

technology & trends

magazine



**Quality delivered,
enjoyment received**



illy caffè: perfect espresso

Quality airtight coffee tins preserve the flavour for three years longer

Learn how Illy did this on page 8



Profinet: developed with you

Together with customer Vassnes we gave birth to the new profinet generation

More on page 4



100,000 horsepower in control

Kongsberg Maritime: a matter of quality, precision and matching the right people to each other

More on page 20

The chemistry of quality, and the chemistry of experts...

I was on a plane recently, reviewing some of the stories for this issue, when the lady alongside me caught a glimpse of the article illycaffè and the search for the perfect espresso. "Taste is subjective," she announced with certainty. Hmm. With 15 minutes to go before we landed, I tried to convince her that the great taste of illycaffè can be objectively measured.

I explained how the tasters smell the beans, recognize the fragrances of flowers, fruits and nuts, look for notes of chocolate, citrus, and vanilla. "So what?" she said. "I decide what flavour of espresso I prefer." No answer to that: "OK," I had to surrender: "Taste is subjective."

If the argument had been about quality I would have won. Wherever an illycaffè espresso is served, it has the same unmistakable flavour. illy guarantee this because they are in full control, with 114 quality checks between the arrival of the raw beans and the despatch of the sealed cans.

This does not come cheap. As Andrea Illy told The New York Times, "Our coffee is twice as expensive as the run-of-the-mill stuff, because our goal is perfect beans and zero defects." He calls this the 'chemistry of quality': quality in everything from the way the beans are grown to the way they are roasted, brewed and arrive at the consumer.

Of course, you can always buy cheaper. But consumers care about quality, and are prepared to pay for it: that's why illycaffè has been so enduringly successful. The article in this issue explains how Omron helps illy by matching our automation expertise to their knowledge of coffee production: I call it the 'chemistry of experts'. You can read more about this same pure chemistry as we explain how we work with other quality-first organisations like Vasness, Kongsberg, Deutsche Post and Frontera.

Happy reading.

Michel Min - Editor in Chief
European Marketing
Communication Manager



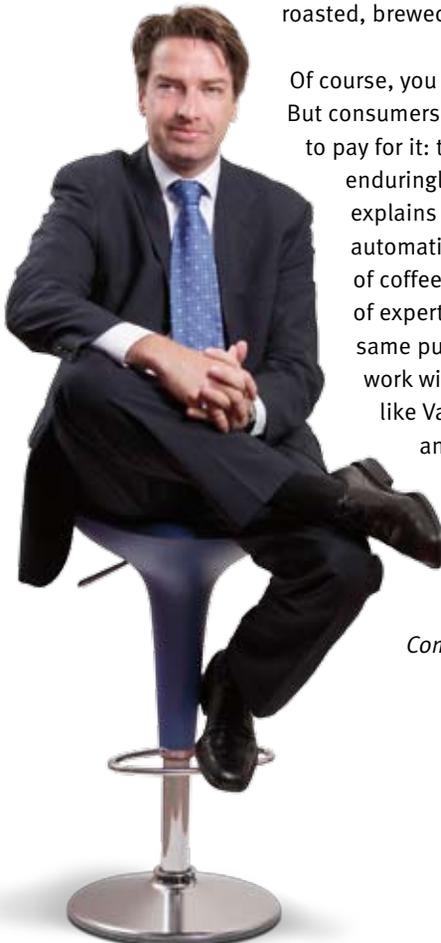
Illy was established in the same year as Omron: 1933.



Cover:

We have never met the lady on the cover, but from the moment she started enjoying her coffee, we had touched her life.

Our engineers made their humble contribution in the background by supporting the coffee producer with knowledge about industrial automation and especially about inspection, to ensure that the coffee arrives with the flavour as it was meant to be when it was brewed.





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Full of relevant application and case studies. Now available on-line.

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Product Development in Omron Europe Not just for, but with our customers

Introducing new technology is a challenge: more importantly, it cannot be done in a vacuum. Omron has always held the view that new products should only be developed for the benefit of our customers. The introduction of our PROFINET products is an object lesson in how we do this. We worked in close co-operation with long-term customer Vassnes Automation, who were planning a major change in the architecture of their automation solution. We talked to Igor Jovanovic, European Groupleader Network Development, about how this joint product-development approach worked.



*Igor Jovanovic
European Groupleader
Network Development*

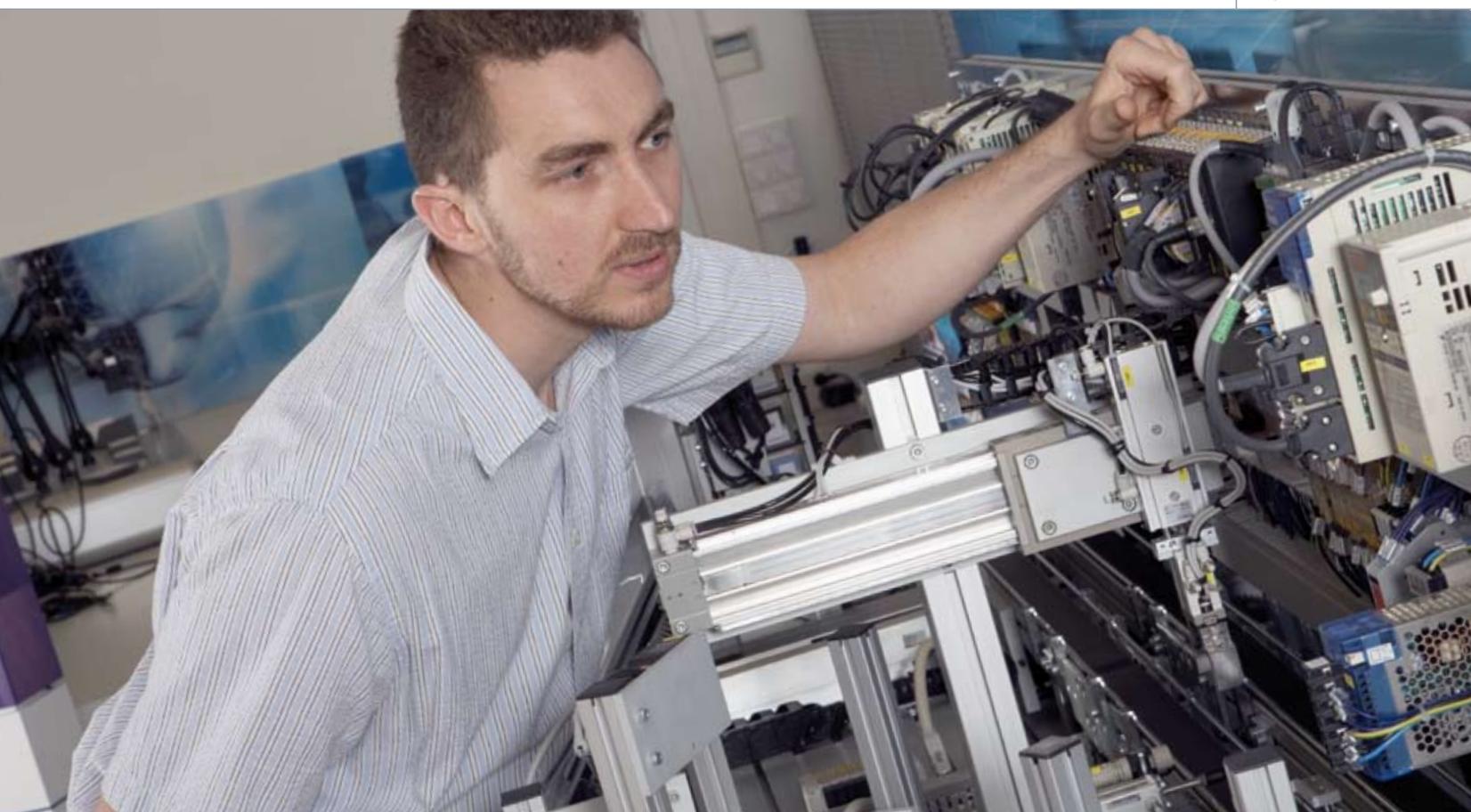
Omron started working on PROFINET products a couple of years ago, although at the time there was no concrete demand in the market. Then Vassnes Automation got in touch. "It was a unique moment," says Igor Jovanovic. "We at Omron wanted to maintain our position as frontrunners in the development of new Profinet products, while Vassnes wanted to prepare their network architecture for the future."

Vassnes Elektro is highly experienced in upgrading offshore rigs and similar installations, as well as in shipbuilding, ship repairs, and a variety of land-based activities. For its part, Vassnes Automation supplies instrument and automation solutions for these applications. Vassnes had worked closely with Omron for some time – one of their products, built with Omron

equipment, had had zero failure during the previous three years. DeviceNet was used as the fieldbus in that application, but Vassnes wanted to maximise the opportunities offered by improved industrial ethernet technologies.

An experienced customer

A team of engineers from Vassnes Automation came to the Omron Europe R&D centre in Den Bosch, the Netherlands, to talk about the development of PROFINET products to meet their future needs. "It was a real meeting of minds," says Igor Jovanovic. He has a glint in his eyes as he continues: "It's vitally important for our R&D department to have experienced sparring partners, people with the knowledge and the drive to challenge our development engineers, and push them to the limit."



The PROFINET standard offers many new features but the question was - how could they be used and would they work? In Vassnes Automation the R&D team was working with a customer with clear vision, and they had the added advantage of a real target application to work with. Personal contact with the customer and knowing exactly how each feature would be implemented created additional motivation.

Creating a real synergy of ideas

The co-operation extended beyond the development process. When visiting Den Bosch, Vassnes engineers were able to get answers to all their questions, because they could talk to Omron's product marketing, logistics and development teams. By discussing in one place all of their requirements for product features, software tools, product release dates, planning of new units, DNV and Lloyds' approval etc, a real synergy of different ideas was created.

The result of this co-operation is that Omron Europe R&D developed the PROFINET products with configuration

DTMs in an extremely short time. In addition, they provided very advanced features like network redundancy and redundant ring topology – while Vassnes Automation benefited from leading edge technology developed to meet their specific needs.

As Igor Jovanovic says, both companies recognize that the development process was the ideal experience. "We worked together from the beginning, learning from each other, improving both Omron products and Vassnes solutions. The benefits will extend way beyond this particular project, for us and for Vassnes."

"It was a real meeting of minds"



Building on tradition, focused on the future beyond the centenary

Omron is proud to be celebrating its 75th anniversary this year. In recognizing this milestone, we are also recognizing the contribution of our predecessors, whose hard work and aspirations are the foundation of our achievements to date.

However, our 75th anniversary can also be seen in another light - as a way station on our journey into the future, to our centenary and beyond.

May 1933 - Tateisi Electric Manufacturing Co. established in Osaka

Inspired by his friend's remark, Mr. Kazuma Tateisi came up with the idea to create an X-ray timer. It took Mr. Tateisi a month of trial and error to complete a sketch of the timer. In 1933, he delivered a handmade prototype to Nissei Hospital in Osaka, where it was tested and proved effective.

June 1964 - First fully automatic traffic signal in the world

Prevention of accidents and ease traffic congestion was requested. In response to an order from the National Research Institute of Police Science, Omron developed a vehicle detection and signal control system, the first of its kind in the world, which was put into operation at an intersection in Tokyo.

July 2006 - Trajexia Motion Control Platform ready for volume production

Omron officially unveiled its new Trajexia Motion Control Platform. This is significant as the development has been a wholly European project aimed at satisfying the needs of the European market, which focuses principally on continuous-path motion control.

Omron celebrates 75th Anniversary



With voluntary work and eco-initiatives

To mark the 75th anniversary that it celebrates in 2008, Omron is reaffirming its core corporate value, "Working for the benefit of society", through an extensive programme of voluntary work by the company's 35,000 employees.

Omron has a long-standing commitment to the creation of a better society, and each year our locations worldwide mark 'Omron Day' with activities in support of local charities and welfare organisations.

Eco-Volun programme

The 75th anniversary celebrations take this a stage further, with an 'Eco-Volun' programme of environmental initiatives and voluntary work, culminating in a substantial donation to nominated charities. Omron employees will take part in activities ranging from increased recycling and energy saving through to community and charity work.

Donation to Red Cross project

All Omron employees will be awarded 'Eco-Volun' points according to the activities undertaken. Based on the number of points gained by all employees, Omron Europe will use its donation to contribute to a Red Cross project for healthcare education in Malawi.

One of the poorest and most densely populated countries in Africa, Malawi has very high rates of diseases such as Aids, malaria, respiratory illnesses and nutritional deficiencies. The Red Cross is working with the Malawi Government to deliver a health education programme aimed at



pregnant women, with the aim of reducing childhood mortality rates. Omron Europe's 75th Anniversary efforts will be used to support this programme.

 www.omron.eu/75years

Roberto Maietti
President & CEO
Omron Europe B.V.

Deutsche Post

Millions of mail items, thousands of optical sensors... total reliability

It may be stating the obvious, but automated systems simply would not be the same without optical sensors. These indispensable signalling devices are used in a wide range of applications, each of which imposes different demands and requires different results. However, one characteristic is vital in every sensor application: absolute reliability over the longest service life. Without this, automated processes fail, production is interrupted and core functions are lost.

Deutsche Post AG provides an object lesson in the importance of total sensor reliability. Despite the growth in electronic communication over the past ten years or so, Deutsche Post still processes around 70 million mail items every day. This is a massive undertaking, and one that would simply not be possible without modern automation technology.

Keeping manual sorting to a minimum Deutsche Post uses fully automatic sorting for standard letters, but for special- and large-format mail, some manual sorting is still necessary. To keep this to a minimum, the majority of the mail distribution centres have semi-automated sorting based around roller conveyor systems installed by Interroll Automation GmbH.

The system has two sets of conveyors, one above the other: the lower one distributes empty containers to workstations where the post is sorted, while the upper one takes filled

containers to a loading station for onward distribution.

Reflective light sensors detect each container as it passes, and so that empty ones are distributed according to the requirements of each workstation. This prevents backlogs, while positioning containers less than 50 mm apart.

Total reliability is vital

Over 7,000 sensors have been used at Deutsche Post's distribution centres. These centres operate 24 hours a day, so total reliability is vital – one defective sensor can close down the system, preventing mail from being sorted. The system integrator chose Omron's tried and tested E3Z series of sensors, which have been proven in literally millions of different applications. The E3Z sensors are integrated into the conveyors, with a precisely-defined sensing area. This ensures that they only recognise the containers and are not affected by spurious reflections or by signals from frequency converters or mobile phones.

Although there is still a manual element to the sorting of non-standard mail items, the optical sensors ensure that as much as possible the process is automated. In turn, this makes a major contribution to Deutsche Post's reputation for reliable and on-time mail delivery.

Deutsche Post 

Deutsche Post is part of the world's largest logistics company, and handles over 70 million mail items a day in 82 mail distribution centres spread throughout Germany. It relies heavily on automated systems, and is a major user of optical sensors.



For over 70 years, illycaffè has set itself the target of producing the perfect coffee. This quest for perfection led the company to develop advanced production and testing lines, the latest of which inspects 20,000 catering packs of coffee a day.



Quality is a consequence of control, control and more control

 www.industrial.omron.eu/food



They say you need 50 grains to make the perfect coffee: but only one to ruin it. It's a maxim that everyone in the business understands, and it's been a guiding principle for illycaffè ever since the company's founder, Francesco Illy, invented the forerunner of today's espresso coffee machine in 1934.

This passion for quality is all the more important because illycaffè sells just the one blend of premium coffee. Made with 100 percent Arabica coffee, illycaffè has an unmistakable flavour that's the same wherever the coffee is served – and it is served in over 50,000 establishments in 140 countries worldwide.

At the company's production headquarters in Trieste, the company's quality focus has led to many innovative production control features. One of these – for testing

3 kg tins of coffee - has recently been redesigned with the help of Omron technology.

Guaranteed airtight

These tins are only sold to catering establishments, and are designed to go directly on top of the grinder-doser of a coffee machine. After filling, the pressurized tins must be tested to guarantee that they are completely airtight, which preserves the flavour for three years or more. The previous test system had been in use for 25 years and, as illycaffè's Giuseppe Cutuli explains, it was in need of a complete upgrade: "We needed to improve the productivity, and to sort out some issues that caused machine breakdowns," he says. "Testing is one of the most delicate phases of the entire production process. No tin of coffee leaves the production line without passing the onsite check for airtightness."



illycaffè and the search for the perfect coffee

The upgraded test has twin lines that operate in parallel around the clock, five days a week. The 3 kg tins of coffee are put into a tank, where they are put under pressure and analysed for leaks. The main test consists of submerging the tins of coffee in water. They are then viewed for a few seconds to make sure that there are no air bubbles, which would indicate a failure in one of the welds.

Handling is critical

Precise and efficient handling of the cans is critical, and the transport mechanism is controlled by three Omron Xtra series linear motors that move the cans throughout the process. Before the test system was built, the linear motors were trialled to make sure that the solution met illycaffè's criteria in terms of speed and accuracy. These initial tests convinced the company's technical staff that it would be possible to

improve efficiency, while maintaining the required accuracy.

On the Omron Xtra motors, the servo drive and axial control board are integrated, which reduces the size of the unit. As Giuseppe Cutuli explains, "This meant we could reduce the bulk of the test machine, as well as cutting transfer times and materials used. As a result, we were able to design the testing tanks around the coffee containers." The use of linear motors – which don't have the mechanical components used in traditional technology – also improved reliability, which was critical given that water is used in the test.

The new system tests twelve 3 kg tins a minute, doubling the previous output. It also makes the work of the operator much simpler, says Giuseppe Cutuli: "Beforehand, control depended entirely on the experience

of the operator, and that experience was difficult to pass on if the operator left or moved jobs."

Assured quality

Just as importantly, the system gives room for increased volumes in the future as illycaffè continues to grow its market. And with its chain of "espressamente illy" franchised coffee shops, growth seems assured. From a standing start in 2003, more than 150 of these cafés have been opened in 20 countries. All of them serve coffee delivered in the pressurized 3 kg tins reserved for use in commercial establishments - and quality-assured by the new illycaffè test system.

In each edition, Faouzi Grebici, Sales and Marketing manager, Omron Europe, talks about his observations regarding machine automation in Europe.



Talk about...

The biggest threat is not China but a lack of innovation.

The goal for European machine builders is to build the best machines, because low-cost manufacturing centres in Asia have the price advantage. Of course, it is easier to talk about innovation than to do it - differentiation calls for courage and entrepreneurship.

But many European machine builders are clear about the direction they need to take. In Germany most differentiate by innovative functionality. In the UK, machine builders add value in their entire business chain, from managing their intellectual property to offering additional services such as remote maintenance. In France and the Benelux countries, I've noted a trend for customer-specific solutions, not by reinventing but by combining existing modular machine functions.

Different approaches to innovation, but all ways of adding value. These businesses have innovation woven into their corporate DNA: I've seen this at first hand, because these businesses often invite us to think with them.

There was a good example of this recently, when we had a session with a builder of abattoir systems. Two sets of engineers, searching for creative solutions, never losing sight of the final goal, and constantly asking the key question: does it add value for the end user? I've no doubt that some of the ideas created that day, will successfully find their way to market.

Learning from our customers and putting quality first are the cornerstones of our values, and we are confident that we can help machine builders to innovate. Customers want suppliers they can trust, suppliers who don't treat them as a number. That's why, even with over 35,000 employees, Omron is a global company that refuses to be big.

Ideas become experiences

A competence center to test, try and touch machine automation solutions

Customers can now gain a better insight into the working of their applications, thanks to Omron's Automation Competence Centers (ACC), the newest of which opened in Den Bosch (Netherlands) recently. As well as testing their own applications, customers can see the latest applications in the field of sensor technology and industrial automation.

More than just a demo centre

The ACC is more than just a demo centre. It helps customers with the specific requirements of their applications and projects they hope to optimize in terms of productivity through real-time simulations and tests. With the help of Omron specialists, they can study, configure, activate, test, evaluate and put into practice their processes and thus choose the most pertinent and efficient global solutions. Visitors can find solutions to their specific problems, or indeed find inspiration for future automation tasks. Omron's Koos van Diest, senior engineer at Omron Netherlands, explains: "Customers can try out Omron products for themselves. For instance they can take their own electric motor and connect it to Omron's control system at the ACC. Here they can see

with their own eyes what is being quoted for and how it is applied in their factory." The ACC is also an ideal place for students. Van Diest: "Students can see the latest technology at work and get a feeling for the practical side of applications."

Three demonstration and testing areas

The area for integrated machines offers a real machine-testing environment for three types of manufacturing: extraction, production and distribution. It is fitted with 'Smart Platform' and enables customers to test-drive the CX-One software.

Then there is an area for experts, where new products and the latest technological innovations are demonstrated. For example, nano-automation, high-resolution long-range linear laser systems, 100% in-line vision systems, flexible and open motion control, gradient temperature control, advanced process control, LCIA (Low Cost Intelligent Automation) and integrated safety solutions.

Hands-on area

Finally, there is the laboratory area in which customers can try products and

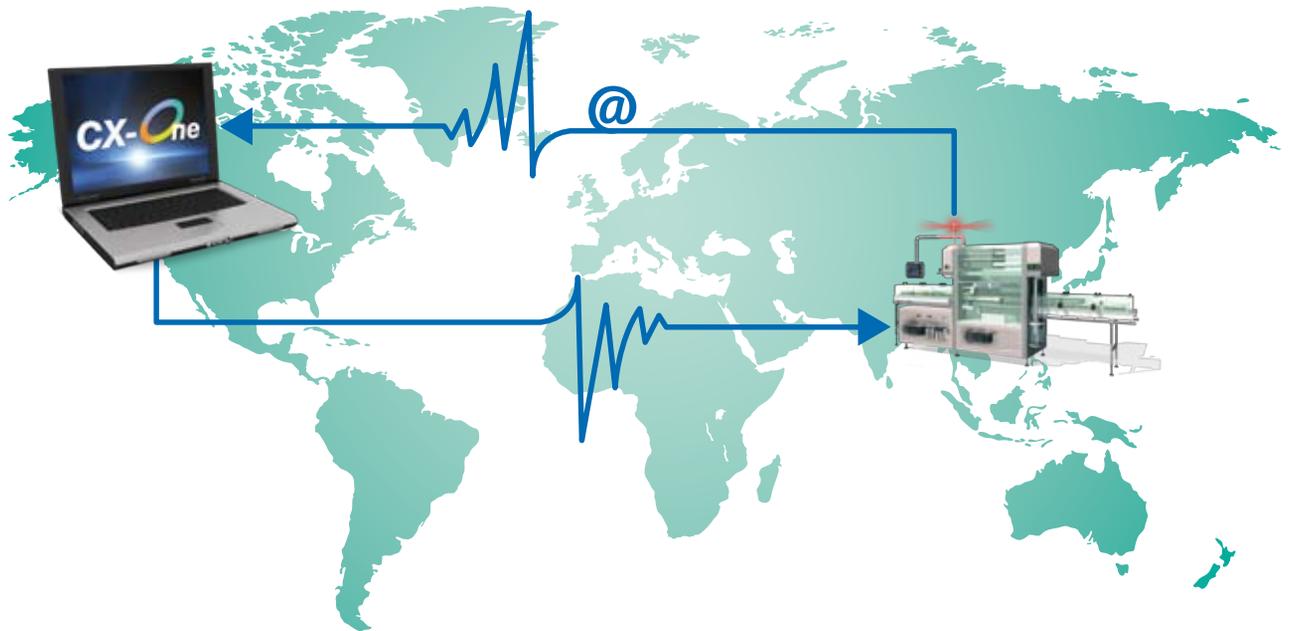
applications, test them, simulate their own environment and even build a solution using equipment like conveyors, high-speed revolving tables, multi-axis table systems or engine configurations.

Our engineers, your sparring partners

Closeness, availability and user friendliness are common benefits of Omron's ACCs, which also double-up as communications centres where customers can meet application engineers or partners. They can also use the video-conference facilities to speak directly with Omron product managers or research centers, as well with their own international sites and subcontractors.

👉 Virtual tour through our competence area and subscribe for a visit: www.industrial.omron.eu/acc





Machine maintenance goes remote

for every machine manufacturer



*Karl Walker
Marketing Manager for Automation
Products. Omron Electronics Ltd*

For machinery manufacturers, providing good support after installation offers a major sales advantage, and leads to greater customer satisfaction. The headache is in delivering this back-up without major investment in staff, facilities and equipment. Similarly, for OEMs, ensuring that a machine is properly serviced when it's installed thousands of miles from the manufacturer has always been an issue. Remote access, using readily available communication tools, means global support is a now reality for any machine controlled by a PLC.

The concept of remote service is not new: it's increasingly used for IT support, with an engineer having online access to a user's PC desktop to diagnose and solve problems. But this is relatively straightforward: PCs are fairly standard products and all operate in more or less the same way. It's much more of a problem with the specialised equipment that most machine builders manufacture or OEMs use.

Over the past year or so, Omron has been working on this problem, and has now launched a remote

connectivity solution that enables remote service and maintenance support to be provided using standard IT tools and mobile technologies. It is designed around easily installed, pre-written software function blocks that provide secure access to the data on any machine controlled by a PLC, from anywhere in the world.

Comprehensive two-way communication

Using standard broadband routers, GPRS/3G modems or good, old-fashioned dial-up internet access, the system allows comprehensive

two-way communication with a machine. With the access that this provides, engineers can review machine status, propose preventative maintenance, diagnose problems and install software updates.

There are four ways in which engineers can communicate with the machine:

- 1** Two-way SMS communication enables error and warning messages to be sent by text from the machine to a mobile phone. The machine could, for instance, be run or stopped using text messages, and the values within the PLC can be monitored or changed as required.
- 2** Emails from the machine to the engineer's inbox give diagnostic information and status reports.
- 3** Remote web-browsing allows access to the machine over the internet. This gives an engineer full control over the machine, using a standard web-browser.
- 4** Remote monitoring and programming allows software to be updated and individual components, such as drives, HMIs, motion controllers, etc., to be accessed and reconfigured as required.

What this means in practice is that any machine manufacturer can now offer their customers extended service contracts, secure in the knowledge that the contract can be operated without the need for expensive international travel costs or an on-the-spot service organisation.

Immense user benefits

Engineers are able to diagnose and in many cases fix faults wherever they are: from their desk, on the road, or even from home. The benefits to the end-user is immense: peace of mind, minimised downtime, fewer production hold-ups and problems solved very quickly – without waiting for an engineer to arrive on site.

A working example of the remote communications system has been installed at Omron's UK offices, on a demonstration bottling machine. This can be accessed through Internet Explorer or most other web browsers, and allows users to take control of the installation using the virtual HMI. There is even a live camera to show what is happening on the demonstration bottling machine.

As the software takes its feed from the PLC, the remote connectivity system can be used on any machine, even ones that don't currently use Omron PLCs. Using Omron PLCs and other automation hardware gives much more comprehensive functionality, of course, because of Omron's seamless "Smart Platform" concept.

In these and other ways, remote connectivity opens up entirely new possibilities for machine makers, in terms of improved customer service, lower warranty costs and enhanced efficiency. And the benefits extend to the end user: remote access enables problems to be addressed more quickly, reducing downtime and increasing productivity.

Remote connectivity offers a clear path to onsite support in the future. Machines can be interrogated, controlled and updated without the need for an engineer to be there. And even where complex issues arise that require the presence of a technician, the ability to diagnose the problem and develop the solution remotely will ensure that the work is done quickly, efficiently and at minimum cost. In the world of global markets and manufacturing, remote connectivity is, quite simply, the future.

**“Updated without
the need for an
engineer to be there”**



Product News



E3FZ photoelectric sensor

Object detection - up to 10 times faster installation

Equipped with the modular sensing technology of Omron's most popular E3Z photoelectric sensor, the E3FZ combines reliable object detection in a compact housing with fast and simple mounting. The secure-click snap mounting technology provides fast installation in two easy steps and up to 10 times faster than conventional square sensors.

Features and benefits:

- Short M18 sized housing for reduced mounting space
- High-power LED for enhanced sensing distance
- Secure-click snap mounting for fast installation

With the innovative SecureClick snap mounting system, the new E3FZ photosensors are typically ten times faster to install than ordinary square sensors, and three times faster to install than conventional cylindrical sensors. By dramatically reducing the time needed for installation, the new sensors provide big cost savings, especially on large installations. The novel mounting system used with E3FZ sensors completely eliminates the need for nuts and screws – the sensors simply click into place in a suitably drilled hole. Despite its speed and ease of use, however, the SecureClick mounting system has been extensively evaluated and shown to be secure even when exposed to high levels of vibration.

Omron's new high-performance sensors feature the popular space-saving short-body M18 cylindrical format, and incorporate high-intensity LED light sources for enhanced sensing range. They are manufactured to close tolerances with minimal optical axis deviation, which guarantees ease of alignment. Speedy installation, simple set up and very competitive pricing make the new units particularly attractive for use in OEM, materials handling and other demanding high-volume applications.



NE1A-L

Stand-alone safety controller

Scalability and transparency in stand-alone safety control. Based on the DeviceNet safety controller family, the new NE1A-SCPU-L stand-alone controllers cover small and mid-sized machine applications.



CP1L

Compact machine controller now with LCD option board

The LCD option board is an easy to use monitoring plug-in module with function keys and can be used with CP1L and CP1H CPUs. In the monitoring mode it can display PLC data, error messages, or user-specified messages.



V680 RFID series

Identification made for flexible integration

Omron's RFID controllers, the V680 series, offers a wide choice of controllers, communication interfaces and antennas, as well as RFID controllers for direct integration into the CJ1 or CS PLC systems.



H7BX

Multi-function pre-set counter with large display

The new H7BX succeeds the popular H7BR pre-set counter. Its DIN 72 x 72 mm housing has a 6-digit double display measuring 13.5 mm in height with 9 mm high digits for the set value.

Product News

If you would like to know more about Omron's latest products, please see our Product News Magazine or have a look at www.industrial.omron.eu/product_news



Failure is not an option



Dairy for life

For the world's largest exporter of dairy products

Omron inverters are among the key components of a new production unit in Chile where five tonnes of milk powder are produced every hour. Reliability and a fast, dependable service on site were key factors in selecting the equipment.

Producing over two million tonnes of dairy products annually and exporting 95% of its production to customers in 140 countries, Fonterra, the New Zealand-based multinational dairy company, is the world leader in large-scale milk procurement, processing and management. It turns 13 billion litres of milk a year into more than 1,000 different products for the international food industry. In Chile, Fonterra's market leading dairy products brand is Soprole®, a daughter company of Fonterra.

Firm deadline

A fire at the Soprole Osorno milk-powder production unit 1,000 km south of Santiago forced the company to build a new installation from scratch. To give a rough idea of the size of the installation, there are more than 350 pneumatic and electrically controlled valves and more than 100 instruments such as flowmeters, and over 30 kilometers of wiring just for the electric motors. Market pressure and contractual commitments forced plant management to set a firm deadline for the plant to become operational again. Keeping to this deadline is critical because daily deliveries of 800,000 litres of milk (equivalent to a daily output of 100,000 kg of milk powder) to the plant, was expected soon.

Reliability key

In conjunction with the project leader and dairy plant engineers Relco

Wet & Dry, and system integrator JB Besturingstechniek B.V., Omron contributed 30 inverters ranging from 1.5 kW to 600 kW for controlling 30 of the 90 fans, pumps and motors at the new plant. The large inverters will control a 600 kW motor driving a huge (3m) MVR (Mechanical Vapour Recompression) fan used in the evaporation stage of the manufacturing process. "The customer asked Omron to supply the 600 kW

"Downtime will cost a minimum of 100,000 dollars"

motor as well as the inverters because of its reputation for reliability and excellent track record in both fast and dependable aftercare," confirms

Robert Barten, Omron's Field Sales Engineer Industrial Projects based in The Netherlands. The insistence on products with utmost reliability is quickly brought into perspective when you consider that any breakdown causing downtime will cost a minimum of 100,000 dollars. A local and dependable service is very important for Soprole and it was an essential part of their selection criteria. Omron Chile understands the predicament of the customer and is able to offer the required service.

Tough environment

JB Besturingstechniek is the system Integrator who was responsible for the total electrical engineering for Soprole, using Omron inverters. "We've chosen Omron inverters not only because of their superb control, but also because of their proven reliability in extreme temperatures



About the system integrator: JB Besturingstechniek is one of the largest industrial automation specialists in the North and East of the Netherlands. They develop, programmes and build control systems for machines and process installations.

 More info: www.jbbesturingstechniek.nl.

and poor ambient conditions,” confirms Arthur Kamerbeek, project manager, JB Besturingstechniek. “A further advantage in Omron’s favour is the broad portfolio, which ranges from 0.25 kW right up to 1200 kW. Another essential requirement was that all inverters could be controlled by a Profibus DP connection because the total process is controlled by a PLC equipped with a Profibus DP master.

Product quality

For the end customer, Soprole, it is vital to maintain the quality of the product for which the percentage of fat is particularly significant and for which standards and controls are applied worldwide. No deviation from the stipulated 26% fat is tolerated. So, perfect control is the name of the game. And it is required 24 hours a day, 365 days a year. Failure is not even an option.”



Fan control critical

In the four-stage production process, raw milk, skimmed milk and lactose are first mixed to a predetermined fat and protein content. The resulting blend is then fed to the evaporator containing the MVR fan, which is a key component of the entire installation. This creates a pressure differential and hence a temperature differential that causes evaporation. The MRV fan saves energy by reducing steam consumption in the evaporation process. Control of the fan is critical because it is required to provide a steady evaporation rate. From here, the miniscule evaporated milk droplets pass under high pressure through the 30 m high spray dryer in which they are converted to powder at an internal temperature of around 200 degrees. Then they are transported by vacuum to storage silos.





It's what we make, it's what we know

A new feature on the Omron website will give visitors a real insight into Omron's expertise across a range of business sectors. The Expert Areas will show real solutions to real problems.

Recently visitors to the Omron website got access to an entirely new and very versatile feature. 'Expert Areas' are being introduced in recognition of the fact that most people come to the site with a problem, and that they are looking for solutions rather than for a specific product.

Over the years, as the website has developed, it has included news about product developments and product applications, as well as case studies about users of Omron systems. Now the Expert Areas will draw all of this information together, to show customers and potential customers what expertise Omron has in their particular sector.

By the end of 2008 there will more of these Expert Areas on the website, dealing with the automotive business, SEI (Semiconductor, Electronics Industry & Photo Voltaic), and food processing/packaging. Within each area, users will be able to look at a specific process, and within that process they will find related applications and case studies.

Computerised model of an automotive plant

The first Expert Area to go live was the one for the automotive business. The opening page of the Expert Area that features a computerised model of an automotive plant, with six tabs giving access to the separate processes: press shop, body shop,



➔ Become inspired on the expert area:
www.industrial.omron.eu/expert_area

paint shop, powertrain, assembly and 'first tier'. The 'first tier' includes applications that are not specific to one particular process in an automotive plant, but are relevant to the processes of the first line suppliers.

When a customer looks for information under one of these tabs, the 'roof' of that particular part of the automotive plant is removed, and a series of applications and case studies is presented. Robert van Klei of Omron's Strategic Business Team says that users will be able to tap into Omron's blend of knowledge and experience in industry-specific sectors.

"We don't anticipate that people will always find the precise answer to their particular problem, though it will be good when they do so," he says. "Instead we will demonstrate our know-how in the particular industry, and solutions to very specific and detailed problems."

Easy-to-find information

An important focus in the development of the Expert Areas has been to concentrate on solutions, and to provide links across the whole site, so that it is easier for visitors to find the information they need. As Robert van Klei says, "It doesn't matter where you are in the Expert Area, whether

you are looking at an application or a case study, and it doesn't matter what industry you are looking at, there will be links to other applications or case studies, so that you will always be able to find what you are looking for quickly and easily."

On each page of the Expert Area there will be links to contact forms, which are designed so that enquiries go as fast as possible to the appropriate business group in Omron Europe.

Robert van Klei: "Someone who comes to the Expert Area is looking for answers, and we need to give them as soon as possible. The contact form will identify the enquirer's country of origin and area of interest, and the system will deliver

that enquiry to right part of our business in minutes."

In the longer term, users will be able to register to be informed immediately when new applications/case studies have been uploaded, so that they always have the most up-to-date information about Omron's developing expertise. If knowledge is power, the Expert Area is a power tool for the automation and control business.

"If you want to know how, visit: expert area"

August 1970 - Omron original future prediction method SINIC theory introduced

When Omron began to focus on the future development of society, science and technology, Kazuma Tateisi established a study group giving rise to the SINIC (Seed-Innovation to Need-Impetus Cyclic Evolution) theory, which was presented at the International Future Research Conference in 1970.

September 2007 - European introduction of vision system with user guidance

The all-new Omron ZFX vision sensor had its European launch in Strasbourg in September. A demonstration of how the interactive menus on the ZFX touch screen allow intuitive set-up was so well received by the press that never has a product introduction received so much media coverage.



October 1987 - Grasping the intangible development of fuzzy logic technology

With the aim of creating harmony between people and machines, Omron developed fuzzy logic as a next-generation core technology. It was an unexplored area, but Omron's achievements include the world's fastest fuzzy controller (1987), an ultra-high speed multitask fuzzy controller and the world's first fuzzy microcomputer chip (both in 1988).

February 1960 - World's first non-contact switch developed (proximity switch)

As automation spread throughout the globe, market demand arose for precision switches capable of withstanding more than 100 million cycles. Mr. Tateisi believed that this could only be achieved with a contactless (solid state) configuration. A team of seven young researchers (the "Seven Samurai") successfully developed his 'dream switch'.



100,000 horsepower in full control



KONGSBERG

“We’ve found no-one to match Omron on quality and customer service”



➔ Learn more about the R88-MCW151 servo based motion controller at: www.industrial.omron.com/product_catalogue

To compete successfully in world markets, it is essential that every link in the supply chain is optimized, and the marine industry is among the most challenging in this respect. Competition among suppliers is intense, so when one company achieves a 40 per cent market share, it must be doing something really well. Such a company is Kongsberg Maritime.

First connect the right people

Since 1965, Norwegian company Kongsberg Maritime’s department of offshore and marine products has been supplying solutions for controlling onboard machinery, delivering its first bridge control system back in 1979. For several years they have relied on Omron as a primary supplier, because these applications demand the highest quality of products and designs. In addition, Omron’s local sales engineer for the past ten years, Jan Valter Johansen, previously spent several years as an electrician on cruise ships. As a result, he speaks the same language as Kongsberg Maritime’s engineers, understands their requirements intimately, and works closely with them on new and ongoing projects.

Kongsberg Maritime’s latest generation of equipment for controlling a ship’s main engines and monitoring the engine room is the AutoChief 20. It was introduced in 2004 and has been extremely successful. Kongsberg has about 40 per cent of the total market for this kind of equipment, delivering 475 systems in 2007, of which 380 were Autochief 20s. Bente Melås, who led the team that developed the AutoChief 20, anticipates that they will deliver 750 systems in 2008.

The majority of systems are installed on merchant vessels, in particular container ships and oil tankers. Most installations are carried out at yards in countries such as Korea and China, but development and quality control is the responsibility of the offshore and marine products department in Horten, Norway. As Bente Melås explains, “Because



of the long distance and the fact that we are dealing with different cultures, we rely on suppliers who offer quality products, and who will deliver in time. Over the years, we've found that Omron is a supplier we can depend on."

Harsh environment

Two Omron products are used in the AutoChief 20: proximity switches which monitor speed and direction, and a MCW151, a powerful servo based controller which controls the fuel injection to the two-stroke main engines, which have a maximum speed of 100 rpm. "Although these engines don't operate at high speeds, it is extremely important that they run correctly," says Bente Melås. She continues, "Running at too high a speed increases the amount of fuel used and in the worst case can cause a breakdown. Given that these engines output at anything from 10,000 to 100,000 horsepower, you can imagine the cost if that happens."

The Omron products operate in an extremely harsh environment, with a considerable amount of vibration, while high temperatures and humidity

can also be challenging. All system solutions and products must fulfill the demands of classification agencies such as DNV and Lloyds.

Price, quality and customer service

Very few suppliers are able to deliver knowledge and components with the functionality that Kongsberg Maritime demands. "Omron was among the first companies to offer servo-control systems," according to Bente Melås "and our experience has been very good. We continuously monitor the market for products that we can use in our applications, but we've found no-one to match Omron on price, quality and customer service."



Omron Italy, still a pioneer after all these years

As the starting point for Omron Europe, Omron Italy has long been a pioneer of new initiatives. The company's highly successful strategic sales team shows what can be achieved through total customer focus.

Italy is where in a way it started for Omron Europe, with a joint venture that was set up with an Italian company, Carlo Gavazzi, in 1974. The joint venture developed into a major pan-European organisation of which Omron took full ownership in 1986. Omron Italy was one of several national Omron companies set up at that time, taking on staff from the joint venture.

Maurizio Poli is Omron Italy's general manager, and he says that the company's maturity in the market has given it the self-confidence and the critical mass to respond efficiently to market demands. "We recognised five or six years ago that we needed to specialise if we were going to serve the customers better, and we split the sales team into product groups: Automation & Drives and Sensing & Controls. We'd already organised technical support along these lines so it was a logical step. It meant customers could benefit from our detailed product knowledge."

"Our field engineers are recruited from the industry they serve"

Work harder and smarter

Even so, it soon became clear that in order to build the business, it would be necessary to become even more market focused. "We've about 25 percent of Omron's business in Europe," says Maurizio Poli, "which is very comfortable - but it means we feel the responsibility of our size and we have to work harder and smarter to grow the business even further."

Three years ago, Omron Italy set up a strategic team tasked specifically with approaching new business, built around a group of specialist field sales engineers, each of whom had a relatively small number of accounts and potential customers. The logic is that the engineers can spend more time with the customers, talking not just to designers, but to production managers, purchasing and finance, sales, marketing and general management. A team of 40 Field Application Engineers provides on site support, helping customers to develop new applications to meet their specific needs.

"All of our field technical people are recruited from the industries they serve," says Maurizio Poli "so they know the customer's business. They become like consultants, building up a high level of trust and getting involved in the design and specification process at the earliest stages. And the customers seem to appreciate that involvement."

Learning about future trends

A major advantage of being close to the market is that the Omron Italy team learns much more about future trends, and is able to help and advise customers as a result. It's clear, for example, that motion control is becoming the core technology in the packaging industry. In addition, end users are demanding much faster completion times from order to installation. As a result there has been a move towards modular designs for machinery, in which motion control has an important part to play.

There have been several notable successes as a result of Omron Italy's specialisation. Schmucker is a manufacturer of packaging machines based in Trieste, and a well established Omron customer. With Omron Italy's support, Schmucker developed machines supplied to Nestlé for production of Nespresso capsules for home coffee makers. It was one of the company's first sales to Nestle and an important breakthrough for them into a difficult market.



*Maurizio Poli
General Manager Omron Italy*



At the other end of the scale, Evolut is a successful manufacturer of robotic systems for steel/metal and automotive industry, but not – until recently – an Omron user. The Omron Italy's strategic team worked with Evolut to develop robotised machines for highly specialised applications, using advanced sensors, motion control systems and safety products.

By getting and staying close to customers, a high level of trust and confidence is developed. "It helps that we grow people within the company," says Maurizio Poli, who recently celebrated 20 years within Omron. "Almost all of our senior managers have been with Omron for a good few years. The customers know us, and we know them. So we can identify with their issues, and come up with solutions."

"Customer focus" can be seen as a rather glib phrase, but when it means something – as demonstrated by Omron Italy's approach – it can translate into real success. For Omron, and for its customers.

Rescuing automation from complexity...

With the efficient operation of modern machines, and processes and production lines relying on increasingly large numbers of sensors and actuators, the need has emerged for an alternative approach to device-level networking. Theo Mattaar, product manager field networking, describes how CompoNet meets this requirement, delivering high performance and increased flexibility, whilst reducing system complexity.



...CompoNet tomorrows hero

Seamless networking between the highest levels of the enterprise and the lowliest plant floor device holds the key to efficient manufacturing, whatever the industry. Open network technologies, such as DeviceNet and EtherNet/IP, have been key drivers in helping manufacturers to meet this need.

These technologies provide:

- Effective enterprise resource planning,
- Manufacturing resource planning,
- Predictive maintenance.

At the same time, however, the increased automation of plant floor has seen a dramatic rise in the numbers of sensors, actuators and other control devices used on and around machinery. We may not necessarily class these as 'smart' devices in the modern sense of the word, but they are far from simple on/off control components, and the requirement to set and monitor perhaps a few hundred parameters would not be classed as exceptional.

The need, then, to connect hundreds of such devices to the network in the most efficient manner, and to transfer data to and from them at high speed has become a real challenge in the automation environment. To meet this need, in 2006 Omron and ODVA introduced a new field network standard – CompoNet. Based on the Common Industrial Protocol (CIP) as used in DeviceNet and EtherNet/IP, and thus providing seamless integration with these sister technologies, CompoNet completes the picture for automation by providing an effective extension to the network architecture from plant level

to sensor/actuator level, dramatically simplifying the set-up, commissioning and maintenance of automation systems.

Field network characteristics

Networks linking today's field devices to the control system must support fast and reliable cyclic data exchange as well as acyclic message communication. This is certainly within the capabilities of networks such as DeviceNet, but as the number of field devices on the network increases, the network performance will drop. DeviceNet, for example, is optimized to carry byte-sized data between a few dozen highly sophisticated devices. It allows fine-tuning of the communications to serve simpler sensors and actuators, but additional configuration and commissioning effort is needed.

CompoNet, by contrast, has been optimized from the outset to carry much not only word- but also bit-sized data at far higher speeds between hundreds

of devices. It combines ease of set-up, fast and reliable cyclic communication with CIP-based messaging in a single, highly effective network.

Simplicity is achieved by a restricting CompoNet to single-master operation, and limiting the total amount of input and output data to 80 words per direction. This results in strict timing with fixed cycle times as little as 1 ms per 1,000 I/O points. Messaging is bandwidth-restricted, giving priority to cyclic communication.

Whenever large numbers of sensors, actuators and other field control devices are involved, wiring time, effort and costs become a major

consideration. CompoNet addresses this through the use of non-shielded 2-wire cable, making installation quick and cheap. There is also the option to use standard unshielded flat cable and IDC connectors, saving on installation time. These innovative cabling strategies also minimize the chance of mis-wiring, so reducing commissioning time.

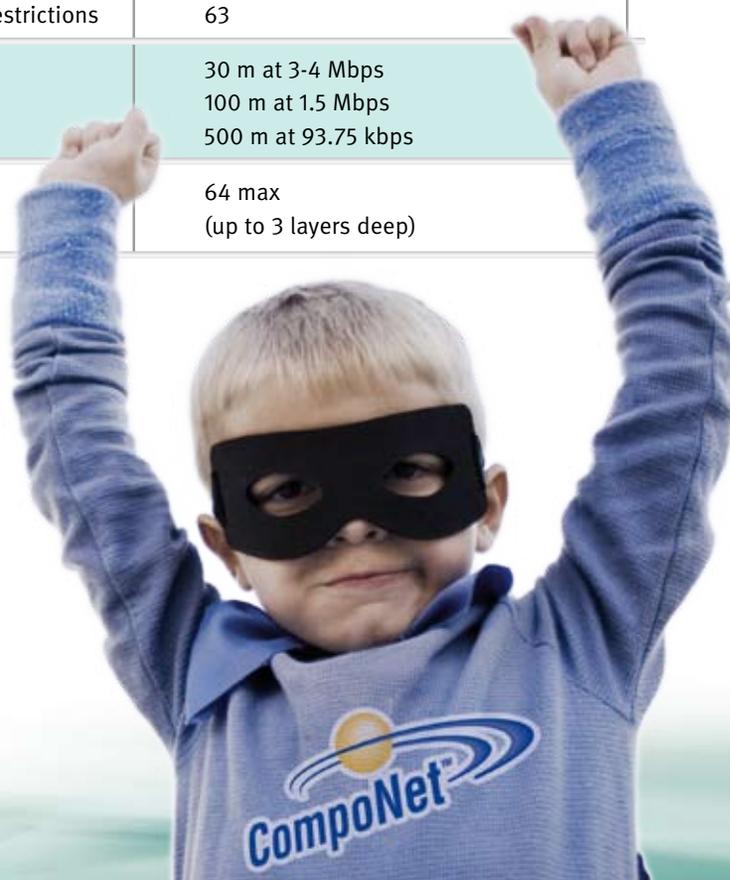
Further, by using repeaters, CompoNet supports network segmentation, simplifying system commissioning and troubleshooting, and so considerably reducing set-up times on new installations.

CompoNet also delivers greater flexibility in wide area applications such as warehouses or conveyor lines. Not sacrificing on speed it frees users from conventional line or ring topologies, and allows unrestricted branching with a total line length per segment for 500 m. Combined with CompoNet's ability to use up to 63 repeaters per network, the result is highly efficient wiring of even very wide areas using the minimum amount of cable.

Complementing DeviceNet and completing the picture for automation networks together with EtherNet/IP, CompoNet provides an economical, easy-to-maintain solution for small node distribution. And as an open CIP network, it also fits well with the modern requirement for transparent enterprise to plant floor integration, offering seamless access to every device, and allowing even the most complex of machines and production lines to be managed from a single network connection.

“easy to maintain
solution for small
node distribution”

| | DeviceNet | CompoNet |
|----------------------|---|--|
| Masters | >1 | 1 |
| Slaves | <63 | 64 * Word In + 64 * Word Out + 128 * 2-bit In + 128 * 2-bit Out + |
| Data capacity | 2000 Words In+Out | 80 Words In + 80 Words Out |
| Messaging | CIP | CIP |
| Baud Rate | 125, 250, 500 kbps | 93.75 k, 1.5 M, 3 M, 4 Mbps |
| Cycle time | Depends on # slaves + data size | 0.7 to 4.5 ms (4 Mbps) 12.2 to 154 ms (93.75 kbps) |
| Cable | 4-wire shielded (comms+power) Trunk cable / Drop cable  | 2-wire unshielded (communication only)  or 4-wire flatcable (communication+power)  |
| Topology | Line (+ branches) | Line (at 4 Mbps), line +branches (at 1.5-3 Mbps), free topology (at 93.75 kbps) |
| Repeaters | 2-3 max., with timing restrictions | 63 |
| Segment length | 100 m at 500 kbps 500 m at 125 kbps | 30 m at 3-4 Mbps 100 m at 1.5 Mbps 500 m at 93.75 kbps |
| Segments per network | 1 | 64 max (up to 3 layers deep) |



Zero defects all round

Omron's oft-stated quality policy is one of "zero defects" – and increasingly Omron's suppliers are buying into the same exacting standards:

At a meeting early in 2007, Omron's packaging supplier, Smurfit Kappa Vandra (SKV), said that they wanted to find a way of reducing the number cardboard boxes that were being produced with minor defects. These defects appeared on very few boxes, but they all seemed to have the same root cause: either the printing was out of register, or the cutting was wrongly aligned.

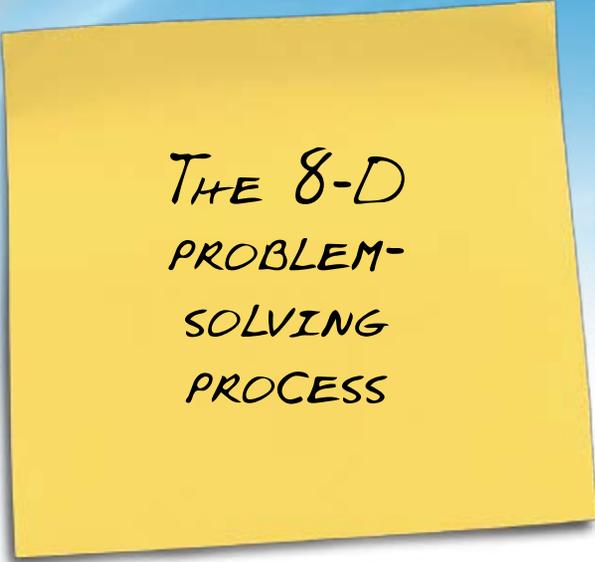
Will van Boxtel from Omron's Quality and Environment department visited the SKV factory several times and discussed the issues with their Production Manager Jan van Dongen. They looked at the various quality tools that Omron uses, and a team of SKV 'quality ambassadors' - including operators and managers – was charged with investigating and improving quality-related issues.

The team visited the Omron factory on several occasions to look at the various ways in which Omron achieves its zero-defect standard, using Low-cost Intelligent Automation (LCIA) and other quality tools. They also learned about the 8-D problem-solving process, which uses a team approach to identify problems and implement solutions through a sequence of eight disciplines (hence the name).

The SKV team established that the root cause of their printing and cutting problems was that the card sometimes slipped during the production process. A relatively straightforward change to the clamping pressure, allied to a 100 percent inspection process, achieved rapid success. Because of these positive results, SKV has extended quality control process across its entire plant.

The final 'discipline' in the 8-D process is to congratulate the team for successfully completing its task, and Omron was delighted to host the celebration. As Will van Boxtel says, "it was great that we could congratulate the SKV team on six clear months without a single defect. We were really pleased to work with them, because when suppliers share our quality-first attitude it makes life much easier all round. They benefit, we benefit, our customers benefit: a great result all round."





THE 8-D PROBLEM- SOLVING PROCESS

8-D is a method of solving problems, divided into eight disciplines (hence the name), which emphasizes team-working to improve processes. The eight disciplines are:

1 Use a team approach

Set up a small group – under a team leader - with the expertise and authority to diagnose the problem(s) and implement a solution.

2 Describe the problem

The problem must be specified in specific terms.

3 Put in place short-term corrections

Define and implement 'quick wins' which will keep the problem under control until permanent solutions can be put in place.

4 Find the root cause of the problem

Identify all of the possible causes of the problem and test each one against the description specified at (2). Identify what corrective actions could be taken to eliminate these root causes.

5 Verify corrective action

Establish that the corrective action will permanently solve the problem and will not have unsatisfactory side effects (eg, substantially increased costs). Put in place other actions as necessary.

6 Implement corrective actions

Put the permanent corrective actions in place, with controls to make sure that the root cause of the problem is eradicated. Monitor the long-term effects.

7 Prevent recurrence

Modify processes, improve training and work practices to prevent recurrence of this and similar problems.

8 Congratulate and share

Recognise the team's efforts publicly, and share the knowledge gained with others in the organisation.

OMRON



Xpectia Vision System

Performance in touch with simplicity

Omron's Xpectia is defining a new class of vision systems: real colour sensing, high resolution, 3D functionality and Intuitive User guidance combined, provides you with simplicity, no matter how complex the inspection. Like the human eye, Xpectia can identify any object with any colour mix, at any distance and any size. It features an easy-to-use touchscreen and "Auto" functions, making vision applications simple and straightforward. Xpectia is available with a range of controllers with and without the touchscreen, and supports up to four cameras. By combining the benefits of compact system with the power and flexibility of an industrial PC platform, it offers, quite simply, the best of both worlds.

Features

- True colour system: 16 million colours
- High-resolution cameras: 2 million pixels
- 2D and 3D inspections
- Touch-screen for easy operation
- Industrial-PC platform

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