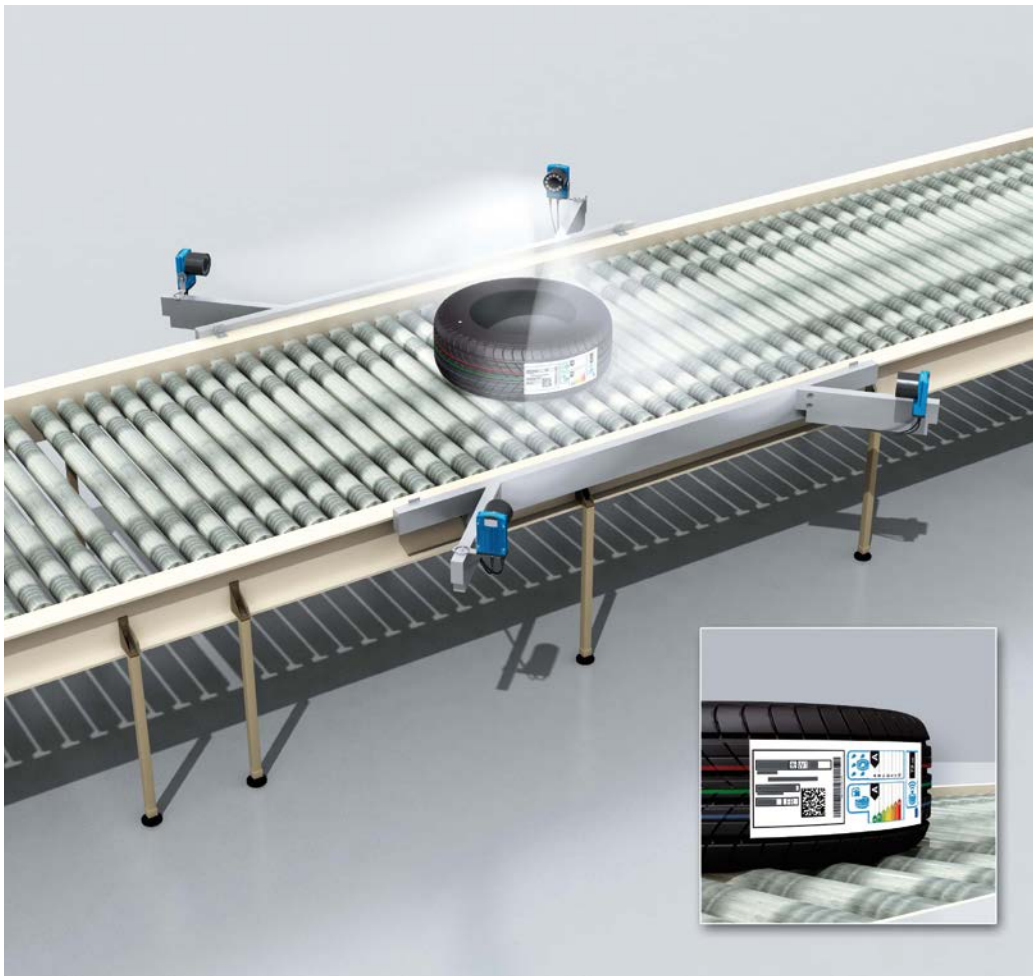
Before the finished tires reach the inspection stations, they are identified by the Tire Lector Array tire code reading system. Alternatively, a finished tire can be identified and aligned in the spotting station with a camera. The Lector632 image-based code reader reads the bar code label and identifies its position on the tire. This information is used to align the tire correctly for the quality control stations. The depth of field of the Lector632 makes it very flexible, in particular in applications involving tires of different heights. Its wide field of view and high decoding speed enable fast throughput times to be achieved in the station.

The Lector632 image-based code reader can also be used for tire identification and position control.

Identification of tires and ecolabels in the tire picking station

In accordance with the EU regulation on identifying tires, since November 1, 2012, tire manufacturers have been legally obliged to affix an ecolabel to passenger car tires. The label indicates the fuel efficiency class, the wet grip class, and the class rating of the external rolling noise of a tire, including the corresponding measured value. In addition to the readable text, the label also has a 1D and 2D code. In the picking station, four Lector65x image-based code readers with high depth of field are installed on the conveyor to check the ecolabel on the tire. The position and alignment of the tires on the conveyor is not important in this context.

Tires that are ready for shipping are stored in shipping racks. Rugged RFID tags on the racks safeguard traceability until the tires reach their ultimate destination. In the robot cell, the RFU62x RFID read/write device by SICK identifies the tag labels containing information about the shipping of the tires. As the RFU62x features numerous integration interfaces, the corresponding data can be sent directly to the warehouse management system. Since the read/write device has a long reading range, the rack does not have to be positioned exactly in front of it. *(ro)*



Identification of tires and ecolabels with four Lector65x image-based code readers.


KUKA
KUKA

FULLY AUTOMATED POSITION AND ASSEMBLY CONTROL AS WELL AS VISUAL GUIDANCE OF ROBOTS

SENSOR AND CAMERA TECHNOLOGY FROM SICK IN USE AT FORD

SICK supplies image-based code readers and vision sensors for fully automated position and assembly control as well as for visual guidance of robots. This equipment features in a system for screwing airbag modules and tailgate strikers into place by RESA Systems, which is used by the automotive manufacturer Ford at its plant in Cologne, Germany.

>> The role played by the automation and standardization of process workflows is becoming more and more important for automotive manufacturers who wish to succeed on the global market. This is because an increasing number of variants are being built in parallel on a single production line. An innovative and fully automated robot solution is currently being used in two workstations on the production line in the Ford plant at Niehl, near Cologne. The application involves screwing the airbag module in the passenger compartment and the locking clip striker for the tailgate into place. RESA Systems, an automation specialist from Saarwellingen, Germany, was appointed as the main contractor for the project. SICK supplied the sensor and camera technology to process all relevant information.

The VSPM-6 Inspector intelligent image processing solution by SICK optimizes the fully automated screw assembly of the airbag module on the assembly line at Ford.

Screwing the airbag module and tailgate striker into place

An industrial robot screws the airbag module into place on the center console of the car. A second industrial robot screws the tailgate striker, as it is known, into place. Once the car body has entered the station, a scanner detects the car body data and sends this directly to the controller. The robot for the airbag module picks up the appropriate module in its gripper (there are five variants in total). It then positions the airbag module in the car and screws it into place. The five different airbag modules are brought to the robot's discharge station on an inbound belt approximately ten meters in length, having had their position and load checked upstream by the Lector62x image-based code reader. A VSPM-6 Inspector 2D vision sensor from SICK detects the exact position of the threaded bolt for the airbag module. A nut infeed system with singulation supplies the nuts for screwing the airbag into place.

The second robot (in the robot cell) screws the tailgate striker into place. A template is used to position the striker before it is screwed into place. Here too, the VSPM-6 Inspector detects the exact position of the screws for the tailgate striker. The PSDI time for the station is 60 seconds.

Lector® series and Inspector: A perfect match

As the intelligent image processing solution in the sensor package, the VSPM-6 Inspector checks and measures objects even in high-speed production processes. Its powerful object finder supplies accurate data whatever the position, size, and angle of rotation. “Integrating SICK's camera solution was a major challenge in the project, because reading accuracy requirements were very complex,” says Harald Maaß, project manager at RESA Systems. “From joint projects completed previously, we already knew that the Inspector was exactly the right product for such a complex requirement.”

The Lector62x image-based code reader by SICK is being used by Ford for the first time in final assembly at its plant in Cologne. It has been tailored specifically to meet industrial requirements. The Lector62x identifies 1D, 2D, and directly applied codes on moving or stationary objects, even if the quality of the codes is poor. The camera is linked directly to the plant controller. “A special feature from our point of view is that in the spirit of a holistic approach, a single software solution is able to process all read types,” explains Klaus Pübben, key account manager at SICK. This is one of the factors enhancing SICK's ability to position itself on the market as a full-service supplier going forward, under the motto “More than a vision” SICK is always able to provide a solution to meet individual requirements – for 1D and 2D codes, 2D vision or RFID alike. SICK has developed its own user interface SOPAS (SICK Open Portal for Application and Systems Engineering Tool) to serve as a configuration tool. “The holistic approach which enables us to offer our customers the right all-encompassing solution for their specific problems is also increasingly in demand on the market,” explains Pübben. *(as)*

More about the customers at:
www.ford.com
www.resa.de

The Lector62x by SICK can be relied upon to read codes on objects that are in motion or stationary, even if the quality of the codes is extremely poor.

VISUALIZATION FOR MUCH EASIER COMMISSIONING, RETROFITTING, AND MONITORING

SWITCH TO THE ENCODER AT THE CLICK OF A MOUSE

The future of the industry is characterized by a marked individualization of products in the context of highly flexible large-volume production. This trend is being spurred on by intelligent monitoring and decision-making processes that companies and entire value-added-chain networks can control and optimize virtually in real time. Encoders with Ethernet-based fieldbus interfaces are already easy to configure and come complete with a range of diagnostic functions.

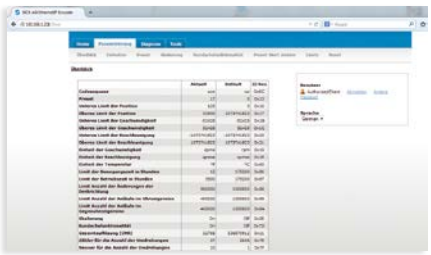
>> SICK is now going a step further, integrating a web server into the AFS/AFM60 EtherNet/IP absolute encoder. In order to be able to give machine builders and manufacturers new options and more freedom for encoder integration, service, and maintenance, SICK is taking encoders online with an integrated web server. With the embedded new programming tool, the AFS/AFM60 EtherNet/IP absolute encoder is ready for operation immediately without the need for additional software – enabling it to be used either with a browser-enabled device combined with a controller or even without a controller.

More than speed and position

As well as opening the door to sensor data (i.e., precise angle, speed, and position detection), visualized communication via web server provides insights into the application by virtually mirroring plant conditions and requirements. With a whole range of integrated diagnostic functions (minimum and maximum values for position, speed, temperature, operating hours counter, motion counter, display of flags, alarm, and warning messages), downtime can be reduced and material costs cut. Optimized service and maintenance intervals increase machine performance. Even without a web server, the AFS/AFM60 EtherNet/IP absolute encoder has already enjoyed market success, delivering significant added value with new functions. These functions can now be visualized via the web server, making the EtherNet/IP encoders easy to integrate and operate.

Everything at a glance

Visualizing all encoder features and diagnostic functions at a glance on one screen enables the user to modify parameters quickly and easily, to output data values to the controller, and to display diagnostic data in graphic format. Operators are thus able to configure and/or analyze encoder data via Wi-Fi switch with LAN or WLAN access regardless of location, and optimize service intervals where applicable. Such action can be taken directly on site in the application, in a lab, in a warehouse, or in an office – even without a controller.

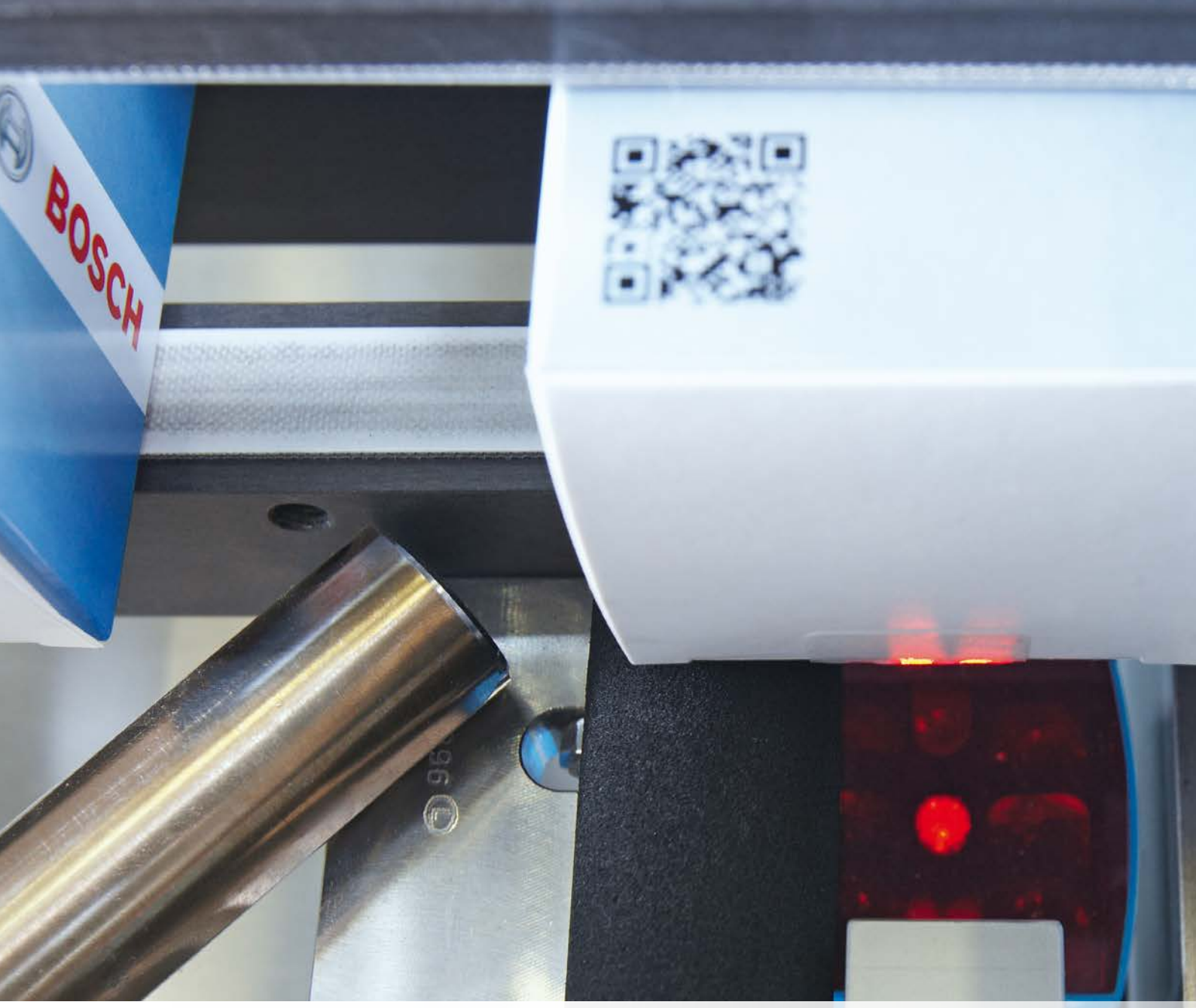


Easy and intuitive operation

Users are not required to have specific interface knowledge, as the websites are displayed in cleartext with decimal values and diagnostic data is displayed in graphs. The user-friendly interface maximizes flexibility for operating personnel. Web server settings are sent to the controller automatically. Specific data exchange with the controller takes place in the background. With the encoder as the output device, operators can change values quickly and safely. This is a significant factor in increasing efficiency. Operators can compare their “actual settings” with the “default settings” on the configuration overview on the screen. All settings are listed clearly side by side and missing or incorrect settings are immediately apparent. This helps significantly to avoid incorrect entries. The addition of an integrated FTP server to the AFS/AFM60 EtherNet/IP by SICK means that the encoder can be updated with the latest firmware at any time – directly in the system, without having to replace the sensor.

Integrated web server as standard

The AFS/AFM60 EtherNet/IP encoder is now automatically being delivered with an integrated web server. Customers can choose one of three ways to use the encoder. It can be operated in the conventional way via the controller, with the web server being used exclusively as and when required for monitoring and diagnostic purposes. Alternatively, the web server or the integrated programming tool can be used solely to configure the encoder in advance, prior to its implementation in the plant. The third and final option is to use the controller and the web server at the same time. The most recent setting made takes priority, regardless of whether it was made on the controller or on the web server. The AFS/AFM60 EtherNet/IP with web server enables a machine operator to upgrade the machine without having to come to grips with a complex programming routine. *(as)*



TAMPER EVIDENCE AT BOSCH PACKAGING TECHNOLOGY

MEDICINAL PRODUCTS: BRIGHT PROSPECTS FOR TAMPER PROTECTION

The Glare by SICK is offering “bright” prospects in the battle against falsification and tampering in the field of medicinal product packaging. The innovative glare sensor was developed in response to the aims of the “Packaging – Tamper verification features for medicinal product packaging” standard. Bosch Packaging Technology is successfully using the Glare in its CPS serialization solutions and is achieving 100% reliability in detecting transparent tamper-evident safety labels, which are applied by machine.

>> Falsified medicinal products are a global problem. Popular medicines and highly priced medicines are at particular risk. Experts estimate that more than one in ten preparations worldwide are falsified; for medications available online, the level is believed to be over 50%. Studies suggest that buyers who wish to remain anonymous when making purchases via the Internet could even expect a falsification rate of up to 95% – based on all of the products that are available on the web. *)

Tamper evidence: Transparent labels show when folding cartons have been opened

Standard EN 16679:2014 is a supplement to the Falsified Medicines Directive (FMD) 2011/62/EU. This enhancement of the standard will ensure the genuineness and verifiability of individual packs, and thus prevent falsified or adulterated medication and lifestyle preparations from entering legitimate distribution channels. EN 16679:2014 recommends a range of sealing options that would prevent packs from being opened and closed again without leaving evidence, and would guarantee maximum protection against tampering. “Alongside fiber-tear labels, which are irreversibly damaged on opening, and foil 'VOID' stickers that reveal previously invisible text or patterns once they are detached, tamper-evident safety features have proved themselves effective in practice. These are transparent, self-adhesive sealing labels with perforations across the opening flaps of folding cartons,” explains Daniel Sanwald, product manager at Bosch Packaging Technology.

As a form of protection against prior opening, transparent seals neither affect the pack design nor cover up the required wording or markings on the packaging. The damage to the perforation when first opened, however – i.e., the broken edge that results from opening – is instantly visible. “As an element of our CPS folding box printing and verification systems, we are offering a tamper-evident function as an optional module that can very easily be retrofitted to existing packaging and serialization solutions,” says Sanwald. “For most packs, there are two label dispensers that attach the safety labels to the two opening flaps. In order to identify errors in dispensing or attaching the labels immediately, 100% reliable detection of the applied labels was essential.”

*) *Source: http://de.wikipedia.org/wiki/Medikamentenfälschung.*

Glare – when glare characteristics make the difference

Although glare is a property which often interferes with the function of sensors, for the Glare it is an advantageous characteristic of the object or surface that can be enormously useful. Delta-S-Technology facilitates reliable detection. The Glare has a sensing distance of 50 mm and features two receiver fields and eight transmitter axes. The red-light LEDs transmit in various directions and create a light spot size of approximately 10 mm x 13 mm. This arrangement renders the sensor invulnerable to vibrations during machine operation and to any wobbling of the objects as they pass the sensor, thus ensuring reliable detection of glare changes between label and pack. “For us as machine engineers, it is also important that the Glare should not require time-consuming configuration, or need additional illumination or protection against ambient light,” says Sanwald, referring to the ease with which the glare sensor can be integrated into a system. During operation, the Glare distinguishes between directional and diffuse reflections, using an intelligent algorithm to evaluate the received signal in terms of its spatial distribution. By simultaneously observing the dynamic transitions between glare states, the Glare also achieves good signal quality.

IO-Link: The efficient option

The Glare can optionally be integrated into the machine controller via IO-Link. This allows the sensor to be adjusted via the controller and a wide range of process data can be supplied during operation; this data can then be processed for specific purposes in the PLC or on the user interface. As required in a pharma environment, the configuration data is stored centrally in the machine controller. It can be transferred to the sensor when switching to a different pack or when changing devices. In addition, the Glare will send an error message to the operator when it encounters contamination such as dust on the pack.

NOW A REALITY: AUTOMATIC AGGREGATION OF PHARMA PACKAGES

In the process of combining packages in track-and-trace containers, SICK's DeltaPac MultiTask photoelectric sensor can be relied upon to accurately count units without any interruptions to the product flow. Moreover, where automatic aggregation is concerned, it makes all the difference. Once the packages have been labeled and sealed ready for sale, they are combined (both physically and in terms of data) in bundles in the aggregation module. DeltaPac counts the packages by detecting the leading edges. Simultaneously, a Lector62x image-based code reader reads the labels on the individual packages. After this, the bundle is taken to a robot module for outer packaging. “Previously – without DeltaPac – this automatic, continuous aggregation was impossible,” recalls Daniel Sanwald. Before, a person had to pick up the individual packages, scan them, and place them in the next aggregation unit.

When full, the outer packaging is forwarded to a pallet handling machine. “Each stage of the aggregation process is verified seamlessly,” explains Sanwald. “In the ERP system, this produces a complete aggregation structure which is similar to a pyramid and maps all stages of the bundling process, thereby supporting seamless track and trace.” Identification of the packages with the Lector62x and reliable counting with DeltaPac maximize process reliability and enable a product to be tracked and traced at any time and at any stage throughout the entire production, packaging, and logistics process. *(tm)*

A perfect match: DeltaPac supplies the trigger signal for the Lector62x image-based code reader.

A NEW ERA OF SAFETY.

THIS IS SICK

Sensor Intelligence.

Since the invention of the light curtain, SICK has spent more than half a century developing pioneering innovations for a safer industrial world. The market leader for safety technology is now once again entering a whole new age with a new generation of safety laser scanners, light curtains, switches, and encoders: microScan3, deTec4 Prime, STR1, and DFS60S Pro. Whatever angle you approach industrial safety from, there are common aims: to set new standards for safety and productivity and to enable customers to implement pioneering solution concepts their way. We think that's intelligent. www.sick.com

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