

technology & trends magazine



The owners ultimate test!



Never stop...

Renault-Nissan: "First time right"

Nissan Production Way (NPW) aims: "Build it right, first time, using minimal resources and with no waste"

More on page 5



Never fail...

Revolution in Vision Sensors

Prof. Dr. Dietrich Hofmann: "ZFX sets the standard in operation of vision systems"

More on page 6



Just create...

30% more electricity from sunpower

The Spanish village Higuera has been the pioneer in the development of alternative energy

More on page 20

500,000 ways to experience the Fiat 500

Recently I was in San Donà, a small village in north-east Italy. In the central piazza a crowd of people gathered excitedly round a car - instantly recognizable as the new Fiat 500, with its shape modelled on that of the classic “nuova Cinquecento” from 1957. Like other icons of Italian post-war creativity – the Vespa and Lambretta spring to mind – the original Fiat 500 is part of our collective memory.

But the new Fiat 500 – launched 50 years to the day after the original - is much more than a nostalgic version of a classic design. Fiat CEO Sergio Marchionne calls it “Figlia della vecchiaia” – “daughter of the legend”. However, it’s not just the shape that intrigued me: it is also the fact that Fiat offers a truly unique level of customization, with over half a million possible variants - 549,936 to be precise!

Think of that: 549,936 versions of the same car. I don’t know how Fiat organizes its production, but it must be a massive operation. It reflects the desire of today’s customers for something unique, something other than mass-produced “same same same”. In Omron we have seen this in many industries – not just car manufacturing, but also in mobile phones, packaging, and food and beverage industries, among others. The ability to be flexible, to build this customer desire to be different into the manufacturing process, gives a real competitive edge.

In turn, this offers a major opportunity for European machine builders and manufacturers. And in this edition of Technology & Trends, we see how customers like ABB, Delmia and Socabelec are contributing, by offering – and delivering - short turn-around times when change is needed. Enjoy reading.

Michel Min - Editor in Chief
European Marketing Communication Manager



1964: my father's first car was a Fiat 500

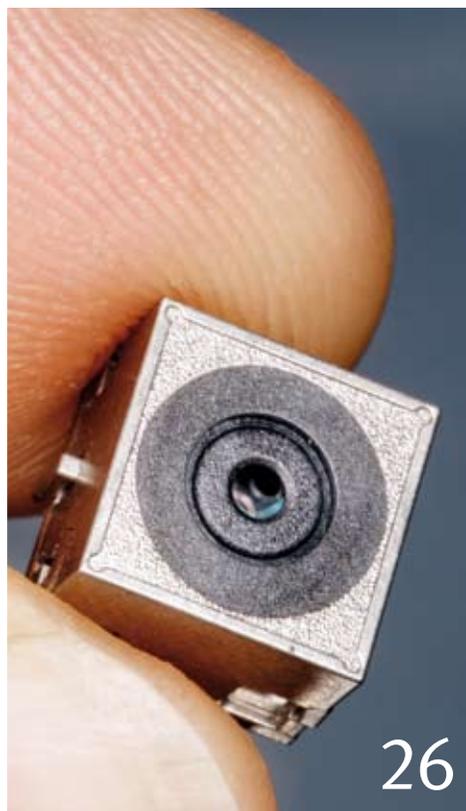


Cover:

Inspecting his brand new car just before buying. His opinion counts and makes the difference between success and failure for car makers. There is no industry more trend setting than the automotive industry. And today we see trends like increased flexibility emerging as crucial factors in both meeting market demands and gaining a competitive edge.



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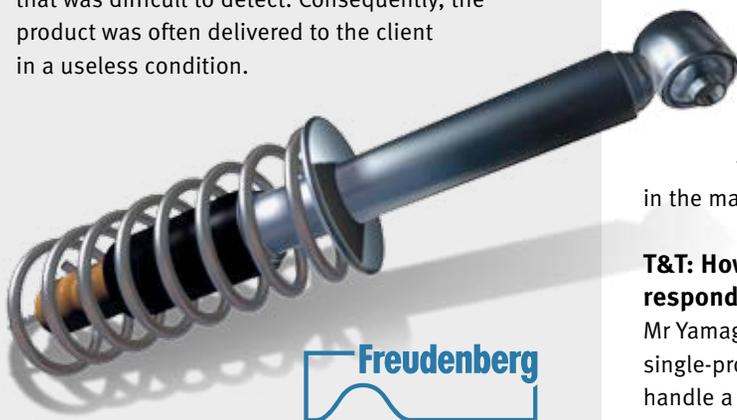
Unique technology for motorised lens.

Decrease faulty products

Laser distance-measurement system eliminates faulty seals

Simrax, member of the Freudenberg group, the Dutch subsidiary of Freudenberg, producing seals for shock absorbers and water pumps, has reduced the number of rejects and boosted quality by installing a laser distance measurement system.

Simrax produces about 150,000 seals for shock absorbers every day. The products enter a cutting machine via a conveyor belt. However, the seals are frequently misaligned and end up being folded double in the cutting machine, a condition that was difficult to detect. Consequently, the product was often delivered to the client in a useless condition.



Now, a new cutting machine in operation has been equipped with a laser distance-measurement system that detects misaligned seals before they reach the cutting machine. This enables the staff to correctly reposition or remove a faulty seal. Simrax process engineer, Mark Hof, says, "This investment has yielded quite a return as we no longer have faulty products being returned."

This positive experience also prompted Simrax to apply laser technology in the press. In this instance the laser detects whether the moulds are filled with rubber pre-forms. The company is now looking to see what improvements can be achieved on other presses.

➡ Please visit www.omron-industrial.com/simrax for the full article.

Global car industry ahead of the game



The editor of T&T spoke to Mr Mikihiro Yamaguchi, head of Omron's global automotive business group, about trends in vehicle manufacturing.

T&T: What do you see as the most significant current trend?

Mr Yamaguchi: Customer demand: car buyers want more choice, more quality, more value, more green - all at more competitive prices. The only way forward is to innovate – not just in the cars themselves, but also in the manufacturing process.

T&T: How are manufacturers responding?

Mr Yamaguchi: Most are changing single-product lines to ones that can handle a mix of vehicles. To make this work, they need reliable solutions to minimize or prevent production line stoppages and our vision sensors, laser measurement equipment and sound analysis equipment are increasingly used to reduce quality defects and improve traceability.

T&T: Can you claim that your global team is contributing to car manufactures?

Mr Yamaguchi: We've worked extensively with major global car manufacturers for decades, so we have exceptional experience in all aspects of car production. Of course, we're not going to tell them how to build cars – they know that better than anyone – but we'll gladly share our knowledge.

T&T: How do you do that?

Mr Yamaguchi: We say "If you have a problem, come and talk to us. We have an excellent network of engineers, who work in the Automotive Industry for a long time. Their know-how is at your disposal, to help you deliver the best possible solution, wherever your factories are located." Simple as that.

T&T: Can you give some examples?

Mr Yamaguchi: To improve quality and mechanization, automation in car assembly lines is advancing considerably, and the introduction of robots with vision sensing is an increasing trend. With our core competence in sensing and control, we've installed vision-based in-line inspection systems at most of the global car manufacturers.

An example of our latest thinking is stereo camera systems for inspection and parts picking.

T&T: And a final message for vehicle manufacturers?

Mr Yamaguchi: The same as for all Omron customers: we strive to be your trusted partner in automation, providing you with the support you need to operate globally.

Constant innovation,
keeping you ahead
of the game.

Renault-Nissan: Build it right, first time

Omron has outstanding experience in the automotive industry, been a partner of Nissan for more than 55 years.

RENAULT NISSAN

Demand for more frequent new models – and ever-shorter times-to-market – mean that all car manufacturers want to improve build quality, increase product traceability and maximise utilisation of production lines. This imposes enormous demands on production planning.

Nissan Production Way

The dynamics of product quality have changed dramatically in recent years, and the objective is now zero-defect production. Nissan's manufacturing philosophy, known as the Nissan Production Way (NPW), aims to "build it right first time, using minimal resources and with no waste". Renault, united with Nissan in the Renault-Nissan Alliance, is now implementing a similar philosophy.

Omron has supplied optical sensors to provide inspection and for robot guidance. These are used to fit larger items such as roofs, doors, and bonnets which were, until quite recently, still fitted manually. Omron has also supplied laser-measurement sensors for objective inspection of procedures such as laser welding. By integrating inspection and quality control into the production process, in-production errors are eliminated, and final inspection becomes superfluous.

"Build it right first time, using minimal resources and with no waste"

Traceability: a much discussed topic

Traceability, and the need to have complete documentation for each vehicle, is a much-discussed topic in the car industry, particularly in the light of stringent product liability requirements. Data matrix codes are increasingly used to enable the unique identification of individual components, particularly within the powertrain. Marking is applied directly to the surface of the components – rather than using a label – which has benefits over and above traceability.

Choosing the right coding procedure ensures correct identification. Symbol or colour codes are increasingly used in addition to data matrix or bar code systems.

Maximising production flexibility

One way in which Nissan maximises its production investment is by making a range of different vehicles or assemblies on the same line. To deliver this versatility, production tools need to be increasingly flexible, and Nissan uses Omron's servomotor and axis controllers to help manage the process. Precisely positioned servomotors allow high speed operation, with maximum production tool flexibility, while their reliability means that lines can operate 24/7 – and achieve zero-defect production.

NO WASTE!



The all-new Omron ZFX vision sensor had its European launch in Strasbourg in September, in front of an audience of technical journalists from all over Europe. A series of technical, marketing and academic presentations showed how the interactive menus on the ZFX touch screen allow intuitive set-up.



The new Omron ZFX vision sensor, touch, connect and go

🔗 See top 5 of application examples on: www.never-fail.info

No delay production by inspection

There's a fundamental problem at the heart of modern production lines. As the speed of production increases, how far can the inspection process be trusted to pick up defects? And in mixed-product lines, such as those in car manufacturing plants, how quickly can different – but often quite similar – components be correctly delivered to the appropriate assembly points? Of course, one answer is to impose closer control systems, maybe with repeated inspections – but that increases the costs that faster production lines are supposed to save.

The new ZFX vision sensor range is designed to solve that problem. These are the first of a new generation of vision inspection systems, designed for

simplicity of operation. As such, the inspection system complements rather than complicates the production process.

The unit has a built-in 3.5 inch touch screen on which the user sets up the inspection parameters by tapping on a series of simple icons. The entire process is self-contained and takes just a few minutes, even for the most intricate inspection procedures.

In Strasbourg, demonstrations were shown of ZFX sensors being set up to handle various different tasks, including relatively straightforward inspections of labels on a product through to identifying and sorting up to 64 different kinds of component, all at high speed. Other examples showed how flexible inspection processes could be established, to accept insignificant variations (for example, slight discrepancies in print quality





Prof. Dr. Dietrich
Hofmann
University of Jena
Germany

Prof. Dr. Hofmann said, “The more complex the technology, the greater the desire of users for simplicity.” The ZFX is the embodiment of that philosophy.



ZFX vision sensor: Intuition Standardised!

or minor differences in shapes), with the user deciding the level of acceptability.

The ZFX sensor comes with a range of smart cameras with built-in lighting and adjustable focus, with a field of view between 10 and 150 mm. All of cameras can check either colour or monochrome images, to guarantee maximum flexibility and long-term viability. There’s a range of connectivity options, including Ethernet, serial bus, USB and digital I/O.

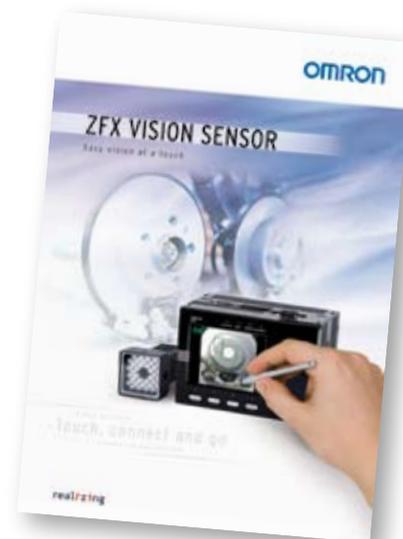
“seeing is believing”

Much has been made of the intuitive nature of the touch-screen set-up, and at the Strasbourg event, Professor Dr Dietrich Hofmann of the University of Jena gave a presentation on the value of intuitive operation. He began by discussing what was meant by intuitive operation – defining ‘intuitive understanding’ as “comprehension

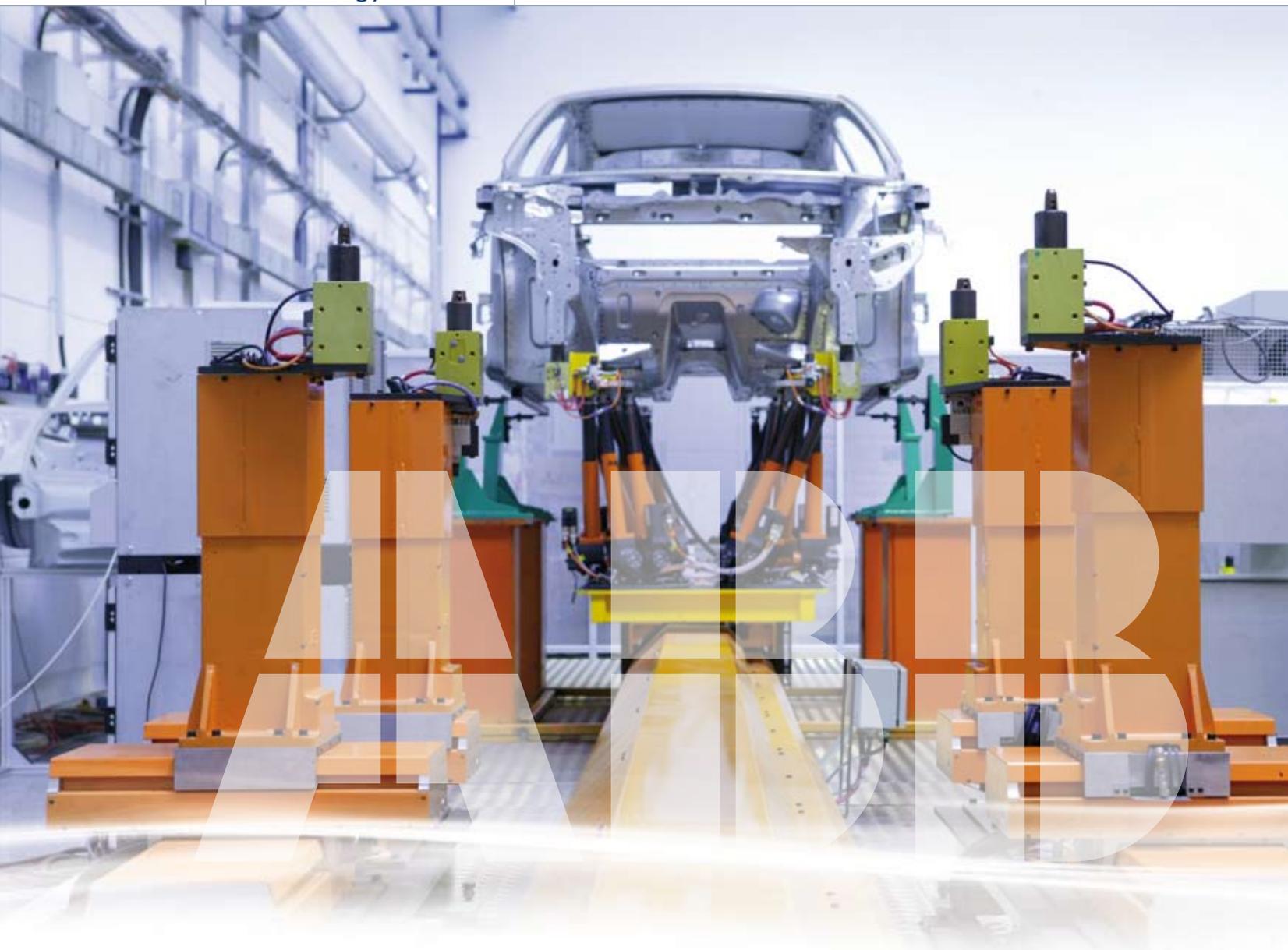
without any necessary contemplation or explanation.”

As he explained, “seeing is believing” is the key to intuitive operation – we understand visual information such as symbols far more readily than we do words. By way of example, he contrasted a printed instruction manual with the touch-screen on the ZFX: in Dr Hofmann’s view, the latter is the way of the future.

Like Dr Hofmann, the journalists at the launch seemed impressed by the extent to which the ZFX clarifies inspection using vision systems. As the Professor said, “The more complex the technology, the greater the desire of users for simplicity.” The ZFX is the embodiment of that philosophy.



 You can now order the new ZFX brochure on:
www.omron-industrial.com/zfxbrochure



The flexibility dream comes true for carmakers

Car buyers want more choice, while car manufacturers need to reduce production costs. Now there is a solution that enables a mix of different models to be built on a single production line.

The automotive industry pioneered the large-scale use of production robots, but over the years, requirements have changed. Now individual assembly lines – some of which deliver a car every 45 seconds – need to produce several different vehicles, preferably without stopping production. ABB's revolutionary new FlexLean robotic cell, based on Omron motion-control equipment, is designed to help meet this need.

“The key is flexibility”

According to Fabrice Legeleux of ABB Manufacturing Automation, France, the key for ABB's customers is flexibility: “They might want to build four different models on the same line, with the potential for up to eight. Therefore,

we proposed replacing fixed tools with position controllers using new kinds of mini-robots which can handle an unlimited numbers of parts. For the motion-control, we chose Omron Yaskawa MP2200 controllers and 400W Sigma III series motors with a Mechatrolink II bus, which enabled us to offer the flexibility our customers need.”

A modular approach offering unique functionality

The ABB mini-robots are located at each side of the production line and adapt to the sizes of the oncoming vehicles, assembling parts, drilling holes, welding, etc. The system can handle a maximum of 80 axes per car model, controlling 20 mini-robots: an ABB database holds the appropriate coordinates for each vehicle. Coordination of the assembly



lines is via an Ethernet connection between the MP2200 and the PLC, while the host PLC sends commands via Profibus to pick up the cars.

When a new model is introduced, it is simply a matter of programming the robot coordinates, which can be done off-line with simulation software. This modular approach offers unique functionality, but it was flexibility that proved a deciding factor says Omron France's Bertrand Seewald: "We showed that we could adapt our solution to ABB's product, which was decisive in them choosing Omron."

At the heart of the mini-robots is Omron Yaskawa's MP2200 high-performance motion controller, which provides sequence, motion and process control and is capable of controlling 256 axes of motion. A specific FlexPLP application was developed by Omron for ABB, allowing the MP2200 to communicate with a PC-based application developed in MS VB.Net. The PC-based man-machine interface which ABB developed to configure and monitor the FlexPLPs was also based on Omron components.

Huge savings in cost and space requirements

Without a solution like ABB's FlexLean, manufacturers must store the car carriers which transport the vehicles through the assembly process – and a factory producing 800 cars a day

might stock up to 80 different carriers. Fabrice Legeleux says that "in the car industry, a lot of space is required to store the car carriers.

With the ABB solution, neither special transport nor bulky and expensive tools are needed. The savings in cost and space requirements are huge."

Manufacturers can tune their production system according to their actual needs. And as Fabrice Legeleux points out, "they can change models in different countries whenever they want to without having to bring carriers on to the line. It offers complete flexibility."

"Deliver a customized car every 45 seconds."

Omron's performance made a real difference Mr Legeleux goes on to explain that Omron offered ABB more than it expected: "In addition to helping with development of the project, they trained our technical staff and put a dedicated team entirely at our disposal in the field where it was needed. Only Omron offered this onsite assistance on a daily basis. The level of performance and service made a real difference to the project."

He continues: "Omron was a real partner, bringing us what we lacked – motion control expertise, provided by a team that had the technical know-how and was readily available to us." The resulting solution was made available in just two months, and ABB expects to sell not only into the automotive market, but also to other OEMs.



In each edition, we ask Faouzi Grebici (Sales and Marketing Europe), two questions about hot topics in the industry. In this edition, we talk about how Omron's strategy was changed and why it was necessary.



Talk about...

Omron's Specialisation Strategy

What has been happening in the market which required Omron's new specialization strategy?

As usual it's never down to ONE single factor. FIRST Omron has moved from discrete component supplier to a machine automation provider. Now we have over 25 classified product families versus five 20 years ago. SECOND: the customers are either specialising themselves or rationalising (meaning demanding that the supplier is part of their development supply chain). The THIRD factor is that Omron Europe is not anymore the recipient of Japanese born products, we develop and produce locally. Hence specialisation is an important innovation and responsiveness feed.

What are the key distinctions which set value added machine builders apart?

Omron's structure has changed to meet the needs of value added machinebuilders. The previous structure served its purpose very well as long as the market was big enough for everybody, and our business was relatively small. Now in Europe we are well over half a billion Euro and expect to pursue a double digit growth. After careful consideration of our business and customer base we decided specialize our sales channels into three main areas: Core, Specialized and Strategic. The three channels work in a *push* and *pull* manner and most importantly in a well synchronized and complementary manner.

Core will emulate our *push* strategy. It consists of our well established business that will ideally run through our network of distributor partners. For this we have Core Business Managers in every region re-enforced by a European Core Business marketing team.

Specialized will be the short term *pull* medium. Split into Automation & Drives from one side and Sensing & Safety on the other side, it addresses mainly medium to large OEM's and is primarily targeting new businesses. It will also focus on highly industrialized areas.

Strategic business deals mainly with Omron strategic industries such as semi and automotive areas. It also explores new and emerging technologies like renewable energy, water and environmental applications.

What is the value expected?

From internal view we expect to have clarity alignment and efficiency towards the market we address. From the market view we will offer a highly specialized salesforce that add immediate value to the clients they serve.

Combining or connecting two or more core products into one device

The Trend to Blend

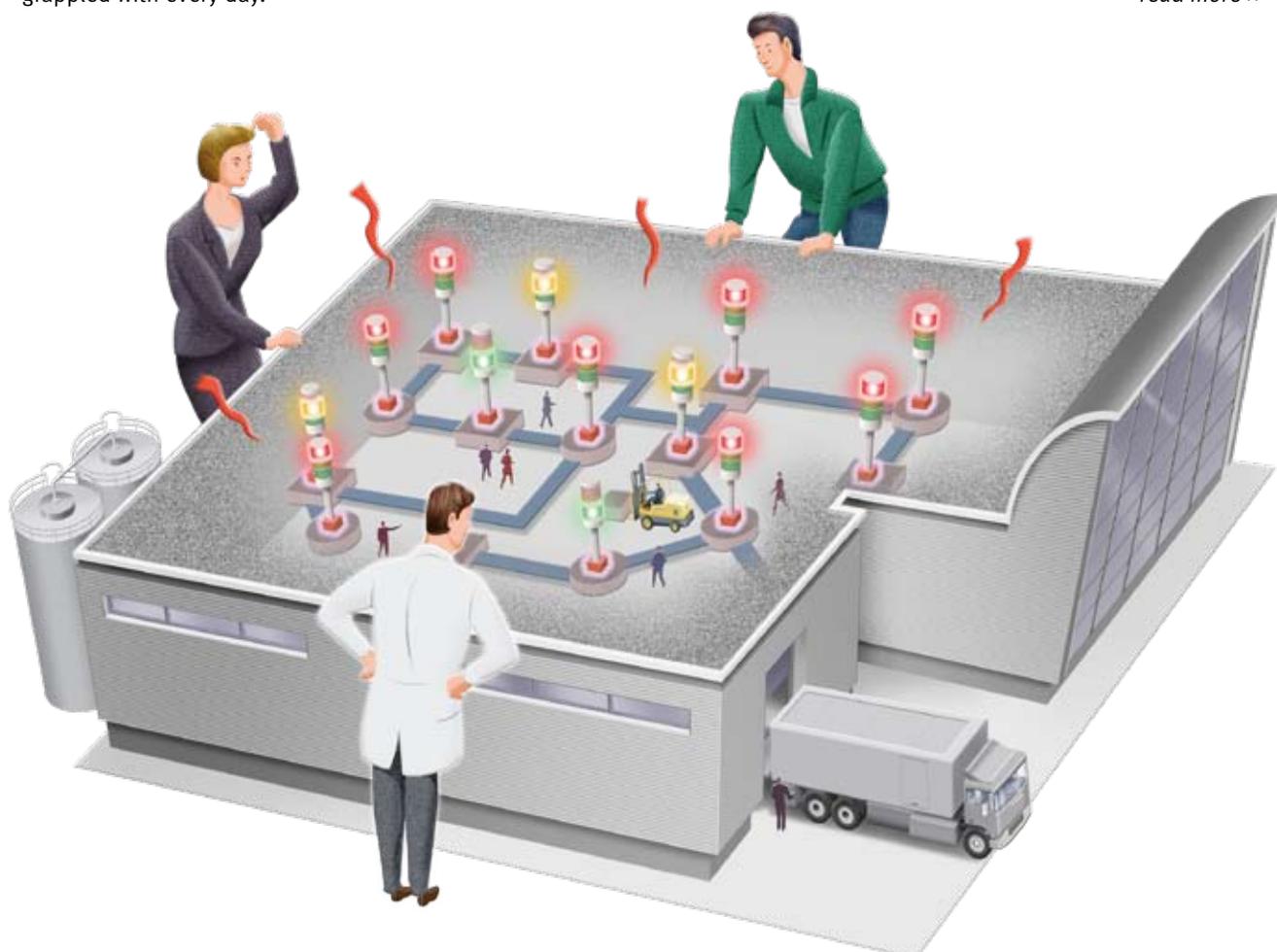
By Robert Brooks, Product Marketing Manager, Motion and Drives at Omron United Kingdom.

Omron is seeing a trend to bring product functionality together into multi-functional devices in the interests of both machine builders and end-users. Omron-Yaskawa's new inverter drive the V1000 is just one product that has been built with this trend in mind.

Machine builders are always under constant pressure to do more with less – reductions are sought in panel space as well as price, but at the same time machine builders must improve the functionality and efficiency of the machines they build. Automotive customers in particular are demanding quick and simple installation, network integration, greatly reduced wiring and easy trouble-shooting. For those responsible for designing and building machines, dealing with this constant pressure is a dilemma grappled with every day.

For industrial automation vendors such as Omron and others in the market, one answer to this scenario has been 'product blending' – combining or connecting two or more core products into one device. An early example of connecting multiple devices together to increase machine functionality and reduce cost was seen in Fieldbus communications. Typically an inverter would be connected to a controller via discrete, separate wires but the wiring between the units becomes the weakest link.

[read more >>](#)



CUSTOMER NEED

LEGAL REGULATION

Our approach is to offer a range of communication option boards which are designed to be built into the inverter, allowing the machine builder to choose a communication option board based on their technical expertise and commercial focus, rather than being restricted to a single protocol standard.

Suit application demands

A more radical addition has been combining PLCs into products such as inverter drives, or even including PLCs into an HMI, simplifying connection between the devices and saving panel space. With an inverter drive, the PLC can be used for tasks such as monitoring energy consumption, or information on a drive's status. Furthermore, programs can be selected via an optionally connected HMI which can be tailored to specific applications, changing the settings to suit the demands of the application, flexibility which is greatly in demand in the automotive industry.

It is interesting to analyse the design process of the major automation

manufacturers, who are deciding to combine new functionality into devices such as inverters. With Omron-Yaskawa, we have recently launched our V1000 inverter drive. Designing a new inverter completely from scratch means you have the ability to build in functionality more easily. Omron-Yaskawa decided to embed safety functionality into the V1000. We believe it makes sense to incorporate safety functionality into the inverter drive itself as it provides clear benefits to the user in terms of simplified wiring and hence installation costs, simplified circuit layout and improved reaction times. We know that for many industry sectors, integrating functionality is becoming increasingly important, especially safety, where it is being built into applications rather than a separate add-on.

Dedicated Software

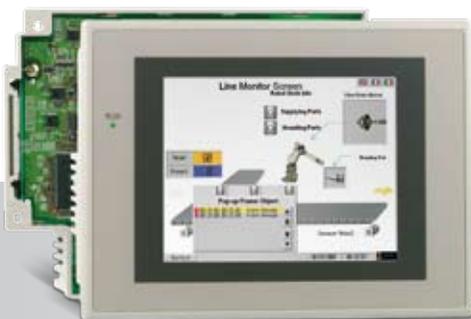
It is also becoming increasingly important for products to be

engineered to meet particular application demands through the use of dedicated firmware. Omron calls this CASE firmware and already offers many firmware variants for its ranges of drives including position control, electronic line shaft synchronisation, winder control and pump sequencing – all realised using dedicated functionality that the user has to hand.

“Eliminate that wiring between the units becomes the weakest link”

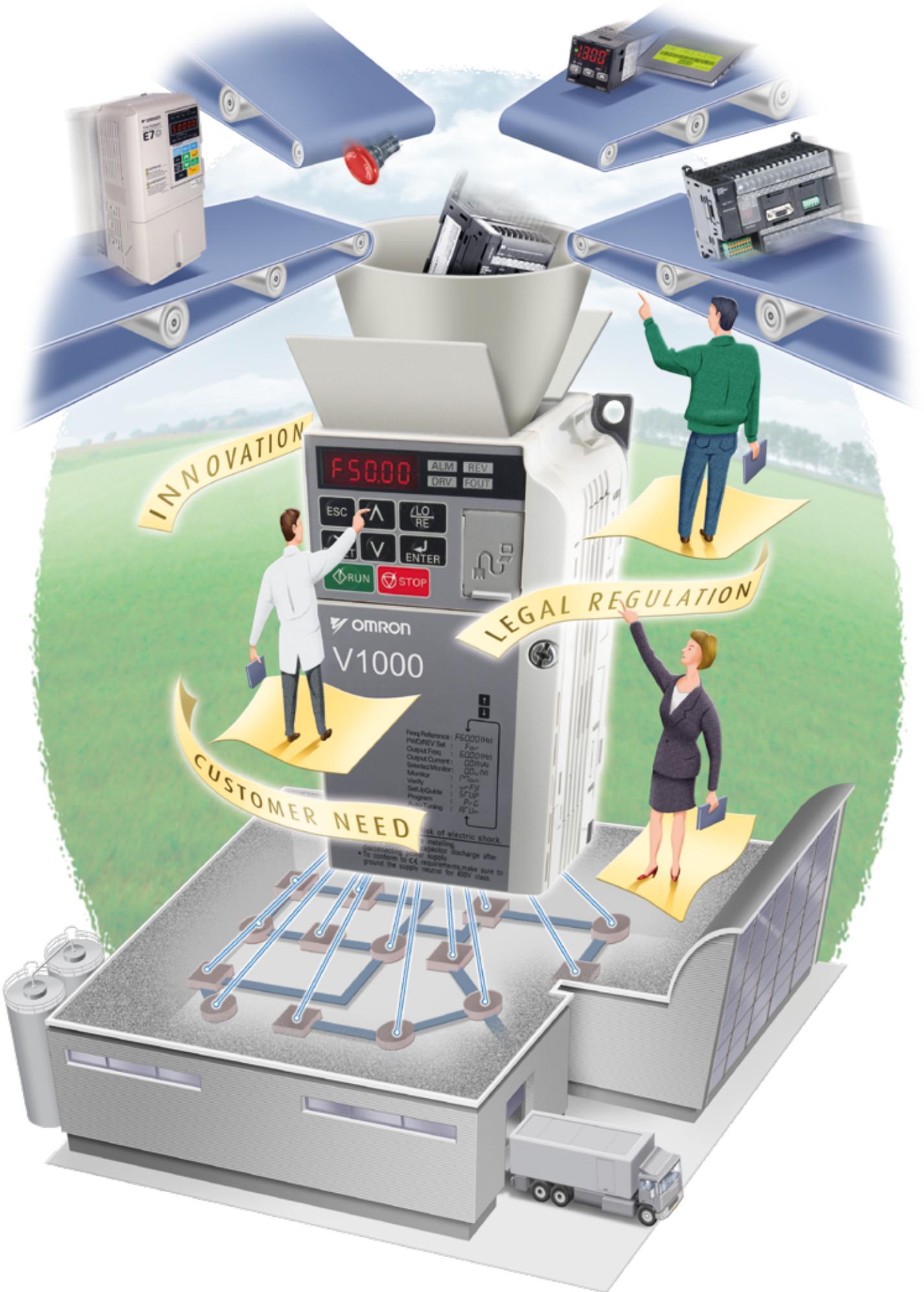
In summary combining numerous, previously separate, products is proving more cost effective, and easier to install and maintain. End users and machine builders alike also find it a more logical approach than connecting and deploying separate devices. The trend is also a positive one in terms of maximising the use of products such as drives – ensuring reduction of total cost of ownership as well as more rapid delivery of return on investment on these products.

NS5J - HMI blends with PLC functionality



Powersupplies blends with Monitoring functionality





Product News



DyaloX industrial PC

Reliability made flexible

The Omron DyaloX industrial PC is setting new standards in industrial reliability. It is created specifically for 24/7 operation in even the most demanding industrial environments.

The DyaloX box-type industrial PC is created specifically for 24/7 operation and sets new standards in reliability, even in the most demanding industrial environments. A very flexible IPC, the box can be mounted in two different ways. Either separately so that a minimum amount of cabinet the touch screen in order to use it as a panel IPC.

Feature full

Available with either 2 GB or 4 GB disk-on-module storage and 512 MB or 1 GB of RAM, the DyaloX with the extended version of Windows XP Embedded provides high performance for a wide range of applications. The functionality can be further expanded using the two PCI slots and audio output ports, while the built-in DVI-I port allows either a 15 or 17 inch Omron touch screen (or any other screen of your choice) to be connected.

Features and benefits:

- Reliable 24/7 operation even in the harshest conditions
- Industrial-grade 1.3 GHz Intel Celeron CPU
- No moving parts, reliable disk-on-module storage
- DVI-I interface for connecting any display
- High-quality touch screen with two USB ports on the front
- 3 year warranty / 7 year repair service

The DVI connection of the DyaloX box-type industrial PC makes it very suitable for big machines that use a swivel arm to operate the machine as it supports a length of up to 10 metres. The same advantage is applicable to machines that face heavy vibration, as the CPU box can be positioned to best suit your needs.

The difference

The DyaloX IPC makes use of Omron's unique RAS self-diagnostic hardware and software, to ensure that it will keep on running and warn you if conditions become unstable. To prove our reliability Omron offers a full 3-year warranty and a guarantee to repair your DyaloX IPC for up to 7 years after purchase.



CP1L

Think big, start small

The new CP1L series offers the compactness of a micro-PLC with the capability of a modular PLC. Scalable and with a faster processing speed than other controllers, its price/performance is in a class of its own.



E3ZM-B

PET bottle detection in stainless steel

PET bottle detection photoelectric sensor in rugged stainless steel housing. Sharing the same rugged stainless steel housing of other members of the E3ZM family, the E3ZM-B is the latest addition specially designed for PET bottle applications.



S8VT

3-phase input power supplies

Better than ever before! The new S8VT is very compact and therefore offers the best power versus footprint on the market. Four models are available with an output power of 120 W, 240 W, 480 W & 960 W at 24 VDC. All models are mains protected by fuses to protect both the power supply and your DC application.



Sigma 5

Sigma 5 - the 5-star servo

Our obsession with quality has resulted in the most flexible and dependable drive ever. Sigma 5 with MECHATROLINK-II Motion Network reduces cabling and installation time, improves system reliability and enables remote-servo configuration and diagnosis.

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.omron-industrial.com



Efficient baggage handling for improved passenger experience

It is more than likely that you have had your baggage or goods handled by Vanderlande Industries. Its equipment is installed in some of the world's largest and important facilities, including many airports. We visit the company and find out how rising standards are leading to unprecedented market success.

Global supplier

Vanderlande Industries is one of the top three producers in the world of automated materials handling solutions. The company has installed over 600 baggage handling systems at more than 350 airports worldwide, from small, regional ones to the largest international hubs, including key facilities such as Amsterdam's Schiphol airport and Heathrow's new Terminal 5 building. With a focus on delivering reliable, cost-efficient performance, each installation is tailored to meet the customer's specific needs.

Supplier review

As senior buyer for control equipment at Vanderlande Industries, René Daniels asked Omron to pitch initially for photo-sensor business. "We looked at the products of ten suppliers and compared product ranges, specifications, global availability, quality and reputation and so on. Four were short listed and their products evaluated. The companies themselves were also put under the microscope regarding their overall capabilities, reliability and pricing, etc." Omron's E3Z series is one of the most popular photo-sensor ranges in the world and was chosen as one of the top four models to be evaluated at Vanderlande Industries.

Looking deeper, looking beyond the products

Walter Roosendaal, Controls Development Engineer Product Lifecycle Support group, was given the task of looking beyond the face-value of companies and their products.

"New suppliers bring us new technologies, tools and components with new potential. This view clarified our position regarding Omron,

which has an active R&D department that introduces advanced concepts and ideas to its products. Talking to best-in-class suppliers expands our knowledge base and shows us how to improve by transferring new ideas."

Vanderlande Industries' Lifecycle Support Group looked beyond the face-value of companies and their products.

Fruits of cooperation

Increasing Industry requirements for Express Parcel, Distribution and Baggage Handling systems require efficient and robust solutions. New technologies from Omron are helping Vanderlande to maintain high standards with Omron's standard products, which Vanderlande uses to maximise its performance at minimum cost.

Well aware of the need for proactive partners, Vanderlande has changed its approach to working with suppliers. Walter Roosendaal says that the company usually has to spell out the

References:

- Daimler Chrysler • Audi
- Amsterdam Airport Schiphol
- Hong Kong Int. Airport • DHL
- G-Star Fashion • UPS
- Farnell • RS Components
- DHL Mexx Fashion • Würth

Russian success

Omron Russia scores big success

With its main office recently established in Moscow, Russia, Omron's national sales company is making great progress in setting up the company infrastructure, operations and in developing a distribution network. Currently we are able to offer our customers a service in terms of marketing, repair, logistics, and a local warehouse, based in Moscow.

We are already proud to announce a big project, which is at British American Tobacco Russia. In April 2007, Omron was approached by this world player, when it was looking for a vision systems solution for quality control at their plants in Moscow and Saratov, two big industrial cities. Together with NTC-ECO, one of our main distributors, we were able to offer a more competitive solution based on the ZFV system. This offered advantages in terms of functionality, ease of operation and costs compared with our main competitors. By developing the solution together with our distributor and customer, we were able to increase the effectiveness of the production process for British American Tobacco Russia.

SPC centre

Recognizing and underlining the importance of software in automation

Omron's UK-based Software Product Centre, which provides automation software supporting Omron products globally, has moved to new premises on the Solent Business Park near Fareham, Hampshire, UK. The new location houses both the Software Product Development and Software Marketing teams. The move to new offices represents recognition from Omron Europe on the importance of software in automation. The Software Product Centre is an Omron global centre of excellence, with software teams developing configuration, programming and visualisation software. It contributes to the progression of leading products such as CX-One. This allows users to build, configure and program a host of devices such as PLCs, HMIs and motion-control systems and networks using just one software package.

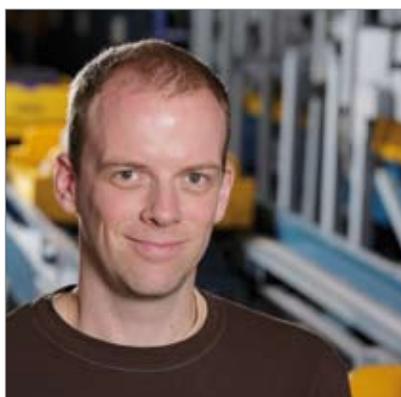
specification and functionality it needs in a new product – but with Omron it is different. “We have found its products to be reliable,” he says, “with the quality and functionality we require. It shows how Omron continually uses advanced technology to adapt and refine its processes to improve efficiency and reduce costs. We need that to remain competitive. Omron simply sets higher standards, and some suppliers have had to change their products to match those levels.”

Flexibility to match

Vanderlande also places great emphasis on the flexibility of its suppliers. “Our business is experiencing tremendous growth,” says Rene Daniels,

“and the influence of multinational companies in markets such as India and China is increasing rapidly and putting considerable pressure on system costs. Product leadtimes are continuously falling and we are expected to supply and commission within a matter of months. On top of this, functionality is increasing and we are challenged with delivering smarter systems. There is no room for making mistakes, which is why we place great value on reliable suppliers with the flexibility to match our needs. And that is another reason why we have chosen Omron as our preferred supplier.”

*Walter Roosendaal,
Controls Development Engineer
Product Lifecycle Support group*



*René Daniels,
Senior buyer for Control Equipment*



Riding a wave of success in Germany

Germany represents one of Omron Europe's fast-growing sales companies. Omron Germany's General Manager, Klaus Okraffka, is asked why.

With sharply increasing sales figures, Omron Germany is doing something very right. But what exactly is pushing sales to new highs? "You should really be asking our customers that question, but I can explain what we as an organization have done," replies Klaus Okraffka. "I believe we are now starting to reap the fruits of our efforts over the past 3 years in building a

truly expert organization. We developed four technology areas of expertise: Sensing & Safety, Automation, Motion & Drives and Control Components. Of course we had those competencies before, but now we aligned the whole organization to it. Instead of just being the first point of contact who calls in the real specialists later on, our field sales engineers (FSEs) are now the specialists who deal directly with the customer. And it is highly appreciated by customers according to 4,000 who gave Omron field sales engineers the highest score of all competitors in a recent survey held by JDPowers."

Matching our resources to our customers precise needs

And it's not only FSEs who are rated highly. So are application engineers and product marketing specialists. "Our new organization has teams specialized in and focused on our customers' markets, like: semiconductors, automotive, packaging and printing," continues Okraffka.

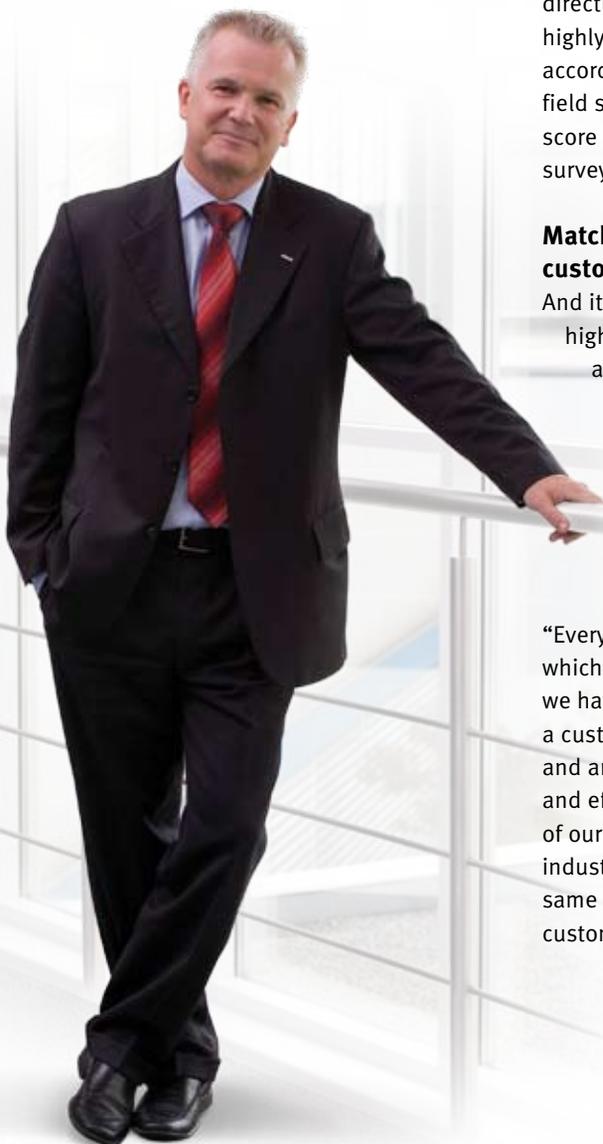
"Every market has its own dynamics, which are different from the rest, so we have teams that are fully tuned to a customer's particular challenges and are best placed to provide a quick and effective solution. Indeed, 85% of our FSEs are recruited from the industry they serve. They speak the same language and understand the customer's situation."

In Germany, Omron has both a manufacturing plant and a sensor application centre in Stuttgart, and an automotive competence centre is being constructed. "The R&D group in Germany, which specializes in safety and sensing, is so close to our customers that we can embed their market requirements into the products that leave our factory within a very short space of time."

"Empty offices: our people are out, discussing face-to-face with customers"

Finally, Omron Germany has adopted a culture that puts all of its resources at its customers' disposal. "People talk about front and back office, and mid office functions, but we have is what I call an 'out of office' approach," says Okraffka with a glint in his eye. "All offices are nearly empty because our people are out discussing our customers' challenges on a face-to-face basis."

This point is not lost on Germany's machine builders who are currently working flat out to meet growing export orders. And Omron is riding with them on the new wave of success.



By Christian Beede, Field Sales Engineer Sensors, Vision & Safety.

Airbags have often made the headlines, but not just as life-savers. They have sometimes resulted in injuries and even death due to malfunctions. Such tragic incidents can, however, be avoided if the activation of the airbag is adapted to the size and weight of the front passenger. Ingenious testing and calibration units equipped with the latest sensor systems provide maximum safety in this area today.

Front passenger safety

As a specialist in this field, Stankowitz Test Equipment, based in Diepholz (Germany), has been developing and manufacturing testing and optimisation systems for more than 30 years. Stankowitz tests car seats for the automotive industry. Based on the test results the manufacturers can match the seats with an appropriate airbag so that it deploys correctly without injuring the passenger. Accurate and reliable test results are therefore critical.

High standards

“We have very high standards for reproducibility,” explains Reinhard Stankowitz, the managing director. “The seat must be positioned very precisely to enable the function to be tested or calibrated and then verified. We are, after all, dealing with peoples’ safety. Moreover, the different reflective properties of the seat surfaces must not impair the function. We expect reliable measurement results, both for fabric and also for leather or simulated-leather seat cov-

ers. Light or dark colours, patterned or solid fabrics, dull or satin surfaces: none of these may affect the quality of the measurement results in any way.”

Sensors to match

Up to four Omron ZXLD300L series laser distance sensors are used in this testing and calibration set-up. The sensors, which are insensitive to the influence of ambient light and have the shortest response times as required for this application, are suitable for distances up to 300 mm with a resolution of 300 µm (mean value over 4,096 measurement cycles). “Omron’s sensors fully meet our requirements and at the same time offer good value for money,” says Stankowitz.

More benefits

“In addition to the high level of reliability, we were also impressed by the durability of the laser distance sensors,” continues Stankowitz. After all, unexpected sensor failures would temporarily bring the entire testing system to a standstill. “We are there-

fore one of the first users at present to install a completely new Omron sensor head onto our testing systems,” reports Stankowitz. Thanks to the large detection range of 2,000 mm, the ZS-HLD sensor can be permanently installed in the head frame of the test equipment. Consequently, there is no need for a mechanical system for the positioning unit, which saves space and furthermore also accelerates the testing and calibration process.

Omron sensors are not only influencing optical sensor system design, they are making a significant contribution to improving the safety of vehicle passengers.



Passenger safety 100% secured By laser distance sensors



Growing 30% more electricity in a “solar garden”

Using a similar principle to that employed by sunflowers, following the sun to maximise the amount of sunlight received.

Spanish systems integrator Electricidad Alsanbo has recently installed a 100 kW photovoltaic plant at Higuera in southeast Spain. Photovoltaic systems generate electricity from sunlight and the installation at Higuera produces about 30% more electricity than comparable fixed installations. It does this by using a similar principle to that employed by sunflowers, following the sun to maximise the amount of sunlight received. The Alsanbo system has double-axis solar trackers which continually adjust the positioning of the solar panels so that they always face the sun.



The installation is a product of the company’s environmental commitment, and was a personal initiative of Andrés Almendros, Alsanbo Director and native of Higuera, who has a keen interest in this kind of development: “The environmental impact of photovoltaic solar panels is less than other renewable energy sources such as wind power. It is clean, doesn’t cause any noise that might disturb local people, and is not harmful to birdlife.”

Higuera is an ideal setting to guarantee maximum output from a photovoltaic solar installation: an altitude of 1000 metres, a clean atmosphere, plenty of sunlight and low temperatures. The “Solar Garden” has five double-axis solar trackers - manufactured by Aplicaciones de Energías Sustitutivas (ADES) - with movement controlled by an automated system that can determine the exact position of the sun throughout the day.

Omron provided the technology required for the automated units, as well as advice, services and technical support.

The movement of the panels is controlled by an automated system based on an Omron CJ1 programmable controller which uses an astronomical clock to calculate the exact position of the sun. Five 4 kW Omron KP40G inverters are installed in each support structure, to convert the direct current generated by the panels into alternating current for transfer to the grid. The modular layout minimises production loss in the event of a fault, while installation and maintenance of the smaller inverters is easier, quicker and more economical compared with centralised inverters.



Contribution to green energy

The results of the installation are even better than anticipated. Reduced downtime and maximum productivity have resulted in an average generation of 630-640 kW/h (compared with a forecast of 400kW/h) according to Spanish energy company Iberdrola. Moreover, low voltage connections mean that the electricity produced can be used by the local population, so there are no transport losses, maximising the benefit of the increased power output.

Martín González, Mayor of Higuera, comments that: "Our municipality has been a pioneer in the development of alternative energy in Castile-La Mancha. The first wind farm was set up here in Higuera and in its day was the largest in Europe. Now we are concentrating on photovoltaic solar energy. We are currently working on a 300 kW project for local investors. We are very proud of our contribution to promoting green energy."

"It is clean, doesn't cause any noise that might disturb local people, and is not harmful to birdlife"



Omron's Environmental Performance

Omron considers addressing environmental issues to be its corporate responsibility, therefore it is an important management objective for the company. Based on this, we established our "Green Omron 21" environmental vision in May 2002, which is intended to maximize Omron's corporate value on a long-term basis and contribute to building a sustainable, resource-circulating society.



➔ To order the sustainability report 2007 please visit:
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Mirror Mirror on the...

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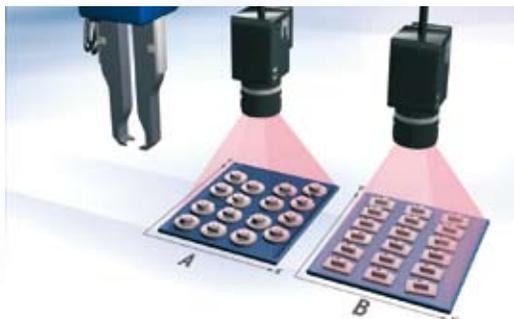


Robotics • Automation
Instrumentation
Industrial Electricity

By Jan Struelens, Industry Specialist Automotive.

Automotive windshields are made by laminating two sheets of curved glass with PVB film, which prevents shattering in an accident. Typically, the glass will be screen-printed with location points for components such as sockets for the rearview mirror and rain sensors. Fixing these components requires exceptional precision, which is complicated by factors such as the curvature and positioning of the windshield, the shape of the socket, the temperature of the windshield, the type of adhesive and so on.

As Stéphane Badts, Socabelec's Development Manager explains: "Fixing a component every 18 seconds leaves no room for error. Fortunately Omron vision systems do much more than simple pattern recognition, which gives us plenty of options."



Stage 1: selecting and picking the right component

A robot is required to pick the correct socket. A PLC tells an Omron F500 vision system what to look for and the F500 scans the available components and analyses them to pick the right one. "The F500 has 32 configurations and many advanced programming features," says Stéphane Badts, "which enables it to select components on the basis of very minor variations."

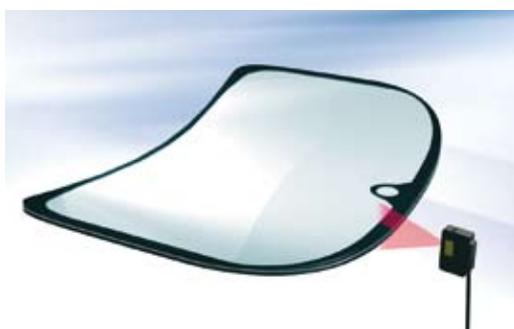
Technical insight: Macro (script) language is used; this made it possible to write a unique calibration program for all types of sockets without consuming too much memory space.



Stage 2: precise placement

A second F500 scans the windshield to detect the screen prints and guide the robot to the right place. Another camera then checks that the socket is positioned and fixed correctly. This ensures there are no defects to be put right further down the line.

Technical insight: defining the ideal lighting is crucial. It was decided to work with LED back light to get the greatest possible contrast and to guarantee the right measurements.



Stage 3: rigorous quality check

While continuing its movement as far as the loading station, a Z500 laser sensor measures the profile of the windshield to ensure that the assembly of the two panes of glass and the PVB strictly observes the specifications.

Technical insight: the Z500-SW6 measuring sensor positioned on a robot emits a 6 mm laser beam onto the object while the Z500-MC15E controller analyzes the data and supplies the profile.

Web Trends

Cambridge test the future of manufacturing

Helping to enhance the future of manufacturing.

Cambridge University's Institute for Manufacturing (IfM) is using Omron CS1 PLCs in a research programme to maximise product lifecycles, improve serviceability, minimise the environmental impact of redundant products, and reduce total cost of ownership.

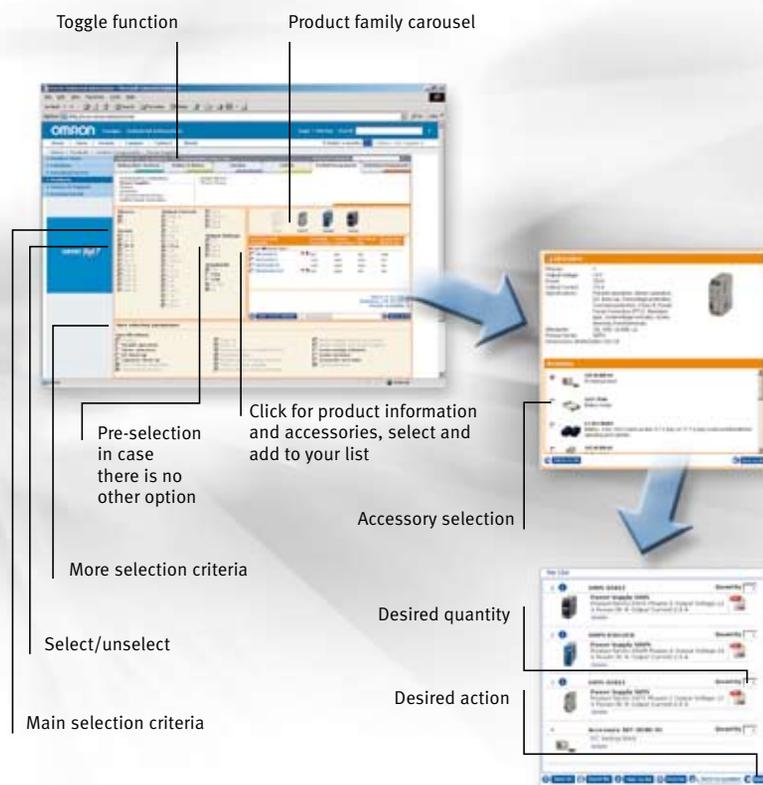
IfM is simulating the manufacturing of a small gearbox. The simulation shows which components could fail, and which can be recycled, and the results will be applicable to almost any manufactured product made up of different components.

IfM's Andy Shaw says the Omron PLCs are easy to program, with a wide choice of programming methods. "These features allow us to modify our systems quickly to try out new ideas, and to use the PLCs as teaching tools."

➤ Please visit www.omron-industrial.com/cambridge to read the full article



'This picture is provided courtesy of the Cambridge University, Institute for Manufacturing (IfM).'



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Integration and reuse of strategic components:

Virtual production systems are reality today

By James Riley, Product Marketing Manager Software.

Production planning is probably more complex in the automotive industry than in any other. The manufacturing process involves the assembly of a wide variety of different components and sub-assemblies in a precisely defined order and at critical times. Over recent years, the process has become even more complex, as customer demand has led to rapidly changing model ranges, each with a variety of options. Henry Ford's "any colour as long as it's black" approach has long been consigned to history.



For production engineers, the key problem is how to plan a manufacturing line for models which often do not exist yet. It's a problem which has been increasingly addressed through the digital factory, a 'virtual production unit' which creates the entire production set-up digitally, using a combination of bespoke and open-access digital tools.

Building a virtual production line

The advantage of the virtual factory is that the entire production process can be developed, checked and modified well before physical manufacturing starts. Production tools can be

designed and tested, timescales modified and processes validated – all without making a firm 'real-world' commitment. Planning and development costs are reduced, as are production cycles. In the world of virtual production planning, a new production line is only put into practice when it has met pre-determined quality, budget, quality and scheduling standards.

For over three years now, Omron has had a strategic partnership with Delmia Automation, and has integrated Delmia's digital manufacturing systems into its control and network solutions. This enables control systems to be programmed and adjusted even before the equipment which it controls has been ordered.

Engineering time and costs are drastically reduced, because manufacturers can digitally define, control, and monitor automated systems. Delmia's unique Logic Control Modeller (LCM) provides a digital model of the control logic of an entire



automation system and delivers PLC program validation entirely in a 3D virtual environment.

A single environment for developing and testing machines

Omron's Smart Platform forms another important element in the development of a virtual factory. It offers a single programming and configuration environment in which users can develop and test the kind of complex integrated machines that typically form a major element within a production line.

According to James Riley, Omron's Software Product Marketing Manager, "Factory automation controllers are now capable of much more complicated control sequences and functions. It's therefore essential to reduce development time by using modern open languages, by improving the readability of the program and by providing the best possible debugging tools."

This is the direction in which Omron is headed, and the future model of program development is shown in

Diagram 1. The user begins by considering the main reusable components of the system – the tools and line elements which would form the backbone of the manufacturer's product line. As new products are introduced or changes made to existing lines, these components can be adapted and reused.

During testing of a program, errors may be found in the asset library components, which can be changed and the asset library updated. Because the library is 'intelligent', it will automatically update each location in the program where the changed component had been used.

Many engineers, one integrated solution

According to James Riley, a key benefit of this new programming system is that it will enable an integrated but distributed development environment: "Multiple users will be able to work on a development simultaneously – perhaps handling different stations along a production line – and the Omron system will provide a system

overview, common tag database and advanced project file management."

Omron sees this combination of integration and strategic reuse of components as essential for effective planning using a virtual factory system. The strategic reuse of basic components maximises planning efficiency, saving time and improving cost effectiveness. Moreover, this kind of digital production planning will allow the engineer to compare alternative processes using 'what-if' interrogation of the system. Inappropriate solutions will be rejected early in the planning process, reducing the risk of costly changes at a later date.

The use of the virtual, digital factory as a planning tool is a reality for many automotive manufacturers, and tools such as Omron's Smart Platform maximise the benefits of this process. These benefits extend from the manufacturer – shorter lead times, reduced costs, faster time-to-market – to the consumer, who benefits from great product choice and more freely available options.

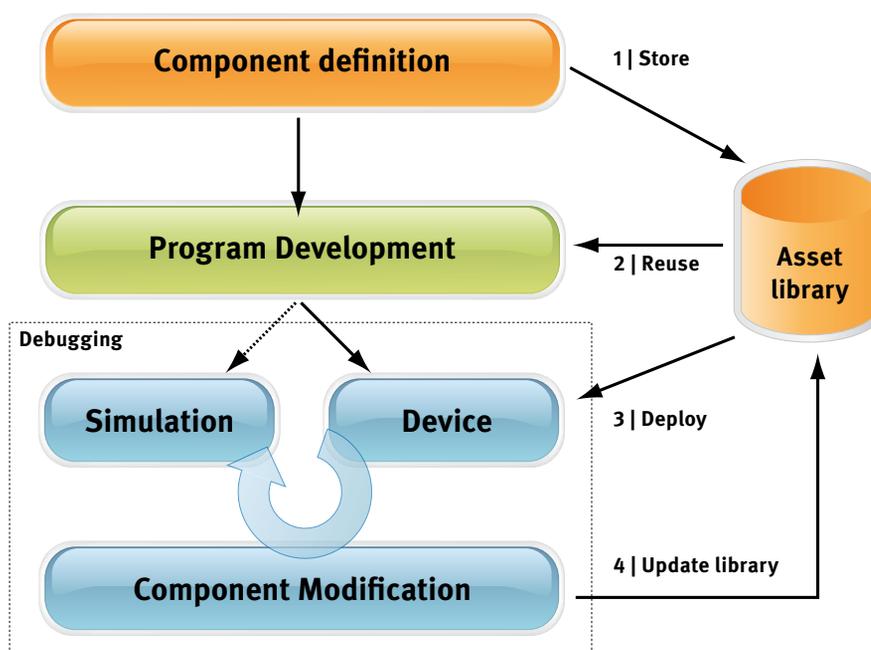


Diagram 1: Development model


PHILIPS

Philips High Tech Plastics (HTP) has developed an auto-focus lens for GSM cameras. To ensure greater precision and superior picture quality, ZS laser sensors are testing the critical parameters.

Sharp... not only the picture

Emerging market

Philips HTP, a Business group of Philips, manufactures lens products for mobile, automotive and medical applications. One of the most recent additions to its product range is a 3 megapixel auto-focus (AF) lens for GSM cameras. The AF camera is equipped with an electric motor for shifting the lens, thereby adjusting the focus - a big advantage over current generations that only give a sharp picture from 1 meter distance.

“The development of the AF camera in GSM phones is necessary for entry into the mainstream market,” says Rien de Schipper, HTP’s Senior Product Manager Optical. “Within short, the digital compact camera will be superfluous because GSM phones will soon be equipped with AF and zoom lenses, as well as flash. We expect an enormous market to emerge, especially in the developing countries where these products will be affordable and act as a status symbol.”

Unique technology for motorised lens

Ron de la Haye, Philips HTP Application Engineer, says:

“Expertise that must have saved us weeks of research”

“The big difference between AF and existing camera lenses is the fact that the lens must be moveable. This means that it must have a motor and electronic control. Our invention, for which simplicity is a key feature, is a mechanism of unique quality that offers greater precision and superior picture quality in combination with lower energy requirement.”

ZS laser sensor

The process from development to mass production goes hand in hand with precise quality control, for which Philips HTP has set up an extensive test process. Control mechanisms include statistical process control of the injection-moulding process with dedicated testing stations

that use Omron ZS sensors to measure a number of critical parameters. The laser sensors collect data for each motor and these are reported to the customer.

Time saving

Both Philips HTP and IPTE, a specialist maker of test machines they called in, favoured the chosen sensor

because it is capable of measuring down to micrometer level with a reaction speed of 110 microseconds. Besides, the communication speed is also much higher than competing sensors. Speed had a big influence on the required investment in test apparatus too. The achieved time saving of 20% translated into the need for sufficient measuring stations, costing several ten thousands of euros a piece, results in a mayor saving of investment costs.



Added value

Another advantage is the sensor's ability to measure on any surface, whether rough, smooth, light or dark. Its reliability, price and integration possibilities were also points in its favour, as was Omron's support. Ron de la Haye: "Compared with its competitors, Omron not only gave a quicker response, it also offered sound expertise that must have saved us weeks of research."

Thanks to its USB interface, the ZS sensor can be connected to all standard peripherals, which eases the integration with other equipment. "The sensor is effectively a serial device, but with a USB connection," says de la Haye. "None of the other makes that we have evaluated could

offer that. Also a standard USB cable can be used whereas some other require special and therefore more expensive cables. Some of the other makes require special and therefore more expensive cables."

Rapid growth expected

A number of test stations are already in use and this number will rise over the coming months to meet the growth in production. Rien de Schipper: "We expect that annual sales of mobile phones will exceed the magical one billion mark in a couple of years. The ultimate goal of Philips HTP is to ramp up production and corner a substantial share of the world market."



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