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Editorial

Only solutions count!

Dear Readers,

Just in time for Interpack 2008, you are receiving – hot off the press – the customer magazine SICKinsight Packaging with numerous solutions for the packaging industry. In many cases, the applications from all over the world were realized through energetic support on the part of the colleagues of our globally active Industry Management Packaging. They are a team of specialists for whom everything revolves around packaging-related client applications. They are familiar with the demands made in the packaging industry on sensor and control systems – from IO link, materials compatibility, from switching reliability to control integration. They know that in the final analysis, the customers are interested in one thing and one thing only: the solution. And to this end, drawing on SICK’s portfolio, they can put together customer-specific complete packages for even the most complex jobs – for your benefit.

Go and see for yourself by basing your assessment on the following success stories – and have a great read!

Patrick Kraemer
Manager Solution Center Factory Automation
SICK AG

SICK’s Industry Management Packaging is a team operating worldwide for international industry, project, and customer management. Its members are the global contacts for OEMs and end users in the packaging industry across all product segments. The focus of the meetings is on the benefits expected by machine builders and end users regarding complete sensor- and control-related solutions. The orientation toward the food, beverages, and tobacco industries, pharmaceuticals and cosmetics, as well as toward the application segment of final packaging ensures a well-mapped-out exchange of information. Ample time and space is devoted to the presentation of projects realized successfully – after all, only sharing experiences makes the multiplication of knowledge possible.

Communicating, cooperating, sharing experiences, and multiplying knowledge – with these goals in mind, the international packaging experts from SICK meet at regular intervals. Additional topics are the alignment of customer expectations and processes, the coordination of international activities, as well as discussion of current trends in the packaging industry.

Positioned internationally
The packaging experts from SICK form a network that operates on a worldwide scale. Lead account managers look after a client in the very country where that company has its headquarters; moreover, the national account managers are present in all of the client’s most important locations. This approach allows accommodating and implementing requests for particular technologies and trends directly in the country or economic region and in close-up contact to customers.

Customers interested above all in complete solutions
Having available a complete spectrum of products, systems, and services allows putting together the best possible solution packages for nearly any assignment and any size of project. Furthermore, SICK’s product range extends far beyond technical solutions – depending on the client’s needs, it also includes project management, support functions, service, engineering, and many others. This may result in substantial technical, cost-related, and organizational advantages for both manufacturers of packaging machinery as well as for the end customer.

Next meeting after Interpack 2008
The Interpack 2008 trade fair in Düsseldorf – the international key fair for the packaging industry – offers the best opportunity for the next meeting of the packaging professionals from SICK. On 23 and 24 April 2008, the concentrated flood of information from the days at the fair will be processed virtually “online” – evidence of just how closely SICK is in tune with the best of the packaging industry.
The world of the packaging industry

Brands depend on striking packaging

In the context of the great variety characterizing today’s world of merchandise, when it comes to packaging, perception and appearance of quality have become more important than ever. In particular, branded articles live and die on whether their outward appearance reflects the product quality expected by the customer. At the same time, packaging at the point of sale is the most important medium of advertising – especially when it transports information on special promotions and provides for flexibility and minimized set-up times during product changeovers.

Almost always, solutions for the packaging industry are also “riveting” solutions, since they combine complex sensor expertise with clients’ individual specifications.

Whether product, water, or hygienic agent – moisture always plays a role in bottling or packaging. Added to this are mechanical stresses – not least of all due to the extremely harsh external cleaning processes. In these conditions, sensors from SICK meet the varied demands both in wet and dry areas, in primary and secondary packaging – and due to easy operability, it provides for flexibility and minimized set-up times during product changeovers.

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For 100,000 jet black plates per day

Solution found for Findus’ ready-to-serve meals

They look delicious on their black plates – the ready-to-serve meals from the southern Swedish producer Findus. During the filling process, the photoelectric proximity switch – the WT18-3 – ensures that the portions of elk steak, salmon, or tagliatelle land on their plates and not beside it.

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>> “Given the vibrations and the several cleaning processes per day with high-pressure washers and alkaline detergents, I would not want to be a photoelectric proximity switch here,” Anders Sandblom, Automation Engineer at Findus, describes the operating conditions for the proximity switches along the 1.2 km filling line. “And when we changed from white paper plates to black plastic ones for aesthetic reasons, the days of the old sensors were definitely numbered.”

Dividing the portions on the “right side” of the rim

Findus produces almost 100,000 ready-to-serve meals every day. Thus, space on the conveyor system is correspondingly tight: an uninterrupted flow of black plates passes the individual filling stations – which always have to know whether the plate has arrived. “The sensors did not always provide the correct answer – and the elk steak would miss out on its gravy,” Anders Sandblom remembers. In order to ensure that the rim of the plate would be reliably detected in future, Findus decided to look around a bit and found a suitable solution on the market: the WT18-3 proximity switch.

WT18-3: no plate rim remains undetected

Food-oriented robustness, a large detection range with reliable background suppression, and dependable detection of black surfaces – only one device passed the comprehensive sensor tests involving the combination of these three “automation ingredients”: the WT18-3. “This photoelectric proximity switch withstood the stresses of cleaning and, thanks to its new type of chip technology, offered the best detection tolerance – so that we did not need to keep making millimeter-accurate fine adjustments. Installed 50 mm above the conveyor system, no plate rim remains undetected,” Anders Sandblom arrives at a positive assessment and explains why the WT18-3 has now become the works standard at Findus.

The robust WT18-3 photoelectric proximity switch detects the rim of the plate reliably, making sure all the plates are filled

Inductive stainless steel initiators from the IM18 series are responsible for synchronizing two process steps during mozzarella production at the Jäger dairy in Haag. Their precise position detection minimizes rejections, while their high level of robustness maximizes their availability in the harsh conditions prevailing in food production.

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>> “Bavarella” is the name of the tasty mozzarella pizza cheese produced in the Jäger dairy. The so-called “300-gram carousel” plays a decisive role in the production of the cheese. To begin with, at the carousel’s ejection station, the liquid mozzarella cheese is given its typical shape. Subsequently, the cheeses are taken up by the after-shaping belt and transported in the direction of the packaging machine. For a long time, this transfer was a problem because the position of a chain wheel on the after-shaping belt was only monitored indirectly. Inaccurate positioning during acceptance of the cheese resulted in too many mozzarellas landing in the receiving or rejection basins, respectively. Conversion of the previously tactile to an inductive solution by using IM18 sensors has effectively stopped this loss of product.

Stainless steel initiators: “certified” robustness thanks to IP 69K enclosure rating

Now the chain wheel in the 300-gram carousel is monitored directly – with the help of IM18 sensors in Inox design with fully encapsulated V4A stainless steel housing. The IM18 inductive proximity sensor in stainless steel design defies frequent cleaning with acids, alkaline agents, and hot steamings. The resulting enclosure rating of IP 69K is particularly important because this is the only way to ensure lasting availability of the sensors despite frequent cleaning with acids, alkaline solutions, and hot steam. The same applies for the high tightness requirements for the connector technology. Thus, the M12 plug connector also has an enclosure rating of IP 69K. Moreover, its cable, contact bearers, and extrusion are all designed in PVC compatible with foodstuffs. The material resistance of the inductive INOX sensors against a vast number of disinfectants was confirmed and certified in independent tests done by JohnsonDiversy and Ecolab.

Direct detection reduces rejections

The IM18s detect the teeth of the chain wheel and pass on the pulses to a variable frequency drive. This counts the pulses and reduces the speed of the after-shaping belt after every fifth pulse (when the transfer position for a new mozzarella is reached). The cheese is thus transferred from the ejection station much more precisely and reliably – the amount of mozzarella ending up in the rejection basin has been drastically reduced.

IM18 Inox – the Bellissima solution for Bavarella mozzarella with resistance certificate

Cleaning in Place (CIP) and high-pressure washers with aggressive cleaning agents, acids, and alkaline solutions constitute extreme stress for sensors. With its IP 69K enclosure rating, the Inox series stands up even to the most rigorous tests. High-pressure cleaning at 10,000 kPa nozzle pressure at close range, abrupt temperature changes, and corrosive media are unable to damage either the housing or the plug-in connectors and connecting boxes.

The robust WT18-3 photoelectric proximity switch detects the rim of the plate reliably, making sure all the plates are filled

The food must also appeal to the eye! During processing, great importance is also attached to the color effects of the instant meals
Panel of experts at Gerhard Schubert GmbH packaging systems

Using potentials for innovation consistently

Chaired by the editor-in-chief of Food Marketing & Technology magazine, Benni Keller, a part of panelists met in Crailsheim to exchange ideas on the innovation potential of packaging machines. To serve the upshot right away: performance, flexibility, reliability, and connectivity are becoming increasingly more important features of installations – and the goal is to use resolutely the potentials available for innovation in this area.

The participants of the talk were Gerhard Schubert, General Manager of the company by the same name, Steffen Winkler, Head of sector sales for Food & Packaging in the business segment of Electric Drives and Controls at Bosch Rexroth AG, as well as Wilhelm Schürmann, Head of Marketing & Sales Photo-electric Sensors & Fibres in the Industrial Sensors Division at SICK AG.

» Sensor technology should be integrated early on into the overall equipment design «

The objective of end customers: earning real money

Right off the bat, Gerhard Schubert made it clear that for an end client, the performance of the machine still constitutes the focus. Therefore, according to him, packaging machines should always be designed in such a way that they are capable of producing in three-shift operations: “In that case, they have generally paid themselves off after a year and a half, enabling the final customer to earn real money with them afterwards.” At the same time, he advocates compact machines with an optimized degree of automation: “Living up your machines such as erecting, filling, closing, and labeling in one compact machine is preferable to the concept of multiple machines connected with accumulating lines, for the latter is often less efficient, requires more staff and space as well as higher investment expenditures.”

“Dual” flexibility called for

However, the economic efficiency of packaging machines depends on additional factors as well. For Steffen Winkler, flexibility is one of the key terrains – with multiple meanings: “From the perspective of the plant operator, flexibility means, for instance, being able to change tools quickly or to change formats automatically. For companies like Gerhard Schubert GmbH Packaging Machines, though, flexibility also means being able to build machines on the basis of scalable drive and control platforms.” With the compact IndraDrive drive systems, the people at Bosch Rexroth are moving along precisely in this way. The robotics functions of IndraDrive provide users with access to multiaxis kinematics, kinematic changes, zero-point shifting and movable ramps. The integrated control ensures synchronization with conveyors, monitors protective zones, and simplifies operation with teach-in functions.

Reliability also results from user friendliness

Wilhelm Schürmann starts out with the feature of “teach-in,” as he points to the fact that when it comes to packaging machines, user friendliness constitutes a crucial customer demand even with respect to sensor technology: “Simple operation of a machine – and thus the reliability in practice. The best possible quality of mechanics, control and drive technology, as well as sensor technology is a prerequisite; but it yields results only if one can operate the machinery in a way adapted to the needs of the packaging process. This occurs, for instance, when during the testing of product batches, a contrast sensor can be taught in to detect a new print mark automatically via the automation system.” Therefore, the sensor technology should be integrated early on into the overall equipment design – especially since this approach alone allows tapping the innovation potentials such as ID link technology. This leads the participants in the panel of experts to the next trendy topic concerning packaging machines: the “connectivity” of components within the machine as well as the “inter-connectivity” of the installation vis-a-vis the fieldbus and IT environment, respectively.

Connectivity within the machine as a “giant opportunity”

Non-contact connections are the way of the future – that is a point on which Gerhard Schubert, Steffen Winkler, and Wilhelm Schürmann agree. The latter adds, “Through some questions pertaining to transmission safety still require clarification, sensor-controlled transmission systems for data and energy will be coming.” Steffen Winkler even says: “It is a reality, that there are already solutions that allow to transmit data and energy automated. With IndraWorks, Bosch Rexroth offers the best possible software framework that ensures a continuous and rapid engineering from data entry to the sensor via FDT/DTM (field device tool / device type manager). Sensors from SICK, e.g. the WT12 photodiode proximity switch for the latest “3” series generation that is in wide use in the packaging industry, support the IO link interface standard: “In this way, they bridge the last meter at the machine, allowing for cost-effective communication,” explains Wilhelm Schürmann. As a result, the sensors from SICK are just as intelligent as the IndraDrive drive systems from Bosch Rexroth: “Today, the intelligence of sensor and drive components for packaging machines extends so far that they can detect and report sources of interference during ongoing operations,” says Steffen Winkler. “Moreover, it is possible to parameterize and interrogate them remotely directly from the automation system of the machinery.” And Gerhard Schubert adds: “In this way, they allow an optimization of preventive servicing and maintenance, thus accommodating the final customer’s basic demand, i.e. the highest possible equipment performance.”

“With this, we have come full circle with respect to performance, flexibility, reliability, and connectivity as central demands placed on packaging machines,” Benni Keller concluded the panel of experts.

Performance, flexibility, reliability, and connectivity are central demands on packaging machines

www.boschrexroth.com

More about the companies:
www.harnisch.com/fmt
www.boschrexroth.com

PACKAGING2008
Vision sensor in food use

Handle or chicken leg?

The IVC-2D camera monitors the position of movable handles on the transport cases. The IVC-2D industrial vision camera has enabled the Swedish robot producer Transman to come up with a solution for the fully automatic stacking of transport cases in a chicken processing plant.

>> End-customer Kronfagel’s reusable cases are ideal for transporting packaged chicken pieces. The beauty of the cases is that a robot can pile them up into easy-to-handle stacks. However, this only works if the movable handles are in the correct position and the cases can be stacked seamlessly. Conventional systems have been unable to carry out this inspection, so important for the robot, properly. They could not detect all of the various handle positions. Moreover, they certainly could not distinguish between a handle and a protruding chicken leg.

Keeping a grip on the handles with the IVC-2D

The IVC-2D has succeeded in solving this assignment reliably. The camera system offers a program library with about 100 software tools, with which the most diverse two-dimensional tasks can be solved. Shapes, geometries, sizes, or designs – users can set up the camera for their individual object detection needs in great detail via the graphic programming interface. Thus, the IVC-2D detects the entire case to determine the handle position as it passes the robot control station. The contour generated on the case by the laser transmitter is evaluated, and the particular handle position established. As soon as an improper handle position is detected, the vision system transmits a signal to divert the case to a manual sorting section. Chicken parts pecking out between the handles are identified as such and do not lead to the case being diverted out of the line.

With the IVC-2D, a technically reliable and – compared with complex image processing systems – economical robot control solution was found for Transman and the end customer Kronfagel.

Spice factory avoids “peppery” customer complaints

Code monitoring on spice packages

Paprika, cinnamon, coriander, pepper, and cantanom – at the Santa Maria spice factory in the Swedish town of Mölndal, CLV410 barcode scanners make sure that chefs and amateur cooks always have the appropriate ingredients available and that the best-before date is correct.

>> Checking presence and readability of labels is part of a quality assurance system that was certified by the BRC (British Retail Consortium). Santa Maria’s clients – among others the Swedish retail chains ICA and Axfood – demand compliance with this standard. “Goods whose codes are missing or cannot be read at the goods received in these companies are returned to us rigorously,” says Anders Gäfvert, automation technician at Santa Maria.

Spice production – from basic product to mixed spices in bags

At the Santa Maria spice factory, dried mixed spices are produced for consumers and large kitchens. On the top floors of the production site, the spices are cleaned, cut up, ground, sorted, and blended. Subsequently, the spices reach the ground floor through pipes. There they are collected in bags and transported to the warehouse or directly to the packaging department. Every day, 120-180 pallets with cans or bags leave the works to be transported to the central warehouse supplying the clients. “The barcodes on the goods indicate which spice they contain, from which production or filling batch they originate and the date they were packaged,” explains Daniel Holgersson, also an automation technician at Santa Maria.

Label present? Code readable?

Since it is not enough to recognize the presence of the label, Santa Maria has opted for the use of barcode scanners of the CLV410 series. The compact devices detect the labels, read the codes, and in addition, they are capable of making assessments concerning printing quality. “In this way, we are able, on the one hand, to divert bags with unreadable labels,” says Daniel Holgersson. “On the other hand, the code readers provide us with information regarding a trend, allowing us to recognize early on if the labeling station has a problem.”

Contrasting program

The broad assortment of spices produced by Santa Maria is reflected by the numerous colors of the bags in which they are filled. Using the KT10 contrast sensor means deploying a sensor at the packaging lines that is not confused by the great range of colors. “Several times a day, we change spices and thus the bags,” says Anders Gäfvert. “A simple push of the button allows the machine operator to set the new color independently at the KT10.”
One sensor, two switching points

Short-stroke cylinder with a “mag(net)ic sweet tooth”

Two separately adjustable switching points in a single device – for the plant manufacturer Winkler und Dünnebier Süßwarenmaschinen, the MZ2Q permits simple, flexible, and cost-effective installation of the sensor on short-stroke cylinders.

>> Winkler and Dünnebier Süßwarenmaschinen GmbH (WDS) in Rengsdorf specializes in forming machines for solid and filled chocolate products, pouring facilities for sweets as well as special plant process technology related to Mogul installations for products based on gelatine, starch, pectin, agar-agar, or other stabilizations for products based on gelatin. Achieving a high degree of process reliability and availability necessitates detecting the start and end of the lifting motions of the pneumatic cylinders used.

MZ2Q – the application solver

This innovation of forming installations from WDS became feasible due to the use of the MZ2Q magnetic cylinder sensor. The device offers two freely adjustable switching points; at the same time, it is so compact that it can be inserted into and attached to all standard T-slots by drop-in installation. It is possible to adjust and Fine-tune the switching points in a user-friendly way even when the cylinder sensor is already installed.

Cost of piston detection reducible by up to 30 percent

Not only in terms of design and application technology but also from an economic point of view, the MZ2Q is the optimum solution for detecting two switching points in short-stroke cylinders. Current calculations, directly comparing the MZ2Q as an alternative to two separate magnetic proximity sensors featuring only one switching point each, indicate cost savings of up to 30 percent. The crucial element for this is the elimination of installation components as well as the time involved for installation, setting, and cabling of the MZ2Q. On top of that, there are qualitative aspects, e.g. the occupancy of only one slot, less cabling on the cylinder or, respectively, in the machine, better access to the sensor once the cylinder is already installed, and minimized risk of a component failure that results statistically from reducing the number of sensors.

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High degree of process reliability with the MZ2Q magnetic cylinder sensor

Perfect for chocolates and cookies

Package inspection in three dimensions

Whether chocolates or cookies – often one cannot tell by the packaging what is actually inside. With the IVC-3D smart camera, producers of candy and pastry can prevent unpleasant surprises for their customers even at the packaging stage.

>> The IVC-3D industrial vision camera works with CMOS technology and laser light. The profile of the line of light, projected by the laser onto the test object, is evaluated by means of triangulation. Special laser filters and evaluation algorithms ensure that different colors, surfaces, or contrasts barely have any influence on the measurement. This makes it possible, among other things, to detect dark chocolates in a dark blister or to measure reliably the height of layers – and thus the number of cookies.

Whether chocolates or cookies – often one cannot tell by the packaging what is actually inside. With the IVC-3D smart camera, producers of candy and pastry can prevent unpleasant surprises for their customers even at the packaging stage.

Not one cookie too many, not one cookie too few

The IVC-3D features programming software called “IVC-Studio”, which offers the system integrator or user more than 100 tools for easy programming for various tasks, for example monitoring the filling height of a packaging unit. For instance, it is easy to create a camera program that makes it possible to measure the size of a cookie stack, ensuring that exactly the right amount of baked goods is packaged. If the type of cookie or the packaging changes, contours, geometries, sizes, or designs can be adjusted in detail via the graphic user interface to reflect the respective requirements of object detection.

Model for package inspection

The freely programmable IVC-3D industrial vision camera from SICK IVP is suitable for solving the most diverse types of package inspection for which three-dimensional object detection or the checking of features matters. In contrast to conventional image processing systems, the 3D Smart Camera is capable of detecting geometric features independent of fluctuations in contrast. Thanks to its encoder input for detecting feed rates as well as the fast Ethernet connection, the IVC-3D is extremely well suited even for fast packaging processes.

You can obtain further product information on the Internet at:
www.sick.com/packaging
The development of this sensor became possible only due to the close cooperation of engineers from Absolut Vodka and SICK. The bottle for the Swedish grain vodka is inspired by a Swedish medicine bottle dating from the nineteenth century. “Its hammered surface results in a lens effect that renders reliable detection nearly impossible for conventional photoelectric switches,” says Bosse Nordmark from SICK Sweden. “The undesirable optical effect is reinforced by the fact that the glass of the original bottle is crystal-clear – just like the vodka itself.” For this reason, the original photoelectric switch received nearly 100 percent of the emitted light, i.e. the bottles passed the machine undetected and thus uncounted.

The solution: infrared transmitter and automatic adjustment of switching threshold

In order to achieve unambiguous switching signals, the goal was to absorb as much light as possible in the bottle. The desired attributes were obtained by switching to an infrared LED as a light source, varying the hystereses and filters, as well as developing an automatic switching threshold adjustment to compensate for contamination effects. “The result was the WL12G glass photoelectric switch that has become established today as the sensor standard in numerous bottling facilities,” says Bosse Nordmark. For him as well as for Jasper Hilhorst, automation engineer at V&S Absolut Spirits, the development of the solution was a fascinating topic. “It was interesting and instructive to be participating with the product developers in such a project,” he looks back. “They have an incredible wealth of knowledge in sensor technology, are familiar with the inner workings of the devices, and thus think along similar lines as we the users do.” No wonder, therefore, that in the bottling facility newly put into operation in 2007 the WL12G is used once again.

Solved in the ABSOLUTely best possible way

Bottle flow monitoring at the vodka plant

Up to 15,000 bottles of vodka per hour are filled at the production lines of Absolut in Ahus. The WL12G glass photoelectric switch detects them all – despite the unfavorable shape of the bottle and its transparent content.

Sensor technology for a great variety of tasks – sensor technology from a single source

However, even apart from bottling lines, the people at Absolut primarily use SICK sensors. “By doing so we know for sure that things always work the way they are supposed to,” says Jasper Hilhorst. After the filling process, sensors check that the labels and shrink-wrap around the caps are in the correct position. Bar-code readers ensure that the bottles are marked with the proper label, and they identify which pallets are leaving the plant. Photoelectric safety switches with muting secure the automatic palletizers.

Premium automation from SICK for the premium vodka from Absolut.

You can obtain further product information on the Internet at:

- www.sick.com/packaging
- www.absolut.com

The WL12G glass photoelectric switch with infrared LED detects bottles in any shape and even with transparent contents.

Crystal-clear company history

The name “Absolut” was introduced in 1879 by the entrepreneur Lars Olson Smith. Smith introduced fractional distillation that produces liquor without fusel alcohol in Sweden in 1877, under the name “Tiodubbelt Renadt Brännvin” (Tenfold Purified Vodka). Brännvin literally means “burnt wine” and is analogous to the German “Branntwein”. The term is also used in Norwegian, Danish and Icelandic. (“Vodka” was not used for Swedish liquor until 1958, with the potato-based Explorer Vodka.) The name was changed to “Absolut Rent Brännvin” (Absolutely Pure Vodka) by Smith to market his much improved product.

Smith challenged the city of Stockholm’s liquor marketing monopoly with his superior vodka. It was sold at a lower price than the monopoly’s product, just outside the city border. Smith even offered free boat rides to the distillery and “Rent Brännvin” made Smith a fortune.
Not just during the Soccer World Cup in 2006

Laser measurement systems ensure dependable beer supplies

The LMS400 Laser Measurement System measures the height of the pallet and detects any missing cases in the top layer – these are the ingredients of the LMS400 Laser Measurement System. They ensure not only during mega events such as a soccer world cup that not one liquor store or beer aficionado has to do without “nature’s pearl” (as advertised).

The LMS400 is a multi-purpose solution for pallet inspection at Krombacher. It was possible after a lengthy search to find a reliable solution for high-speed identification of milk cartons.

Are the beer cases OK? At Krombacher, this question is answered by several LMS400 Laser Measurement Systems. They ensure not only during mega events such as a soccer world cup – that not one liquor store or beer aficionado has to do without “nature’s pearl” (as advertised).

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The laser solution is characterized by great user-friendliness and easy service. Krombacher can use their own maintenance staff to check and correct any error messages that may crop up, without requiring any expensive specialists.

The LMS400 is a multi-purpose solution for the automation of inspection tasks or palletizing & depalletizing applications – especially as it can be connected flexibly to external evaluation systems via Ethernet, RS 422, RS 232, as well as digital inputs and outputs.

After a lengthy search, Krombacher was able to find a reliable solution for high-speed identification of milk cartons.

Smart solution for process control and retraceability

IVC-2D smart camera identifies milk cartons at Arla Foods

Enthusiasm instead of skepticism at Arla Foods: By using the IVC-2D smart camera, it was possible after a lengthy search to find a reliable solution for high-speed identification of milk cartons.

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The compact housing permitted a very much quicker and more space-saving installation than would have been possible for a camera solution with separate lighting gear. Finally, the laser solution is characterized by great user-friendliness and easy service. Krombacher can use their own maintenance staff to check and correct any error messages that may crop up, without requiring any expensive specialists.

The LMS400 is a multi-purpose solution for the automation of inspection tasks or palletizing & depalletizing applications – especially as it can be connected flexibly to external evaluation systems via Ethernet, RS 422, RS 232, as well as digital inputs and outputs.

Fast, reliable, and adapted to integration: the IVC-2D

The IVC-2D industrial vision camera offers resolutions of 640 x 480 to 1024 x 768 pixels, combining the latest image processing technology with an extremely flexible and highly efficient program library for image evaluation. Whether contours, geometries, sizes, or designs – the OEM or user can adjust the camera in detail to his or her needs in object detection by using the graphic programming interface. For this purpose, more than 100 software tools are available that allow – apart from recognition of characters, numbers, and logos – checking the most diverse two-dimensional parameters. The camera is designed to the requirements of industry; it is easy to use and in addition to plug & play I/Os, it features onboard Ethernet interfaces for rapid transfer of signals and image data at speeds of up to 100 Mbps.2,3 “says David Hannaford from SICK (UK) Ltd.

Reliable differentiation achieved

Owing to the unfailling identification of the letters F and D by the IVC-2D, milk cartons can be distinguished dependably at the inlet of the palletizing station. When a carton is positioned in the scanning window, the camera first searches for the last letter of the labeling, then records its image, compares it with the stored and permissible features and variants of various Ds and Es, and subsequently decides, within a split second, which letter it is. “The entire inspection takes place so fast that the throughput performance of the lines is not impaired at all,” confirms Steve Brace. Small wonder, therefore, that the camera skeptics at Arla have become fans of the IVC-2D system as they can adapt the camera system to new process requirements themselves.

In all of this, one should not forget the support provided by SICK: “The support during the project phase was excellent already, and when we have any questions now, one call suffices to get the information necessary for a solution,” Steve Brace expresses his full satisfaction.

InsightLINK

You can obtain further product information on the Internet at: www.sick.com/packaging
More about the customer: www.krombacher.com
www.novatec-v.de

InsightLINK

You can obtain further product information on the Internet at: www.sick.com/packaging
More about the customer: www.arlafoods.com

PACKAGING 2008
Superb contrasts regarding all color combinations

Print mark detection on tubes

Thanks to its three-color LED used as a light-transmitting source, the KT3W print mark scanner achieves the highest possible detection reliability with respect to all combinations of mark and background colors. The people at IMACO Group s.r.o. in the Czech Republic reap the benefits of this high resolution for positioning tubes.

The KT3W print mark scanner ensures correct positioning of tubes in order to guarantee perfect printing along the sealing seams.

KT3W: Switching where others fail
Following the analysis of the detection task by engineers from IMACO and SICK in the Czech Republic as well as comparative testing with sensor alternatives from other suppliers, the KT3W print mark scanner turned out to be the best possible device, because it switches to others fail. Due to the use of a three-color LED as transmitting light source, the sensor achieves a high contrast resolution and thus a high degree of detection reliability.

The compact and space-saving housing, detection ranges of 12.5 mm, switching sequences of up to 10 kHz, as well as an integrated adjustment of switching thresholds for highly reflective detection objects constitute important additional features of the sensor. The “dynamic teach-in” with respect to both the mark and the background renders operation of the KT3W rather simple. By input via the operating panel, the operator simultaneously activates the turning of the tube in front of the KT3W and, via the control line, the dynamic teach-in. The contrast sensor takes care of everything else: illuminating the contrast object - with each of the three transmitted colors, recognizing which LED provides the best contrast value, and then adjusting the contrast sensitivity of the reference mark in relation to the respective background. After completion of the teach-in procedure, processing of the tube in the machine can commence immediately.

KT3W provides the clients of IMACO with the highest level of flexibility, reliability, and operating convenience in the packaging process - no wonder, therefore, that the contrast sensor has become established as a standard at the Czech equipment manufacturer.

In order to achieve the highest possible dependability of supplies of secondary packaging for milk products, the Campina Dairy Company relies on servo controlled carton erectors with integrated HIPERDRIVE® positioning drives.

“Being upright” not a question of carton format
For the love of Landliebe, Campina & Co

In order to obtain full high precision by the second format adjustment drive so that both correct folding and the position of the crate are guaranteed and there will not be any interruptions during the onward transport through the machine. The third HIPERDRIVE® is only activated if one of the 16-piece crates needs to be separated into two 8-piece trays. This takes place by means of the so-called crate saw whose travel positions are predetermined via the third adjustment drive.

Utmost availability in continuous operation
The carton erectors are operating six days a week in three shifts. This illustrates how high the production volume of yoghurt and desserts is and thus the demands to ensure permanent availability of the cardboard trays. Campina’s carton erectors from A+F can no longer suffer from inaccurate settings, forgotten process steps, and other operation-related sources of error - not least of all due to automatic format adjustment.

In the Czech Republic, automated format adjustment with HIPERDRIVE® was an essential demand of Campina & Co. For the love of Landliebe, Campina & Co.

About the customer

Information on the Internet at:
www.sick.com/packaging

You can obtain further product information on the Internet at:
www.sick.com/packaging
www.aystar.aufbaufaktur.de

More about the customer:
www.imaco.cz
Automatic format adjustment in its most compact design

With the HIPERDRIVE® HRA08, SICK-STEGMANN and the Italian packaging machinery producer IMA SpA are presenting for the first time at the Interpack 2008 a revolutionary solution for automatic format adjustment. Small as a cigarette pack and big in terms of functionality combined with fieldbus connectivity, the format adjustment drive opens up new applications in a variety of packaging machines.

>> Whereas the ‘larger’ format adjust ment drives of the HIPERDRIVE® series with power outputs of up to 45 W are used for larger auxiliary axes, the HRA08 with its maximum power output of 8 W is aimed at the smaller auxiliary axes, e.g. in packaging machines, which thus far have been adjusted largely by simple hand wheels with a counter.

In this context, it is worth considering that, for instance, a blister and carton packaging facility in the pharmaceutical industry may easily feature up to 40 different mechanical adjustment axes. This quickly reveals the various advantages an automatic format adjustment unfolding simultaneously may have for the productivity and quality of a packaging line.

HRA08 – the revolutionary compact positioning drive

The HRA08 represents an integrated positioning drive, which accommodates the motor, gears, the absolute measuring system as well as performance and control electronics in an extremely compact and easy-to-install design. The system can be mounted right next to the machine shaft (and thus as a direct substitute of a hand wheel), without standing out particularly on the equipment as a separate component. The nominal torque amounts to 2 Nm and the speed to 40 rpm. The absolute measuring system allows positioning accurate to +/- 1.8° at 128 resolvable revolutions. This means the elimination of any reference run after starting, which can be a great benefit, especially following an emergency stop, e.g. when there is still packaging material in the machine. The integrated jog buttons enable the drive shaft to move directly, independent of the machine control, using only the 24 V operational voltage. This results in a considerable simplification of start-up and of the configuration mode, respectively. Particularly with respect to the installation of more complex facilities, a pretzel of the two end positions of a mechanical string can be advantageous.

PROFIBUS-DP or fieldbus with CANopen hub “organizes” communications with the machine control. As a communication interface, the HRA08 features an RS 485 serial interface. Since in complex packaging machines, a positioning axle – and therefore a format adjustment drive – rarely occurs in isolation, the HIPERDRIVE® hub serves as a connecting module for performance distribution and data management for up to 64 HRA08 format adjustment drives in CANopen. In addition to the substantial reduction of the wiring effort and space requirements on the machine or in the control box, respectively, the clear address structure both in CANopen and in PROFIBUS-DP is very advantageous. Due to the signal and communications management using transmission rates between 10 and 1,000 kbaud, the automation system has access to the status of each individual positioning drive throughout and is capable of responding to and moving it – individually or simultaneously with others.

Joint project of IMA and SICK

Deployment at the development partner and pilot client IMA

The development of HIPERDRIVE® HRA08 took place in close cooperation between Product Management of SICK-STEGMANN in Donauwieschen, Industry Management Packaging of SICK in Waldkirch and the manufacturer of packaging machines, IMA SpA in Bologna, Italy. The company, founded in 1901, is one of the world’s leading suppliers of machines used for packaging pharmaceutical products, cosmetics and toiletries as well as tea in filter bags. In addition to process-related devices such as mixers, filling machines, or tunnel driers, the product range includes a broad spectrum of facilities for primary and secondary packaging all the way to integrated complete packaging solutions. As a result, IMA is very familiar with the problem of format adjustment, contributing essential application competence to the definition of requirements placed on the HRA08 that was scheduled for new development.

Format adjustment and fine tuning within minutes

The first blister packaging and cartoner line for pharmaceutical products with HRA08 is already in operation. As compared to hand wheel adjustment, IMA managed to achieve extreme improvements on the machine in some respects. If the operator calls up a specific packaging format on the touch screen panel, the HRA08s begin immediately and simultaneously to adjust the relevant auxiliary axes, the limit stops, and machine components. This results in a dramatic reduction of changeover time: What possibly took several hours in the past is now a matter of minutes – and with far greater precision and repeatability at that. The same applies to potentially necessary fine tuning, e.g. the kind that might emerge because of tolerances for the same packaging material from different production batches. Without HRA08, the machine operator has to adjust, one after the other, all of the other axle positions by hand to the new value following tolerance checking and adjustment on an auxiliary axe. With the HRA08, this fine tuning is carried out on one spot only – subsequently, the automatic format adjustment drive transmits the new adjustment value to the machine control via the hub. It then automatically adjusts the relevant parameters on all of the other HRA08s via the fieldbus – a procedure that takes only a few seconds while offering utmost adjustment accuracy.

HIPERDRIVE® perfect for flexible packaging

As far as physical size, performance as well as integration of the HRA08 in terms of mechanics and data systems technology is concerned, the people at IMA currently do not see any other comparable solution for automatic format adjustment on the market. In combination with the HIPERDRIVE® hub, it is possible to achieve efficient automation solutions especially with respect to complex machines featuring numerous auxiliary axes. After all, the supplemented HIPERDRIVE® family furnishes a complete spectrum of positioning drives for different power outputs, allowing comprehensive automation of format adjustment in packaging machines from a single source.

With the HIPERDRIVE® HRA08, SICK-STEGMANN and the Italian packaging machinery producer IMA SpA are presenting for the first time at the Interpack 2008 a revolutionary solution for automatic format adjustment. Small as a cigarette pack and big in terms of functionality combined with fieldbus connectivity, the format adjustment drive opens up new applications in a variety of packaging machines.

Insight

More about the cooperating partner:
www.sick.com/packaging

You can view further product information on the Internet at:
www.sick.com/packaging

A project partner and cooperation partner:
www.ima.it
Single-camera system for 2D and 3D image processing

Smoothing the path from inspection to analysis

Image processing technology departs from classical thinking on 2D and 3D imaging with the Ranger C and Ranger E series. The cameras’ multiscan with scatter function combine, for the first time, complex analytical potentials in a single vision system – thus making it interesting to the packaging industry, e.g. for blister control.

Presence, alignment, contrast, brightness, and other conventional features are predestined for 2D inspections. 3D systems are involved if position, volumes and shape require inspection, or spatial measurement tasks have to be solved. Often users can combine both approaches in a single system only at considerable cost and using a lot of space. The high level of complexity of the complete solution thus taking shape frequently proves to be a further obstacle. If it is necessary to inspect semi-transparent surfaces, the choice of industry-oriented solutions on the market is limited – or the camera solution must be supplemented by further inspection systems.

Multiscan and scatter – the “fourth” dimension in image processing

The Ranger C and Ranger E camera systems from SICK IVP offer the necessary technologies – multiscan and scatter – for tasks in which the detection of both an object’s geometrical 3D data and its conventional 2D features are necessary in a single step.

The multiscan functionality permits the simultaneous application of the most diverse image capture processes. Objects are subjected – simultaneously and with a single image-capture process – to a 3D detection, a conventional 2D inspection and, for objects with semi-transparent surfaces, a scatter inspection. In the case of technical or organic materials, this process obtains information on the direct object surface. The depth of penetration and light scattering provides, in the form of surface structure or the underlying object or layers.

Latest image processing technology in a complete package

Only one single camera, Ranger C or Ranger E, is required for all of these analysis tasks. It receives images of the different object properties simultaneously in different areas of the camera chip and carries out pre-processing. The resulting images are transferred to an evaluation PC line-by-line without any loss of time. Here they are available for the most varied simulations and analyses.

Just one camera, a compact inspection structure, rapid image generation for a variety of tasks, and immediate availability of the measurement results make the cameras from the Ranger series interesting for numerous applications closely related to packaging. The multiscan and scatter functions smooth the path from inspections to the analysis of objects, thus allowing packaging processes to be made even more reliable.

Tracking & tracing in the medicinal field

“Babylonian confusion of tongues” straightened out

An end to Spanish packaging for Taiwan, Chinese labels on products destined for Singapore – the use of ICR840 2D code readers at Johnson & Johnson in Thailand has allowed the prevention of products shipping to the wrong countries.

Johnson & Johnson is the world’s largest health care company. Its products are sold in 175 countries and range from surgical wound care, implants, and minimum invasion instruments to pharmaceuticals, surgical wound care, implants, and minimum invasion instruments. The plant in Thailand supplies several countries in South-East Asia.

For a long time, products such as towelettes or talcum powder bottles were logistically controlled and tracked solely based on their barcodes. But the EAN-13 barcodes contained no country-specific differentiation – so it was always possible that products with linguistically differing packaging could get mixed up, and an end customer in, say, the Philippines, received products destined for Taiwan!

Country and language information

Integrated in 2D code

The idea of attaching a second “country barcode” was quickly abandoned for space and cost reasons. Instead, Johnson & Johnson now uses an additional small data matrix code with a cell size of just 0.33 mm, for which there is enough space on the packaging and which does not adversely affect the design of the packaging or label. It was therefore necessary to find a suitable reading system that could read the codes at a speed of 0.4 ms on a transport system while coping with the critical packaging surface (similar to plastic), and which was also easy to use and program.

More than a dozen production lines equipped with ICR840s

SICK Singapore suggested the ICR840 as a solution – the local integrator Planet &T&S inserted the 2D code reader, with its 1.3 megapixel CMOS matrix sensor, into a total solution with a PC, PLC, and control unit. Integrated software assistants simplified the Ethernet connection and the teach-in of the codes to be detected. The image repeat rate is 25 Hz with an image field of 44 x 35 mm² and a resolution of 0.2 mm. If the location of the code on the object is known (due to technical process conditions, for example), the reading field can be restricted if desired, and the image repeat rate increased to over 100 Hz. This leads to intended multiple readings of each code, and thus to increased process reliability, as the code is reliably detected several times in series as it passes by.

After successful initial trials, Johnson & Johnson ordered a total of 17 complete reading stations for its production lines. Since then, there has been no more mixing of products – and an end to the Babylonian or, respectively, Asian confusion of tongues.

PACKAGING 2008
For medical and pharmaceutical products
Complete sensor package for packaging facilities

In the facilities of Harro Höfliger Verpackungsmaschinen GmbH, process steps involving the plastic wrapping of small tubes are controlled and monitored by optical, magnetic, distance-measuring, and ultrasonic sensors from SICK.

Complete automation from a single portfolio
A total of 17 process steps are required to package 140 small tubes into formed film and foil packages. The packaging consists of a bottom and a cover film, to which handling and product labels are attached by means of various processes. In this context, DSG900 encoders from SICK-STEIGMANN determine the exact positioning of the labeling unit that travels sideways. Simultaneously, a KT3 contact sensor ensures that the label was actually attached to the bottom film. At the first sealing station, the bottom film is heat sealed 80 percent with the cover foil. Subsequently, the insertion robot pushes the small tubes into the package in packets of ten. The automatic feed and the provision of small tubes are monitored by fiber-optic photoelectric switches of the WL170 and WL190T.2 series featuring four-digit digital displays. In case the facility is undergoing maintenance or connectivity hampers the supply of small tubes, the robot’s externally accessible cabinet is monitored by an X300 safety laser scanner.

Packaging control: tactile detection with magnetic evaluation
A particular challenge was the verification to see whether each package actually contained a small tube after the insertion by the robot. “Together with SICK, we have realized a means for checking presence via pneumatic cylinder sensors featuring integrated magnetic cylinder sensors of the MZ20 series,” says Christian Vogel. The special feature of this sensor is that it offers two independent switching points on a very short construction – thus allowing three sets of status information concerning piston position. “Piston retracted means that the sensor issues an enable signal for the automatic feed of the package. The second piston position issues a signal once the tactile finger detects a small tube in the package. Piston extended as the third state means that there is no resistance and thus no tube present which implies an error, resulting in the extraction of the affected packaging unit via a shifting register,” explains Christian Vogel. After checking the package for contents, it is sealed completely. A CM1 color sensor checks the correct positioning and sealing of the packaging seams. Following attachment of the opening device to the package, the medical products reach the ejection station, the last process step. In the infused area, one ultrasonic sensor of the UC12 series per path monitors their arrival. After the rejection of the incorrect units, another UC12 per path ensures that now only correct packages leave the machine.

All you need – Harro Höfliger Verpackungsmaschinen GmbH has dedicated its work to this slogan. And all they need? Featuring one of the most extensive sensor portfolios worldwide as well as customer-specific problem solutions if required, SICK is the suitable one-stop supplier precisely for the packaging industry concerning individual all-included sensor packages – as the example of this facility for formed film and foil packages demonstrates.

In practical operation at Duni:
The world’s first facility with IO link communication

Recently, meurer Verpackungssysteme has commissioned the world’s first facility with IO link used in productive operations for Duni GmbH & Co. KG, a manufacturer of table and banquet table decor in Bramsche (Lower Saxony). Photoelectric proximity switches of the WT18-3 series from SICK communicate with the controller of the packaging machine, offering the end user more flexibility, operating reliability, and availability.

> Tablecloths, table sets, or napkins – functional table decor in five design concepts constitutes the main production emphasis of Duni at its site in Bramsche. One of the products enjoying great popularity is the Dusine Tête-a-Têtes.

Tray packer: the “communicative” carton packaging machine
The tray packer from meurer follows immediately upon the film packaging and labeling station of the table runner rolls. Important process steps are controlled with photoelectric proximity switches featuring IO link. At the infeed of the machine, two sensors detect the arrival of rolls as well as any undesired congestion of rolls. In the roll magazine that follows, two additional WT18-3 take on the minimal and maximum detection, thus ensuring the correct and complete stacking of the rolls in several tiers. Parallel to these processes, two photoelectric proximity switches monitor the precise position of the cuts in the respective roll magazine that is actuated by the carton ejector, a further monitoring of presence regarding the cuts occurs; the same applies for the detection of the tiers of rolls that are pushed into the carton.

IO link “talks” turkey during sensor configuration and error analysis
Both the commissioning capability of the IO Link sensors via the PROFIBUS fieldbus of the carton packer and the easy to follow display of sensor signals on the interface of the touch-screen panel designed by meurer have simplified the operations of the machine to an unprecedented extent. That applies equally to the changeover between different packaging orientations and to error correction of the assembly or maintenance of equipment. Thus, in the start-up phase, exact configuration of the photoelectric proximity switch for each of the formats to be processed was carried out via the teach-in field on the touch screen. During operations, the parameters, e.g. detection range, hysteresis, or the serial number of the sensor are retrieved from the automation system, transmitted to the sensors, e.g. – if required – shown on the display. Mechanical readjustment of the sensors for each change of order is no longer necessary; as well, their configurations are reproducible 100 percent and thus absolutely reliable. In case of a malfunction, the machine operator can immediately gain an idea of the potential cause. Touching the respective sensor depiction on the panel immediately gives the operator all of the important information. This data includes signal quality as a figure and bar graph, the status of the switching output, the degree of contamination, any indication of a possible short circuit as well as information concerning the potential influence of any external sensors or other sources of interference in the machine.

For a large number of sensors, the controller of the packaging machine is reading feedback on IO link used in productive operations for Duni GmbH & Co. KG, a manufacturer of table and banquet table decor in Bramsche (Lower Saxony). Photoelectric proximity switches of the WT18-3 series from SICK communicate with the controller of the packaging machine, offering the end user more flexibility, operating reliability, and availability.

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For a large number of sensors, the controller of the packaging machine is reading feedback on
The application in the AVP8-Rolo bag manufacturing machines from NOVO-CZ is one example showing that a client solution often involves more than the choice of sensor. Apart from the distance measurement, the essential benefit is derived above all from the fact that the machine manufacturer has available an all-in-one unit, i.e. eliminating the need to procure the four different components – encoder, measuring wheel, spring system, and mounting bracket – separately as well as having to install and adjust them with considerable effort. In addition, the solution with DKV60 is also more cost-effective, as in many cases the cost of installing the component parts frequently exceeds the purchase price of the complete system from SICK-STEGMANN.

**Indirect measurement of feed length of bag films**

Incremental encoder as complete all-in-one solution

The Czech packaging producer NOVO-CZ uses the DKV60 incremental encoder – a complete unit consisting of an encoder, measuring wheel, spring system, and mounting bracket – to measure the unwinding length of plastic film.>> The application in the AVP8-Rolo bag manufacturing machines from NOVO-CZ is one example showing that a client solution often involves more than the choice of sensor. Apart from the distance measurement, the essential benefit is derived above all from the fact that the machine manufacturer has available an all-in-one unit, i.e. eliminating the need to procure the four different components – encoder, measuring wheel, spring system, and mounting bracket – separately as well as having to install and adjust them with considerable effort. In addition, the solution with DKV60 is also more cost-effective, as in many cases the cost of installing the component parts frequently exceeds the purchase price of the complete system from SICK-STEGMANN.

**Measuring lengths, counting bags**

The bags produced on the machines are used, among other things, for packaging in the food industry. During production, sheet or blown-film material, e.g. made of PE, is automatically unwound, welded after reaching the pre-set length, and perforated crosswise along the film weld seam by a knife. The indirect distance measurement of the DKV60, i.e. the type not carried out directly at the drive, ensures that the bags subsequently feature the correct filling volume and the same size. This is guaranteed by the high resistance against vibration and the non-slip surface of the measuring drum, which accommodates the sturdy mini disc measuring system and the electronics of the incremental encoder. Furthermore, the machines of NOVO also use the impulses of the measuring wheel encoder to count the number of bags produced.

Construction-friendly, compact, and reasonably priced, the DKV60 is the ideal solution anywhere in the packaging industry, where lengths of film and sheet materials need to be detected by indirect means.

**Construction-friendly, compact, and reasonably priced, the DKV60 is the ideal solution anywhere in the packaging industry, where lengths of film and sheet materials need to be detected by indirect means.**

The teachable UC12 ultrasonic sensors with background suppression on a winding machine from NOVO for detection of reel diameters

Ultrasonic sensor determines reel diameters on winding machines

No problem with color and surface of plastic film but instead teachable and equipped with precise background suppression - the UC12 ultrasonic sensor was exactly the solution that NOVO-CZ had been searching for to detect reel diameters.

> The sensor is used on the winding machines of the PRZ 500 series from NOVO. Its job is detecting the point at which the diameter reaches a certain level – i.e. when the reel holds the desired length of film.

Many advantages over mechanical detection

The UC12 replaces a detection mechanism that was used previously but had only been working inadequately. The ultrasonic detection now offers the opportunity to teach-in the switching point – and thus the amount of plastic film – at the push of a button, greater precision and repeatability, as well as more reliability with respect to measuring the film. Another important aspect is the accurate functioning of the background suppression, making sure that a switching signal is issued via the PNP output only upon reaching the desired reel diameter. In this case, the winding machine is stopped, the winding up of the reel is terminated, and a new reel is inserted into the machine for the next winding process.

Finding a solution in a team effort

The engineers from NOVO and the sales consultants from SICK in the Czech Republic developed the solution jointly. Following clarification of the requirements and basic conditions, the UC12 was identified as a suitable sensor, presented to NOVO, and made available for practical testing. With respect to the order of the UC12 eventually placed, ultimately its good value for money proved advantageous.

The teachable UC12 ultrasonic sensors with background suppression on a winding machine
Muting instead of a test of courage

Safety on the glass bottle and tin can palletizer

The palletizer producer ACMi makes its systems safe with the M4000 Advanced multiple light beam safety device together with the UE403. They provide the ideal muting solution, preventing "mounting modifications" by "courageous" employees.

>> For courage is definitely required if one is working on an automatic palletizer whose safety monitoring has been modified by non-experts on the part of the end user.

Signals are "lost" Modifications frequently result – as in current case involving ACMi – from problems during the process. Fully loaded pallets – in this case with glass bottles and large tin cans – correctly triggered the muting function during entry to the palletizer. However, themuting sensor signals were sometimes "lost" when the pallets were loaded only partially. The consequence: a machine stoppage, redundancy in throughput, and loss of production. It did not take long to find the "solution to this problem" – the muting sensors were simply shifted by the end user for as long as it took for all the signals to be restored. The safety risks involved were not initially apparent, either to the plant user or the employees.

Decentralized muting with M4000 Advanced and UE403 ACMi took its responsibilities as a machine producer seriously and reacted appropriately. Protection of the palletizer was switched to the M4000 Advanced. It was the ideal solution for connecting the WL250 muting photoelectric switches in direct proximity to the installation with the help of the UE403 safety relay – and for decentralized implementation of the muting function. The LED muting lamp is already integrated in the end cap of the M4000 – further reducing the wiring and mounting effort involved. The timing and logical sequence of the muting sensor signals are detected and evaluated when a pallet passes the muting station before entry to the hazardous area, bypassing a shutdown of transport by the protective device.

Permanent safety The adjustable filter time on the UE403 signal inputs for the muting sensors ensures that this process now functions properly for pallets with any load. Thus, maximum safety is achieved because when the pallets pass out from the photoelectric safety switch, the safety system is fully reactivated immediately, even if the muting sensors still happen to be active. In the case of only half-load ed pallets, the partial cutting out of the beams of the photoelectric safety switch – compared to complete muting – ensures increased safety, because at least the uppermost beam remains active at all times.

Thanks to muting with the M4000 Advanced and UE403, there will be no any mishaps at the glass bottle and tin can palletizer.

The M4000 multiple light beam safety device with UE403 – the perfect muting solution

Less space required, less wiring effort

Safe automation: less is more

Space required in the control cabinet reduced by 75 percent, only two instead of six switching modules, considerably reduced wiring, yet full functionality and safety - the software-free UE403 Flexi safety controller is exactly what manufacturers of packaging equipment had been waiting for.

>> One example is Haloila, a Finnish producer of stretch-wrapping machines. At the company’s facilities, two rolls of foil are operating simultaneously at tremendous speed. Transport to and from the machine takes place via automated conveyor technology, and the rolls require regular changing. Both factors mean that the machine requires protection against unauthorized access or opening. Entry of the pallets to and their departure from the stretch-wrapping machine are each monitored by one M4000 multiple light beam safety device with muting. A safety locking device controls the access gate.

“Tangled” linkages All of this sensor technology, as well as the emergency stop pushbutton, require control and monitoring. Up to now, a total of six safety relays have been responsible for this – four for the M4000 and one each for the locking device and the emergency stop function. They were wired up to one another in a complicated manner to create safe logic functions. The “tangled” linkages had little in common with rapidity or flexibility – characteristics for which the stretch-wrapping machines from Haloila are famous.

Control now as transparent as the plastic film itself Haloila wished to avert the danger of any “tangles” and has now found the right solution with the software-free UE410 Flexi safety controller. Based on a main unit, almost any desired number of input, output and fieldbus modules can be added – that is flexibility. Any control solution can be displayed and checked in advance with the Flexi configurator, which takes place rapidly and cuts the engineering effort involved. Now two modules, with a total housing width of 45 mm (instead of the former 225 mm), suffice to implement the safe functional logic for a stretch-wrapping machine, saving space on the mounting rail. The individual modules communicate with one another via a data bus and their functions can be selected by means of a rotary switch – both features that eliminate wiring effort almost entirely.

The adjustable filter time on the UE403 signal inputs for the muting sensors ensures that this process now functions properly for pallets with any load. Thus, maximum safety is achieved because when the pallets pass out from the photoelectric safety switch, the safety system is fully reactivated immediately, even if the muting sensors still happen to be active. In the case of only half-load ed pallets, the partial cutting out of the beams of the photoelectric safety switch – compared to complete muting – ensures increased safety, because at least the uppermost beam remains active at all times.

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The M4000 multiple light beam safety device with UE403 – the perfect muting solution

Less space required, less wiring effort

Safe automation: less is more

Space required in the control cabinet reduced by 75 percent, only two instead of six switching modules, considerably reduced wiring, yet full functionality and safety - the software-free UE403 Flexi safety controller is exactly what manufacturers of packaging equipment had been waiting for.

>> One example is Haloila, a Finnish producer of stretch-wrapping machines. At the company’s facilities, two rolls of foil are operating simultaneously at tremendous speed. Transport to and from the machine takes place via automated conveyor technology, and the rolls require regular changing. Both factors mean that the machine requires protection against unauthorized access or opening. Entry of the pallets to and their departure from the stretch-wrapping machine are each monitored by one M4000 multiple light beam safety device with muting. A safety locking device controls the access gate.

“Tangled” linkages All of this sensor technology, as well as the emergency stop pushbutton, require control and monitoring. Up to now, a total of six safety relays have been responsible for this – four for the M4000 and one each for the locking device and the emergency stop function. They were wired up to one another in a complicated manner to create safe logic functions. The “tangled” linkages had little in common with rapidity or flexibility – characteristics for which the stretch-wrapping machines from Haloila are famous.

Control now as transparent as the plastic film itself Haloila wished to avert the danger of any “tangles” and has now found the right solution with the software-free UE410 Flexi safety controller. Based on a main unit, almost any desired number of input, output and fieldbus modules can be added – that is flexibility. Any control solution can be displayed and checked in advance with the Flexi configurator, which takes place rapidly and cuts the engineering effort involved. Now two modules, with a total housing width of 45 mm (instead of the former 225 mm), suffice to implement the safe functional logic for a stretch-wrapping machine, saving space on the mounting rail. The individual modules communicate with one another via a data bus and their functions can be selected by means of a rotary switch – both features that eliminate wiring effort almost entirely.

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New range of sensors for the food industry

Hygienic, robust, and versatile

Due to an ideal mix of product performance and features, the new optical and inductive sensors defy the extreme challenges posed by use at food and beverage producers.

The new complete series of the V18V, MH15V, and IMF, available for the first time from SICK and aimed at the food & beverage sector, are highly efficient solutions for reliable processes. The high level of robustness is confirmed by certificates from independent institutions such as Ecolab and JohnsonDiversey concerning resistance against cleaning chemicals, as well as from Fraunhofer Institute with respect to seal tightness in enclosure rating IP69K. For the user this means higher well as from Fraunhofer Institute with respect to seal tightness in enclosure rating IP69K. For the user this means higher

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New technologies are often notorious for being complex, appearing as something that needs to be worked out and understood first before being used and yielding benefits. However, particularly with respect to safety technology, it is imperative that the application barriers are kept as minimal as possible. In this context, SICK offers, under the label of “sens:Control,” safe control solutions that are easy-to-use, modular, and can thus be migrated, which makes them interesting for packaging machines.

Simple solutions to complex problems

In regard to machines and plants with a high degree of networking, sens:Control offers innovative safety network solutions and gateways that allow the linking and evaluation of safety-oriented components in bus systems. Besides the selection of components and their configuration, the comprehensive approach also entails support of machine builders, OEMs, as well as end users in all phases of a project from planning to start-up and all the way to maintenance and modernization of existing facilities.

Fiber-optic photoelectric switches

Intelligent combination for flexible solutions

If mounting space in a packaging machine does not even suffice for miniature sensors, fiber-optic photoelectric switches often constitute the only solution for detecting objects.

If increased demands, e.g. on range, temperature resistance, material robustness, or flexible installation are added to this, only an intelligent combination of sensor design and a fiber-optic cable provides the perfect solution.

Conbinations for optimum solutions

Apart from detecting objects, sheathed plastic or glass fiber-optic cables serving a “slim” access from the sensor to the object also allow the detection of gray-scale or color contrasts or fluorescent markings. In order to solve the numerous task settings, one requires an intelligent combination of various sensor and fiber-optic cable designs. The different sensor series and the assortment of fiber-optic cable variants open up a wide variety of possibilities for application in compact machines. All of the fiber-optic cable series from SICK are available as both through-beam and scanning systems. Currently, the product range encompasses more than 100 different fiber-optic cables and end sleeves made of plastic or glass fiber in order to provide for ideal automation solutions. Whether the issue is objects that are flat, narrow, fast, transparent, reflecting, or deep black - in addition to the broad product portfolio, SICK can draw upon years of experience and solution competence in the packaging industry.

Take advantage of it!
New platform, more performance

Laser scanners with Ethernet on board!

The CLV620, CLV630, and CLV640 from SICK are representatives of a new generation of barcode scanners. The devices offer even more scanning performance and an improved operating and diagnostic arrangement.

- Controlling destinations in order picking and packaging processes is among the typical application fields of these devices. Thanks to the optional optical window made of plastic, the CLVFlex product family is also suitable for use in the food and beverage industry.

Platform of a new generation of scanners

The CLV620, CLV630, and CLV640 are not merely a face-lift of the well-known and reliable CLV420, CLV430, and CLV440 series, but an autonomous new scanner platform. They continue the success story of laser scanners from SICK, delivering convincing performance due to increased scanning efficiency as well as an improved operating and diagnostic arrangement. From evaluation and operation all the way to possible communication uses, this equipment incorporates the most advanced technologies and solutions. The scanning algorithms of SMART decoding have undergone further refinement – codes can be “even poorer” and yet still be scanned nevertheless. In order to achieve the easiest initial start-up possible, users have at their disposal an operating design unmatched in simplicity – e.g. featuring connecting assistant, quick start, teach sensor, integrated LED bar graph, and a diagnostic window that can be activated during the entire parameterization. An event monitor visualizes inputs and outputs, supporting possibilities for simulation while varying the adjustable parameters. The auto set-up is undergoing further adaptation to users’ requirements.

Magnetic safety switches on packaging machines

Ideal protection for hoods, doors, and hatches

Vibrations, imprecise guides on separating safety components, high demands on robustness in harsh environments – magnetic safety switches of the RE series from SICK solve requirements that see other switches fail.

- Primary and secondary packaging machines, carton erectors, fillers, locks, and labeling machines are only a few among many types of devices whose access areas are often protected by hoods, doors, or hatches. The magnetic safety switches of the RE series constitute the optimum solution for safe monitoring of these protective components, since they master tolerances in door guides and machine openings, withstand the harsh conditions involved in external cleaning of facilities, and are free from wear and maintenance. In this way, they offer not only a failure-free to performance level “a” but at the same time ensure a high degree of availability and safety for packaging facilities.

The locking of the safety component is required in addition to the simple monitoring direction, the 120 Lock and 155 Lock safety locking devices from SICK are very well suited. Various operating directions combined with high retention power allow flexible and reliable solutions. When integrated into the control and communications technology of packaging facilities, the safe switching devices, controllers, and network solutions from SICK provide added value in the system.

For fast and reliable quality inspection

Inspector – an intelligent vision solution in an easy-to-use sensor package

At the 2008 Hanover Industrial Fair, SICK will present, for the first time, the new Inspector, a compact, user-friendly, and precise 2D vision sensor with integrated lighting, image evaluation, and Ethernet interface. The Inspector can check parts in any position and orientation and reliably determines in real-time if objects pass or fail.

- Efficient like a camera and easy-to-handle like a standard photorelectric switch – these are the objectives the Inspector combines in an unprecedented way. The sensor features its own light source, standard ring light or unique dome light - integrated in the IP 67 metal housing. The dome light offers an advantage when working with glassy or reflective surfaces. It provides a very robust image - the key to solving many vision applications. With other vision sensors on the market, this is only possible using elaborate and expensive external light solutions.

The Inspector provides several possibilities for configuration – from teach-in via a signal to external teach-in of a new parts configuration and all the way to a computer-assisted configuration. Parameterization via PC offers fast teach-in in a few steps. Finally, expert parameters allow the solution of more complex tasks.

Reliable quality assurance in any orientation

Inspecting parts with the Inspector does not require the objects to be in the exact same orientation. Irrespective of the part’s position and orientation, the sensor’s software algorithms evaluate the contour, edge pixels, or gray value pixel sums of each test object within a few milliseconds. There is no need for a trigger signal – as soon as the object is within the measurement field, image capture of the part takes place. The rapid image evaluation allows parts inspection even in high-speed processes.

Focus on inspection of packaging

Regarding the packaging industry the Inspector is the perfect solution for numerous tasks, including:

- Label position on bottles, cartons (vignettes), cases, etc.
- Date code presence
- Cap inspection – presence, position, height, integrity or damage
- Blister packs – all tablets in the blister, is the blister damaged, foil sealed

Sickleight}

You can obtain further product information on the Internet at:

www.sick.com/packaging

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Sickleight}
Robust, precise, intelligent: the W12-3 sets the new standard

Process reliability is top priority

For your applications, are you expecting optical sensors that solve demanding tasks, follow high process speeds, and exhibit a high degree of availability in harsh industrial environments? In that case, the W12-3 is the right choice.

For specific examples of SICK’s technological leadership and solution competence in the field of industrial automation, please visit the website:

www.sick.com/packaging

You can obtain further product information on the internet at:

www.sick.com/packaging
Industry guide for the packaging industry

Competence right down the line

Extending over 40 pages, SICK’s industry guide presents solution competence in packaging automation. Divided according to industries, products, and process stages, the publication shows how sensor technology by SICK shapes packaging processes on all levels reliably, safely, and efficiently.

Since packaging is as important as content, facilities for primary, secondary, and final packaging have to meet special demands. The intelligent sensor and system solutions by SICK fulfill the most diverse requirements on reliability, availability, and efficiency of automated packaging lines.

Process orientation within different industries

In the industry guide on the packaging industry, various market segments are examined in a differentiated way: pharmaceuticals, cosmetics, hygiene, food, beverages, and tobacco, as well as household goods. Each area makes specific demands on automation solutions – which ones these are and how sensors from SICK solve them is shown by the industry guide, both in a textual and visual way. In this context, the focus of attention is equally on the solutions for entire process chains and plant lines as well as on the automation of individual plant modules such as filling installations, labeling devices, cartonizers, code printers, shrink tunnels, box packers, palletizing robots, or foil wrapping machines.

Expertise and solution portfolio globally available

No matter what the task at hand is specifically – manufacturers of packaging machines have worldwide access to the expertise as well as the sensor and control solutions made by SICK. This is ensured by both the global sales and service network and the internationally oriented warehousing and logistics processes at SICK, which make components and spare parts available in the right place at the right time nearly anywhere in the world.

Special highlight: The packaging machine - a large exhibit designed in cooperation with the Italian IMA Company. IMA developed the exhibit and will be showing the identical facility on their own exhibition stand. Please find out more on pages 20 and 21.

The interpack takes place every three years and in 2005 was able to welcome more than 2,600 exhibitors from 57 countries as well as 176,964 visitors from 106 countries.

The interpack 2008 represents entire value chains: from the production and refinement of goods and packaging materials to packaging and distribution, and all the way to quality assurance and consumer protection.

Processes and machines for packaging the following: Food and beverages, pharmaceutical goods and cosmetics, consumer goods (non-food), and industrial goods

Packaging materials, means of packaging, production of packaging

Processes and machines for candy and bakery produce

Services

Immerse yourself in the world of packaging automation made by SICK and pull up the industry guide at interpack 2008

Processes and Packaging

In Düsseldorf from 24 to 28 April 2008

Hall 6, exhibition stand 6D02 on 80 m²

Visit SICK at the trade fair interpack 2008

Processes and Packaging

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www.sick.com/packaging