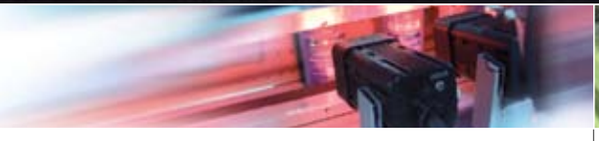
Spring 2006

technology&trends magazine



Advanced Industrial Automation

OMRON

Faouzi Grebici
European Marketing Manager

Usability – key ingredient to JUST CREATE!

Instead of embarking on complex definitions at Omron, we simply refer to a product as being highly usable when it takes seconds to find and minutes to set up. Both aspects are key attributes within Omron Europe.

Since December 1st 2005 new site – **www.omron-industrial.com** – has been online with the motto "find it in seconds, decide in minutes, get served in hours". This will really mark a new shift in the way we do business in the coming decade.

The aspect of easy operability is addressed in this issue through three new products that will set new standards in the market. The vision sensor ZFV which comes with a built-in screen showing live inspected images; the Trajexia new motion platform that breaks the myth of complex motion control through openness and simplicity; and SmartSlice remote I/Os that are the smallest and most easy to use and diagnose devices in the market.

Thus, usability is a serious factor when developing products and services for you, so that all you have to do is... JUST CREATE! ■

Content

Main topics

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News & Trends

Product News

Zero Defect production – dialogue between user and supplier

Forum "Zero Defect production" connects users and manufacturers of inspection systems.

Nico Liebert (tesa AG)
Lucian Dold and
Michael Glassl (Omron)

"Learn from our customers" has always been our slogan in Omron. Gathering industry experts and listening to their views is our source of inspiration. We thought it would be useful to share with you this hot debate on Zero Defect manufacturing. For this we invited two major users of our quality control products, Mr. Mario Backhaus, Process Accompanier Center Plastic at Hettich GmbH & Co. KG and Mr. Nico Liebert, Team Leader technical equipment and installation at tesa Plant Offenburg. The discussion was hosted from the Omron side by Lucian Dold, Marketing Manager Sensing and Safety, and Michael Glassl, Sales Manager Sensing and Safety South Germany.
The discussion took place at Omron's sensor business unit in Nufringen-Stuttgart.

Michael Glassl,
Sales Manager
Sensing and Safety
South Germany

Michael Glassl,
Astin Matthais &
Mario Backhaus
(Hettich GmbH & Co. KG)
and Axel Kalf (Omron)

Lucian Dold: It is a privilege to have you both here. First let me point out that in Nufringen we produce sensors and safety for European and global use, and we are hoping to attain Zero Defect / Zero Leadtime production. But first, Mr. Backhaus, what's your experience of Zero Defect at Hettich?

Mario Backhaus: Producing up to 25,000 items/day and having operations in Germany, Hettich relies heavily on highly advanced fully automated manufacturing. Thanks to a high production level, Hettich's strategic goal is to first 'produce' quality and then 'control' it. For this reason, Hettich has been an early adopter of in-line inspection systems. ZERO-Defect manufacturing means to Hettich: producing at a failure rate of 5 to 20 ppm (parts per million). A smart approach to quality control represents a key issue.

Lucian Dold: In Omron we achieve 20 ppm for components and 50 ppm for systems such as PLCs and drives. You do even better; what's your secret?

Mario Backhaus: Inspection is part of our core processes. But if not applied smartly, it can be extremely costly. Hettich produces 13 million product variants; each version must be properly inspected. Therefore it is vital to understand the production process and to apply a "critical opinion" towards manufactured parts. Highly critical parts need stringent inspection.

For these kinds of applications "Easy Vision" brings huge benefits, since it is easily applicable, provides instant information without additional equipment and helps to stick to your budget for inspection equipment.

Michael Glassl: Any concrete examples where Easy Vision has really helped your manufacturing process?

Mario Backhaus: Some critical parts for the car and furniture industry needed adequate lubrication. The use of the ZFV immediately led to positive results. Besides this, we managed to improve

Lucian Dold
Marketing Manager
Sensing and Safety
Omron Europe

our processes even further by introducing colour inspection for filtering out contrast more easily. So one improvement lead us to a better understanding and resulted in a major improvement action.

tesa's experience

Lucian Dold: We understand that discrete production has its headaches in terms of inspection, but applying Zero Defect in a continuous process such as adhesive tape production must be a real challenge.

Nico Liebert: At tesa we produce adhesive tapes at extremely tight thickness tolerances and at speeds sometimes exceeding 400 metres per minute. The thickness of the adhesive layer has a direct impact on the quality of the adhesive bond. Inspection systems are mainly used to check the application of paste. Core applications include the inspection of transparent stamps.

The main difficulties lie with detection of hole positions in areas which are difficult to illuminate, and the small scanning range of just 2 to 3 cm per image, due to the extremely high line speed. Another major hurdle is that the product is transparent and therefore almost invisible. Hence border detection for proper material alignment while winding is somewhat tricky.

Michael Glassl: Does it mean that such high requirements are met only by complex inspection systems?

Nico Liebert: Not necessarily. At the beginning we used a high-end vision system that required considerable expertise. When the system stopped, only a few people could help. However Zero Defect is only successful when the operator can also contribute to the process improvement when necessary. Thus for many inspection tasks Easy Vision can do the job.

Lucian Dold: From a user's point of view, what would you find essential in a good inspection system?

Mario Backhaus: Colour and resolution are important elements which have been improved in the newer generations. Detecting free falling parts and identifying low contrast still represent important challenges. However, one should seriously consider the usability aspect. A feature packed system which leaves the user in the dark when malfunctions occur, or which requires a PC and a dedicated software just for diagnosing a fault, isn't quite realistic. The real challenge for a Zero Defect production process is really to bring the initiative to the shop-floor operator.

Nico Liebert: I guess inspection system suppliers must balance performance and flexibility with ease of use. There are many inspection tasks that vision systems still have to solve. However, as users we are confronted with the reality of the shop-floor and always look at the total cost of ownership of the product. This means cost, usability and maintainability of the product. For us, achieving Zero Defect production is also a balance between failure-free production and sustainable cost. The Omron Easy Vision with the ZFV allowed us to combine vision complexity with sensor simplicity. You brought it down to the machine operator level and this really made a significant difference.

Michael Glassl: Thank you for your contributions. I would like to briefly summarise the key success factors for Zero Defect manufacturing:

- Zero Defect production is an essential factor for quality production in high labour cost countries.
- Zero Defect must be implemented around a clear target. For Hettich it is 5 to 20 ppm. Every ppm less leads to 10 defective pieces less per annum.
- Zero Defect should not only be a matter for the planning or engineering departments, but includes bringing the initiative to the machine operator level. Hence...
- Suppliers should focus on the cost effectiveness and the usability of the inspection devices.

Profile of Hettich

Hettich GmbH & Co. KG employs 4800 people and produces moulded parts for several industries. Main segments are furniture and automotive. Hettich prides itself in quality and innovation. Hettich has used Omron inspection systems for several years and has just adopted the ZFV in its new lines.

Profile of tesa

The tesa Group is one of the leading producers of adhesive solutions, with 3500 employees worldwide. They use Omron inspection systems in their main plant at Offenburg for several inspection applications. ■

Axel Kalf

Product Manager Vision
at the Sensor Business Unit
Omron Europe

Confidential

ZFV – just unstoppable!

The new Omron vision sensor has achieved 10,000 units installed worldwide.

40% of the units are installed in Europe.

Easy vision in minutes

The myth of complexity...

Modern plants and advanced manufacturing processes cannot survive without quality inspection and proper product traceability. However, in most cases the operation, set-up and maintenance of such a complex inspection system needs highly skilled specialists that most plants cannot afford.

...has just been shattered!

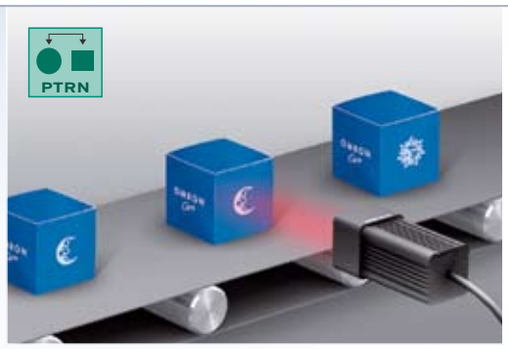
A number of devices from various suppliers are on the market, but most are complex to set up as you need to understand and set dozens of parameters. Thankfully, Omron has made quality inspection so much easier. Since pioneering vision sensing technology with its F10 in the 1990s, Omron has led the trend towards Teach & Go inspection systems. With its ZFV Vision Sensor family, Omron is again revolutionising vision by making it easy and intuitive.

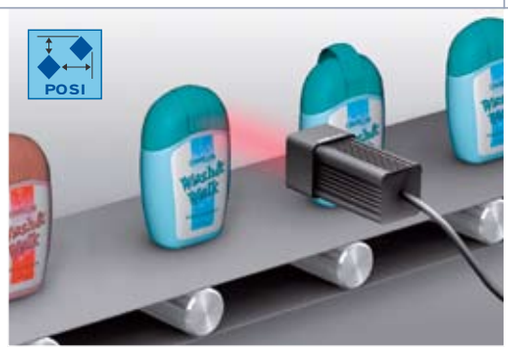
Target, Teach & Go!

The concept behind the ZFV is Target, Teach & Go! It provides the right balance between user-friendliness and capability, by offering functionalities

Pattern recognition

The PATTERN tool verifies if a symbol printed on a package is present and complete by comparing it with a previously taught reference.





Position verification

The correct cap position (closure) of a shampoo bottle is inspected using the POSITION tool which detects object edges.

Character recognition

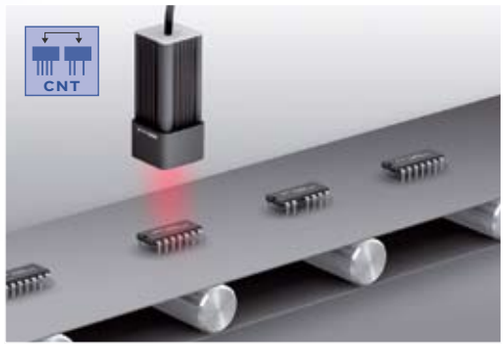
The CHAR tool verifies if a lot code, date code or product code is correctly printed on a label.

Width inspection

The WIDTH tool measures an object, in this case a label, to verify that it is not folded or cut.

Area inspection

The AREA tool verifies the size of an object, in this case sweets in a blister pack, to check their presence.



Object counting

The COUNT tool verifies the number of pins on an IC by counting the edges within an area.

that users can understand and an easy intuitive method that saves time. The ZFV comes with a complete user interface, so a PC is unnecessary. The user interface consists of a crisp colour LCD screen and a few buttons. A simple menu guides you through the set-up procedure. To minimise installation effort, the sensor head comes with an integrated light with a field of view of up to 150 mm.

Live image

The ZFV is the first vision sensor that offers live images of the inspected object on an LCD screen. The plain image of the inspected object, the inspection status (“OK” or “NOT OK”) and detailed results are simultaneously displayed. This eliminates the need for an additional monitoring device such as a PC or industrial terminal. In case the information needs to be remotely monitored, a USB port is available on the ZFV colour for connection to an external device or to a PC. The PC tool is of course available for the colour version for configuration and monitoring.

The ZFV is the first vision sensor that offers live images of the inspected object on an LCD screen.

Set-up in minutes

For all its simplicity, the ZFV is far from basic. The ZFV family offers a toolbox containing up to 8 built-in inspection tools, enabling you to address the majority of inspection tasks in minutes.

Colour... the virtual third dimension

The ZFV family also includes a colour model, which is extremely useful in processes where colour coding or tagging is used, such as assembly of electronics and packaging.

In terms of inspection functionality, the ZFV colour offers similar features to the ZFV grey scale – but as it acquires a colour image, it uses the colour information in the image as a “virtual 3rd dimension” – giving additional security and stability to your application.

Target, teach, go... and enjoy!

With the ZFV family’s focus on “usability”, Omron’s ambition is to reduce the complexity of vision sensing. Everybody should be able to use a vision sensor without expert knowledge and without prior, extensive training. The ZFV vision sensor enables you to do exactly that. ■

www.never-fail.info

German Application Award 2005 winners:

1. Prize: Klaus Arhelger, Carl Cloos Schweißtechnik GmbH, Haiger
2. Prize: Ralf Heikens, Hauni Maschinenbau AG, Hamburg
3. Prize: Björn Rinke, Römerwall Naturbrunnen und Getränke GmbH & Co. KG, Duisburg

German Sensor Application Award 2005

Hauni, the global market and technology leader in machine building for the international tobacco industry was awarded with the German Sensor Application Award 2005 at the automation technology exhibition SPS/IPC/Drives in Nürnberg, Germany.

The innovative application with Omron's laser measurement sensors convinced the jury of well-known representatives of Media, Science and Industry and brought Hauni the second place in the nationwide competition.

The German Sensor Application Award for the most effective, most economical, most creative or most unusual sensor application was founded in 2002 by an initiative of the Ruhr-University Bochum, Fraunhofer Institut Physikalische Messtechnik, Sensorspecialist Turck and the magazines "elektro Automation" and "KEM". ■

In the eyes of a customer, your package is your brand. Missing or misplaced labels, spilled products, damaged seals may derail your best efforts to build up brand image and make your business grow.

A company like L'Oréal is well aware of this fact: "Striving for Excellence – Perfection is our goal" is one of its corporate values. And in the Karlsruhe production plant – one of L'Oréal's largest European production sites outside France – Omron's ZFV teach & go vision sensors are supporting that value.

Along with other products, at Karlsruhe, L'Oréal's "PURE ZONE, deep control"-bottles are filled, labelled, packed and shipped throughout Europe.

After each container is filled and closed, two labels are attached – one on the front of the container, one on the back. The package represents

Your package is your brand

Never fail... in practice at L'Oréal

L'Oréal's brand, so accurate placement of these labels is crucial. This is where the ZFV comes in. It makes sure that the correct label is attached to the correct side by verifying a unique feature on each label using the (Pattern) Match function. This unique feature is typically one of the printed elements on the label to be inspected such as a symbol or a name, and since both sides of the object are inspected, 2 ZFV sensors are used.

No problems with different product types

Although more than 1 variant of the product is processed on this machine, this is no problem for the ZVF.
The settings for each variant are stored in the ZFV's "bank storage" and are switched via digital input signals, so there's no need to re-teach when the product type is changed.

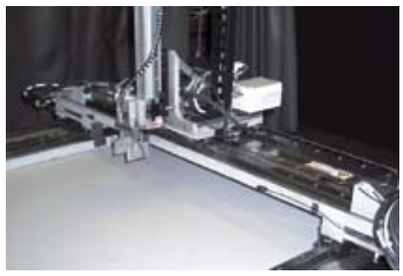
The line speed of 110 objects per minute is no problem for the ZFV since it is able to handle those cycle times per second.

The line speed of approximately 110 objects per minute is also no problem for the ZFV since it is able to handle those cycle times per second.

It's no surprise that, beside its functionality, one of the key reasons for L'Oréal buying the ZFV was its intuitive, easy-to-use product concept. Without needing specially-trained personnel, vision specialists or external support, L'Oréal was able to solve all the challenges presented by the application in an extremely short period of time.

Target! Teach! Go! A good example of how Omron's ZFV helped to ensure L'Oréal's brand image. ■

By Axel Kalf, Product Manager Vision, Omron Europe



Omron technology supports Mechatronics center of excellence at the Finnish university

Mechatronics is now an essential discipline in the industrial automation world since modern machines are using extensively motion and servodrive technology. The School of Information and Communication of Technology (ICT) Seinäjoki Polytechnic in Finland has cooperated with Omron Electronics Oy to build a modern Mechatronics center geared to provide a complete curriculum on this subject. ■

OMRONnews

OMRON BUSINESS SCHOOL

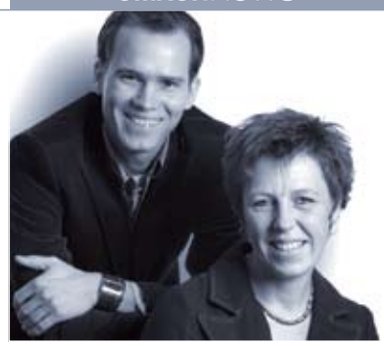
Omron Business School – because we care

For organisations to excel in the economically challenging global environment, it's crucial that they have the competence to accept change, and then adapt to it as a core part of their corporate culture, while maintaining an implicit focus on the needs of their customers. As part of Omron's commitment to this ethos, the Omron Business School (OBS) has been established.

The OBS is a dedicated European Training Centre. Its mission is to develop a coherent understanding throughout the organisation of what Omron deems to be of value to the customer, and how the company wants to approach and operate within its market.

Programmes focus on motivation, coaching, performance and change management – with external expertise used as appropriate. To date, the OBS has trained in excess of 150 employees – the response from whom has been extremely encouraging.

Roberto Maietti, European Sales Director, sees this success as a direct result of '...placing the emphasis on programmes which both enhance our corporate knowledge and competence and deliver value that employees can use on a daily basis. We strongly believe that the combined effect ultimately gives sustainable value to our customer base'. ■



Robert van Geffen
Web Content Coordinator

Corrie de Bruijn
New Media Coordinator

www.omron-industrial.com

Providing you with expertise online

Omron's new, improved website enables you to access our knowledge banks, whether you are looking for a new product or are already using an Omron solution.

The product selector on our homepage is your guide to the right product. Simply select from our product ranges and scroll down. Every click gives you more details.
Once you arrive at the correct product page, the information at your fingertips includes:

- Detailed product specifications
- Brochures, manuals, datasheets to download
- Dedicated software and accessories
- Application stories
- And much more....

If you have a question, or would like to request a quotation or brochure, simply click on the appropriate button on the product pages. We will follow up your enquiry quickly and efficiently.

New Download center
Sharing knowledge 24/7

A new Download center is now available from www.omron-industrial.com – around the clock and in your own language. What is particular about this essential tool is its reliability, user-friendliness and multi-language capability. Based on Documentum the new tool allows you to search documents using familiar terms for products. Hence entering terms like 'HMI', 'MMI' or simply 'Touch' will invariably lead you to the range of our HMI terminals. There you have all document categories (manuals, brochures, datasheets) and an overview of languages in which it is available. ■

Josep Marti
Product Manager
Omron Yaskawa Motion Control

With the ever-increasing demand for higher throughput, manufacturing processes nowadays operate more and more on a continuous basis. This has resulted in a marked shift from traditional "step-by-step" sequencing automation to "continuous" sequencing. This is now commonly called multi-axes control. In Omron we see it as our mission to popularise "continuous sequencing" and to bring it back to the customer level. Coming from that angle, it is hardly surprising that we designed Trajexia to be intuitive, transparent, open and functional.

Multi-axes control or just "continuous sequencing"

Easy and powerful motion platform

At the heart of Trajexia lies Omron's new TJ1-MC16 high-performance multi-tasking motion coordinator. It is specifically designed to meet today's most demanding continuous-path motion control tasks, controlling up to 16 axes over a Mechatrolink-II with independent control of position, speed or torque for each axis.

The use of the Mechatrolink-II motion bus significantly reduces wiring, space, installation complexity and breakdowns while increasing the system reliability and offering information transparency throughout the system.

A common challenge facing machine manufacturers has been the high engineering costs of developing motion-control systems that meet the varying requirements of different machines with differing needs.

With Trajexia, however, easy scalability from low to high axis-count creates the possibility to re-use motion solutions over several machine versions, providing significant savings in development time and costs.

Moreover, even once a machine is in the field, the flexibility of the Trajexia platform allows a wide range of production adjustments to quickly and easily meet constantly changing and sometimes unexpected manufacturing requirements with minimum or even zero system down time.

A single user-friendly software environment

What's more, programming even complex motion tasks is easy thanks to Trajexia's intuitive and powerful Motion Perfect programming software. The software includes dedicated commands for linking axes, e-cams and e-gearboxes.
Automatic recognition, control and configuration of drives via the Mechatrolink-II bus, moreover, allows easy set-up and maintenance – locally or even remotely via Ethernet.

trajexia you decide

Meeting end-user brand requirements

The controller also features built-in Ethernet and serial ports that provide direct connectivity with Omron PLCs, HMIs or any other field device.
And besides the Ethernet connection ready to implement future protocols standard in the industry, the controller provides other connectivity options including interfaces to popular fieldbuses such as PROFIBUS-DP and DeviceNet, enabling the system to operate with PLCs from vendors other than Omron.

...a marked shift from traditional "step-by-step" sequencing automation to "continuous" sequencing. This is now commonly called multi-axes control.

Best motion, best automation, best servo actuators

In short, with our new Trajexia motion-control platform, we've approached the challenge of motion control completely from our customers' point of view.

By developing a controller capable of translating simple user-friendly commands into the most sophisticated multi-axis-synchronisation commands, Trajexia puts our customers for the first time in total control of their machines.

Trajexia offers our customers the best in motion, a totally integrated automation system and the best-in-class drives from Yaskawa, whilst at the same time releasing them from the need for heavy in-house investment in proprietary solutions or continued reliance on specialist suppliers.
For today and tomorrow... the best choice is, of course, Trajexia. ■

SmartSlice I/O – Smart functions you can rely on

In automated production, high availability is absolutely critical to stay efficient. Smart control systems that can keep your process running are always a worthwhile investment.

The latest innovation from Omron is SmartSlice. This modular, remote I/O system is full of patented, smart features – making it the most intelligent and easy-to-use remote I/O system currently available.

SmartSlice will allow you to minimise engineering, troubleshooting and maintenance in your machine, line or plant, resulting in significantly reduced downtime. ■

Trajexia – the advanced motion controller that puts you in control

Trajexia is the new motion platform that offers you the performance of a dedicated motion system, the ease of use you get from an automation specialist and the peace of mind you have from a global player.

Trajexia puts you in full control to create the best machines today and tomorrow.

16 axes advanced motion coordination over a robust and fast motion link, Trajexia is a real multi-tasking controller capable of running up to 14 tasks simultaneously.
Advanced debugging tools include trace and oscilloscope functions, and it is open: you can use the built-in Ethernet, Profibus-DP and DeviceNet as options. ■

ZS-H – Multi-tasking at sub-µm accuracy

Highest demand in quality control can be satisfied by the ZS-H expansion of the popular ZS-L series. The ZS-H controller is capable to run up to 4 measurement tasks in parallel. Solve applications with the unique 1500 mm sensing head or ensure

0,25 µm precision at 0,05% linearity. You can be confident that the ZS solves your application because this family works reliably on almost all surfaces, from glass and metal to black rubber. ■

E5CSV - The easy way to perfect temperature control

The E5CSV temperature-controller series is the enhanced successor to our E5CS series. The new series shares many of the outstanding features that made its predecessor such a success – including easy setting up using DIP and rotary switches, a large 7-segment LED display and choice of ON/OFF or PID control with Self-Tuning.

However, the new E5CSV series offers much more, like an Auto-Tune function and multiple input types.
The enhanced display enables the E5CSV to show a larger range, extending up to 1999 °C.

The series also complies with the IP66 Standard and the depth has been reduced to a mere 78 mm. ■

ZFV Colour – Easy vision, teach & go

Omron's new ZFV smart vision sensor is an image processing system in a sensor format. It consists of two separate components, a camera head with an integrated light source and a processing unit.

The latest addition to the ZFV family is the ZFV colour sensor. Using this instead of the conventional monochrome sensor widens the choice of applications and increases the stability of your inspection. Through its automatic colour filter function, image contrast is optimised, making measurements more reliable. There are 7 colour filters in total; the one that obtains the most suitable contrast is automatically selected, so there's no need to worry about colour setting parameters.

Parameter settings and lighting control are available at the touch of a button. A "smart" user interface allows parameter setting using a few buttons and the built-in colour LCD monitor.

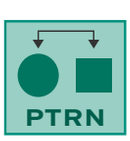
During operation, the display gives direct feedback showing results and images in real time. Easy vision – teach & go, for applications which can be solved in minutes – not hours or days. ■

Features at a glance

- Brilliant colour display
- Real-time result and image display
- Intuitive user interface
- One button teach – teach and go
- Up to 8 inspection tools
- Adjustable inspection area and distance
- Integrated, adjustable LED light
- Up to 250 inspections per second

Hue

Area

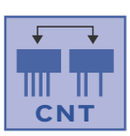


Pattern/Search

Brightness/defect

Character

Position



Edge count

Width

If you would like to know more about Omron's latest products, please see our Product News magazine or have a look at **www.omron-industrial.com**

Tim Foreman

Manager of Motion Control and Network Products Development, Omron Europe

trajexia

Combining the best to create the best in motion control

It was a real challenge that Omron's new Trajexia Motion Control Platform had to take just 12 months to develop from concept to completion. According to Tim Foreman, Manager of Motion Control and Network Product Development at Omron Europe, the development project's timeframe was indeed a challenge. But by drawing on the know-how and maturity of Omron's Development centres in Europe and Trio Motion Technology, the Trajexia development team was able, in record time, to combine the best of current state-of-the-art technology to produce something really special in motion control.

"Our aim was to develop a motion-control platform that first and foremost would be easy to program in order to eliminate much of the headache from motion control," says Tim Foreman, who was also responsible for leading the project. "In addition, the platform would focus on multi-axes synchronisation control specifically to meet the requirements of the European market where this type of motion control is more common."

To develop the new platform, Omron Europe teamed up with Trio Motion Technology. "Trio is acknowledged as one of the most respected specialists in advanced motion control and has worked successfully with us on several past projects, so it was a logical partnership," points out Tim Foreman.

The Omron touch

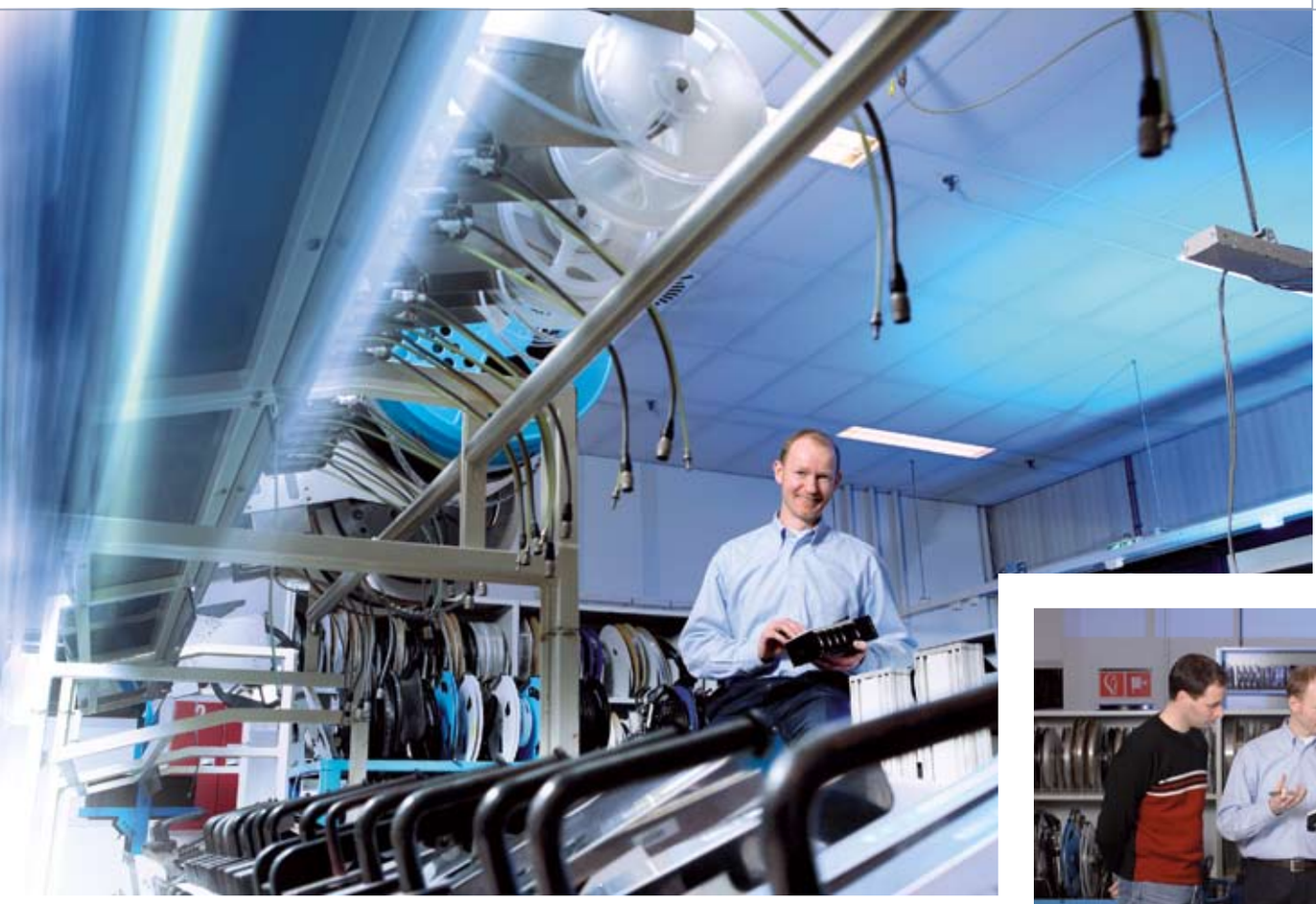
The springboard for the new Trajexia platform was the Trio motion controller with its 32-bit DSP and highly user-friendly Motion Perfect programming software. Omron Europe provided the 'Omron touch' by compressing the circuitry into a much smaller volume. "For this we drew on our CJ1 PLC series experience and on our experience of using miniature ball-grid array (BGA) components," explains Tim Foreman. "We also incorporated the advanced Mechatrolink networking capability developed by Yaskawa. So instead of driving the servos in the conventional way using pulsed or analogue outputs connected to each individual servo-driver, servos can now be daisy-chained and controlled through a single motion bus."

"... the development project's timeframe was indeed a challenge."

A modular approach was also adopted in which individual units, such as the motion controller and Mechatrolink network master unit controlling digital communication with the servo motors, could be simply clicked together and communicate via a common backplane. This was an important development enabling the system to be easily expanded by allowing additional units to be added and automatically configured into the system. Omron Europe has already developed a PROFIBUS-DP communication unit to enable the system to operate with third-party PLCs such as those from Siemens, and other field bus units are in the pipeline.

Inside, the platform incorporates a two-channel communication bus that includes a very fast data-exchange channel for motion control information and a slower communication channel for other information such as Profibus data.

"To speed up performance, we also designed the motion controller to operate with 2 or more network masters," points out Tim Foreman. "So the motion controller isn't forced to wait for a master to become free before new control data is transmitted



Trajexia engineers (from left to right): Frank Exoo, Tim Foreman, Marc van Look, Paul van Geldorp

through the network as would happen if only 1 master were used. As a result, system performance is twice as fast as it would otherwise be."

One software from One connection

One of the most important requirements laid down at the start of the project was that the Trajexia software should be intuitive and easy to use. This is summed up by the Omron slogan 'One software from One connection'. Omron and Trio working together developed a new software package combining Trio's Motion Perfect software with Omron's flexible and easy-to-use CX-Drive configuration software for servos and inverters.

Now, using the new Trajexia software you have just one package and one interface to do all the work.
"After programming the motion controller you can immediately configure each of the drives simply by clicking the 'Config button' to bring up the CX-Drive configuration program. Everything can now be done from your PC."

New styling

In order to give the Trajexia line a distinctive look yet keeping it within the Omron style, a new industrial design was commissioned based on a distinctive blue and grey housing style and a blue 7-segment LED display. The front panel design was also made more attractive by placing the LEDs very close together and using light guides to direct the light from the LEDs on the printed wiring board to the front face of the housing.
"Light leakage between the individual light guides was initially a problem which was solved with a novel design using back-firing LEDs mounted on the side of the PWB opposite the light guides," says Tim Foreman.

Quality FIRST with smart testing

To meet the tight timescale without compromising on Omron's legendary reliability, the development team also had to devise faster testing methods that could be used during development. Manual testing is too slow and automatic testing can be expensive. "For this a completely new and innovative testing environment was developed based on very simple instructions in MS Excel," says Tim Foreman. "The test machines read the instructions directly from MS Excel and execute them automatically.
The result is a testing system offering the same low cost as manual testing at a speed that is around 5 times faster."

"... using the new Trajexia software you have just one package and one interface to do all the work."

The future...

Even more than a product, Trajexia is also a motion platform. Hence it has a clear business and technology roadmap that offers not only ease-of-use for the customer but also ease of selection and configuration.
As Tim Foreman sums it up, "For our team, it was an exciting project and all I can say is WE ARE READY..." ■

trajexia

Trajexia for high speed sleeving machine

Totally owned by LogicPAK

When LogicPAK decided to design the new LPK sleeving machine, they insisted on working with a system that gives them total control on development, servicing and upgrading of the machine. This is key for safeguarding their unique know-how in high-speed sleeving machines. They decided for Trajexia.

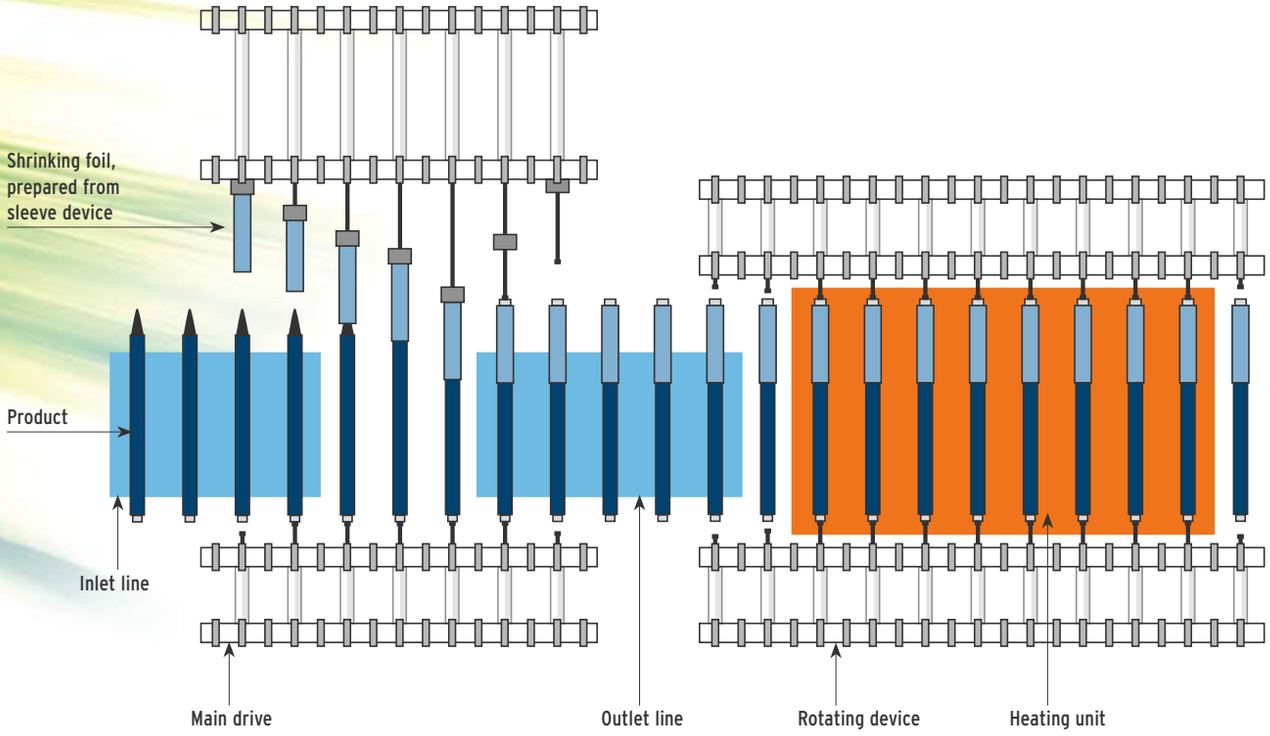
From the technical aspect, the LPK had to be developed in less than 6 months, it had to be smaller, and be able to handle more product variety with a change-over time reduced by a factor of 3.

A beautifully synchronised operation

Products are transported into the machine over an inlet line, at which point a sensor identifies their presence and triggers the sleeve device to provide a foil. After the product has passed the inlet line it will reach the main drive. While the product moves further through the main drive, the foil, which is provided by the Sleeve device, will be pushed over the product.
After this the product with the foil reaches over the outlet line the rotating device. The flow of the product through the rotating device goes beneath an electrically operated heating duct where it is heat-shrunk. The Sleeve process is now closed and final inspection can eventually take place.

Motion and vision fully integrated

To achieve 160 cycle/min a non-stop operation had to be adopted, thus all axes had to be perfectly synchronised. The machine uses 10 rotary and 2 linear servo-axes, all coordinated via Mechatrolink motion bus. On-the-fly orientation mechanism is performed by precise synchronisation of ZFV vision sensors and a sophisticated servo-based mechanism.
Final inspection is performed by an F160 unit. A CJ1 PLC takes care of the machine sequencing and management tasks while an NS screen is used for visualisation. The whole automation system is fully integrated allowing access to all devices via one Ethernet connection, thus achieving easy tele-servicing. ■



Safety Guide featuring "AN SEN MAN"

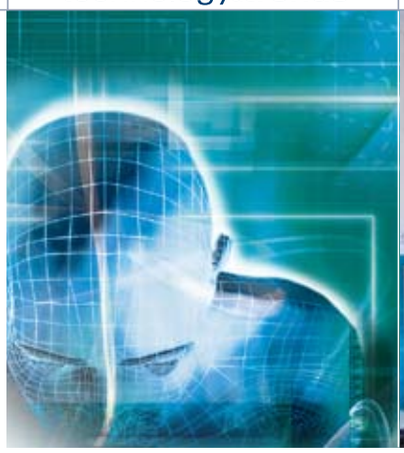
Your companion in machine safety

While machine safety has gained a wide recognition in the industrial automation world, it is commonly acknowledged that the safety language is still a reserved domain of the specialist. Unfortunately, users are either confused by product suppliers due to the tendency to sell more complexity than to genuinely advise, or are simply overwhelmed by abstract regulations when they turn to notified safety specialists. Recognising that, Omron created an easy safety guide having the "AN SEN MAN" character as mascot.

"AN SEN MAN" – your guide through safety regulations and applications

"AN SEN" is the Japanese expression for safety. It is a guide dedicated to gain transparency for non-specialists. It addresses safety issues related to users as well as machine operators. It gives you valuable advice when designing a new machine or renovating an old one and provides you with valuable background on safety standards and regulation. AN SEN MAN also covers international regulations like OSHA and standards from the US while giving hints and advice when exporting outside the EU.

AN SEN MAN comes in a 12-language CD and is freely available from your nearest Omron office. ■



Automation Competence Centres

Turning ideas into proven solutions

Today's machines as well as their related automation components and networking systems are subject to ever-changing and challenging development leaps. Understanding the complexity while at the same time getting the simplicity of operating Omron systems across to potential users is no longer just a matter of fairs and exhibitions. Seminars and showrooms have been a method of knowledge transfer in the past, but with its new Automation Competence Centre (ACC) project, Omron is making way for a new kind of industrial automation dialogue.

The end result will be a number of Automation Competence Centres distributed throughout Europe, connected and interfacing with our existing application centres. Here, visitors will be able to find solutions to any of their specific problems, or thrilling inspiration for their future automation tasks. With a single visit, you'll get a completely new perspective on possible savings and increased productivity opportunities.

Each new Automation Competence Centre will comprise a number of key elements.

A. Integrated Machine Area – Proof for Smart Platform Concept

This area will feature a real machine testing environment with three manufacturing stations: Retrieval, Production, Distribution. A key objective of each ACC is to allow a visitor to configure, commission, test and train in a hands-on way any process for which they want a smarter solution. Upon predetermination of your requirements, an environment can be set up to exactly match and evaluate your needs and present a suitable solution.

Omron's Automation Competence Centre project – a new kind of industrial automation dialogue.

Designed to make machine automation easy, Smart Platform provides seamless, drag-and-drop integration of all automation components in your machine. Moreover, built-in distributed intelligence in Omron devices means that you spend less time programming and troubleshooting. Visitors will be able to discover the many benefits of Smart Platform by experimenting with CX-One software, which is an integral part of the Smart Platform concept. They will be able to see for themselves how CX-One software offers a single connection point to communicate with, configure and monitor Smart Platform devices such as PLCs, HMIs, drives, servos and temperature controllers.

B. Expert Area – Knowledge transfer from a manufacturer's core competence

This area features the latest product presentations, including related application examples, plus an inspiring "expert" demo that demonstrates the possibilities of the latest – and future – technologies.

Actual applications in your business field, linked to Omron-specific

technology background and customer references accompany this knowledge transfer point in the ACCACC, so you'll be able to benefit from Omron's huge knowledge base.

The Technology part of the Expert Area is likely to continually change to keep up-to-date with the rapid pace of technological evolution, but topics already pencilled in are nano automation; high-resolution, line and wide distance laser systems; 100% inline machine vision systems; flexible open systems motion control; gradient temperature control and advanced process control; LCIA; and integrated safety solutions.

C. Lab Area

In the Lab Area, visitors will be able to try out products, test them and even build a possible solution for their specific requirements. Here, Smart Platform will be a major focus. This area will offer the opportunity to simulate your specific environment and find a solution for your application task. Equipment such as a conveyor bench, high-speed turntable, tripod system, multi-axis desktop system, motor set-ups etc. can be combined and networked or set up as stand-alone scenarios to demonstrate an individual solution. Omron specialists will of course be on-hand to provide specific support and advice.

Denmark first

The first ACC will be opened in Copenhagen, Denmark in Spring 2006, followed by centres in central Europe. Automation Competence Centres will be continuously networking with the existing Technology Application Centres of Mechatronics (Spain), Sensing (Germany) and Software (UK). ■

Omron remote I/O intelligence in any environment

Omron offers remote I/O solutions for industrial automation, suited for a wide range of environments. What they all have in common is built-in intelligence that will reduce engineering time, help to plan maintenance, and give you better control over your machine performance. You decide the network and the type of I/O to best suit your application.

From centralised to distributed control

The function of the Programmable Logic Controller is gradually changing from centralised control system to the brains and communication core of modern machines.

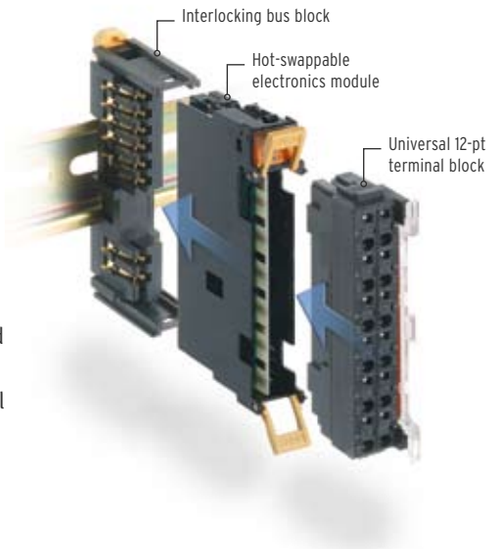
Traditional PLC I/O units are being replaced by remote I/O islands connected to the PLC by bus systems. The increase in initial hardware expense is easily outweighed by savings in wiring, commissioning and troubleshooting.

The change is also driven by a trend towards modular machine design. By splitting production machinery into logical sections, machine builders can adapt to customer requirements more easily. By linking standard machine sections by a single bus instead of conventional parallel wiring, such machines can be assembled rapidly from prefabricated sections.

IP20 In-cabinet I/O

For mounting remote I/O in a protected environment (i.e. inside machines or in control cabinets), IP20 protection is sufficient. In IP20 class, Omron offers compact I/O blocks as well as modular I/O systems for DeviceNet, CompoNet and Profibus-DP.

SmartSlice is Omron's modular remote I/O system. With bus couplers for DeviceNet and Profibus-DP, and other open networks like CompoNet and Ethernet/IP in preparation, it offers the most flexible and intelligent I/O solution yet. Its internal bus structure is based on CompoNet's CIP message system, allowing seamless integration with all CIP-based networks and with Profibus DPV1. This means that data in each individual I/O module can be configured and monitored through multiple network layers, without additional PLC or HMI programming.



Omron's remote I/O units offer:

- *The right protection for any environment*
- *Open bus interfaces to suit any application*
- *Clever design for easy installation*
- *Built-in intelligence for reduced engineering*
- *Smart monitoring for planning machine maintenance*

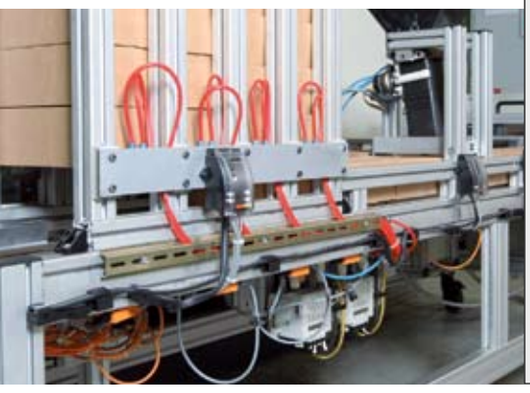
Theo Mattaar

Product Marketing Manager PLCs at the Control Business Unit Omron Europe

IP54 field-mount I/O

For field-mounting in relatively clean environments, Omron now offers an alternative to IP67 I/O in a new range of CompoNet IP54 I/O units. Their dust-proof enclosure can be subjected to the occasional splash of water, which offers sufficient protection in most areas where human workers operate. The IP54 housing design allows quick connection of standard I/O wiring, avoiding the need for prefabricated cable-connector assemblies as used in IP67 systems.

A new quick-connect network system makes it easy to branch off the main line at any place in the production line. With the freedom of topology that CompoNet offers, this makes the IP54 solution ideally suited for warehousing and conveyor applications.



IP67 harsh environment I/O

Omron's IP67 I/O line was developed in close cooperation with Japanese car manufacturers to withstand the harsh environment of car production lines. Resistant against dust, water and welding spatter, they are aimed at providing maximum availability under all circumstances. Rugged M12 connections and power supply through the DeviceNet cable provide fast and faultless installation.

Supported networks

Omron's main network architecture is based on CIP, the Common Industrial Protocol of DeviceNet. Its mix of cyclic and acyclic communication services allows fast I/O response plus reliable messaging for on-line parameterisation and monitoring of intelligent field devices. Omron also supports CIP-equivalent messaging over Profibus-DP, using DPV1 acyclic services.

To help you build best-in-class machines with minimal effort, Omron now introduces CompoNet, a new member of the CIP family. Ideal for networking finely distributed sensors and actuators, it combines easy set-up with sub-millisecond response and smart messaging.

Smart Platform

What all of Omron's I/O systems have in common is the intelligence built into each device. By distributing the burden of data pre-processing, signal validation and error logging, the programming efforts for PLCs, HMIs and supervisory software can be reduced.

Furthermore, all Omron remote I/O have features that help to plan machine maintenance. Each unit keeps track of its power supply status, the operation time of each single sensor or actuator, the number of operations, and even monitors machine response time locally.

With this data, Omron's Smart I/O can warn maintenance personnel that a machine part is about to reach the limits of its operational life. Maintenance can then be performed at a convenient time, thereby reducing the risk of machine breakdowns causing costly production downtime.

All this built-in functionality can be used without having to program a PLC or HMI, and without having to worry about data transfer across network transitions.

Using the Smart Active Parts and Function Block Libraries in Omron's CX-One software, access to this information is a matter of

One Software – One Connection – One Minute.

Smart Platform supports sustainable packaging

The Swedish company Ecolean was founded in 1996. The company focuses on developing functional, efficient and environmentally-friendly packaging materials for foodstuffs. In other words: "sustainable packaging".

Earlier this century, Ecolean developed a packaging material based on calcium carbonate, or chalk as it is commonly known. The chalk is bound by polyolefins to create a unique packaging material with very low environmental impact. For example, no chemical processes are necessary to extract the raw material, and only limited amounts of energy are required. Furthermore, Ecolean packaging is completely recyclable. It is easily sorted and can either be reused or burned as fuel to provide heat.

An extra customer benefit is that the packaging machines are smaller and less expensive than those of competitors like TetraPak, which is making them especially attractive in the markets of the Far East.

International growth

So successful is this product – which is sold worldwide to discerning customers in many segments of the foodstuffs industry – that Ecolean is now experiencing the exciting development of moving from being an innovation company to an international industrial company.

A professional management team has been brought in and the company has come under stable ownership. Ecolean now has 200 employees worldwide, with production taking place in Helsingborg, Sweden, and Tianjin, China.

Ecolean also develops complete packaging systems, covering everything from smart packaging to filling machines. The filling system for fluid foodstuffs is based on a highly practical stand-up bag, or soft-bottle as Ecolean calls it.

A second system is Lean®Cover, which is a wrap-around film for butter and margarine. Lean®Cover can be used in most existing packaging machines and provides consumers with the perfect packaging.

Total automation

Omron is a total automation supplier for Ecolean and provides an extensive range of products to automate Ecolean's packaging systems, all of

Confidential

Flying start for CX-One

CX-ONE Omron software for total machine integration sold globally over 15,000 licences in its first year of release.

Europe accounts for 50% of this performance in just 6 months after release.

"Our E L1 machine has a capacity of 3,000 packages/hour"

Jesper Solenlind

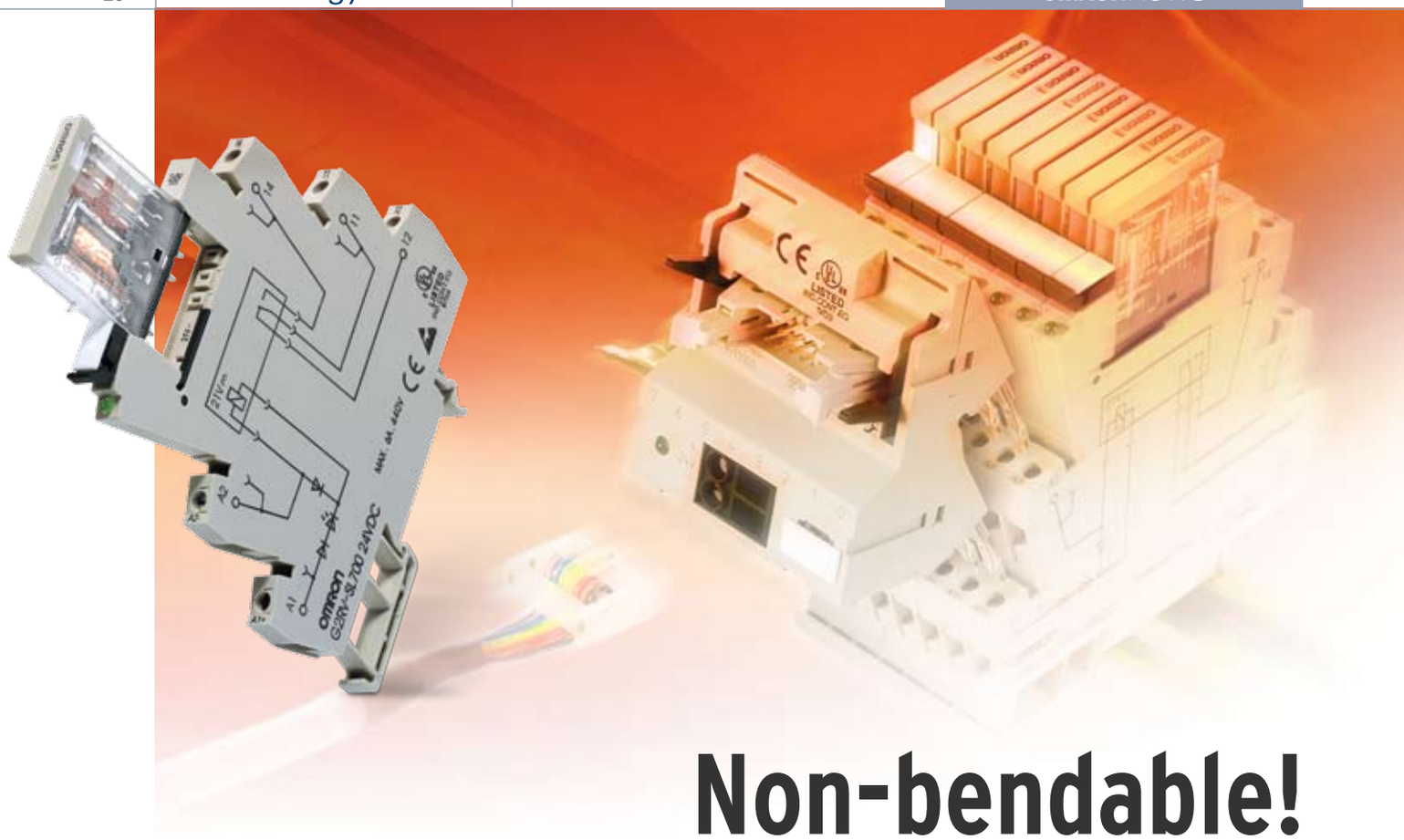
Automation Engineer
Ecolean

which are fully supported within the Smart Platform concept. Some of the operations controlled by Omron equipment are unwinding, positioning, correcting the filling process and printing.

An Omron CJ1-series PLC controls the whole packaging machine. With its credit-card size profile, CJ1 offers the best size/performance ratio in the industry.
An NS10 HMI monitors operations for the operators. A major advantage of the NS10 is that it enables operators to make use of Omron's unique Smart Active Parts (SAP), which are pre-programmed, pre-tested visualisation objects with embedded communication code. Bringing 'drag and drop' simplicity to HMI design allowed Ecolean to create additional HMI pages allowing specific screens to be created to assist with the configuration, commissioning and maintenance of each machine.

Other Omron products used at Ecolean include the Advanced Motion Controller which is used for the unwinding and positioning the rolls of material and ensuring accurate positioning for the filling and printing processes – all on a single controller and using Mechatrolink to network the servos, inverters. The use of networked motion control offers great benefits during the set-up and configuration stage of the machine – reducing the servo set-up time. Other devices used include advanced fibre-sensors, as well as ancillary equipment such as power supplies, relays and low-voltage switch gear.

Omron was chosen by Ecolean for a number of reasons such as high quality, excellent products and a competitive price. Also essential were the service and support capabilities from Omron's Swedish affiliate in Malmö. ■



Non-bendable!

First 6 mm relay with strong mechanical pins

Industrial relay re-invented

Invented 80 years ago, the relay is undoubtedly the foundation of modern industrial automation. With such a long history one could easily assume that the industrial relay is entering its natural phase of decline with market consolidation and product "commoditization".

Wrong! Omron, the pioneer and market leader in the field of modern relay technology, sees industrial relays as one of its core businesses and has heavily invested in developing a revolutionary line of 6 mm plug-in relays suited for industrial automation. "The G2RV is a clear indication from Omron that it intends to play big in this market," says Boudewijn Hoogma, European Product Manager.

G2RV likes it rough

With the industrial environment in mind, the G2RV is a real plug-in relay designed with strong mechanical pins that tolerate roughness.
Also remarkable is that both socket and relay have been designed from the start as one smart unit, taking into account labelling, marking, and ease of wiring with its push-in terminals.
In spite of its slim design, the G2RV includes all the features of a true industrial relay like mechanical flag, transparent housing, 6 A and 400 VAC switching voltage, and it sustains an electrical life of 100,000 operations.

Family concept

The G2RV comes in 6 different models covering input voltages from 12 VDC to 230 VAC. A wide range of accessories is available, ranging from labels and cross-bars to a PLC interface unit to reduce wiring. The G2RV will expand further to cover more applications and more models. ■

Features and benefits:

- Strong mechanical pin
- Slim design
- Indication (mechanical flag and LED)
- Screw and push-in terminal
- Max. current 6 A
- Max. switching voltage 400 VAC.

RoHS OK!

The European RoHS Directive on the restriction of the use of certain hazardous substances such as lead, cadmium and mercury in electrical and electronic equipment, comes into force from July 1st 2006. Its aim is to contribute to the protection of human health and the environment. Therefore Omron has decided to follow this directive even though our range of industrial products is currently outside the scope.

Omron is committed to going beyond the RoHS requirements and covers not only the 6 RoHS substances but over 220 other potentially harmful substances. Since 1999 Omron has been actively working on removing such hazardous materials from its products. This meant replacing electronic components by RoHS compatible alternatives in many of our products and changing some of our key manufacturing processes, such as lead-based soldering. This involved the introduction of new reflow-ovens to allow lead-free soldering.

Omron is one of the pioneers in environmentally-friendly product design and manufacturing and has built up extensive expertise in these areas. Combined with Omron's key focus on quality, this allowed us to introduce these changes without compromising the functionality and reliability of our products.

For our customers, all this means you can rely on Omron as an environmentally conscious supplier and we intend to comply with the EU directive before it comes into effect. We have thoroughly tested all products incorporating replacement materials, so you can be sure that our customary high quality standards are met.

By offering RoHS compliant products, Omron is showing its leading position in terms of care for the environment and good corporate citizenship. Another example of this approach is Omron's environmental charter. Initiated in 1994, it has been extended into the 21st century with Green Omron 21' which specifies a well-defined environmental action plan incorporating RoHS compliancy. ■

Omron manufacturing in the Netherlands - 100% green production since 2003!

Colophon & Contact

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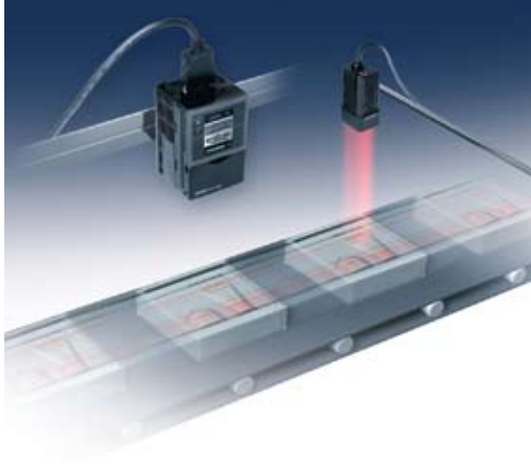

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