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SICK insight

SICK'S CUSTOMER MAGAZINE 2_2008

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: Editorial

Seizing opportunities together.

Dear Readers,

In times of economic uncertainty, the notion of business relations suddenly takes on a completely new meaning. One realizes that things are significantly easier when acting in concert.

In the current economic environment, no one knows what the future will bring. We will strive in this situation to focus all of our energies on improving our clients' competitiveness and by the same token, our own.

What matters now is bringing to bear the strengths of automation in particular, mobilizing all available reserves in production and material flows. Precisely in this area, we can support you with highly innovative sensor technology in order to enhance the performance of your machines and plants, thus increasing your competitive edge.

Competent sales personnel will assist you at anytime when searching for additional optimization potentials in your applications. Rest assured that even tomorrow, you will be able to rely on SICK as the market leader, offering our broad product portfolio and forward-looking solutions.

Our entire team cannot wait to find out about the challenges you will confront us with in the immediate future and especially at this year's SPS/IPC/DRIVES in Nuremberg. Do approach and talk to one of our automation experts there. Once again this year, we will be coming to Nuremberg with a large number of new products and solutions. Today, we are already giving you a little foretaste with our customer magazine.

We wish you an enjoyable and stimulating read through this latest issue of SICKinsight, and we are looking forward very much to you visiting our exhibition stand.

Best wishes,

Ralf Klein | Management Board | Head of Corporate Sales & Marketing

Calling on SICK at the trade fair rewarded with Nikon reflex camera

Discovered HMI highlights and was in luck

>> For Tobias Ebert, an employee from technical support for applications (META) at SEW-EURODRIVE, the visit to this year's Hanover Trade Fair was definitely worth his while. The winner of SICK's prize game at the HMI, he received a Nikon DX40 reflex camera.

During his tour of SICK's exhibition stand, he discovered all of this year's highlights: the LFT level sensor, the new generation of CLV6xx barcode scanners, the Inspector 2D vision sensor for parts inspection, the Flexi Soft safety controller, the new OD Precision displacement sensor, and the MZT8 and MZ2Q magnetic cylinder sensors for C-slots. When the draw took place, fortune smiled on him, since his entry slip was allotted the main prize. In late July, he was able to accept the reflex camera in Bruchsal from Volker Neuhaus, one of SICK's lead account managers.

However, we would like to extend sincere congratulations not only to Tobias Ebert but also to the other winners that took delight in an Apple iPoD 80 GB, a Garmin GPS60 navigation system, a pair of Safari binoculars from Steiner, and LED flashlights.

Visit us at the fair:

SPS/IPC/DRIVES 2008 in Nuremberg
from 25 to 27 November 2008
Hall 7A – Stand 340
www.mesago.de/sps

This year's main topics at the international fair are:
- Ethernet in automation
- Safety and security in automation
- Motion control

An annual overview of all trade fairs with SICK is available on p. 45

Industry expertise visualized!

Innovative solutions for the wood industry

>> Do you wish to optimize automated production processes in the wood industry? In that case, the new industry guide from SICK is just the right thing for you!

SICK offers you solutions that are tailored specifically to the requirements of the wood industry – regardless of whether in round timber sorting, at the lumber mill, in planing or miter-cutting facilities, in edge gluing machines or at machining centers.

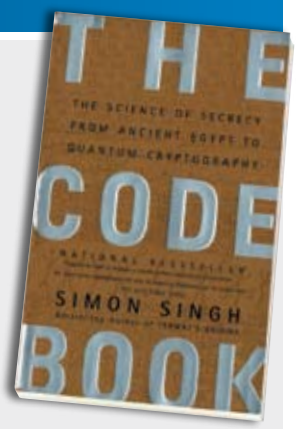
Featuring a new "look and feel," SICK presents the range of products and services in the proven format of a brochure – and of late, in digital format on an interactive DVD. Animations of process sequences, accurate in every detail, guide you through the world of the wood industry, showing you how the range of SICK's products can provide immediate benefits. If interested simply send an e-mail to info@sick.de

SICKinsight
Now scrolling online!

>> Effective immediately, the current issue of SICKinsight will be available online as well on our website in the format of an e-paper. It features a new scrolling tool that makes the printed version visible 1:1. With the help of its user-friendly means of navigation, the reader can 'leaf' through the digital edition in a way similar to the printed magazine. Furthermore, the numerous functions of the online version improve reading comfort because they allow zooming as well as the direct saving and printing of pages. Another benefit compared to the printed edition of SICKinsight is the possibility of clicking on additional links that refer to related topics. (Currently only available in German.)

Try it yourself at www.sickinsight.com!

Book Tip



Simon Singh

The Code Book

The Science of Secrecy from Ancient Egypt to Quantum Cryptography

In his book, published by Anchor, Simon Singh deals with the evolution of cryptography, providing readers with exciting insights into the world of codes, secret signs, and ciphers. In doing so, he presents not only encoding and decoding methods specific to certain eras but also encourages discussion on the topical issue of data protection.

Automated guided vehicles transport rotogravure cylinders and secure the travel path

Safety with optimum protective fields

Compact scanner with comprehensive functionality

Driving collision-free and positioning accurately – on the unmanned transport vehicles at Schlott GmbH in Freudenstadt, S300 safety laser scanners manage the automatic traffic between the electroplating lines, the high bay warehouse for cylinders, and the printing presses.

>> The previous two-part solution consisting of bumpers for personnel protection and ultrasound as queuing sensor has had its day – the S300 takes on both functions more precisely and flexibly.

Transport automation for printing center

The Schlott group is one of Europe's largest printing and direct marketing providers, covering all processes involving digital and printed communications. In a new building, Schlott has built up an entirely new cylinder form production with adjacent printing presses. The contract for implementing the fully automatic equipment and plant technology went to Effing GmbH Maschinenfabrik based in Ahaus (ATG Systems), which ranks among the leading suppliers in this field. Part of the solution provided by Effing entails two unmanned transport vehicles used for transporting the rotogravure cylinders. In the electroplating lines of form production, these are placed on the AGVs by automatic cranes and removed as well as stored at the high-bay warehouse by the aisle stacker. Corresponding to the printing jobs pending, unmanned transport vehicles take care of retrieval and transport to the printing presses, where the cylinders are removed by crane and transferred to the printing press. Since the drive path is not cordoned off and persons may be present in the facility, the people from Effing searched for a suitable personnel protection system – and decided in favor of the S300.

"Big brother" serving as a reference

Effing has fared very well in numerous projects with the S3000. However, apart from this positive reference, use of the S300, the "little brother", in the advanced version was above all a matter of suitable functional features: 2-meter protective field and 8-meter warning field ranges, a scanning angle of 270°, two pairs of protective and warning fields, switching of the fields independent of processes and speed, lightweight and compact construction design, as well power-saving electronics. Thanks to the S300s, the unmanned transport vehicles at Schlott are always traveling safely. Obstacles or persons are detected so far in advance that the heavily loaded vehicles manage to brake gradually. Once the obstacle disappears, they continue to travel on automatically. In the high-bay warehouse, the switching of the warning fields allows approaching a wall up to a few centimeters while maintaining the full safety function.

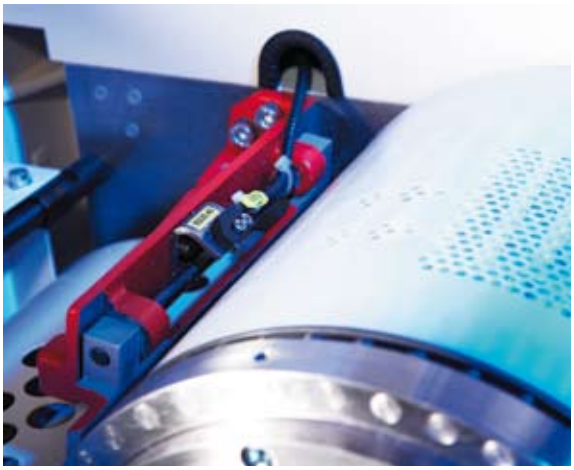
Personnel protection for unmanned transport vehicles solved in the efficient way typical of Effing: for the task required at Schlott, the S300 Advanced provides maximum safety and an optimum extent of functions.

Further product information:
www.mysick.com/applications

More about the customer:
www.schlottgruppe.de

Maximum performance in a small space

Filter detection by means of photoelectric switches with fiber-optic cables



The WLL12 sensor can detect gaps developing between the individual filter rods in the vacuum drum

The filter rod machines of Universelle Engineering U.N.I. GmbH produce up to 5,000 filters a minute. The WLL12 photoelectric switch with glass fiber-optic cables manage to detect each filter reliably at high speed.

>> The core business of Universelle Engineering in Schwarzenbek near Hamburg is the rebuilding of machines for the tobacco-processing industry that require an upgrading of drive, control, and sensor technology after running times between 10 to 20 years. The company is a subsidiary of Hauni Maschinenbau GmbH – the world's leading manufacturer of machines and plants for the tobacco industry. Hauni in turn is the management company of the tobacco division within Körber AG, whose additional business portfolios are paper, tissue, and toiletry technology, machine-tool building, as well as pharmaceutical packaging systems.

Filter detected – production process OK

The filter rod machines from Schwarzenbek are capable of producing, every minute, up to 5,000 filter rods measuring up to 150 mm, each of which is then made into four or, respectively, six cigarette filters. On the one hand, detection of each single filter rod after the cutting knife serves production analysis. It also plays an important role in recognizing early on any disruptions in the feed of materials and in stopping the machine quickly in that case. Undergoing various process steps, the cellulose material is shaped into a highly homogenous continuous filter strand and cut by rotating knives into filter rods. Subsequently, they are "injected" into a rotating vacuum drum, singulated in a new conveying direction, and transported to a logistics device. The sensor head of the fiber-optic cable, specially developed for Hauni, is bolted above the drum. The actual sensor – a WLL12 – is installed on the machine at a less confined and more easily accessible spot. The photoelectric switch with fiber-optic cable detects if gaps develop in the drum between the individual filter rods, in that case stopping the machine quickly and reliably.

Fiber-optic cable solution: individually designed, tried and tested thousandfold, available worldwide

Just the number of Hauni's filter rod machines alone that operate worldwide exceeds 2,000 – additionally, there are far greater numbers of cigarette producing machines. The fiber-optic cable solution for detecting filter rods was adapted specifically to the particular requirements of Hauni and, respectively, Universelle Engineering. The glass fiber-optic cable is extremely robust and provides very high light throughput – with positive effects on detection quality and speed. The optical head is integrated into an individual special sleeve bolted directly to the machine. The exceedingly robust construction of the sleeve as well as the use of a glass instead of a plastic fiber-optic cable result in high service life and mechanical hardiness in case of potentially necessary adjustment and cleaning measures in the area. Another crucial factor for loyalty to the WLL12 is the fact that in an emergency, short-term spare equipment is available worldwide via SICK's sales organization.

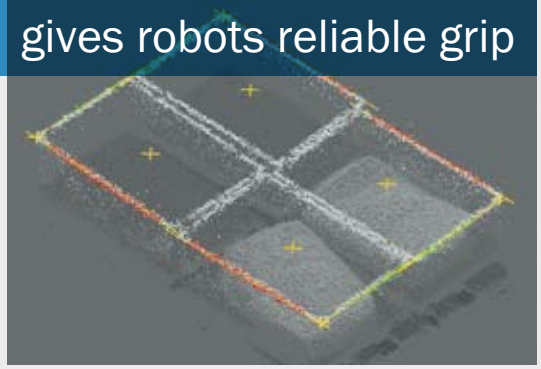
Incidentally, that also applies to the other photoelectric switches from SICK used on Hauni's machines, e.g. a photoelectric proximity switch for monitoring tears in filter paper, a photoelectric reflex switch for counting filter rods, a photoelectric proximity switch for checking the beginning of filter strands and monitoring the paper supply of the bobbin, or a miniature photoelectric proximity switch for jamming control in the transfer device or high/low level controlling in the storage magazines.

Further product information:
www.mysick.com/applications

More about the customer:
www.hauni.com

Controlling depalletizing processes

Laser measurement gives robots reliable grip



Alignment, size, surface, height level, loading pattern – there are many things a robot needs to know for reliable gripping. Whether the goods are bags, crates, wheels, engine pistons, or other objects – the LMS400 laser measurement system delivers the necessary control information.

In most applications, the LMS400 is mounted directly to the gripping device of the robot. With a scanning frequency of 330 Hz and a scanning resolution from 0.5° to 0.125° that can be parameterized in advance, the LMS400 generates 3D contour images of the object surface, e.g. of a loaded pallet. It detects edges, breaks, and gaps – and thus, the loading pattern and position of the individual objects. Depending on the task, the measuring cycles range at about 700 ms. Based on these measured data, the LMS400 then calculates the best possible gripping points for the robot. Transmission of the data from the evaluation computer of the LMS400 to an automation system may take place via PROFIBUS, Ethernet TCP/IP, or CAN bus.

Combination with a camera system possible

The LMS400 permits technically and economically efficient automation regarding depalletization of round, oval, angular, or asymmetrical objects. With the help of software, it is possible to parameterize new objects or load carriers into the LMS400 at any time. The device is very compact and requires no separate light. If required, the visual guidance of the robot by means of LMS400 can be supplemented with the use of 3D cameras, e.g. the IVC-3D Smart Camera or the Ranger vision system, for instance, in cases that necessitate high resolutions or particularly fast scanning frequencies.

Cost benefits for automatic stamp assembly machines from Trodat

One sensor, two switching points, many advantages

Quality, precision, and cost efficiency are top priority for the rubber stamp producer Trodat. Therefore, the Austrian company relies on MZ2Q magnetic cylinder sensors for its automatic processing and assembly machines.

>> Based in the Austrian town of Wels, Trodat is the largest rubber stamp producer worldwide. As the inventor of the world's most successful stamp, "Trodat Printy," which to this day has sold more than 150 million times, Trodat builds or purchases assembly fixtures and complete automatic assembly machines that must meet production-related requirements and the demands of design-to-cost serial production alike. "The decisive element is total cost of ownership," says Herbert Scharinger from Trodat's production team. "Often, the purchasing costs play merely a subordinate role. Only once maintenance expenses, costs for spare parts, assembly times, machine downtimes, or conversions due to type restrictions are calculated as a sum total, one knows whether a sensor, for example, is expensive or economical."

Automating cost-effectively and accurately with the MZ2Q

The MZ2Q magnetic cylinder sensor fulfills all of Trodat's specifications. With its two switching points, the sensor offers important technical advantages. It occupies only one T-slot and requires laying only a single cable. Insertion and vibration-free fixing in the slot occurs in a user-friendly way from the top. Setting the switching points takes place via easy-teach method. The piston is positioned successively at both desired switching points, thus being taught-in to the respective piston position that requires detection. If needed, the switching points can be changed at any time and taught-in again. For this reason, Trodat changed its cylinder sensors over to SICK. "To us, the great advantage of the MZ2Q magnetic cylinder sensors was the possibility of application in SMC and Festo cylinders with one and the same sensor type – entailing the corresponding savings in purchasing, assembly, and storage," says Herbert Scharinger. "Another cost benefit for us was the fact that in places requiring two or three sensors in the past, we can now use the teachable MZ2Qs with two switching points. Thus we saved additional sensors."

Global quality

In view of Trodat's two production sites in Wels and in China, SICK's worldwide presence proves very convenient for the company. "This means to us that even in China we can obtain support featuring the same quality, equally fast availability, the necessary expertise, and the suitable sensor technology directly on location," Herbert Scharinger explains.

www.trodat.de

Better than bumpers

Compact laser scanner secures ‘rolling workbenches’

Rolling workbenches dominate the scene in the axle assembly at BMW’s Dingolfing plant. S300 compact laser scanners monitor their travel path and manage the spacing of the rail-mounted vehicles at the individual assembly stations.

>> The rolling workbenches are produced by the Emil Schmid Maschinenbau Company based in Sonnenbühl. “Originally, we considered bumpers for protection,” Wolfgang Schmid looks back, “but then we quickly became convinced of the benefits that protection with the S300 offers.”

S300: Perfect for mobile applications

The S300 is a compact safety laser scanner that provides new possible solutions for mobile monitoring tasks. The laser scanner, featuring a 270° scanning angle is approved in compliance with Type 3 according to IEC 61496-3 and SIL2 according to IEC 61508. As a protective system for mobile use, the S300 was designed deliberately to save space, weight, and electricity. The protective fields – with a radius of up to 2 m – and the warning zones – with a radius of up to 8 m – that are required depending on the area of application can be programmed easily.

Reduction in speed all the way to non-contact stopping

One essential advantage of the S300 is that it permits the vehicle to brake and stop proactively. “In the case of a bumper, the vehicle stops only upon direct contact, which can definitely give an employee a serious fright,” says Wolfgang Schmid. “With the S300, we can use individual programming of the warning and protective fields to reduce vehicle speed and stop depending on the situation and without contact. That is also an important feature for keeping individual vehicles at the right distance.” In addition, due to freely definable protective fields, it is also possible to protect projecting contours, e.g. axles. “This is not feasible in the same way with any other existing system,” Wolfgang Schmid explains.

To Wolfgang Schmid, what began with equipping a test vehicle and has now proven its worth at BMW is a solution for the future, since “the S300 safety laser scanner offers the maximum amount of flexibility and cost-effectiveness when it comes to protecting rail-mounted and autonomously moving transport vehicles.”

Further product information:
www.mysick.com/applications

More about the customer:
www.bmw.de
www.schmidgruppe.de

The S300 compact safety laser scanner protects freely moving workbenches

Direct part marking

Best solution for identification of 2D codes on crankcases

Whether lasered codes on a curved cast-metal surface, dot peening on reflective metal, or inkjet marking on bodywork components made of plastic – in "automotive" applications, the use of 2D codes applied directly is advancing unabatedly. For this purpose, users such as KS Aluminium Technologie AG in Heilbronn require reading devices such as the IT6300 DPM hand-held scanner that cope with the special operating conditions.

>> KS Aluminium-Technologie AG (ATAG), employing a staff of more than 1,000, ranks among the leading producers of cylinder blocks made of aluminum alloys. Based in Neckarsulm, ATAG supplies many leading German and international automobile manufacturers with aluminum engine blocks for use in gasoline and diesel engines. For the purpose of automated production control as well as comprehensive quality control and documentability of various machining processes, the blocks are marked with a stamped data matrix code. "2D codes done with DPM technology have the essential advantage that they are more robust and durable than labels, thus making them very well suited for permanent marking of the crankcases," Matthias Brenneis from the Maintenance Department at ATAG explains the use of this marking technology. "The decisive factors for identifying DPM codes are the material, color, structure, and reflectance properties of the object surface. Consequentially, reading two-dimensional DPM codes frequently makes high demands on the reading technology due to varying surfaces, our different code sizes, or changing glare and contrast behavior." It was a matter of considering these issues when the people at ATAG changed over to a new generation of hand-held scanners – eventually opting for the IT6300 DPM from SICK after thorough live testing.

IT6300 DPM: optimum reading performance due to optimum lighting

The IT6300 DPM hand-held scanner delivers excellent performance in numerous assignments even outside the automotive industry when it comes to identifying directly applied data matrix codes. The features responsible for this are a high-resolution Imaging™ image detection module as well as the UltraLight™ illumination design, which allow reading reliably even small codes, weakly contrasting markings – but also codes on highly reflective surfaces.

Mobile and reliable identification of engine blocks

"The IT6300 DPMs are used at various pre-control and final control stations in two of ATAG's production shops in Neckarsulm," says Daniel Gruszka, also from Maintenance at ATAG. "Apart from the 14 x 14 data matrix codes dominating so far, increasingly these days we see 16 x 16 codes used more frequently as well," he explains the significance of flexibility and user-friendliness. For the hand-held scanners, this poses no problem, since each code is taught-in quickly and then read reliably. Identification of the processed engine blocks makes it possible, via the industrial data collection system, to guide the components through the manufacturing process and to update the data set of each respective engine block in

accordance with the individual processing steps. “In this way, we also achieve comprehensive quality control, retraceability, and process documentation,” explains Matthias Brenneis.

IT6300 DPM convinces planners, company managers, maintenance staff, and buyers

Prior to the extensive introduction of the IT6300 DPM at ATAG, a period of several weeks was scheduled to test individual devices in actual operations. Planners praised the simple integration of the hand-held scanners into the existing industrial data collection structure. The decisive point for company management was the time savings and the security against errors in comparison to manual code entry, as well as the high scanning reliability – both crucial for unrestricted throughput performance and acceptance by employees. Maintenance staff was convinced by the robustness of the devices, as even repeated drops from 2 m on a concrete floor did not impair their functioning. In terms of procurement, not only are the IT6300 DPMs significantly less expensive than complex camera-based reading systems – if worst comes to worst, the hand-held scanners can also be exchanged at reasonable cost.

Identification of crankcase with the IT6300 DMP hand-held scanner

Further product information:
www.mysick.com/applications

More about the customer:
www.kspg-ag.de

Laser measurement reduces formation of dust

Discharge optimization at the coal dump

At the seaport of Nordenham, an LD-LRS laser scanner optimizes the discharge of coal onto dumps, while at the same time taking care of collision protection for three cargo-handling facilities as well. An additional solution from SICK: position detection of the discharging belt by the Pomux length measurement system.

>> The seaport of Nordenham at the lower Weser River is equipped, among other things, for the transshipment of dust-generating bulk goods such as hard coal. Coal delivered is unloaded from the ships by means of a grabber dredger and loaded via feeding hoppers onto conveyor belts. The conveyor belts transport the coal to dumps located to the left or right of the tracks of the cargo-loading devices. Discharge to the dumps is supposed to take place from the minimum height to reduce dust emissions while paying attention to preventing collisions of the conveyor system with the piled material. In the past, controlling the position of the conveyor belts and the discharge height took place manually.

Solution a “potential HIT”

Together with the system integrator HIT Hafen- und Industrietechnik GmbH, SICK prepared a solution for reducing the formation of dust. The basis is an LD-LRS laser measurement system with a scan angle of 300 degrees. The sensor offers a range of 55 m on black coal, thus displaying reserves for flexible installability, i.e. it was possible to mount the scanner centered on the pivoting arm above the conveyor equipment without reaching the limits of its range. Three measuring fields were defined in the device: one each to detect dumping height with a view to the left or right dump, respectively, as well as a third one at the center to provide collision protection for the cargo loading bridges. If coal is supposed to be discharged on the dump, the LD-LRS determines the respective dumping height on site. Using these data, a program within the plant control system calculates the ideal discharge, controlling the gradient of the conveyor belts toward a minimum distance from the dump – which in turn minimizes the dust generated and saves the use of humidification with water. Simultaneously, the LD-LRS ensures effective collision protection for the three cargo-handling devices overall.

Pomux for conveyor belt positioning

HIT and SICK were able to solve another type of problem at the seaport of Nordenham simultaneously. Up to this time, the position of the movable conveyor belt had been detected using encoders. The dusty environment required frequent maintenance – which one can dispense with completely when employing Pomux. The high-resolution system works with a code rail featuring magnetic scanning, thus making it suitable for use in the harshest environments. Measurement takes place without contact and free from wear. Coal dust settling on the magnetic code rail has no effect on either function or accuracy.

Further product information:
www.mysick.com/applications

More about the customer:
www.hit-germany.de
www.rhenus.de

Miniature photoelectric proximity switch meets maximum requirements

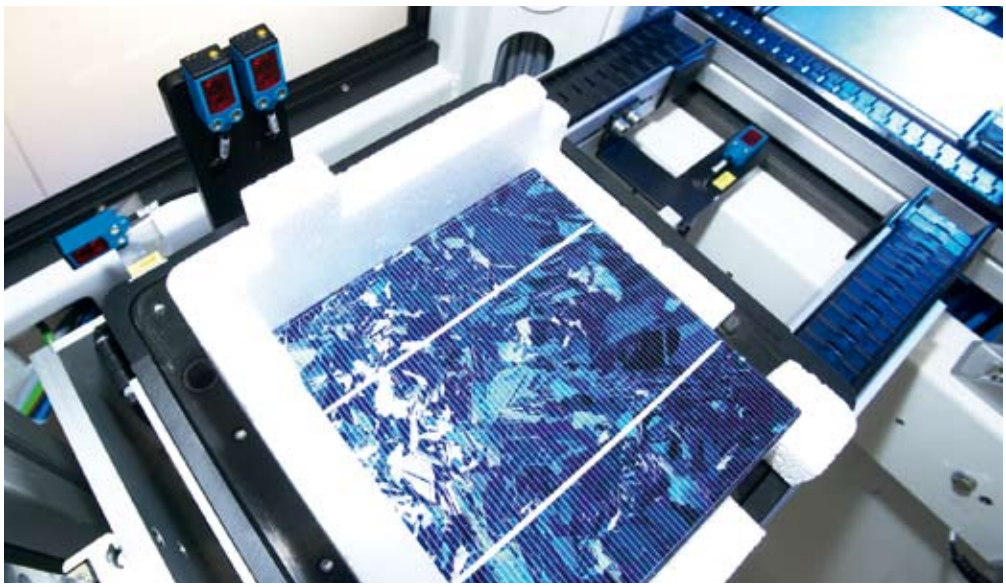
Solar cell handling: Classy performance in the classifier

Schmid Technology Systems is one of the leading producers of machines for solar equipment manufacturing, covering everything from the making of silicon to the finished module. In its C-Sort 5000 classifier, the company relies, among other things, on the high-performance photoelectric proximity switches of the WTB4-3 series from SICK. The reason: Despite the extremely difficult surface of solar cells, the sensors offer a high degree of detection reliability.

>> In many respects, the sensors fulfill maximum requirements: space-saving miniature design, very straightforward installation and start-up, electrical and mechanical compatibility with other physical active principles, e.g. ultrasound. Above all, however, they deliver reliable detection of the very dark surfaces of solar cells in lighting and reflective conditions in the back of the machines that are sometimes anything but ideal.

The Schmid Group: leading in innovative business segments

The Schmid Group, employing a staff of about 1,500 at 13 sites worldwide, develops and produces stand-alone and all-inclusive facilities for the business segments of solar power/photovoltaic conversion, printed circuit boards, and flat panel display. The Niedereschach plant accommodates the production of equipment for manufacturing wafers, cells, and modules in the area of solar power/photovoltaic conversion, among other things, of the C-Sort 5000 classifier – an inline module to measure and sort up to 5,000 solar cells per hour. After building up the semiconductor properties and photosensitivity of the solar wafers in various processes, they are examined in the classifier in three control stations dealing with solar simulation, print image inspection, and back surface inspection. For this purpose, the solar cells are fed on a wide conveyor belt with up to five tracks. Integrated FlexPicker robots take care of handling the cells in front of and behind the control stations, all the way to sorting them into more than 20 different classes.



The WTB4-3 photoelectric proximity switch from SICK provides detection reliability when detecting the surfaces of solar cells

Best in the test: the WTB4-3 photoelectric proximity switch

Detection of the solar cells in particular, sometimes measuring only 160 µm in thickness, confronted most sensors in various tests with unsolvable problems. The cell surface, provided with a phosphorous emitter, features an anti-reflective coating, on top of which it is metallized. Visually, therefore, the solar cell has a deep blue, almost dark color with a luminous reflectance of less than one percent – thus the light emitted from a photoelectric proximity switch is "swallowed" almost entirely. At the same time, the polycrystalline structure of the solar cells, with their uneven orientation of crystals, generates the most diverse light reflections. Added to this is the fact that anodized machine parts and covers on and in the C-Sort 5000 classifier cause a high degree of stress in terms of extraneous light. Tests showed that the WTB4-3 from SICK provides the highest detection reliability. However, the photoelectric proximity switch is not only used for the demanding scanning of the solar cells but universally for all types of position detection, as well as checking for presence and height within the classifier.

Turnkey supply for turnkey solutions

Turnkey solutions are one of the strengths of the Schmid Group. Consequentially, for the area of automation the people at Schmid Technology Systems bank on "turnkey supply" – obtaining not only these two sensors from a single source but also programmable DRS61 encoders and high-end camera systems from the Ranger series for 3D back surface inspection of the solar wafers.

Further product information:
www.mysick.com/applications

More about the customer:
www.schmid-group.com

Using the Inspector 2D camera sensor allows detecting and rejecting damaged solar cells early on

Inspector investigates!

Edge inspection of solar cells

In order to detect defective cells or wafers, respectively, in the production process as early as possible, one manufacturer of solar cells relies on the compact, user-friendly, and precise Inspector. However, in other tasks, too, the 2D camera sensor offers "bright" prospects.

>> The manufacturing of solar cells or wafers, respectively – in the following article, the term cells always implies wafers as well – takes place as a series of complex operations. In various wet-chemical, plasma, and thermal processes, different layers are applied to the substrate. Since the cells, measuring approx. 200 µm in thickness, are very thin, the risk of damage during transport and handling in the facility, but also due to the process-related mechanical and thermal stress, is correspondingly high. The task of early detection and rejection of damaged cells from the production process is solved by means of the Inspector 2D camera sensor.

Inspection, independent of orientation and position

Being efficient like a camera and nearly as easy to operate as a standard photoelectric switch – these are the objectives Inspector combines in a way that is unique to date. The sensor – integrated in the IP 67 housing – comes with its own light source. It illuminates all areas of the cells – including the edge regions critical to the process – homogenously as well as independently of ambient light, and nearly shadow-free. Inspecting the edges of the solar cells does not require exact alignment toward the Inspector. Independent of position and orientation, the software algorithms of the sensor evaluate all edges of the cells – within few milliseconds and with maximum accuracy. This does not necessitate a trigger signal – as soon as detection of the object is complete, the detailed inspection of the item follows. If any damage is determined on the edge of a cell, the relevant part is rejected. This guarantees that only flawless cells pass through all process stages.

Usable in many scenarios and in various ways

Inspector offers a high benefit potential. On the one hand, settings once programmed can be saved on a PC and copied to additional "Inspectors" used for the same tasks. On the other hand, edge inspection constitutes only one of many further possible uses in the context of solar cell production. Thus, the Inspector is now the first choice for checking markings or logos on the cells just as it is for inspecting residues of defective cells in the different transport and handling uptakes along the production chain.

Sensor technology from SICK for the solar industry

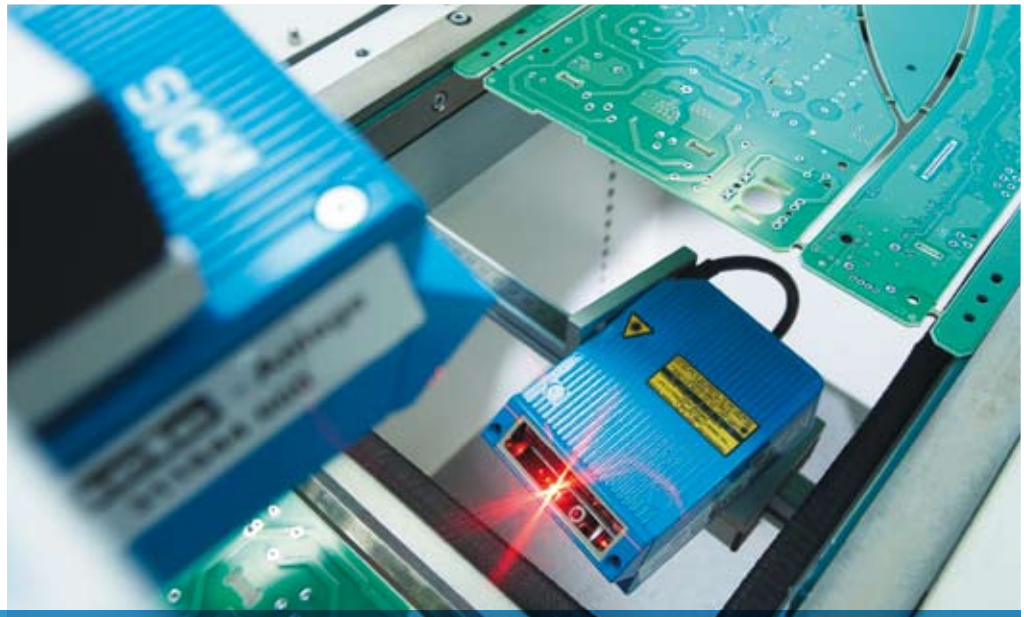
In order to be able to meet the high demand, automated manufacturing processes for solar cells are a must. Sensor solutions from SICK's overall portfolio contribute decisively to their reliability and availability. The following list includes a number of examples, such as

- opto-electronic, electro-magnetic, as well as ultrasonic sensors in handling systems, for the identification of solar cell boxes, solar modules, as well as individual solar cells,
- camera sensors and systems for dimensional and surface monitoring and inspection tasks, too, as well as
- tactile or non-contact safety systems, e.g. on partly automated processing stations or even on fully automated robot work cells.

In every application, sensor technology from SICK, delivering reliable detection, guarantees the highest possible throughput rates in the production of solar cells.

Further product information:
www.mysick.com/applications

: TITLE TOPIC



2D identification of printed circuit boards for washing machines

Miele relies on “inquisitive” 2D code readers

At its plant in Gütersloh, the household appliance producer Miele relies on the ICR850-2 2D code readers from SICK. The devices are capable of reading 12 data matrix codes in succession during one run through the assembly line. Networking several devices in the CAN network allows reliable identification of all codes on the entire width of the printed circuit board.

>> “Better all the time” – following this maxim, the Miele Company has developed, since its foundation in 1899, into a worldwide premium brand for household appliances. In the 2007/2008 business year, sales exceeded three million large appliances, including nearly 900,000 washers manufactured at the Gütersloh factory. None of the machines can do without electronics – it manages the cycle selection, the sequence of individual cycle functions, the control and monitoring of spinning speeds and temperatures, or the status messages of the appliances, such as water intake and drainage, or cleaning instructions. Thus, the significance that the quality of the integrated printed circuit boards has concerning the function of the respective appliances is essential. The quality requirements are high, and identification for the purpose of retraceability is absolutely necessary. For this reason, but also because space on the circuit boards for marking is decreasing constantly, the people at Miele decided to switch from the C128 barcode to the 2D data matrix code – and to ICR850-2s as the suitable code readers.

ICR850-2: the fast code finder

The large field of view, up to 80 mm wide, within which barcodes and 2D codes such as Data Matrix ECC 200 can be found and identified reliably, was one of the most important attributes of the ICR850-2 for solving the task at Miele. An added feature is that the resolution of 2,048 pixels allows detecting even small code cells measuring only 0.2 mm. In this way, 2D codes covering only few square millimeters can be detected reliably – independent of their orientation.

A dozen codes in direct succession

At Miele, 40 ICR850-2s are installed on the assembly lines. They are interconnected via CAN and integrated into the plant control. Every day, 900 to 1,000 panels with up to 12 different circuit cards are processed on the assembly line. In a first production step, each circuit card receives a data matrix code measuring only a few millimeters. In the process, the codes are attached in different spots according to the respective layout of the printed circuit board. Two ICR850-2 2D code readers each are installed in front of the subsequent stations, including the insertion machine, the soldering facility, and the in-circuit tester – either as a stand-alone system or, for larger conveyor belt widths, as a dual reading station with two devices cascade-connected as master/slave. The feed rate at which the ICR850-2s have to detect 12 codes in sequence is 0.25 m/s.

In April 2008, the entire assembly line was equipped and put into operation with ICR850-2s. Since the code readers from SICK meet all the requirements of data matrix identification at Miele, they are scheduled for use in future projects as well.

Burkhard Schmidt (right) from SICK with an employee from Miele

Further product information:
www.mysick.com/applications

More about the customer:
www.miele.de

High resolution and reproducibility even in case of low object reflectance

Distance sensor for muting: switches when switching is required

The people at Ford in Cologne rely on the DS30 distance sensor for activating muting functions when transporting body shells. The reason: its innovative time-of-flight method can handle any skid surface.

>> When body shell skids pull into an area that is, for example, shielded by a safety fence, that space of the conveying facility is monitored by safety light grids or safety laser scanners. The muting sensors serve to differentiate between persons and material to be transported, allowing the skid to pull into the protected area, e.g. a robot welding installation, without causing an emergency stop of the entire facility. To this end, the muting sensors need to detect the feet of the skid in a particular spatial and chronological sequence. If a skid rail has an altered physical appearance due to pollution, rust, or color deposits, some sensors reach their detection limits. The consequence of an absent sensor signal is non-compliance with the muting conditions – and thus an emergency stop.

Successful problem solution with the DS30

Since using of the DS30 distance sensor, emergency stops due to spurious signals from the muting sensors are a thing of the past, for in addition to precise distance measurement, the DS30 utilizes time-of-flight measurement with a novel electronic evaluation method. In this way, the DS30 achieves high resolution and reproducibility even when object reflectance is low – and what's more, at scanning ranges of up to 3 m. Thus, no matter what type of deposits the skid rails have – the DS30 detects them all. The reliability concerning detection and switching is supplemented by precisely and reliably operating background suppression: whether shiny metal struts on the skid, reflections from the body shell, or employees with reflective safety vests – when it comes to the DS30, there are no switching errors.

In the standard housing for photoelectric switches, the DS30 offers the highest detection reliability because of innovative time-of-flight measurement – not only for muting applications ...

www.ford.de

Rotative sensor technology for wind turbine and solar energy facilities

Innovative solutions for innovative energies

Whether the task involves measuring the rotor speed of a wind turbine generator system, adjusting its rotor blades, or repositioning solar panels according to the movement of the sun – everywhere rotative sensor technology from SICK-STEGMANN provides for efficient generation of energy.

>> In the segment of onshore and offshore, speed-controlled wind power generation systems alone, today more than 20,000 encoders from SICK-STEGMANN are in use already – with numbers on the rise. Thus, due to its magnetic scanning and robust IP 67 housing, the ATM60 absolute multiturn encoder, for example, features extraordinary high robustness and ruggedness vis-à-vis environmental influences. At the same time, the encoder, which operates without a battery and is thus very durable – is so precise that it allows both exact rotor blade adjustment – called pitch control – and accurate repositioning in accordance with wind direction. As a result, in varying wind conditions, one can always achieve the optimum performance yield of the wind turbine. That performance level is recorded, among other things, by innovative incremental encoders such as the DFS60, that do an excellent job "across the wind park" as systems for measuring rotor speeds.

Rotative encoders do not have to work quite as fast but with equal precision in solar parks. Their task is to reposition the solar panels in sync with the movement of the sun, thus providing optimum efficiency in using solar energy.

Whether wind or solar energy – encoders and motor feedback systems from SICK-STEGMANN offer innovative solutions for innovative energies. **www.sick.com**

Cleaning cycles from room temperature to 100 °C

Skeptics convinced, acid test passed

Extreme operating conditions for sensors prevail at the Danish spring roll producer Daloon in Nyborg – in fact, so extreme that it was possible to master the application only by using the V18V food & beverage photoelectric switch from SICK.

>> When it comes to producing spring rolls, Daloon relies on fresh ingredients. After being washed and chopped, the vegetables used are made available at the processing machines in stainless steel transport cars. Once the transport car is empty, it is transported to the automatic washing facility. Before the washing cycle initiates the pre-wash, the removal of residues with acid and alkaline agents, the high-pressure wash at 100 °C all the way to disinfection, and the eventual force drying, it is essential to ensure that the stainless steel transport car is positioned correctly within the machine. "Until now, this function was carried out by sensors that we had to replace with new ones every three weeks, because they could not cope with the harsh operating conditions in the washing chamber," says Peter Madsen, who is in charge of plant maintenance at Daloon. "Since we also realized that many devices did not even meet their own specifications, not to mention the IP 69K protection rating, we were naturally quite skeptical when Henrik Bostrup from SICK presented us with the V18V."

V18V: Fit for food & beverage

What was presented to him along with the V18V constitutes a complete family of sensors, comprised of a through-beam photoelectric switch, a photoelectric reflex switch, as well as energetic photoelectric proximity switches with different detection ranges. The highlight, however, is the five-course "feature menu" that consists of a new, patented sensitivity adjustment, optimized materials, extremely long detection ranges, an extended temperature range, as well as resistance certificates from ECOLAB, JohnsonDiversey, and the FDA. "That is truly something for automation gourmets," Henrik Bostrup went into raptures during the presentation.

Reservations dispelled, assignment solved

In order to check out, though, what the V18V can actually do, Peter Madsen first subjected it to an intense trial stage. His conclusion: "The V18V finally is a photoelectric switch that solves our automation problem. It also shows how the limits of use are shifting or nullified when the device layout – and not merely the data sheet – is designed consistently toward the application requirements."

The V18V series represents the perfect five-star automation solution, not only for the washing facility at Daloon, but also for other high-demand applications in handling, bottling, and packaging facilities of the food and beverage industries.

>> Product information

Tested by TÜV and ECOLAB

The food and beverage reflectors

For use in production and filling facilities of foodstuffs and beverages, reflectors resistant to chemical agents and cleaning processes are now available for photoelectric switches.

>> Hot steam, water, acids, and alkaline solutions – in the food and beverage processing environment, not only the photoelectric switches need to be robust but also their reflectors. This requirement is ensured with the PL10F CHEM, PL20 CHEM, and P250 CHEM reflector types. Their material robustness was tested and certified by TÜV Rheinland in elaborate tests. Both H_2O_2 and acids, alkaline solutions, alcohols, chlorinated hydrocarbons, and many other substances failed to damage them. The same result emerged from the test utilizing ECOLAB cleaning agents, which was also unable to determine any impairments or changes to the material structure.

However, the reflectors are not only resistant to a ‚high degree,' but they can also be used to high degrees, since they withstand temperatures of up to 100 °C.

Further product information:
www.mysick.com/applications

More about the customer:
www.daloon.dk

Integrated directly into Danish Crown's Ethernet

Barcode scanners provide for quality, retraceability, and process efficiency

For Danish Crown, the barcode scanners from the CLV620 series are the "choicest part" in the IT chain of their slaughterhouse operations. In the meat-cutting process at the Ringsted plant, for instance, they allow continuous identification of up to 58,000 slaughtered animals a week.

>> Danish Crown is an internationally operating producer of meat and meat products. Europe's largest meat processor, the Danish enterprise is also the continent's largest and the world's second largest hog slaughtering company. "In Denmark alone, 18.2 million hogs are slaughtered every year," says Steen Jochimsen, project integrator at Danish Crown. "If they were lined up one behind the other, it would equal a distance of 24,000 kilometers – or roughly halfway around the globe." Therefore, logistics is of great significance in the slaughterhouses – with respect to the handling of both carcasses and slaughtering data.

CLV620s offer optimum reading performance and integration capability

In order to ensure continuous data capture along the process chain, the people at Danish Crown opted for labeling the carcasses with barcodes. "The labels are inexpensive, they do not go missing during the process, and we can save all important data, such as slaughtering number, slaughtering date, or plant number," Steen Jochimsen lists important benefits. Since the barcode labels are frequently dirty or partly unreadable, the search was on for barcode scanners that were not only fast but also delivered maximum reading performance even when faced with poor barcodes. "Our choice fell on the CLV620 not only due to the 1,200 Hz scan rate and the efficient decoding algorithm but also because we were able to integrate it directly into the existing Ethernet system environment," explains Steen Jochimsen.

Green light at the Ringsted plant

At the Ringsted plant, 24 barcode scanners are in use overall. Each of them is connected additionally to a connection box with integrated cloning plug. "If worst comes to worst, this has the advantage of enabling us to replace a scanner in a matter of seconds without doing any time-consuming parameterization, since the scanner data are downloaded from the module directly and automatically to the new device," Steen Jochimsen points to the advantages concerning availability.

The features offered by the CLV620s, but also support services from SICK in the course of this first project are the reasons why Danish Crown will also equip its additional slaughterhouses with the "choicest ID or, respectively, IT parts" – the CLV620s.

The CLV620 barcode scanner identifies even dirty or partly unreadable barcode labels on the carcasses

Further product information:
www.mysick.com/applications

More about the customer:
www.danishcrown.de

Distance sensor featuring individual "optional equipment"

Custom-made component detection

To ensure that a workpiece robot is not only able to detect components perfectly and in a reproducible way but that the solution also fits the automation system, SICK has "tuned" the DT500 for a car manufacturer accordingly.

>> The task was to enable a robot to detect workpieces with the most diverse surface and color reliably, positioning them in a workpiece carrier or a tool by using the appropriate sensor technology. From a series of tests involving different devices, the DT500 laser distance sensor emerged as the winner because it

- detects just as reliably both reflective and jet black components,
- features superb repeat accuracy,
- has the smallest temperature-related measurement error of all sensors tested, and
- is easy to parameterize and commission – by using only two push buttons.

The solution is more than just the sensor

In this way, the task was solved concerning the sensors, but not in terms of automation technology. The client asked for and SICK fulfilled three "special features" to the DT500 – to begin with, switching off the laser diode. This restriction of the beam path was necessary from the perspective of safety technology, as the sensor was installed on the pivoting robot and its light beam, if not switched off, would be transmitted into all directions during parts handling, disturbing or blinding persons in the direct vicinity. Request no. 2 concerned providing a binary switching output – in addition to the existing analog output –, used to generate an "object within detection range" message. Finally, at the client's request, SICK modified the pin assignment on the M12 connection plug in such a way as to allow connecting the DT500 directly to an SMC analog module.

Warehouse(d) solution

By means of this solution based of the DT500, the customer's task was solved in every respect. Following installation of the first robot, all old facilities are now undergoing retrofitting – the distance sensors earmarked for this purpose are already stored in the warehouse, equipped with individually pre-programmed measurement window and ready for installation. **www.sick.com**

Sensor technology from SICK improves monitoring of automatic doors in busses and trains

No accidents getting on and off

For Bombardier Transportation GmbH in Mannheim, the SGS Smart Gate Sensor from SICK is the perfect solution for monitoring automatic doors in busses and trains: easy to install, invisible to passengers, and always there when needed.

>> Over the last 15 years, Bombardier Transportation GmbH has developed into the largest supplier of rail vehicles and equipment technology. The plant in Mannheim accommodates the production center of drive and control systems for locomotives, local trains, and light track vehicles. When selecting a sensor solution for monitoring automatic doors in these vehicles, the company opted for the SGS Smart Gate Sensor.

Invisible monitoring

To begin with, the most important argument for Bombardier was the reliable functioning of the system, which is guaranteed at any time even in case of intense light incidence, reflections, or transparent materials in the light path, e.g. clear handle bags. At least as important, however, was the application-specific construction of the SGS. For the sensor, a black protective housing was developed that is installed in the door area – inaccessible to passengers – and allows simply plugging in the SGS. This requires no special start-up – one just connects the SGS to the controller and energy supply onboard, and the device is ready for immediate operation. In addition, the SGS features a darkened visual appearance, managing deliberately without any illuminated display. Thus, it is invisible to passengers – it does not catch the eye, which thus protects it from wanton destruction.

Mobile use of the SGS in busses and trains, however, constitutes only one possible application – stationary monitoring, e.g. in train stations or on station platforms, can benefit from the invisible monitoring as well.

www.bombardier.com

The photo on the left shows the read head of the non-contact POMUX length measuring system.
Photo on the right: the optical distance sensor and the LMS221 laser scanner

At the Siemens Technology and Application Center

Innovative sensor technologies from SICK in action

Always focused on the application: At the Siemens Technology and Application Center for Cranes, laser measurement systems, distance sensors, position and length detection systems, as well as encoders solve the most diverse tasks in the test crane facility measuring 12 m by 17 m.

>> The business segment of Cranes in Siemens AG's Industry sector supplies equipment for automating cranes, ranging from control and drive technology all the way to intelligent software solutions. For more than 90 years, Siemens has been equipping crane facilities in every industrial sector worldwide, ranking among the world's leading suppliers of automation solutions for cranes in ports, container terminals, steelworks, and power plants. Siemens cranes solutions permit the highest possible productivity of the respective facilities and guarantee utmost flexibility and reliability.

At the Technology and Application Center for Cranes in Erlangen, Siemens develops its cranes solutions further, testing and refining new features, especially for container and bulk goods handling. In this context, special attention is devoted to drive technologies, automation systems, network and communication solutions, as well as industry- and application-specific product solutions.

Innovative and individual: Sensor solutions from SICK

Sensor solutions from SICK are used in more than half a dozen detection and measuring applications of the Demo Crane facility. Detection of the absolute position of the container trolley and the grabber trolley is solved – parallel to anti-collision monitoring – by the Pomux KH53 non-contact length measuring system. The DT10 optical distance sensor proves its worth in detecting contours and profiles of stacked containers. The Lase Company, a partner of SICK AG, provides a pivoting unit featuring an LMS221 laser scanner used to detect the cargo positions three-dimensionally and with extreme accuracy. The distance between the spreader and winch, i.e. the measurement of cable length and lift is determined with high precision by the BTF absolute wire draw encoder. The DME5000 laser distance measuring device takes care of optically measuring the position of the crane's traveling gear. If the issue is outdoor applications, the DML40 distance measuring device is available as a weatherproof and heatable alternative. Parallel to this process, the position of the crane's traveling gear is also detected by rotative means – using the ATM60 absolute encoder with measuring wheel. Finally, the DS500 optical distance sensor with its two switching points prevents collisions of the cranes with protective field, each other, and even with the wall of the hall.

Thus, the Technology and Application Center for Cranes, which Siemens also uses for feasibility studies and demo purposes, is equipped with sensor solutions from SICK that are also the top choice worldwide, both for equipping seaports or container transshipment centers and for use in industrial cranes.

Further product information:
www.mysick.com/applications

More about the customer:
www.siemens.com

Continuous assembly inspection of tire pressure sensors

Camera network

Seven cameras of the IVC-2D series overall are used by the Italian Laserline Company to monitor the assembly process of "Lasertyre" tire pressure sensors. Integrated in an Ethernet network, they detect and visualize any components installed incorrectly. Moreover, they provide important production and quality data online for statistical purposes.

Cameras of the IVC-2D series monitor the assembly process of Lasertyre tire pressure sensors

>> What matters most with a view to inspecting the different assembly steps is utmost accuracy, since the tire valve, weighing only 3.5 g, is a complex product comprised of 31 separate parts. In finished form, it has a diameter of 3.5 mm and a length of 21 mm. Every day, about 9,000 valves are assembled in three shifts. During this process, the IVC-2Ds are monitoring, among other things, the position of metal rings and valve needles, the alignment of membranes, the presence of glue, or the sealing and fixing of various components. A systems integrator, supported by SICK Italy, carried out the overall solution.

Network-compatible cameras present manifold possibilities

The IVC-2D is a smart camera for two-dimensional inspection of object forms, geometries, sizes, or orientations. For configuring the different inspection tasks, IVC Studio provides highly efficient and user-friendly software featuring more than 125 program tools. A resolution of 640 x 480 pixels as well as sub-pixel measuring styluses allow accurate monitoring even of small attributes or parts, e.g. the different valve and sensor components. The cameras in the various assembly stations are integrated directly in the client's network via Ethernet. This makes it possible to monitor the function and performance of each separate camera by means of the network and to change each individual inspection parameter if required. If an inspection camera detects a part assembled incorrectly, its fault profile is displayed and saved on a viewer PC. In this way, Laserline can monitor its production online via the camera network. Simultaneously, all of the inspection data is processed automatically and used toward quality assurance.

Top quality due to early detection of errors

Because of the quality inspection after each assembly step, errors and their causes are detected early on. Faulty parts are sorted out immediately. With the help of the IVC-2D network, Laserline achieves an efficient production and assembly process as well as final products featuring 100-percent flawless quality.

Incidentally, Laserline not only trusts in camera technology but also on roughly 50 photoelectric reflex switches of the WL9 series from SICK. Furthermore numerous fiber-optic photoelectric sensors are used for detecting parts in and between the assembly stations.

A viewer PC indicates parts assembled incorrectly that were detected by an inspection camera

Further product information:
www.mysick.com/applications

More about the customer:
www.laserlineitalia.com

Referencing and position polling in Oystar Hassia packaging machines

Inductive sensors with the extra helping of precision

Utmost precision, combined with customer-specific device layout, makes the inductive sensors of the IME series from SICK a perfect solution for a variety of position polling in the packaging machines of Oystar Hassia.

>> The Oystar Group, employing a staff of about 2,700 and operating 17 production plants as well as marketing companies, is one of the world's leading suppliers of primary and secondary packaging machines. The most important client segments include the dairy, food, pharmaceutical, and cosmetics industries. For these customer segments, Oystar Hassia offers special expertise and individual solutions concerning molding, filling, and closing machines for plastic containers or cups. Overall, more than 5,000 machines from the Ranstadt-based company are operating worldwide. What matters in all locations is that the machines are not only accurate but also robust. This aspect applies above all to the inductive sensors as well, which are exposed to hot water, steam, and chemicals during the CIP/SIP cleaning processes. With the IME12, Oystar Hassia is using an inductive sensor that meets all of the requirements.

Sensor intelligence in "hidden places"

Inductive sensors are in operation a million times in nearly every area of factory automation. Frequently, inductive sensors work rather unspectacularly behind the scenes, in "hiding," as it were, in the context of an application. If these sensors are unreliable, the result usually is substantial downtimes and high replacement costs. The inductive sensors from SICK include, unnoticed though, high tech in a minimum amount of space. With its extremely compact platform technology, the integrated ASIC chip provides significantly improved manufacturing tolerance across all devices – one sensor resembles the other 1:1. In practice, this means a secure sensing range increased by 10 percent. In contrast to conventional proximity switches, one gets considerably more beneficial sensing range, facilitating not only the structural layout of machines but also the commissioning of the sensors; moreover, it allows – if worst comes to worst – the fastest possible 1:1 replacement of a device.

Designed to match the needs of Oystar perfectly

The IME12s, as used by Oystar Hassia, feature two customer-specific characteristics. For one thing, the housing is designed in stainless steel, endowing the sensors with the necessary durability for the harsh operating environments. In addition, one notices on the cap of the sensor element a small "S." In this respect, SICK was the only supplier that took up the request for a directly identifiable labeling of the sensor's output function. Now employees in the warehouse and in assembly recognize right away whether they are dealing with an IME12 with N/O contact function (=S) or N/C contact function. This is faster and more reliable than deciphering the type designation on the sensor.

Universal solution for numerous pollings

Referencing upon start-up and position detection during ongoing machine processes are the tasks that the IME12s carry out on the molding, filling, and closing machines for containers. For instance, filling of the cups can start only when the IME12s report the correct position of the catch basin below the portioning unit. If the set of machines undergo cleaning, the basin has to traverse into different positions according to the cleaning sequence – which is indicated to the controller by several IME12s. Simultaneously, additional sensors of the series make sure that the guide rails of the portioning unit were removed prior to the start of cleaning and are no longer present in the machine when the CIP/SIP cycle commences. As the full cups are sealed, IME12s check that the automatic adjustment of the lid foil over the thermoformed cups does not exceed certain adjustment paths and end positions of the sealing unit.

From the right: Andreas Zimmermann (SICK VAD), Martin Schmidt (Automation Engineering of Hassia), Myrjam Heinrich (SICK)

Solutions from a single source for packaging applications

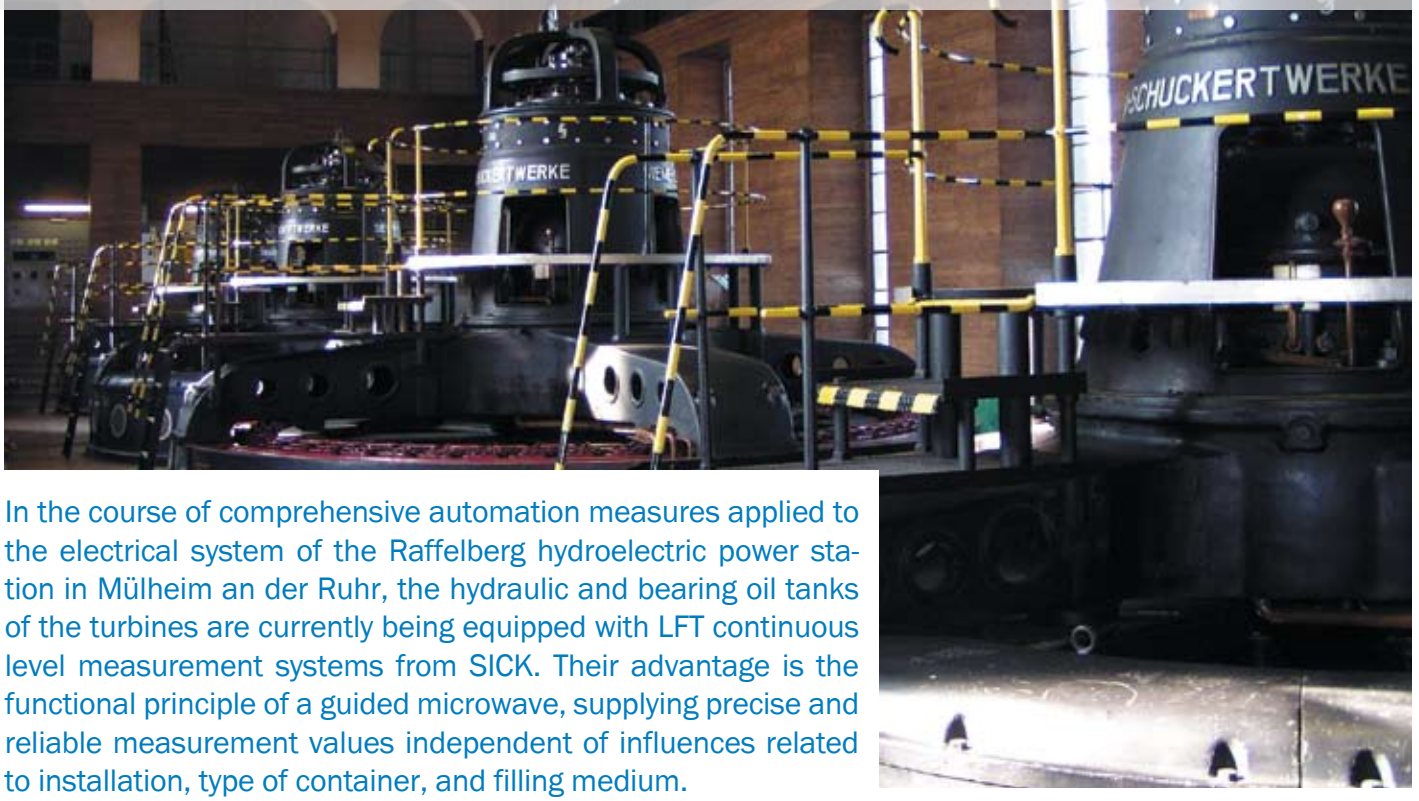
In conjunction with photoelectric switches of the W9-2 series, the KT5-2 contrast scanners, and the magnetic cylinder sensors of MZT6 series, the inductive sensors allow intelligent and durable automation solutions from a single source. Added to this is the fact that service and support are available worldwide – another important argument for globally operating clients such as the Oystar Group.

Further product information:
www.mysick.com/applications

More about the customer:
www.oystar.de

Level measurement in hydraulic and bearing oil tanks with guided microwave

Process automation in a hydroelectric power station listed for preservation



In the course of comprehensive automation measures applied to the electrical system of the Raffelberg hydroelectric power station in Mülheim an der Ruhr, the hydraulic and bearing oil tanks of the turbines are currently being equipped with LFT continuous level measurement systems from SICK. Their advantage is the functional principle of a guided microwave, supplying precise and reliable measurement values independent of influences related to installation, type of container, and filling medium.

>> The automation of the power station that has generated electricity since 1926 is carried out by F.EE Industrieautomation GmbH in the Bavarian town of Neunburg vorm Wald. "Apart from the international automotive and supply industry, our major customer segment, we have an additional focus of competence serving power plant operators, energy suppliers, and municipalities," says Dipl.-Ing. FH [~ B. S. in Engineering from a college of applied science] Heinrich Reitinger, main team leader for planning and sales at F.EE. Since 1 September 2008, he and his staff members have been busy modernizing the hydroelectric power station, which has been listed for preservation since 1986, to reflect the latest standard of automation.

Raffelberg hydroelectric power station: maintaining navigability of the Ruhr River and generating electricity

The Raffelberg hydroelectric power station serves to maintain the navigability of the Ruhr River by regulating the water level in the port and to generate energy from water. "The respective water level intervenes directly to regulate the turbines via the automatic control systems," explains Heinrich Reitinger. "Since the turbines are moving at a constant number of revolutions, the respective flow volume is controlled by hydraulic adjustment of the turbines' guide vanes." For this purpose, each turbine features its own hydraulic oil circulation system containing approx. 180 – 200 liters. "Added to this are two further bearing oil circulation systems – one for the generator and upper turbine bearing and one for the lower turbine bearing," explains Heinrich Reitinger. "In this case, too, approx. 200 liters of oil each are in the circulation system." In the course of automating the electrical installations, the objective was to integrate a continuous level measurement system suited to different filling medium properties – a measurement arrangement supposed to allow detection of the respective amount of oil in the circulation system from a central vantage point. "On top of that, the system was also supposed to provide the opportunity of issuing level warning messages to the master controller via separate switching outputs," explains Heinrich Reitinger. "Eventually, we decided in favor of the LFT system – on the one hand, because it offered high reliability and precision concerning oil as a medium very critical in metrological terms; and on the other hand, because we have gained a lot of positive experiences with SICK as a sensor specialist in numerous automotive projects."

LFT – level measurement and limit level detection in one device

LFT is a level measurement system that combines continuous level measurement and limit level detection with one another. It consists of an electronic and evaluation unit in an IP 67 housing with an operating element and various interfaces for signal

output, as well as a highly resistant coaxial measuring probe made of 1.4404 stainless steel. “The method of the guided microwave featured in the LFT and the probe’s coaxial construction design provide a number of benefits serving the tasks at the Raffelberg hydroelectric power station,” says Heinrich Reitinger. “To begin with, one can mention that the LFT features a G ¾ A connection thread. That meant we were able to install the devices directly into the small container openings. The precision of the measurement technology is convincing as well. “Whereas we had repeatedly gathered negative experiences with capacitive probes for oil measurement, the measurement results in the LFT are influenced only insignificantly by the properties of the medium to be measured, e.g. its density, conductivity, or dielectric constant,” Heinrich Reitinger confirms.

Heinrich Reitinger, main team leader for planning and sales at F.EE. (left), in conversation with Olaf Ophoff, portfolio manager Level Measurement Technology at SICK.

Therefore, if the Ruhr River remains navigable in the future and the Raffelberg hydroelectric power station feeds a substantial amount of energy into the electric grid – free of emissions and radiation – the LFT level measurement systems from SICK contribute a small, yet important share to this.

Further product information:
www.mysick.com/applications

More about the customer:
www.fee.de

Optimized process control and paper quality

Automatic analysis of paper fibers per camera

PulpEye is the name of the automatic pulp analyzer that monitors the quality of paper pulp for the fine paper producer M-real in Husum. For an “eye,” the Swedish manufacturer Eurocon AB has decided to use the Ranger camera system from SICK IVP.

>> One gram of pulp contains a million fibers, whose length, width, lightness, shape, and slivers provide information about the quality of the material processed annually at M-real in Husum into 670,000 tons of paper. “In the past, the sampling and analysis were done manually in the lab, which was very time-consuming and thus possible only at longer intervals,” explains Öjvind Sundvall, head of R & D at Eurocon AB, an internationally operating consulting group for the processing industry. “By using PulpEye, paper manufacturers such as M-real can now analyze their pulp at minute intervals, since the system requires only 30 to 40 seconds for the task.”

Ranger inside

What makes this possible is the Ranger image-processing system, which Eurocon uses in PulpEye. “The camera takes up to 60 images per second,” says Thomas Storsjö, a development engineer at Eurocon. “Featuring a resolution of 0.01 mm, it allows high-precision calculation of the individual parts of the fiber.” The fiber data is sent online to the control system of the paper plant, which uses the information to draw conclusions concerning fiber properties, freeness level, shives, and brightness. The information is also used to control the fiber quality and save energy in pulp and paper mills.

PulpEye provides economical and ecological benefits

The decisive advantage of the fiber analysis possible at faster and shorter intervals by means of PulpEye is that the paper producer can intervene in the manufacturing process immediately and early on in case of deviations in quality. “This makes quality more even, reduces the reject rate, and saves an enormous amount of energy, since that quantity is no longer invested in material which subsequently turns out to be flawed,” explains Öjvind Sundvall. As a result, PulpEye goes easy on the environment and on the paper manufacturer’s energy budget.

The PulpEye pulp analyzer features the Ranger camera system from SICK IVP that allows calculating ultra-precisely the different components of paper pulp

Further product information:
www.mysick.com/applications

More about the customer:
www.eurocon.se

The most impressive feature of the FLOWSIC600 2plex is its intelligent diagnosis capabilities of the installation nearby. It recognises any disturbing influences on the flow profile caused by deposits on the piping or flow conditioner and reports these as maintenance requests before the influence becomes significant

Measuring gas and dust safely:

High-tech analyzers from SICK are in global demand

Manufacturing industries have it tough: their processes have to be safer, better, more cost-efficient and environmentally friendly. Sounds impossible, but it's not. All you need is high-precision measuring technology from SICK! The company's high-tech 'made in Germany' instruments monitor emissions and production processes around the globe, thereby reliably preventing any expensive production downtime or environmental fines.

>> Application know-how obtained from decades of experience, wide-ranging industry knowledge and comprehensive expertise in developing solutions for emission monitoring and process gas measurement have made SICK a successful all-round supplier of analysis and measuring instruments all over the world. Based in Germany, the international group's clients include the chemical, petrochemical and power generating industries as well as cement and waste incineration plants and the natural gas industry.

"Our technological lead sets us apart from our competitors. Our durable high-tech products are high-precision, high-class German workmanship in the truest sense of the term," emphasises Dr Volker Herrmann, general manager at the manufacturing site near Dresden.

Top work using ultrasound

Measuring volumes and flow-rates enables production processes to be regulated and controlled. However, measuring the flow-rate of inhomogeneous gas flows or unpurified, hot and corrosive gases is no easy task. SICK's robust ultrasound instrumentation has proven itself to be the ideal solution for making measurements in sealed pipelines. The sensors themselves are made of titanium or stainless steel and stand for high durability and low maintenance. The special, miniaturised transducers efficiently send the ultrasound into the gas even when density and pressure are low – a technological feat that to date has never been accomplished in this way by anyone else.

When it comes to measuring large volumes of gas in the high-pressure natural gas pipelines, the FLOWSIC600 ultrasonic gas flow meter is well established as a calibratable tool for custody transfer metering. "However, we can measure more than just natural gas," comments Product manager Thomas Horst, when he comes to talk of other ways in which the FLOWSIC600 can be used. SICK has also successfully made measurements of hydrogen flow for several major refineries already, as well as flow in steam and super-critical ethylene gas.

The extremely durable FLOWSIC100 is used for volume flow metering to accurately measure gaseous emissions in the vent stacks of industrial plants. Here we can also ensure reliable measurement – thanks to ultrasound.

Key gas suppliers use FLOWSIC600

Rising natural gas prices are increasingly prompting the natural gas industry to invest in modern measuring equipment. While natural gas suppliers have no influence over gas procurement costs or state taxes, they can use instrumentation to make the grid operations more cost-efficient. The high-end FLOWSIC600 ultrasound gas meter, for instance, is used to ensure more precise gas transfer accounting on the Jamal pipeline, currently the most important line for Russian gas from Siberia to Germany. Around 33 billion cubic metres of natural gas flow west through this pipeline every year. With such quantities, even a few tenths of a percent in metering inaccuracy can result in con-

SICK | MAIHAK

siderable billing differences. The interest in precise instrumentation is therefore very high.

Global leader in dust analysis

Dust pollution in the air is increasing all over the world. There are numerous reasons for this. Industry, amongst others, is being called upon to reduce dust emissions. SICK dust emission meters are instruments for measuring air quality and thus another of the company's technological highlights. "Our product quality and innovative technology has made us global market leaders in this area," remarks product manager Albert Lansche. SICK meters measure extremely low or high dust pollution levels from 0.1 up to 10,000 mg/m³, quickly and continuously. Customised to client requirements, the meters can easily be integrated into existing systems and fit almost any duct diameter.

Process automation with growing turnover

Long-term thinking, products in line with market needs and motivated employees all help to maintain the company's success. Our staff work with great commitment and flexibility to convince our customers of the benefits of our products, solutions and service.

The process automation department brings together in Germany the group's know-how in technology, product development and production at sites in Hamburg, Meersburg, Ottendorf-Okrilla near Dresden and Reute. All of the group's potential is thus fully utilised. The result: "Our customers profit from this specialisation and show a high level of satisfaction," says Dr Volker Herrmann.

DUSTHUNTER T: Dust concentration measurement based on the transmission principle. For medium to high dust concentrations

Further product information:
www.flowsic600.com
www.dusthunter.de

Laser technology

Making gas components visible

Hydrogen fluoride measurement in a hospital waste incinerating plant

The particularly difficult task of measuring concentrations of ammonia gas, hydrogen fluoride or hydrogen chloride is perfectly mastered using laser spectroscopy, the technology used in the GM700 from SICK. The GM700 analyser excels not only by measuring gas concentrations with high precision and minimal cross-sensitivity, but also through its sturdy design, making it suitable for rough industrial conditions and high gas temperatures.

>> Laser beams in the 'battle against pollution': monitoring NH_3 slip-in denitrification facilities in power stations, cement plants and waste incinerators is a key area of use for the GM700 gas analyser, which works on the basis of TDLS (tunable diode laser spectroscopy). Monitoring HF emissions in waste incineration plants and in the manufacture of aluminum and ceramics is also an ideal task for this contact-free analyser. The GM700 verifies very reactive components such as NH_3, HCl and HF with high spectral resolution.

Extensive self-checking ensures consistent measurements

Comprehensive self-tests are the norm. And the GM700's easily adjustable measuring ranges make it highly flexible for use in many different applications. The analyser is available as a cross-duct version or with a measuring rod.

High temperatures and pressures

When dealing with high pressures, high temperatures or very narrow gas ducts, in-situ measurement is sometimes not sensible or even possible. For such situations the GM700 is integrated into a 19″ rack unit. An adjustable long-path cell that can be heated up to 200 °C is used for the measurement path. A dust filter allows the analyser to be used without the need for any additional gas conditioning.

Technological diversity enables varied solutions

Not all gas components can be measured with lasers. SICK therefore offers a broad selection of technologies for gas measurement, such as ultrasound, UV and infrared – to name but a few. We are thus able to offer precisely tailored solutions from a single source.

Further product information:
www.sick-maihak.com

SICK | MAIHAK

Fifty years of partnership between Waldkirch and the Waterkant

Seidel and SICK: Together in (the) lig

Top left: Company founder Hermann Seidel in 1958. Right: 50 years later – Jürgen and Thomas Seidel (center and right) in conversation with Jürgen Gallbrecht from SICK
Top: The staff of Hermann Seidel GmbH

Hermann Seidel GmbH in Hamburg is SICK's oldest sales partner. On 1 October 1958, the company founder, Hermann Seidel started out, with two weeks of technical training in Waldkirch and a monthly advance commission of 500 Deutschmarks as initial aid. In conversation with SICKinsight, his sons, Jürgen and Thomas Seidel, relate details about the successful company philosophy, anecdotes from the past, and future opportunities that are available to distributors with engineering competence.

SICKinsight: On 1 October 1958, few months after the formation of the company, your father, Hermann Seidel, and Erwin Sick agreed on a sales cooperation that exists to this day and can definitely be called successful. In retrospect, how would you sum up the recipe for success?

Jürgen Seidel: I do not know whether our father reflected on recipes 50 years ago. Instead, I am convinced that back then, he had a good feel for what the market needed and how to approach people. Let's just call it "Hanseatic, fair, competent." As a native of Hamburg, he was, for the most part, on the same wavelength as his clients in terms of technology and purchasing. Fairness was and continues to be important because in the area of representation you always encounter the same partners again, which means that only sustainable business relations guarantee lasting success. Incidentally, that also holds true for the cooperation with SICK: Openness and discussion have solved many a problem and helped win numerous projects. Finally, things simply do not work without competence – with respect to both sensor technology and application engineering. Due in no small part to the collaboration with SICK, a broad foundation has taken shape in this respect, enabling us today to offer our customers solutions based on innovative sensor technologies.

SICKinsight: How is Hermann Seidel GmbH positioning itself today?

Thomas Seidel: Today our company employs a staff of 20, including some of our own people in the sales force. This underlines that we view ourselves as a distribution partner with application competence for manifold tasks in every aspect of industrial automation and safety technology. Certainly, the sale of standard sensors for the most diverse assignments constitutes the sales-related "background noise," but 50 years of successful distribution does not fly without close customer relationship management – and that develops only through the right product portfolio, individual application support, or even fast assistance by phone or on site. At Hermann Seidel GmbH, the master electrician will still get the sensor over the counter in an emergency – without any red tape. On the other hand, we are positioned in such a way that we advise on, offer, and handle larger projects as well. Engineering services in conjunction with flexibility and a state-of-the-art sensor portfolio – that is something only few can offer in this form.

SICKinsight: Consequently, the Partner Portal mySICK is probably a valuable support when it comes to bigger projects?

Thomas Seidel: Yes, that is the case. It allows us to prepare quality offers. Via mySICK, we can do research into the current inventories. We know at the time the offer goes out whether the product will be available on the desired delivery date, enabling us to reserve it in advance

ht of success

if necessary. Using the Portal from SICK, we can download well-maintained data sheets and product documentations and enclose them with our offers. Particularly in these months, when – SIL being the key term – various sets of rules and regulations related to safety technology supersede each other, the Partner Portal provides a quality of offers that puts clients in a position to take sound and safe procurement decisions.

SICKinsight: Let's depart for a moment from the present and take a look back along the "beam of time" representing 50 years of partnership with SICK. During this time, what were the most important technological turning points in automation and safety technology?

Jürgen Seidel: What certainly constituted a turning point – even though it had a negative effect on our spare parts business – was the use of GaAs diodes as light sources in photoelectric switches. The diodes simply had umpteen times the lifespan; at the time, that was almost revolutionary. Another thing that comes to mind is the birth of the principle of autocollimation, which made the development of photoelectric reflex switches and photoelectric proximity switches possible. The idea of filtering certain wavelengths through polarizing filters, thus achieving better switching reliability in challenging environments, was another such milestone. In terms of safety technology, the use of parabolic mirrors definitely deserves mentioning. This approach permitted the development of the first safety light curtain for accident-prevention that featured a homogenous monitored area, through which – in contrast to photoelectric switches installed on top of each other – any unnoticed operator intervention was no longer possible. At least as important as a turning point was the technology of proximity safety laser scanners that resulted in best sellers such as the PLS or S3000. In the current portfolio, too, one finds a few devices that have what it takes to become trendsetters, e.g. the IO Link photoelectric proximity switches, the favorite V300 WS, the Inspector, the camera code readers, or the compact LMS100 laser measurement system.

SICKinsight: You just mentioned devices that allow solving diverse tasks. On the other hand, in retrospect what were the most exotic applications?

Jürgen Seidel: Sometimes you do have to wonder indeed about the types of automation ideas people serve up. One client bought a photoelectric switch intended to indicate to him when his cat stood before the front door. Another one, a somnambulist, used to fall down the stairs of his house at night repeatedly – until he installed a photoelectric switch from SICK on the upper landing that activated a horn in time, tearing the man from his mobile dreams. We have even sold devices to measure the speed of curling stones on the Island of Sylt. In Lower Saxony, a WT45 photoelectric proximity switch is of great assistance for observing kingfishers by activating a digital camera – powered by a car battery – as soon as a bird appears on the scene for filming. In terms of service deployment, the classic has got to be the emergency call at one company, when a photoelectric switch that was out of order baffled engineers and technicians. Relying on a good old hanky, our father wiped the optical system clean back then, causing a great hullabaloo. Of course, today such instances are covered by an output weak signal.

SICKinsight: No looking back without looking ahead – how does Hermann Seidel GmbH wish to develop over the years and decades to come?

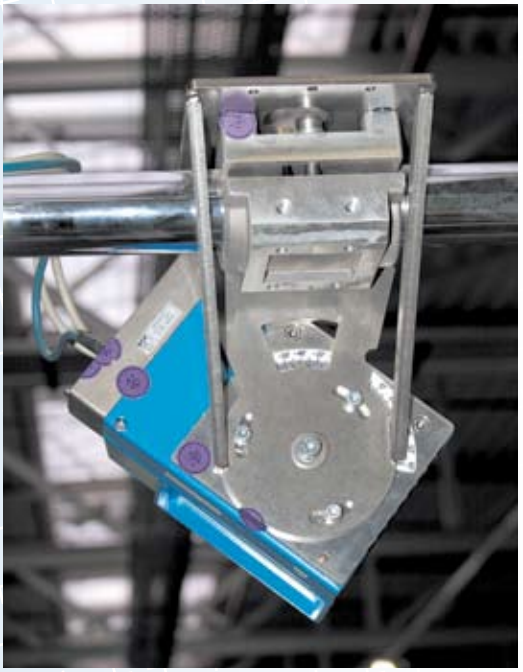
Thomas Seidel: Currently, the market is undergoing particularly intensive change. Wholesale dealers with experience in logistics are pushing into the market. In contrast, we continue to score points with competence in products and applications, thus increasing our customer loyalty. You can see that this strategy succeeds no later than when old customers realize just how important our expertise is, prompting them to come back to us. Competent application support will continue to be one of Seidel's unique selling propositions, especially since you cannot download competence from the Internet; instead you have to work for it – and in this respect, we have indeed so many decades of experience and, now and then, a lead. Moreover, I am guessing that Germany will continue to be the world champion in building special-purpose machinery – and in this field, one simply cannot manage without innovative sensor solutions from SICK and intensive consultancy support from Seidel. As a result, there are good reasons to look ahead optimistically – even more so since the third generation of the Seidel family, too, will probably participate in managing the company in the foreseeable future.

SICKinsight: On this note, we would like to thank the attending representatives of the second generation of the Seidels for this interview.

More about the Seidel Company:
www.seidel-gmbh.de

Volume measurement in conformity with MID for courier, dispatch, and parcel delivery services

The simple path to calibrated system solutions



Volume measurement systems from SICK are used for fully automatic determination of the volumes of packages

The volume measurement systems from SICK, used by numerous courier, dispatch, and parcel delivery services for billing purposes, conform to the guidelines on capability of calibration stipulated in the European Measuring Instruments Directive (MID). An additional bonus for users: SICK not only provides support for plant planning and calibration-related handling but is also authorized to carry out initial calibration.

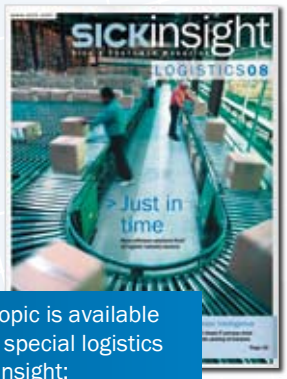
>> In their hubs, an increasing number of courier, dispatch, and parcel delivery services use all-inclusive systems for identifying, weighing, and volume measurement. The relevant background is, on the one hand, automatic and precise determination of chargeable weight. The latter is derived either from the actual weight or the volume weight – a calculation formula coming from the air freight sector. The chargeable weight – the higher of the two – is the basis of settling accounts with the customer. On the other hand, volume determination in particular permits the planning and utilization of vehicle fleets with respect to load space and energy efficiency in distributive traffic.

European directive defines requirements on measurement systems for billing

Using suitable volume measurement systems – such as the VMS510 or VMS520 from SICK – allows determining the volumes of pieces of cargo fully automatically. If – based on the measurement results – billing is supposed to take place, the lawmaker stipulates that the measuring device be tested for meeting the underlying regulations on calibration standards. The requirements that need to be fulfilled if measuring devices are intended for use toward billing in any way are defined by the "MID," the Measuring Instruments Directive. An essential benefit of MID is the establishment of a European approval for measuring devices that replaces the previous national approvals in the 27 EU member states. This constitutes an enormous simplification because this standardization significantly reduces the administrative effort for manufacturers such as SICK, but also for system integrators and end users.

Systems and services in conformity with MID

All of the volume measurement systems from SICK are also available or will be available shortly as MID-certified variant types, consequently eliminating all barriers to approved business within the purview of the MID. However, the situation in terms of standards legislation in Europe remains complex even in the context of the MID. Therefore, the support provided by SICK toward finding solutions extends not only to the entire technical planning of the facility but also includes competent advice and assistance concerning standards-related handling. In the meantime, SICK has been certified to be able to carry out the so-called initial calibration independently on site – i.e. without any standards office designated as an external authority. In this way, SICK is one of the few enterprises worldwide capable of offering a complete package including all services all the way to the calibration-related release.



More on the topic is available in the current special logistics issue of SICKinsight:
www.sickinsight.com/logistics

Capacitive motor feedback systems

The “absolute” alternative to the resolver

Extreme robustness, coupled with multiturn capability, electronic type label, and HIPERFACE® interface characterize the new SEK/SEL motor feedback systems. With their precision increased greatly, these absolute measuring systems are the perfect alternative to resolver solutions.

>> The capacitive motor feedback systems are available in four different versions: as singleturn SEK37 and SEK52 as well as multiturn SEL37 and SEL52. The multiturn property of the SEL versions is achieved by means of a new mechanical drive as well as magnets and Hall sensors.

Wide range of uses

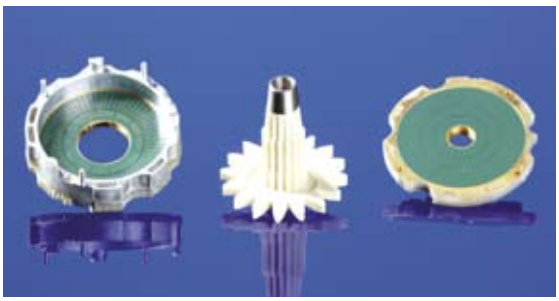
Servo motors, handling drives, feeding axles, and standard robotics applications on the one hand, and robust applications on the other hand, e.g. on textile machinery or in mining – both constitute application fields for the new capacitive motor feedback systems. A closer look at the design of the mechanical systems shows that the SEK/SEL series intends to win over users from both the resolver and incremental encoder segment. Thus, both the SEK37 and the SEL37 are laid out to fit on a cone shaft, in a way common, for instance, for the ultra-compact SKS36 and SKM36 motor feedback systems. Therefore, these new device families are mechanically compatible to already existing SK and SR devices, thus providing true benefit to customers.

Capacitive mode of operation offers many advantages

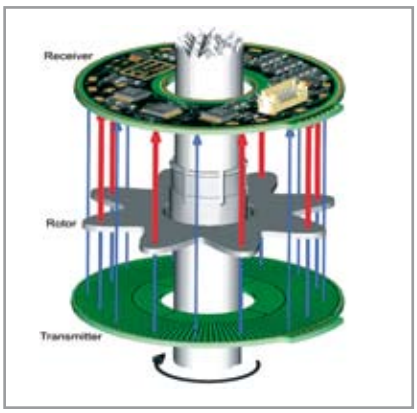
The central component of the SEK/SEL series is the capacitive sensor element without bearings – especially since it provides the prerequisite for offering an alternative solution for the resolver segment, a solution that is attractive in terms of price as well. On the transmitter circuit board, there is a coarse-resolution lamellar groove with three impulses per revolution as well as a fine-resolution groove with 16 impulses per revolution. The receiver circuit board on the opposite side features two conductive grooves, by means of which the coarse or fine impulses, respectively, can be captured. The impulses are generated and, respectively, modulated by a radial rotor that changes the dielectric between the transmitter and receiver circuit board through its revolutions. In the process, holistic scanning takes place, which has the effect that neither radial nor axial or angularity tolerances can result in any reduction of measuring accuracy while the rotor turns. The capacitive principle of operation, however, is not only very precise but also extremely robust, as it manages without ball bearings. As well, motor feedback systems offer a degree of temperature resistance that used to be largely exclusive to resolvers.

Thus, in terms of robustness and precision, the SEKs/SELs feature the kind of suitable application-related performance characteristics that are demanded particularly in the lower segment of industrial-type position and revolution detection. In terms of automation technology, however, they open up new opportunities for those users who focus on issues such as multiturn properties or integration into machinery via the HIPERFACE® interface standard, which has been tried and tested among the manufacturers of drive systems.

Further product information:
www.mysick.com/products



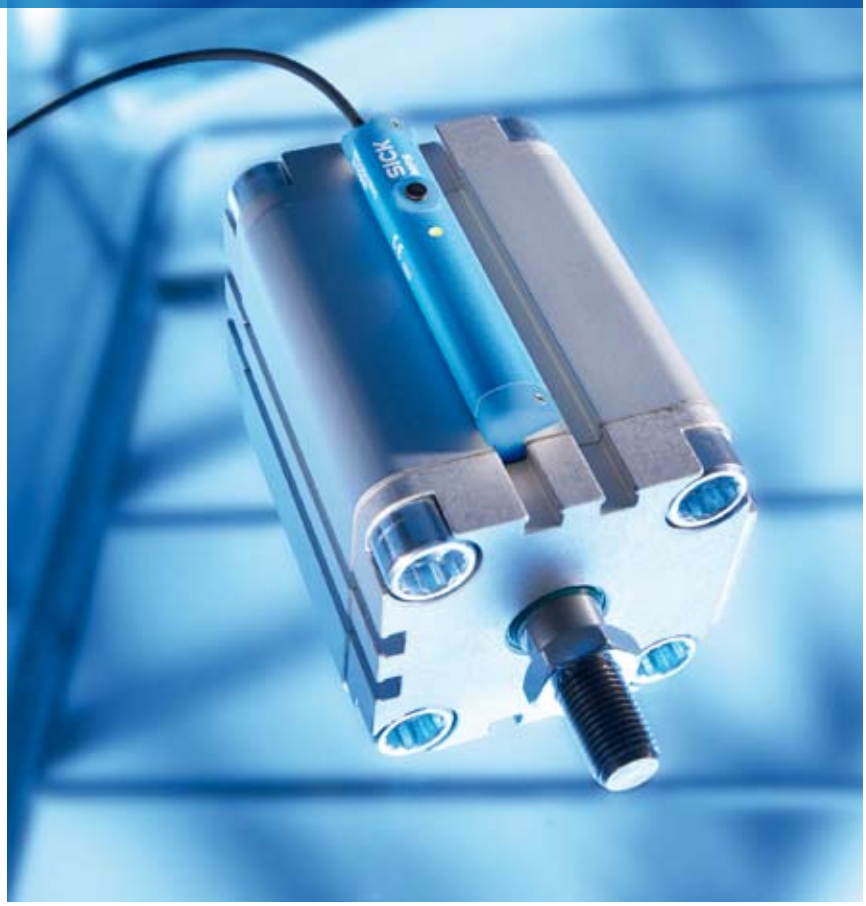
The four capacitive motor feedback systems from SICK: the singleturn SEK37 and SEK52 as well as the multiturn SEL37 and SEL52



Comprehensive scanning by the star-shaped rotor prevents impairments of the measuring accuracy due to radial/axial angularity tolerances

Analogous distance sensor for pneumatic cylinders

Always positioned precisely



The MPS Magnetic Position Sensor from SICK makes available a solution for analog polling of pistons on pneumatic cylinders that combines flexibility with user-friendly operation and maximum precision.

>> Depending on the automation task, the production series covers measuring ranges of 32mm, 64mm, 96mm, or 128mm. The housing layouts in appropriate dimensions are designed in such a way that they allow fast drop-in installation on and attachment to all standard T-slots using two bolts. The inside of the IP 67 sensor housing accommodates, among other things, Hall sensors on two circuit boards for non-contact position detection, the controller, and the teach-in element. Via the teach button, it is possible to teach-in the zero and end point, i.e. the measuring range actually desired. The piston positions in between are output as analog signals – either as 4–20 mA current output or as 0–10 V voltage signal.

Positioning accuracy on a new level

Piston polling occurs at positioning speeds of up to 3 m/s, with greatest precision at all times. For each measuring range, the linearity error is only 0.3 mm, with repeat accuracy at 0.1 mm. With the help of the MPS, a pneumatic drive now reaches a level of accuracy that fits numerous tasks solved in the past by linear motors.

The use of the MPS turns pneumatic cylinders into all-round talents in many applications – thus making them even more popular as drive elements in assembly and handling technology.

Further product information:
www.mysick.com/products

Measuring precisely made easy

Precise displacement sensors with intuitive operation

OD Value is the fitting brand name for the new series of displacement sensors from SICK. To machine builders and end users, the distance sensors offer high reliability, extremely simple operation, and interface flexibility at an attractive price.

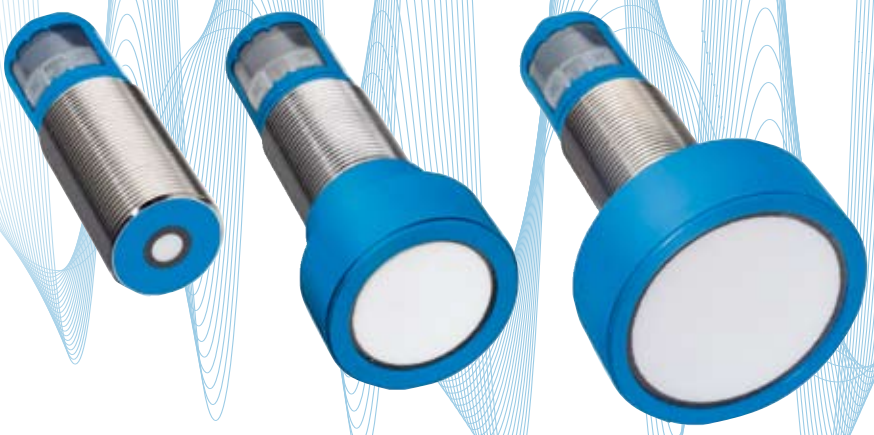
>> Featuring different measuring ranges between 26 ... 34 mm and 60 ... 180 mm as well as resolutions between 2 µm and 30 µm, the OD Values solve their tasks, e.g. for inline quality control, in process control, or for product classification. Thanks to CMOS technology, the devices are capable of measuring light, dark, and reflective objects with equal accuracy.

Further product information:
www.mysick.com/products

Less space required – more functions

Second generation of ultrasonic sensors

A housing that is 25 percent shorter and important additional functions parameterized easily by means of the new display – these are the features of the new UM30 ultrasonic sensors from SICK.



>> The distinguishing marks of the new UM30s open up new possible uses. Thanks to their shortened construction design, the devices fit even when installation conditions are confined. The multiplex mode prevents mutual interference of several UM30s. Synchronized operation makes it possible to "interconnect" several UM30s for monitoring more extensive areas. Integrated temperature compensation guarantees precise and reliable results covering a large operating range. Finally, the new generation of UM30s also offers a version that includes both an analog and a PNP switching output.

Further product information:
www.mysick.com/products

Experience safety on the most confined space with the "Flexi Soft Starter Kit"

Safety automation has never been easier!

Migration capability, simple hardware selection, intuitive logical links, and a choice of functional blocks, as well as ready status within minutes – the Flexi Soft safety controller offers all of these features. Anyone who does not believe it should definitely let the Starter Kit do the convincing – so find out more on the web page at www.sens-control.com and win a navigation system.

>> The web site supplies you with all relevant information concerning Flexi Soft, showing you the advantages of this controller. As a visitor to the web site, you can also download the full version of the configuration software and start creating control solutions. There you have the opportunity to order a Flexi Soft Starter Kit. When ordering the Starter Kit, both control modules, a preconfigured system plug, and an emergency stop pushbutton will arrive at your desk as a complete package – there is no easier way to discover the possibilities of Flexi Soft.

All you have to do is wire the individual sensors according to the labeling and in no time, you will be able to test Flexi Soft and catch the enthusiasm.

Win a TomTom One with Flexi Soft

And while you are at www.sens-control.com, you might as well enter the cool Flexi Soft prize game for a chance to win an equally cool TomTom navigation system by finding and collecting the product benefits.

We would like to wish you lots of fun trying it out – by using Flexi Soft you are on the safe side anyway!

Further product information:
www.sens-control.com

Family of contrast sensors complemented

Detecting light and dark marks with white light

High switching frequencies up to 10 kHz, the most compact construction design on the market, and the self-teaching automatic system for adjustment of switching point and surface shine are the highlights of the new KT3M white light contrast sensor from SICK.

>> Since the device generates only a finely focused light spot on the object to be detected, e.g. a tubular bag, a tube, or a document, it is possible to detect reliably even small print and cutting marks, e.g. OMR marks.

The white light LED in combination with various performance features make the KT3M a unique sensor for a large number of tasks, for example, in the packaging industry, for document handling, or in printing presses. The compact housing is perfectly adjusted to the often narrow installation conditions in the machines. Thanks to the optionally static or dynamic teach-in function, in the course of which the correct setting is reported back to the user, the KT3M is ready for operation quickly. Contrast marks on shiny packages are detected reliably due to the automatic adjustment of surface shine. Flapping surfaces of objects to be detected confront the KT3M with as little trouble as top process speeds.

The KT3M knows what really matters ...

Further product information:
www.mysick.com/products

New ergonomic hand-held scanners

Reading bar codes easily and reliably

With the new IDM series, SICK presents two new hand-held barcode scanners that stand out because of simple parameterization, a high degree of ergonomics, and well as easy operation.

>> The IDM120 is a hand-held scanner for contact and close-range detection of barcodes. The device delivers a scan rate of 200 scans per second. Various code sizes and code qualities are detected reliably, which reduces substantially the effort for manual post-entries, e.g. at a cash register, an office workspace, or during order picking. Due to its trigger button on both sides, the IDM120 is also operable just as well for left-handers and right-handers alike.

Little alignment effort and high accuracy ...

... that is what the IDM140 hand-held scanner offers as well. This is made possible by the imaging module in the device that generates a bright scan line clearly visible on the barcode. Featuring a large depth of field range, the IDM140 can be used for reading distances up to 350 mm. The equally robust and user-friendly design, simple alignment, and fast reading feedback – achieved through a high-speed scan rate of 500 scans per second – guarantee flexible and fast working with the IDM140. Depending on the field of application, a variety of interfaces (PS/2, USB, USB serial, and RS232) are available that have become standard in office automation or in production, in warehousing and logistics.

Whether you use IDM120 or IDM140 – both barcode readers can be configured easily for their respective application by means of either configuration codes or software.

Further product information:
www.mysick.com/products

Do-it-yourself versus standardization

Efficient safety through intelligent accessory solutions – all from a single source

The safety sensors from SICK are designed for simple installation and start-up – except when special installation conditions represent additional challenges. For cases like these, SICK offers an extensive program of accessories. Designed particularly for SICK's sensor technology, it prevents unnecessary expenditures for clients – in the construction department and during start-up on site alike.

>> Anyone obtaining a sensor solution and the suitable accessories from a single source can rest assured of solving the technical safety task efficiently. From a cost perspective, do-it-yourself designs are usually more expensive than the standardized and nevertheless flexible accessory solutions from SICK.

The accessories make the difference!

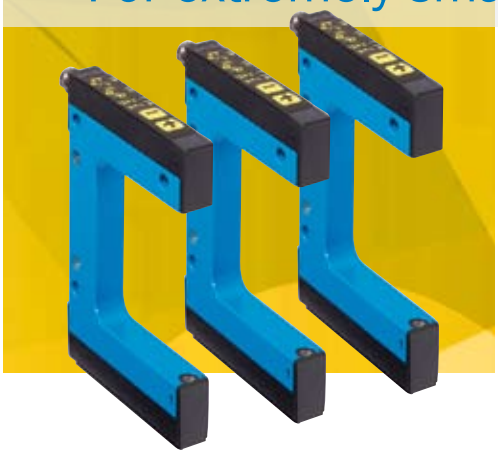
At SICK, nearly 60 years of experience in solving technical safety tasks have sharpened the perception of where and when intelligent accessory systems matter. For example, when it comes to photoelectric safety switches, special device and mirror columns as well as deflector mirrors permit flexible and cost-effective perimeter protection from several sides. For specific bridging of monitoring functions, e.g. of light curtains on a conveyor system, SICK has available pre-assembled muting solutions featuring sensor arms, sensors, mounting brackets, lighting units, cables, and installation materials, all of which are adjusted to the respective safety sensor and specific use. For special applications, too, SICK provides the appropriate accessory solutions, e.g. IP 67 device housings for light curtains or mirror and mounting systems made of stainless steel for the food industry, or the ATEX package for applications in explosive areas.

SICK supplies safety technology from A to Z – from the sensor solution all the way to the appropriate accessories. Together with the service products offered, SICK furnishes a comprehensive product portfolio for solving your safety application.

Further product information:
www.mysick.com/products

Taken to extremes ...

For extremely small components and precise positioning



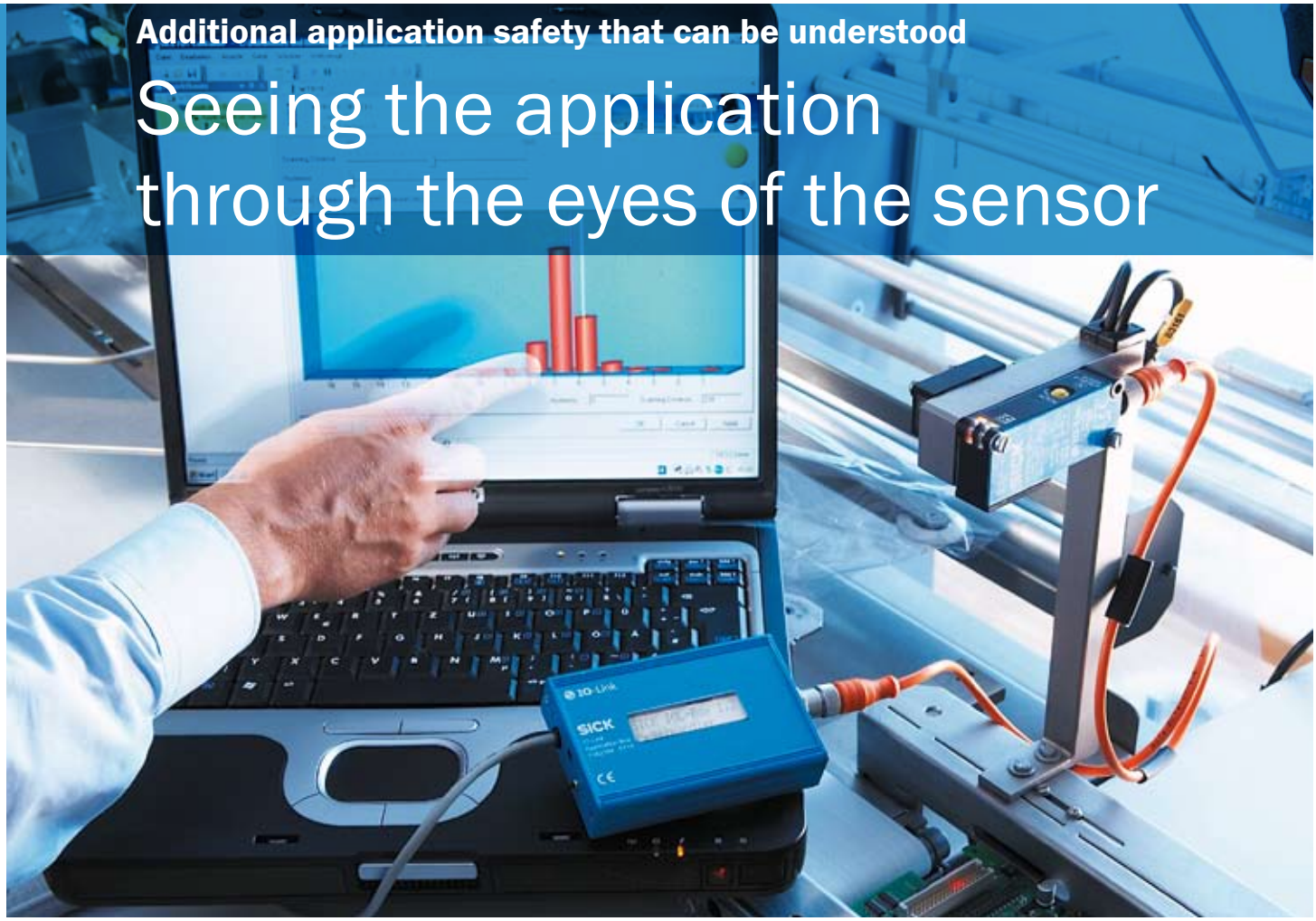
The new WFL series of laser fork sensor encompasses more than 20 different designs that SICK will present for the first time at the SPS/IPC/DRIVES Trade Fair in Nuremberg. Apart from their versatility, these robust sensors score highly because of their speed and their precision.

>> Detecting objects – whether they are dark or transparent – becomes easy with the WFL. The fact that the light spot is imaged by the laser very precisely even on the smallest of objects, e.g. the tip of a syringe, and that the WFLs are also suited for high switching frequencies makes extremely precise positioning solutions possible. Less space required – more functions.

Further product information:
www.mysick.com/products

Additional application safety that can be understood

Seeing the application through the eyes of the sensor



Opto-sensors from SICK allow visualizing the functionality of applications

Can the photoelectric proximity switch solve a particular application problem? What are the secondary conditions influencing switching reliability? Which parameters need adjustment with specific reference to the applications? Opto-sensors from SICK know the answer.

>> By means of the current chip technology used in the photoelectric proximity switches of the –3 generation from SICK, it is possible to view the application through the eyes of the sensor and thus to implement an efficient and reliable sensor solution. To date, you could only make one of two assertions about a photoelectric proximity switch: application works or application does not work. In the former case, it was uncertain, however, whether the application was implemented at the limit or with adequate functional reliability. In the latter case, it was usually impossible to make a direct statement concerning the causes. Typically, when it came to critical applications, the approach was to grope one's way gradually and with the corresponding investment of time toward the optimum sensor setting.

Small effort, great yield

Seeing what the sensor sees – that does not take much. The elements required are merely an IO link sensor, an application box to allow for communication of the sensor with the notebook, the visualization software, as well as the notebook. With this package, you can see in your application what the sensor sees. In the process, what emerges immediately is which active and passive interference signals come from the operating environment and how, for instance, the alignment of the sensor, different backgrounds for restricting the light beam, or variations of the scanning range and the hysteresis affect the detection result.

Even at the time of purchase, therefore, one can be certain to have selected the sensor appropriate to the application. If a special device is required, all of the parameters requiring specific adjustment are now established. At the time of commissioning, this opportunity of visualization saves a lot of time by comparison to the adjustment expenditure for classical opto-sensors. After all, you can take and control specific measures to enhance detection reliability. Alternatively, you use a device for your application that features the optimum set of preconfigured parameters.

The person seeing what the sensor sees can plan in advance the maximum detection and application reliability – and thus, maximum availability.

Further product information:
www.mysick.com/products

Complementing absolute encoder portfolio even further

Bitte, more bit(s)!

Featuring 30-bit resolution and great robustness, the new AFM60 absolute multiturn encoder sets a new record. Its smaller brother, the AFS60 absolute singleturn encoder, also impresses with a high resolution of 18 bits. Thus, both new product families are particularly well suited for harsh operating conditions, in which the thing that matters is utmost accuracy and availability at the same time.

>> With its maximum 18-bit singleturn resolution, the AFM60 ranks among the best in its market segment. Supplemented with 12-bit multiturn resolution, the encoder achieves an "absolute" top value. Both the AFM60 and the AFS60 are programmable using the same programming tool that has already proven its worth in the DFS60 series from SICK-STEGMANN. In this way, incremental, singleturn, and absolute multiturn encoders can be parameterized for the first time with one programming tool.

Robust optical system

The AFM/AFS60 production series distinguish themselves by robustness that is extraordinary for an optical system. The component responsible for this is, on the one hand, the code disk made of nickel. By comparison to code disks made of glass, it is considerably more robust while offering the same resolution; as compared to code disks made of plastic, it has significantly better resolution but is so cold and heat-resistant that the AFM/AFS60 can be used at operating temperatures ranging from –20 °C to +100 °C. In the AFM/AFS60, the shaft bearing, widened to 30 mm, provides considerably more robustness than in the case of encoders with blocked ball bearings. Even at maximum operating speeds, the increased distance between bearings results in unprecedented freedom from vibrations and optimum concentric running. In this way, the recorded velocity values remain uninfluenced by mechanical eccentricity or, respectively, tolerance effects.

Many variant types available

The AFM/AFS60 series in the industry-proven 60-mm design are available with one face mount flange and one servo flange version each for solid shafts. In addition, the user can choose among M12 or M23 connector outlets, or opt for radially or, respectively, axially usable cable outlets in various connecting lengths.

Further product information:
www.mysick.com/products

Now for linear drives as well

Motor feedback per HIPERFACE®

Currently, the TTK70 linear measurement system is the most compact motor feedback system on the market. The magnetic principle of operation, substantial measuring lengths, and extremely high resolution open up a variety of possible uses in absolute position determination, e.g. on linear motors.

>> Since, on the one hand, one can notice a trend toward direct drive technology, especially in high-tech applications, but on the other hand, the control circuits of these machines, in many cases from "rotative times", still feature a HIPERFACE® infrastructure for data transmission, the obvious approach was to combine both items. The result is the absolute, non-contact TTK70 length measuring system. Thus, SICK-STEGMANN is the world's only supplier currently able to offer the manufacturers of drives both rotative and linear motor feedback systems with integrated HIPERFACE® interface.

Further product information:
www.mysick.com/products

New series of photoelectric switches for modern factory automation

Your application in focus

In food production, too, the new opto-electronic sensors of the W11-2 series from SICK provide reliable object and task detection

The new W11-2 series of photoelectric switches from SICK is suited equally for both standard and special applications. Innovative sensor technology makes the sensors the ideal solution wherever reliable object detection, universal integrative capacity, and user-friendliness matter.

>> The W11-2 is convincing due to its variety: a complete series of opto-electronic sensors, equipped with the latest technology, has become available. Adjusted to the most diverse tasks, this results in a versatile range of applications in greatly varying areas of automation technology.

Variety for more possible applications

When it comes to planning a new facility or machine, at the outset one of the important issues always is the selection of suitable sensor technology. In this context, the W11-2 series offers maximum variety of different device variants and sensor technology. In both the WTB11-2 photoelectric proximity switch with background suppression of interference signals and an increased scanning distance of 800 mm, and in the WTF11-2 with foreground suppression for reliable detection of objects with inhomogeneous surfaces, an ASIC is used that was developed specifically by SICK for opto-electronic sensors. It permits exact electronic adjustment of the scanning range and precise and stable determination of foregrounds or, respectively, backgrounds to be suppressed. The family of sensors is complemented by the WTE11-2 energetic photoelectric proximity switch. With its performance data, the WL11-2 photoelectric reflex switch is designed for tasks in handling and warehousing systems. The WL11G-2, based on the same technological platform, is suited for detecting transparent objects, ensuring reliable detection of anything from a PET bottle to transparent plastic film. The WSE11-2 through-beam photoelectric switch constitutes the ideal solution for applications which require greater reserve capacities or very long ranges.

Capable of being universally integrated and user-friendly

To the extent that the new W11-2 impresses when detecting transparent to deep black objects, the production series also convinces machine builders, OEMs, and operators with its special suitability for integration and its user-friendliness. The space-saving, compact housing as well as the standard housing, installation, and connection features across the entire production series – among other things, dovetail mounting and an M12 plug rotatable in intermediate positions – provide universal possibilities of integration for nearly any size of machinery. The devices are simple and fast to install and connect. Two easily discernible, 360° status LEDs on the housing display the operating or switching state in which the W11-2 sensors are.

From the perspective of sensor, integration, and operating technology the new W11-2 is the ideal series of photoelectric switches for many standard applications but also for challenging special solutions.

Further product information:
www.mysick.com/products

Compact family of light grids

Smart types

With the product family of SLG Smart Light Grids, SICK presents at the SPS/IPC/DRIVES trade fair in Nuremberg a new generation of binary light grids that impresses with its smart appearance on the scene.

>> A choice between narrow or flat construction designs, beam coding to prevent mutual interference, simple installation, and plug & play start instead of elaborate start-up – these are the most important common features marking the three devices of the product family.

The SAS Smart Area Sensor....
... is the perfect solution for numerous automation tasks on and in machinery, e.g. for counting parts or detecting projections. The device offers a range of 4 m as well as a resolution of 40 mm. Four graduated height variants from 120 mm to 600 mm permit a sensor selection appropriate to the detection task. In terms of user friendliness, too, the SAS sets new standards: By using the single teach button of the device, the user can choose not only between manual and automatic teaching, but can also access directly the software of the SAS. In this way, various parameters – cross or parallel beams, alignment aid on or off, PNP switching output negated or not – can be adjusted properly to the respective application.

The device behind the term SPL ...
... is the Smart Pick2Light Sensor, which constitutes an effective aid, for instance, in order picking from small parts storages. The important thing for the woman or man on site is that the extremely bright Job LEDs for all light beams are visible from all around, i.e. over greater distances and from an acute angle as well. In this way, it is possible to detect immediately all current picking compartments with just one glance. Another highlight of the SPL, featuring a range of 2 m, is the integrated monitoring of mistaken picks: As soon as a part is picked from a rack compartment, the Job LED lighting up red indicates this. Thus, the SPL, which comes as a parallel-beam or cross-beam version as desired, provides a maximum degree of reliability for order picking.

Finally, the SGS is...
... the Smart Gate Sensor, which many may have seen before without consciously registering it – that is, as an innovative protection system of automatic doors in busses and trains, in elevators or at passenger gates. Featuring ranges between 4 m and 10 m, resolutions from 40 mm or 80 mm, and graduated total heights between 600 mm and 1,600 mm, the SGS can be configured to match each task. In view of the long years of application experience with light grids for monitoring doors and gates, SICK has integrated the so-called “chewing gum” function into the SGS: By means of the switching behavior of the two switching outputs, it is possible to recognize whether individual beams are interrupted, for instance, by a piece of chewing gum. The ongoing monitoring function during vehicle operations is not impaired by this; simultaneously, however, the SGS issues a check or, respectively, maintenance message.

Small, flat, and attractively priced, ...
... the three sensor versions of the SLG series provide intelligent solutions for various application scenarios. If operating conditions happen to be particularly harsh, robust stabilizer housings made of aluminum are available for all devices.

Further product information:
www.mysick.com/products

Laser measurement for monitoring exhibits

For assets, against theft and van

The LMS120 laser measurement system from SICK, operating in a fan-shaped mode, allows superb monitoring of exhibits and other objects to be protected. The protective fields can be adjusted to their respective sizes.

Protecting old masterpieces using the latest technology – that is what the LMS100 from SICK accomplishes in numerous museums. Accurately to size, it generates in front of one or several paintings an invisible veil that permits unrestricted viewing while at the same time detecting quickly and reliably any contact, damaging, or attempted theft.

>> The task of protecting exhibits from such dangers is not new – what is new, however, is the fact that monitoring can be adjusted precisely to the exhibit without impairing the architecture of the room, close-up examination by the art lover, the reading of signs related to the exhibit, or, for instance, cleaning work below or around the painting. An added aspect is that the laser measurement systems allow a flexible use of rooms or wall areas, as it is quite easy to take into consideration changes in the room structure, e.g. due to setting up walls or sculptures or the replacement of pictures with different sizes.

More safety: the new LMS120 laser measurement system

Laser measurement provides functional monitoring protection

In the field of activity related to building security as well as protection of property, the new LMS100 laser measurement system provides a maximum degree of detection reliability. Using a scanning angle of 0.25° and scanning frequencies of up to 50 Hz, the actively sensing scanner of the measuring system transmits an invisible laser impulse in a fan-shaped pattern at an angle of 270°, measuring the time until receiving the reflections. Since the LMS100s operate in a low laser class, they can neither injure persons nor cause damage to the exhibits. The double-pulse evaluation of the measuring points, in conjunction with integrated distance measurement, renders area monitoring extremely stable, thus allowing a very accurate localization of any interruption of the protective field. Independent of the size and geometry of a room or of an object, the maximum of ten fields monitored by the LMS100 can be adjusted to any size of exhibits as well as their positioning and arrangement on the wall. As soon as a person interrupts the protective field, this causes a change in the time of flight of the transmitted light impulse – and thus, triggers the output of an alarm signal. Since the system is capable not only of detecting the person as such but also his or her position in the room, one can also use the LMS100 to align and focus surveillance cameras very precisely. This makes it possible to detect individuals with intentions to rob or vandalize significantly prior to their deed and to mobilize a unit of security guards.

Meets requirements of sensors for protection of property

The LMS100 meets the conditions required of sensors for the protection of property. The technical requirements of

dalism

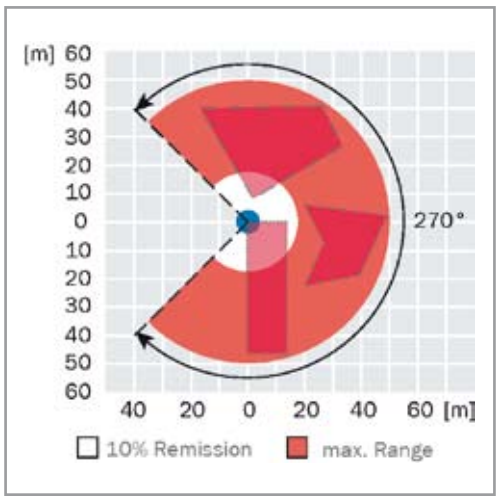
detection devices operating in monitoring centers include, among other things, an input voltage of 9–30 V, housing contacts, and floating switching contacts with optional integrated resistance. The LMS100 provides these features, consequently making it ideally suited for safety functions in the area of facility management and protection of property.

LMS111 – the outdoor variant

In addition to the LMS100 designed for indoor use, the LMS111 constitutes a 270-degree system capable of outdoor operation. It can detect persons independent of the time of day or night. The outdoor version features additional software modules that guarantee reliable monitoring of façades and open spaces even in rain, snowfall, or fog.

Whether one chooses the LMS100 or the LMS111 – both laser measurement systems provide ideal characteristics to protect assets and prevent vandalism and theft – while permitting those interested in art free access to the masterworks.

Further product information:
www.mysick.com/products



For outdoor areas, the LMS111, which also transmits a laser impulse at a 270° angle, guarantees protection of property at a range of up to 60 meters

The world's smallest safety laser scanner is a true expert

Keeping tabs on eight different scenarios

Now offering the possibility of implementing up to eight different monitoring scenarios directly in the sensor, the new S300 Expert safety laser scanner takes mobile transport systems, moving workbenches, or autonomous service robots for industrial use – to name but a few – not only along a safe but also an even more economical path.

>> Due to its flexibility in designing protective and warning field geometries, as well as its scanning angle of 270°, the S300 Expert is the best possible solution particularly for small automated guided vehicles (AGVs). Using static and dynamic inputs, respectively, it is possible to poll up to eight monitoring scenarios, which activate the appropriate path-related and speed-related protective and warning fields.

In terms of mobile use, this means that the monitoring functions for individual sections of the path can be designed in an even more differentiated way. The approach allows reducing downtimes and optimizing travel times, for instance, with a view to AGVs.

Of course, using the integrated EFI (the safe device communications interface), one can also combine two S300 Experts to form one system in order to protect both directions of travel if required. In addition, the S300 offers sufficient monitoring reserves for subsequent changes and extensions of travel paths.

Stationary applications benefit as well

The large number of programmable monitoring scenarios also takes effect when it comes to stationary tasks. Thus, it is possible, for instance, to generate virtual gates in which the S300 Expert, scanning vertically, can detect objects that are conveyed through, even differentiating between persons and materials with different sizes.

Further product information:
www.mysick.com/products

Precise, immune to ambient light, and maintenance-free

High-performance distance sensors for medium-range measuring areas

Further product information:
www.mysick.com/products

DT50 is the name of the new family of measuring and switching distance sensors from SICK. It is designed for medium ranges up to 10 m and ideally suited for the most diverse positioning tasks, checking for presence, and anti-collision solutions.

>> Due to the robust device design, featuring an IP 65 housing made of die-cast zinc, the changeable protective front screen for welding applications, and the temperature range from –30 °C to +65 °C, the DT50 is just as well suited for freezer storage facilities as for steel and hot-rolling mills.

High performance for the best price

With a range of 10 m, 20 ms response time, 1 mm resolution, and 10 mm accuracy, the DT50 offers innovative sensor technology at an interesting price-performance ratio. Integrators benefit above all from the fast adjustability of the sensor via the intuitive display-based, menu-driven operation, as well as the straightforward and precise alignment of the laser sensor. Plant operators will soon forget that they are using the DT50 at all, since the device is not only completely maintenance-free but – because of the novel double-frequency coding – also immune to ambient light up to 40 klux and thus highly available.

Wide range of applications

The DT50 is capable of solving numerous tasks efficiently. Positioning functions such as checking for presence and storage bay occupancy in automated warehouses are as much part of it as distance monitoring on overhead conveyor systems and collision prevention for portal cranes and AGVs. However, in production and process engineering, too, the DT50 solves interesting types of applications, e.g. slack regulation in tire production, on packaging machines and reel-fed printing systems or the positioning of welding robots.

The DT50 – the latest component in SICK's broad distance portfolio!

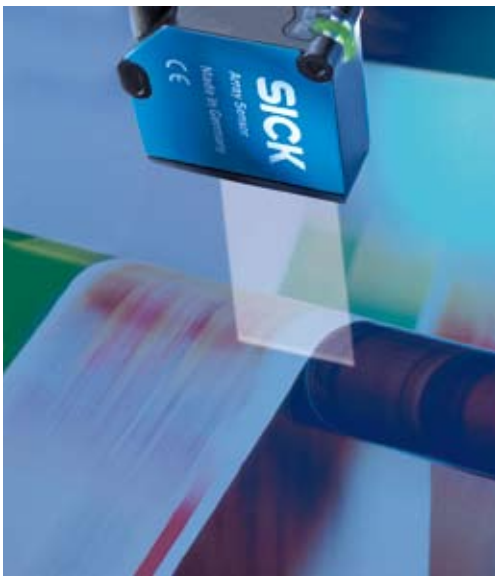
Scanning line array sensor for automation solutions

The new quantity for controlling webs and for position detection

More lead, line after line – true to this motto, SICK is presenting a new compact automation solution for determining edges and webs, detecting material thickness, or counting parts in handling or ejection systems: the Ax20 Array Sensor from SICK.

>> The sensor features a high-resolution array line, which serves to capture the most diverse objects with a repeat accuracy of 50 µm. Due to its scanning mode of operation, the Ax20 requires no reflector. The measuring area can be up to 30 mm in width – and its adjustment is particularly simple because of the visible white light. There is no need for a teach-in process, as the Ax20 works independent of the reflectance attributes of the material's surface. Because of its compact design and appropriate mounting accessories, the Ax20 also offers a high degree of installation flexibility.

Typical areas of use for the Ax20 are, among others, measured value acquisition for controlling the edges of webs comprised of continuous materials, such as films, paper, or non-woven fabrics, whose travel can be readjusted appropriately by means of signals from the analog 4-20 mA output. Position detection may take place both via the edge of the web or a line on the material. Even a continuous material application, e.g. an adhesive bead applied by a glue applicator system, can be detected and traced with utmost precision. Parts ejected from a machine, such as pills or screws passing the measuring field in free fall, are also detected and counted reliably by the line sensor of the Ax20.



Further product information:
www.mysick.com/products

New series of laser scanners with new possibilities

Data output in the desired format

Dynamically adjustable focus position, simple parameterization, high reading performance, and an integrated Ethernet interface are some of the highlights featured in the new CLV640 series of laser scanners from SICK. Thanks to their high clock frequencies, the devices are excellently suited for use in warehousing and conveyor technology involving high throughput.

>> The dynamic focus control of the CLV640 ensures top read rates even for critical auto ID applications, replacing various fixed focus scanners due to the wide range of focus adjustment. For the types of problems that require "searching" the code on an object over a larger area, the CLV640 is available as a variant with oscillating mirror.

The scan frequency is 1,200 Hz, by means of which codes can be identified reliably even at high conveying speeds. This applies even if the code quality leaves a lot to be desired, since the improved SMART reconstruction algorithm identifies even particularly low-contrast, dirty, or damaged barcodes.

Event monitor supports operating concept

In terms of commissioning, the CLV640 offers an operating concept unmatched in simplicity – e.g. featuring connection assistants for network applications, quick start, teach sensor, and integrated LED bar graph. The SOPAS programming interface, identical for all new devices from SICK, also supports the fieldbus connection. An event monitor visualizes the inputs and outputs and supports variation of adjustable parameters during start-up.

Available with Ethernet TCP/IP

In terms of communication, as a variant type the CLV640 is available with additional Ethernet interface as a plug connector option, with the CAN bus available in all version. The cost and space required for a separate Ethernet fieldbus gateway become redundant. By means of the new CDF600 connection box, the CLV640 – like all of the other barcode scanners in the CLV6xx series from SICK – can be integrated easily into fieldbus environments, such as CAN and PROFIBUS.

Further product information:
www.mysick.com/products

Network and fieldbus gateways

Open for anything

In the context of network solutions, SICK uses gateways fitting the respective scenario to allow integration of safety solutions into standard and safety PLCs as well as into master networks and fieldbusses such as PROFIBUS, PROFIsafe, CANopen, and Ethernet TCP/IP.

>> Each one of the EFI gateways (Enhanced Functional Interface) has two EFIs. In this way, the safety-relevant signals of the sensors can be integrated directly into the respective network or fieldbus environment without any additional components.

Currently, the following safety sensors from SICK feature an EFI connection:

- S300 safety laser scanner
- S3000 safety laser scanner
- C4000 safety light curtain
- M4000 multi-beam photoelectric safety switch

On top of that, the following safe control solutions of the sens:Control category have EFIs:

- Flexi Soft
- PROFIsafe and
- DeviceNet Safety

The EFI gateways from SICK permit easy integration of sensors into master controllers as well as networks and fieldbusses. For plant operators, this means continuous configuration and diagnosis of the entire application and plant. The connected sensors can be visualized via an OPC server on an HMI. It is possible, from a central vantage point, to visualize remotely all details relating to the current state of a plant.

Further product information:
www.mysick.com/products

The latest concerning harmonized European Standards

On 22 August 2008, the new list of harmonized European Standards regarding the Machinery Directive was published in the Official Journal of the EU. The Official Journal is available in all European languages under the following link: http://ec.europa.eu/enterprise/mechan_equipment/machinery/stand.htm

>> In recent months, a number of errors in the current listing regarding the Machinery Directive had caused some anxiety. They concerned the date of withdrawal (DOW) of EN ISO 13849-1, as well as the missing listing of EN ISO 13857. In the meantime, these errors have been rectified by means of an updated corrigendum.

The current list includes a greater number of standards compiled for adaptation to the new Machinery Directive (2006/42/EC). These standards were published either as so-called "consolidated versions" (the original version is summarized together with the changes/amendment) or as a European new edition of the corresponding ISO standard. These new versions supersede the previous versions within a specified transitional period extending to the date of withdrawal (DOW).

As a rule, the presumption of conformity of the replaced standard will remain in effect until this date of withdrawal. At the initiative of CEN's Machine Safety sector, the date of withdrawal for all standards in the context of adaptation to the new Machinery Directive (2006/42/EC) is to be fixed as December 2009.

In addition to a certain number of Type C Standards (standards for specific machines or classes of machines), the following changes are of particular importance or interest:

>> Overview of the new European Standards

- Risk assessment (also called risk analysis): the EN 1050:1996 is INVALID EFFECTIVE IMMEDIATELY and is replaced by ISO EN 14121-1:2007.
- Safety distances (to prevent danger zones being reached): The standards for safety distances, EN 294:1992 and EN 811:1996, are replaced by EN ISO 13857:2008. This standard combines both preceding standards without any substantial technical changes.
- Safety of power drive systems (frequency converters, servo controls, etc.): the new EN 61800-5-2:2007 standard outlines the demands on such equipment with respect to safety-related requirements such as secure support, safely limited speed, etc. This standard is effective and applicable immediately.
- Explosion prevention: EN 1127-1:2007, Explosive atmospheres – Explosion prevention and protection – Part 1: Basic concepts and methodology, replaces the 1997 version effective immediately as the end of the transitional period has been reached.
- New Type C standards. Applicable harmonized standards have been published for the following types of machines:
  - Packaging machines: strapping machines EN 415-8:2008
  - Power-operated mobile racking and shelving, carousels and storage lifts EN 15095:2007

Science to take part

TECHNORAMA The Swiss Science Center

"Science and technology on vivid display" – with this central theme, organizers founded Technorama in the Swiss city of Winterthur in 1969. What began as a technical museum has today developed into a science center – a diverse, atmospheric experimental field that stimulates playful learning.

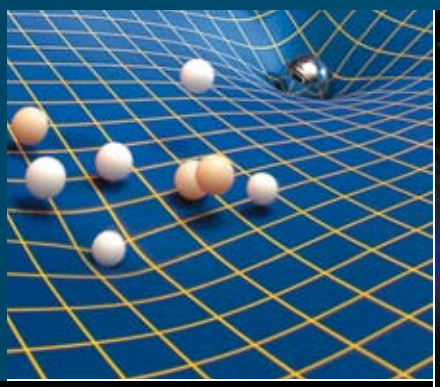
>> Accommodated on three floors and approx. 6,500 m² of exhibition space – including youth laboratory for young people – the Science Center features experimental exhibitions and experimental fields. They are oriented toward the natural sciences, thus providing insight into fundamentals of technology as well. Every year, nearly 250,000 visitors show an interest in the center – roughly one fourth of them are students, for whom Technorama represents an important element of extracurricular educational opportunities.

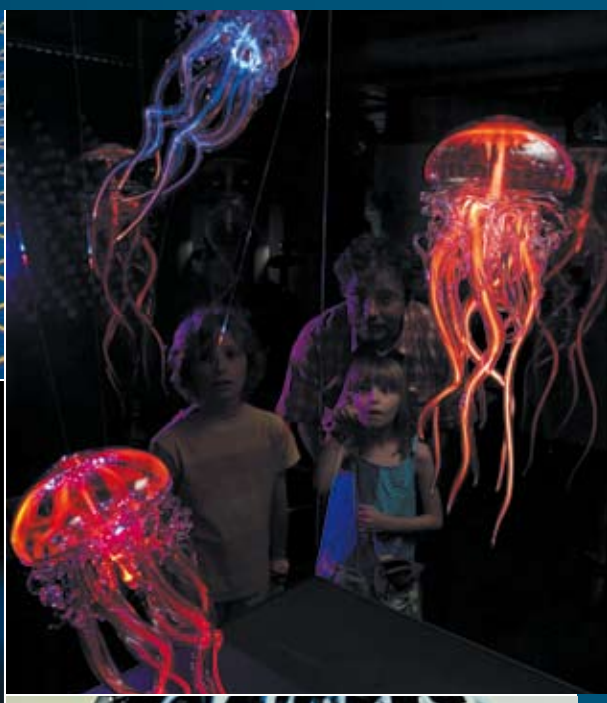
Touching welcome!

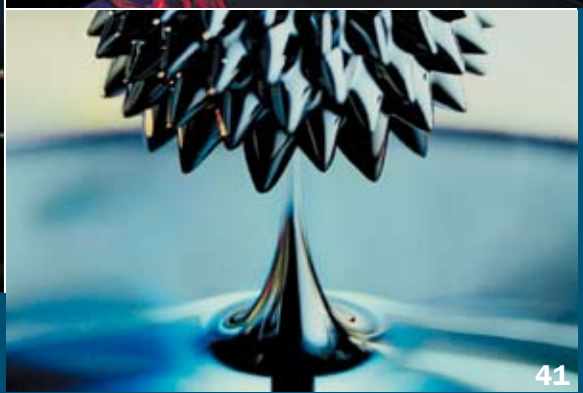
Science centers such as Technorama stand for interactive "hands-on" experience. The exhibits require visitors to take part; instead of "no touching," the motto is "touching welcome." At Technorama, interactive also means dealing with real things. Thus, the struggle for understanding is facilitated in a lasting way by hands-on experience and self-determined participation. That holds true above all, when visitors invest the time to experience. Moreover, to ensure that everyone has a chance to take the necessary time and leisure at Technorama the center meanwhile features more than 500 experimental stations.

A meeting place – an enjoyable location of a common learning culture

In this unique, informal atmosphere, visitors representing a cross section of all generations come together in a casual context. Spontaneous and cross-generational exchange of views or even scientific discourse is the order of the day. Technorama is open to anyone interested from Tuesday to Sunday from 10 a.m. to 5 p.m. **www.technorama.ch**







Eastern promises

SICK in Dubai

SICK AG, the world leader in industrial sensor technology, has announced the opening of its Regional Middle East headquarters, based in the Jebel Ali Freezone, Dubai.

>> The move will be a welcomed and mutually beneficial union for Dubai and SICK AG, which both hold reputations for being visionary forerunners, consistently technologically sophisticated and advanced and achieving aspirational high standards.

Covering the three core segments of the SICK Group, the Regional Headquarters will serve the Oil and Gas, Logistics and general Industrial sectors. Additionally, the Dubai based operation is well placed to assist the regional SICK sales partner network and offer enhanced support to SICK's international clients.

Bernd Hotze, Manager Marketing & Sales New Markets of SICK AG said: "The decision to establish ourselves in the Middle East region wasn't difficult. The combination of SICK's diverse product range and the region's well established Oil and Gas industry and huge investments in logistics and industry, makes it a perfect fit."

"SICK as a market leading company in the sensor industry is covering a vast variety of industries with more applications and products than other companies. Being placed at the heart of the most diverse and dynamic regional economy in the Middle East will greatly benefit our clients with their automation requirements and we look forward to growing with Dubai," Bernd Hotze remarked.

Training & Education:

New competence seminars at SICK

The success of the competence seminars for interested clients/participants has prompted SICK AG to extend the relevant offers in accordance with the solution portfolio.

>> To date, essentially the competence seminars in the area of safety technology have enjoyed great popularity.

These will now be supplemented with offers in the areas of identifying, measuring, and networking. For the first time in 2009, there will be competence seminars on the topical themes of

- RFID – Radio Frequency Identification, its Application as Compared to 1D and 2D Codes
- DPM – Direct Part Marking – Retraceability of Components and Assembly Units Made Easy
- IO-Link – Application, Fields of Use, and Benefits of IO Link and
- Modern Measuring at Near Range for Optimum Quality Determination and Production Monitoring.

In all of the competence seminars, application of technologies is the central focus. Following a brief overview of the essential foundations, lecturers with plenty of practical experience will convey application-specific benefits and drawbacks of various approaches to solutions. In order to ensure the great popularity of the new offers, too, SICK continues to rely on a large proportion of practical orientation and product-independent information.

So go ahead and attend the competence seminars from SICK as a way to secure your competitive edge by recognizing the latest trends early – thus continuing to guarantee decisions with an assured future for your economic success.

Fit for the future

The family of S3000 safety laser scanners has grown once again: In order to meet the increasing demand for possible means of communication on the field level, several PROFINET variants of the proven safety system are currently in preparation.

>> S3000 PROFINET IO stands for the current development of safety scanners that can be integrated directly into the PROFINET bus. Apart from the classic I/O tasks such as protective field switching and separate signal outputs, it is possible to communicate with the devices, even all the way to a more thorough diagnosis. Depending on the application scenario, the scanners available feature four or eight switchable protective fields with ranges of 4 m, 5.5 m, and 7 m.

Of course, the newcomers in the S3000 family are also prepared for the Ethernet IP world, looking forward to the future quite at ease.

In recognition of his lifetime achievement

IEC honors SICK's "Mr. Standards," Gerhard Dieterle

For his decades of commitment to international standardization and the contribution of his expert knowledge, on 6 November 2008, Gerhard Dieterle will be honored with the IEC 1906 Award.

>> The conferment of the award occurs at the recommendation of the IEC/TC 44 "Safety of machinery – Electrotechnical Aspects". Dr. Bernhard Thies, Spokesperson of Management of the DKE Deutsche Kommission Elektrotechnik – Elektronik – Informationstechnik within the DIN and VDE (German Commission of Electrical Engineering – Electronics – Information Technology within the German National Standards Institution and the Association of German Engineers), explains: "On account of his specialist knowledge and dedication, Gerhard Dieterle has contributed to an extraordinarily great degree to the reputation of German standardization at the national, European, and international level."

Far beyond SICK AG, Gerhard Dieterle is regarded a "doyen of industrial safety technology." For more than half of his working life with SICK – by now 40 years – he devoted himself intensively to developing sensors and systems solutions related to safety technology. This experience – coupled with a many-facetted practical expertise – made him a recognized specialist in all questions associated with safety technology. This is documented by a variety of technical publications but above all by his active collaboration in international standardization bodies, including IEC, ISO, CEN, or CENELEC. Throughout, the safety of machines – and thus the safety of employees – meant and continues to mean a lot to him.

Congratulations on this well-deserved award!

More room for future growth

SICK Vertriebs-GmbH in new premises

The SICK Vertriebs-GmbH in Düsseldorf is relocating: December 15, 2008 will be the first working day in the new office building on Willstätterstr. 30. What had been spread so far over three buildings in nearby Schiessstrasse is now located under one roof – substantially expanded and organized in a way convenient for customers.

>> In the German market, the SICK Vertriebs-GmbH is in charge of sales and marketing of sensor, systems, and service solutions for factory automation and logistics automation. More than 4,000 m² of office space on three floors, an air-conditioned conference facility for client training, an innovative showroom area, as well as offices designed in a welcoming and open fashion offer clients and staff nothing but benefits in the new building. "The company's success in recent years becomes apparent not only in rising sales but also in the steadily growing number of employees as well as the increasingly comprehensive range of services we are offering our customers," says general manager Roland Noz. "Therefore, we decided to unite all segments under one roof – in a way convenient both for customers and in terms of organization. In the new building – extendable if required – we are very well prepared for future demands regarding personnel, service, and support matters," Roland Noz looks ahead optimistically.

>> Info

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Subsidiaries are celebrating!

10 years of SICK Czech Republic
founded on 17 August 1998

15 years of SICK Norway
founded on 14 May 1993

35 years of SICK England
founded on 27 November 1973

THE CODE BOOK

The Science of Secrecy from Ancient Egypt to Quantum Cryptography

From time immemorial, humans have loved secrets, attempting to pass them on to one another in such a way as to keep them from third parties. As soon as the first word had been written down, they tried to encrypt these secret messages in order to send them to each other. In his work entitled *The Code Book*, Simon Singh, author of the bestselling *Fermat's last Theorem*, recounts the evolution of cryptography.

Key to the hieroglyphs: the Rosetta Stone

>> Whether in war, love, or the economy, from antiquity to the Internet era people have always been working with codes, secret signs, or ciphers. Singh relates the story of the perennial struggle between cryptographers and cryptoanalysts. In a retrospect covering the ages, he describes the development from simple to the more complex encryption and decryption methods used today. In this context, however, Singh does not, by any means, examine only mathematical theories; quite the contrary. The book reads like a continuous (hi)story, like a "biography" of the "life" of cryptography. The author conveys an enormous wealth of historical knowledge ranging into our day and age, specially, for instance, on the times of Caesar or Mary Stuart, about the Second World War and the encryption device "Enigma." With the help of the examples mentioned and many more historical events, Singh opens up new ways of looking at things, e.g. the coders and decoders, respectively.

The conclusion, above all, raises a topical discussion and encourages some reflection. After all, particularly in our so-called information age, in which information represents the most precious commodity, decryption for the purpose of allowing secret data exchange or, for instance, online trading, plays an important role. In contrast to 100 years ago, cryptography no longer concerns merely the top politicians and the military; instead, nearly every citizen is interested in protecting and decrypting his or her personal data. In this context, Singh wonders just how good encryption programs for the general public ought to be. Is it more essential that everyone can encode his or her data in the best possible way, or is it more important that secret services are capable of decoding data to protect citizens and prosecute offenders?

In writing this clearly organized book, Simon Singh has created a gripping work that conveys, in accessible style, both mathematical and historical knowledge. Especially numerous diagrams, images, and examples not only lend more color to his description but also encourage readers to try out their newly acquired insights themselves. Owing to its character of a continuous story, *The Code Book* is a real page-turner.

This review is written by Sarah Kreutz, BA (Berufsakademie = college of advanced vocational studies) student at SICK

The Code Book: The Science of Secrecy from Ancient Egypt to Quantum Cryptography *written by Simon Singh, publisher: Anchor*
ISBN: 978-0385495325

>> Visit SICK at the Trade Fair!

Trade fair dates Germany

Trade Fair	Location	Dates 2008/2009
SPS/IPC/Drives	Nuremberg	11/25–11/27/2008
Logimat	Stuttgart	03/03–03/05/2009
HANNOVER MESSE	Hanover	04/20–04/24/2009
Control	Stuttgart	05/05–05/08/2009
Euro-ID	Cologne	05/12–05/14/2009
Ligna	Hanover	05/18–05/22/2009

Trade fair dates Europe

Trade Fair	Location	Dates 2008/2009
Groothandel en Logistiek	Eindhoven, NL	11/12–11/13/2008
EF Industry Show	Istanbul, TR	11/27–11/30/2008
Elektro Vakbeurs	Hardenberg, NL	12/09–12/11/2008
WIN – World of Industry	Istanbul, TR	02/26–03/01/2009
IPACK-IMA	Rho (Milan), I	03/24–03/28/2009
Ampér Praha	Prague, CZ	03/31–04/03/2009
Mocon	's-Hertogenbosch, NL	04/08–04/09/2009
Hispack	Barcelona, E	05/11–05/15/2009
MSV Nitra	Nitra, SLO	05/20–05/23/2009
MSV Brno	Brno, CZ	09/14–09/18/2009

Trade fair dates worldwide

Trade Fair	Location	Dates 2008/2009
PACK EXPO International	Chicago, IL, USA	11/09–11/13/2008
ISA SHOW – Brazil Automation	São Paulo, BR	11/17–11/19/2008
VisionChina2008	Beijing, CN	11/25–11/27/2008
INDUSTRIAL AUTOMATION	Bangalore, IN	12/04–12/07/2008
ProMat	Chicago, IL, USA	01/12–01/15/2009
TIMTOS	Taipei, TW	03/02–03/07/2009
The Vision Show	Phoenix, AZ, USA	03/31–04/02/2009
National Postal Forum	Washington, DC, USA	05/17–05/20/2009
International Robots & Vision Show	Rosemont, IL, USA	11/09–11/11/2009
FABTECH	Chicago, IL, USA	11/15–11/18/2009
TOC Americas	Long Beach, CA, USA	11/18–11/20/2009

Further trade fair dates with SICK worldwide at **www.sick.com/fairs**

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