

technology&trends

magazine



Quality in the supply-chain's DNA

Tetra Pak introduced a new way of co-operation with its key suppliers

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The sensitive machine will arrive

Northern Foods, what they expect from machine builders

More on page 4



Trends in machine building

We asked Faouzi Grebici, to shares his vision

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Making innovation possible.... with a passion for quality!

The financial banking crisis of last summer has caused, in many developed countries, a visible and significant drop in manufacturing and industrial production. It is clear (at the time of closing this issue of Technology & Trends) that the world of industrial automation has also been affected, with many statistics reporting negative results within the last quarter, for almost all of the most important industry sectors.

Governments are struggling to adopt emergency measures to face this crisis and enable economy recovery. In some countries tax reduction has become the main solution to stimulate consumption, while other governments are investing in private banks and companies in order to support their financial situation. It is interesting, that this is also happening within economies and countries that are well-known as always following the 'law' of an open and free market.

Surely this current economic crisis will enable people (and companies) to develop a new awareness regarding the need for a more sustainable, healthy and environmentally friendly growth. For example, the quality and flexibility of machines and related automation systems and components will be considered as a key factor to limit waste, to increase the duration of an investment and to ensure longer life of the final product.

This is the cornerstone of the Omron company motto, developed by founder K. Tateishi: "At work for a better life, a better world for all". This inspiring statement, to improve the quality of life, is what keeps Omron focused on driving innovation and seeking better quality, not only within its products, but across the whole organisation, learning and exchanging experiences with customers and partners. With this philosophy and passion for quality in mind, we work together with our customers to improve their machines, to design new solutions, provide safety for the operators and controlled quality for the final product. I invite you to read the articles in this issue, where I hope you will find interesting examples and ideas regarding "making innovation possible...with a passion for quality"

Maurizio Poli – Editor in Chief
European Marketing Communication Manager



*Omron company motto stated from the founder K. Tateishi:
"At work for a better life,
a better world for all".*



Cover:

Looking at the situation above, what's your guess?
Will the milk reach it's destination... into the bowl?

Omron's customers like Tetra Pak are committed to making food safe and available, everywhere. Their processing and packaging products protect the nutritional value and the original taste of food. Quality throughout the whole supply chain is essential.



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No need for specialized skills anymore.



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Omron's Manufacturing platform

Strong local product development and manufacturing facilities enables us to be more responsive to customers' needs.

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IPTE: What it takes to stay competitive.

Separating the control system from the machine.



Biscuit production is partly defined by the organic nature of the ingredients: every product is slightly different, which complicates the handling process. At Fox's Biscuits, one of the UK's leading biscuit manufacturers, fully automated production is a vision which is being achieved – gradually.

Northern Foods is one of the UK's leading food producers, with a range of important brands, of which the oldest is Fox's Biscuits. This traces its history back to 1853 when the company was established in Batley, England, where the company still manufactures. It has two other UK sites at Kirkham, and at Uttoxeter, where the company produces packs of biscuits of various styles and sizes.

According to Mick Walker, senior manufacturing systems engineer at the plant, this variety is a major challenge in the production process. "In the biscuit-making industry, we deal with organic materials, and the baking process always has a variable effect: all biscuits are slightly different from one another."

Efficiency, quality and low wastage

In practical terms, this means that the wrapping machines need to work to fairly wide tolerances, while maintaining efficiency, quality and low wastage. Mick Walker explains when a new wrapping machine is needed, the Fox's Biscuits' team will have a reasonably clear idea of what they want. "We know the tolerances, the kind of wrap, the size of biscuits, the output speed we want" he says, "and we go to the machine manufacturers with our specification."

However, it is not just a question of picking a machine that meets the specification. "What we have to do is design production lines with automation in mind from the start," says Mick

Wanted:

A machine with perfect hand-eye co-ordination

Walker. "You can't simply slot a machine into a line and hope it will do the job – because it won't." So the mixing machine must work with the baking machines, which in turn has to work with the wrapping machine.

All specialist machine makers have R&D facilities, and they – and biscuit producers – consistently look for new ways to increase the level of automation. Control systems, for example, have advanced by leaps and bounds, and for several years Fox's Biscuits has standardised on Omron controls for its machines.

Biscuits: inherently fragile

The use of robotics similar to those employed in, say, vehicle manufacturing is still some way off. Mick Walker

explains: "Biscuits are inherently fragile, so they can't be handled in the same way as metal or plastic products. You still need delicacy, versatility and co-ordination of the human hand on the production line."

This is most evident when operators pick up a stack of biscuits, turn them through 90 degrees, and place them on the wrapping machine. They do this all day - quickly and with unerring accuracy, without dropping or breaking a single biscuit. Mick Walker says the time will undoubtedly come when a machine is designed with the sensitivity and 'hand-eye' co-ordination of a human, but it is some way off.

The sensitive machine will arrive

The other issue is the cost/speed mix. This sensitive machine must be able to pick and transport stacks of biscuits at high speeds, without breakages – and be delivered at an affordable price. Mick Walker says that most machine designers and makers are working on the issue, and incremental improvements are being made. "It will come," he says. "It will take improved machine control, different sensors, new handling tools – there's quite a list, but within the next few years we will have a fully automated production line."

Vinnie the "wise-guy Italian American" seen in Fox's ads.



Born under the sign of growth

Different attitudes, diverse approaches, various mentalities. Each country with its own local taste, but all associated with an outstanding growth. Spotting the secrets of Omron East with its Regional General Manager, Marco Brunetti.



Could you define Omron East?

Omron East is a vast region and it includes five National Sales Companies, located in the Czech Republic, Hungary, Poland, Russia and Turkey; two Country Sales Offices, in Romania and Slovakia, and a strategic number of selected distributors which operate, in line with our Vision, in Bulgaria and in the Middle East. We've about 180 people in the business, 85 percent in sales, marketing and technical support, so we tend to stay very close to our customers. This helps build the business, because we create solid and long-lasting relationships with our environment every day.

It's a growing market?

It varies across the region, but yes, we've enjoyed good expansion over recent years. Our growth has benefited from our involvement and capability to understand the real needs of our targets, together with the rapid development of these nations. In fact our countries have been considered to have the healthiest and fastest growing economies in Europe and they have demonstrated their positive performances for years. They

have been led not only by exports and increased foreign investments, but also by a high domestic demand, especially from a growing middle class, adding new products and infrastructures to boost their quality of life. The result has been an increasing request for automation and control solutions from various sectors, which is expected to boost the growth of the automation and control solutions market.

What's the secret of your success?

We are constantly dedicated to providing to all our Customers with innovative and superior-quality technology, excellent cost/performance ratios, meticulous customer orientation, and large areas of expertise as a provider of sophisticated automation solutions. These are the key success factors of our growth. Vision and Motion Control are our key products; Packaging, Lift&Cranes, Automotive and Process Control the sectors in which we stand out.

Moreover, as a leading supplier of automation equipment who strives to deliver solutions and services with

superior customer benefits, we strongly believe that our success is steadily linked to the success of our customers. We are able not only to plan machines that are optimally tailored to meet market and customers requirements, but also to maintain them and provide support. In the field of automation solutions we are the ideal partner for machine manufacturers. This partnership ranges from cooperation in new machine development to around-the-clock support with spare parts and expertise. To successfully contribute to the value-added chains of our customers, thanks to our logistical superiority, we are able to deliver products in Eastern countries within 24 hours, to provide our customers with more efficient solutions than our competitors, together with a flexibility and intimacy that distinguish our company.

The fact that Omron is able to provide the ultimate technology, together with a deep customer-oriented philosophy, is the reason for the excellent market position we currently hold in Eastern Europe.

So, why should a customer based in the East choose Omron?

Because we are close to our interlocutors and we keep our eyes and ears on their business. Our strengths are:

- A diligent relationship management and a fruitful orientation to the customers;
 - A deep market expertise and knowledge of many specific industries;
 - Our innovative and reliable portfolio;
 - Intensive programs and recurrent training. A clear example of our deep involvement in education is the Automation Competence Laboratory we set up at the Turkish University in Istanbul. This centre gives the students the opportunity to get experience in automation and control technologies and it allows our customers to see first-hand various application solutions, and to test our products;
 - Our specialized support, composed of internal and field technicians;
 - A 24-hour delivery;
- And, of course, our passion for quality!

And what about the future?

Working in Omron East is managerially challenging. Our markets do not perform like Western Europe developed ones or like fast-growing emerging countries, like China and India. Our markets are hybrid: we've come from a standing start, shot up like a rocket, slowed a bit, but we are committed to grow together with our Customers and Partners in all our countries. Eastern Europe is a very good business region, especially Russia where the market potential is enormous. We are convinced that our expertise in value-added technical support and our impressive distribution network, ability to provide logistical and engineering support, will help the Customers to identify Omron as a top partner for their expansion.



Product News



Trajexia in compact format

Trajexia expands with new PLC-based controller

Omron has expanded the Trajexia product line with a new controller focusing on compactness and simplicity. Capable of controlling up to 30 physical axes, digital I/Os, encoder port and MECHATROLINK-II master connection are all included in a single unit.

Trajexia-PLC was specifically created with your application in mind. By focussing on compactness and simplicity, it will help you to create the next generation of market-leading machines quicker than ever.

Integration of your application could not be made easier. Besides a built-in MECHATROLINK-II port providing precise control of up to 30 axes, it takes advantage of the wide range of CJ1 network interface modules to communicate to other Fieldbus systems such as Ethernet, Profibus or DeviceNet, and naturally you have the widest choice of best-in-class servos and inverters.

The Trajexia motion controller and the PLC exchange information through shared memory areas, helping you to simplify programming and data access, making your machine design quicker and easier.

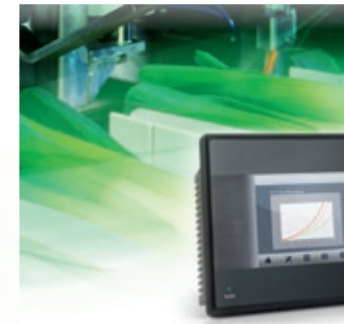
Trajexia Studio software

The Trajexia Studio tool offers an easy and intuitive software environment that saves time programming and debugging your applications. It supports existing devices, as well as the new PLC version and future developments.

Features and benefits:

Trajexia controller: • Compact size • Control of up to 30 servos or inverters • Selectable cycle time from 0.5 ms to 4 ms • Serial port for external encoder • Embedded digital I/Os • Same instructions set as 16 axes stand-alone controller

Trajexia Studio Software: • Improved user graphical interface • Multi device support • Drag & drop functionality • Offline programming and advanced download • Program comparison tool • Axis configuration wizard • Advance editor features



NQ

Create and Operate

Incorporating many of the advanced features previously only available from high-end HMIs, the NQ series for HMI's brings power and sophistication to small and medium sized applications.



G2RV

Industrial interfacing made easy

Our G2RV connectors are specifically designed for industrial interfacing. They create faultless connections in a matter of seconds and avoid wasting time with screwdrivers or soldering when replacing relays. Three clicks suffice to create a perfectly secure and reliable connection with your PLC.



E32

Highest detection reliability for flat glass

A new generation of glass detection fibre sensors is available for the photovoltaic and semiconductor industry. The housing construction has been optimised for different detection distances, temperatures up to 300°C, or water and chemical resistance.



E5 N-H

Proven concept with process control features

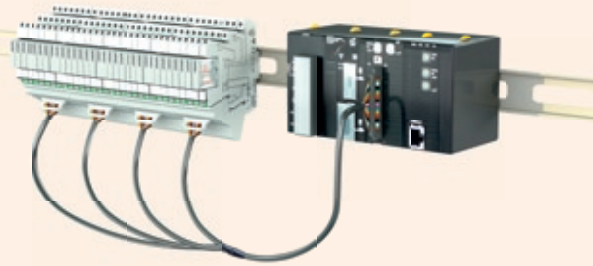
The new E5_N-H series takes proven features to the process control level and with the same easy installation, operation, and menu structure as the E5_N series. However, it improves both on accuracy and speed, as well as process control features.

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




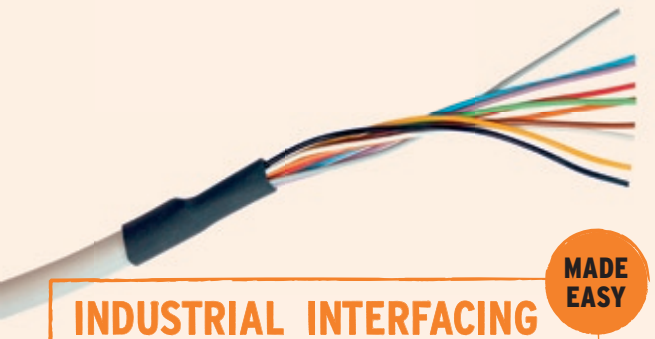
Boost your productivity with G2RV



Three-click connectors for easy interfacing
Our G2RV connectors are specifically designed for industrial interfacing. They create faultless connections in a matter of seconds and avoid wasting time with screwdrivers or soldering when replacing relays. Three clicks suffice to create a perfectly secure and reliable connection with your PLC.

- Interface blocks of 8 relays with your PLC
- Guarantees easy and faultless wiring every time
- Standard 8- and 32-point cables readily available
- Sets up secure and reliable connections in only three clicks.

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MADE
EASY

INDUSTRIAL INTERFACING

VDMA - the voice of German machine builders



With over 970,000 workers in Germany at the present time, production output totaling around EUR 191 billion in 2008 and an export share of over 78%, German mechanical engineering is one of the leading industries in Germany. The VDMA is a lobby group, service provider and point of contact for some 3000 companies. The industry comprises predominantly SMEs. Of the 39 sub-industries in the VDMA, over half are also world market leaders in their respective segments.

“We are anticipating a more stagnant market in 2009 due to the global economic slowdown, certainly there will be unequal distribution of opportunities for the individual specialist machine builders branches,” said Manfred Wittenstein, Chairman of the VDMA. “This distribution will grow. While some consumer and construction-related specialist branches such as textile machinery, printing machinery or construction machinery could be put at a disadvantage, other areas relating to energy and raw materials, such as mills and rolling mill plants or power systems, could still see good to very good growth prospects,” says Wittenstein.

We asked Mr. Rainer Glatz, Managing Director Electrical Automation at VDMA:

What are, in your opinion, the three most essential elements to stay successful as a machine builder in Germany?

- Having qualified and independent staff
- Developing and using the latest technology to benefit customers
- Close and continuous cooperation that extends far beyond company and industry boundaries

Out of those elements: Which one needs the most attention? Qualified, independent staff.

The specialist knowledge of machine building and the understanding of technologies used in this industry are essential if companies are to keep on developing. To ensure that the necessary skilled workers remain available, it is also vital to focus academic training on practical and vocational skills, to provide skills-focused vocational training and to structure the education system in a more open way to ensure new vocational and higher educational routes are created.



Tetra Pak's new vision: quality in the supply-chain's DNA

Adam Smith and Clara Carlsson from Tetra Pak explained how they successfully involve suppliers »



"Quality is always measured and rated in relation to customer expectations and therefore [we need] to understand and foresee what they expect from our products and services, and deliver accordingly. Nothing else will do." So said Dennis Jönsson, President of Tetra Pak, during a conference in Modena, Italy, at which the company introduced a new way of co-operation with its key suppliers.

We all know Tetra Pak - which is hardly surprising given that just about everyone reading this article will have used a Tetra Pak package within the past 24 hours. And the numbers are truly breathtaking: in 2007 over 137 billion packages were delivered - more than 4300 packages of food or drink every second of every day. But Tetra Pak is much more than packaging, because the company delivers complete processing, filling and distribution systems to food manufacturers worldwide. Given that some systems will fill 18,000 packs an hour, any downtime will cause serious problems for the customer, as well for Tetra Pak in lost sales of packaging materials.

Involving suppliers in our quality chain

Adam Smith, Tetra Pak's Director Total Quality, Capital Equipment, explains that he was appointed specifically to make improvements in the machines and systems that Tetra Pak supply: "We recognized that quality issues can be within a department, between different departments, or between us and a supplier. We decided from the start that we needed a two-pronged strategy. The first priority was to 'shut the door' and prevent defects from reaching the customer; the second was to 'get things right the first time' by driving improvements across the supply chain."

One of his first actions was to set up a Total Quality Supplier Management unit, headed by Clara Carlsson, with a remit to improve the quality of component supplies. Recently Tetra Pak's top fifty suppliers were invited to a one-day conference: after a frank analysis of the issues raised by a supplier quality audit, Adam Smith and Clara Carlsson explained how these were going to be addressed. "We explained that we were introducing a new way of co-operating with our key suppliers, working with them to drive quality improvement programmes," says Clara.

Quality is a company-wide issue

Total Quality is a mantra for Tetra Pak's ambitions for continued success in the future. As Adam Smith explains, "Quality is a company-wide issue: although we are the core team, we don't want to be seen as the 'owners' of quality - we're not. Ours is primarily an enabling function." As part of this enabling process, Clara

Carlsson has set up a Supplier Quality Assurance (SQA) team, to work with the suppliers to eliminate the root causes of component problems.

"It's not about policing and waving a big stick, because we know that's not effective" says Clara. "It's about identifying improvement opportunities. Before we had SQA in place, suppliers had little feedback from us, but now we communicate systematically and transparently. The better ones take a proactive role, coming to us with issues, concerns and ideas for quality improvement."

The next step in this process is the establishment of a Supplier Development team, staffed by engineers who will work with key suppliers. Clara Carlsson explains that "They will ensure we retain the right suppliers, with the right quality processes." And the aim is always to improve. "If a supplier's quality is less than 100 percent, we will support and help them to improve. But if the supplier cannot or will not make the improvements, then that's the end of the relationship."

A restless need for continuous improvement

Tetra Pak recognises that quality is always measured in relation to customer satisfaction, and the new way of co-operating with suppliers is already delivering results in terms of fewer customer claims as a result of machine downtime. Adam Smith says that "If we achieve continuous improvement throughout the supply chain, then product quality - and customer satisfaction - will be a given." Not that he is content with

Tetra Pak

what's been done so far: "There will always be opportunities for improvement: when you think you can't do better, that's when you fail. And we need suppliers who have this same restless urge for continuous improvement."

Tetra Pak now has a Vice-President, Quality whose primary objective is to develop a quality culture throughout the organisation and beyond. Adam Smith concludes that "The aim is to make quality the lifeblood of the business, to inject it into our corporate DNA, and into the DNA of the entire supply chain. We'll do this by focusing on all the elements of quality performance - people, process and tools - and how they interact. The key deliverable is total customer satisfaction, because that will give us an unbeatable competitive edge. It will take time, but we have taken a major step down the road: and we are not going to turn back."



"when you think you can't do better, that's when you fail."



"although we are the core team, we don't want to be seen as the 'owners' of quality."



In each edition, Faouzi Grebici (Division General Manager Motion & Drives Europe and America), talks about his observations regarding machine automation in Europe.



Talk about...

Innovation: the most direct route to growth for European machine builders.

Faouzi Grebici, Division General Manager Motion & Drives Europe and America, talks about ways in which European machine builders could grow their businesses, and how best they could combat the threat from lower-cost manufacturing bases such as China. As he explains here, Mr Grebici thinks that the most direct route is through innovation.

Most of the 15,000 or so machine builders whom we deal with in Europe are concerned to grow their businesses in the face of global competition and demands for improved performance. It seems to me that there are four key strategies that the more successful companies use to meet these challenges. These are:

1 Designing better machines

It's worth re-stating that enhanced machine functionality, improved throughput or reduced set-up times are always going to be attractive to customers. Some companies that we deal with are culturally well tuned to innovation, continually challenging us to develop new and improved control and automation products.

2 Creating and extending service offerings

Customers now expect lifetime support for machines, no matter where they are used. Providing innovative and value-added service can be a major sales benefit – and a profit centre.

3 Expansion into new markets

Some companies look at new industrial sectors for their existing machines, while others expand into entirely new geographic areas. Either approach needs something of a leap of faith, and probably means negotiating a learning curve.

4 Production efficiency improvement

Most companies want to reduce the cost of manufacturing, although the smart ones avoid making price the sole differentiator: building a better machine more efficiently is the more sensible approach.

Four strategies, each of which provides a platform for added competitiveness: most machine builders focus on one or two, although some try all four. And whatever strategy is chosen, it seems to us that success comes when the company introduces innovation into the process.

So let's look at each in a little more depth.

Designing better machines

Just as machine builders are experts in their field, so technology providers are experts in theirs. Many machine builders have built effective partnerships with their technology suppliers, so that their combined skill bases can be put to work for the end user.

Of course, technology suppliers need to make their expertise and resources available in a way that suits the machine builder. The progressive machine builder will rightly require their technology company to adapt their way of working to suit the demands of the partnership arrangement.

Creating and extending service offerings

Machine builders who seriously want to compete in global markets recognise that value to the customer is not solely in the machine – it's also in the maintenance, repair and upgrade support offered throughout its working life. The right kind of service can reduce the total cost of machine ownership, which is always music to the customer's ear.

Modern control systems can allow remote diagnostics and servicing, and this opens up the potential for service contracts. These can extend throughout the lifecycle of a machine, and provide the machine maker with continuing income streams in future years.

Expansion into new markets

No company's marketplace is ever static, and forward-thinking machine builders look outside their existing markets, recognising that there is significant value in their expertise and experience. Going further, some companies have 'virtualised' their offering: they have developed extensive skill sets and broad-based geographical capability yet they operate with relatively few full time employees.

Many achieve this by partnering with organisations, like ours, which have global coverage and experience. The partner organisation provides localised support as and when required through their field service engineers - more than 1,000 of them in Omron's case in Europe alone. This gives machine builders the flexibility to meet the needs of a much wider spread of customers.

Other machine builders stick to the geographical regions they know, but tackling new and growing vertical markets. Packaging is a classic example of a market that offers a rich seam of opportunities: here again, packaging manufacturers need to push technology suppliers for innovative solutions.



Improving production efficiency

No intelligent customer buys on price alone, but all want value for money. So machine builders will benefit from building in value while reducing costs. Over the recent past, modular construction has emerged as a significant way to reduce manufacturing costs, and nearly half the machine builders with whom we work use this method.

With the right support from suppliers, modular construction can both protect quality and significantly reduce build times. Modular construction can also speed up new-product development, because modules can be reused, reprogrammed, and repurposed in a much shorter time than it takes starting from scratch. This works best when technology suppliers develop innovative products with backward compatibility, so modules can be upgraded easily and efficiently.

Some machine makers have focused their energies on their supply chain. By co-operating closely with suppliers they can plan the supply and delivery of components more efficiently, reducing parts inventories (and thus costs), while avoiding production hold-ups.

Other machine makers have taken the route of outsourcing manufacturing, often as part of international expansion. It can be a risky strategy if there is a radical change of supplier, or limited local support. Ideally, the machine builder should have access to the same components - and have similar levels of support - as they do in Europe.

Enabling innovation

The role of the technology supplier is to enable the machine builder and OEM to grow their business and to innovate through a mix of these four strategies. In achieving future growth, there are three contributions that the machine maker should expect from the technology specialist:

- Products and technology, which should be innovative, integrated and easy to use
- Application engineering, providing help in proving concepts and ideas
- Value-adding services, that should be available globally

Our investment in these areas means that machine makers have a choice in the way that they differentiate in their markets, and in how they build innovation into their equipment.

Every technology supplier should know the pressure that design and production engineers are under – certainly Omron does. So we need to do our bit to make it easier for them to find and implement solutions which offer additional benefits to their customers. If innovation is continually stimulated, we can be sure there is a strong future for us all, regardless of the growth of manufacturing in lower cost economies.

Over recent years, technology developments and competitive pricing have made automated motion control much more widely available. The benefits of increased simplicity, greater flexibility and improved reliability have led to enhanced performance in a wide range of applications developed both by machine builders and OEMs.



*Josep Manel Fernandez
Product Marketing Manager*

Motion control comes of age

Even so, set-up and tuning of servo systems has often required specialized skills. That's changing, with servos that don't need tuning, and programming in the PLC environment to give open access and make both installation and maintenance much more straightforward.

A dedicated motion control system

The introduction of Omron's new Trajexia platform is a logical development of this process. A dedicated motion control system that allows the design of machines with a very high degree of automation, Trajexia has the connectivity to meet foreseeable communication standards, as well as interfaces to popular field buses such as Profibus-DP and DeviceNet. This familiarity tends to give a short learning-curve for designers, installers and operators, which is important in reducing time to market and increasing machine uptime.

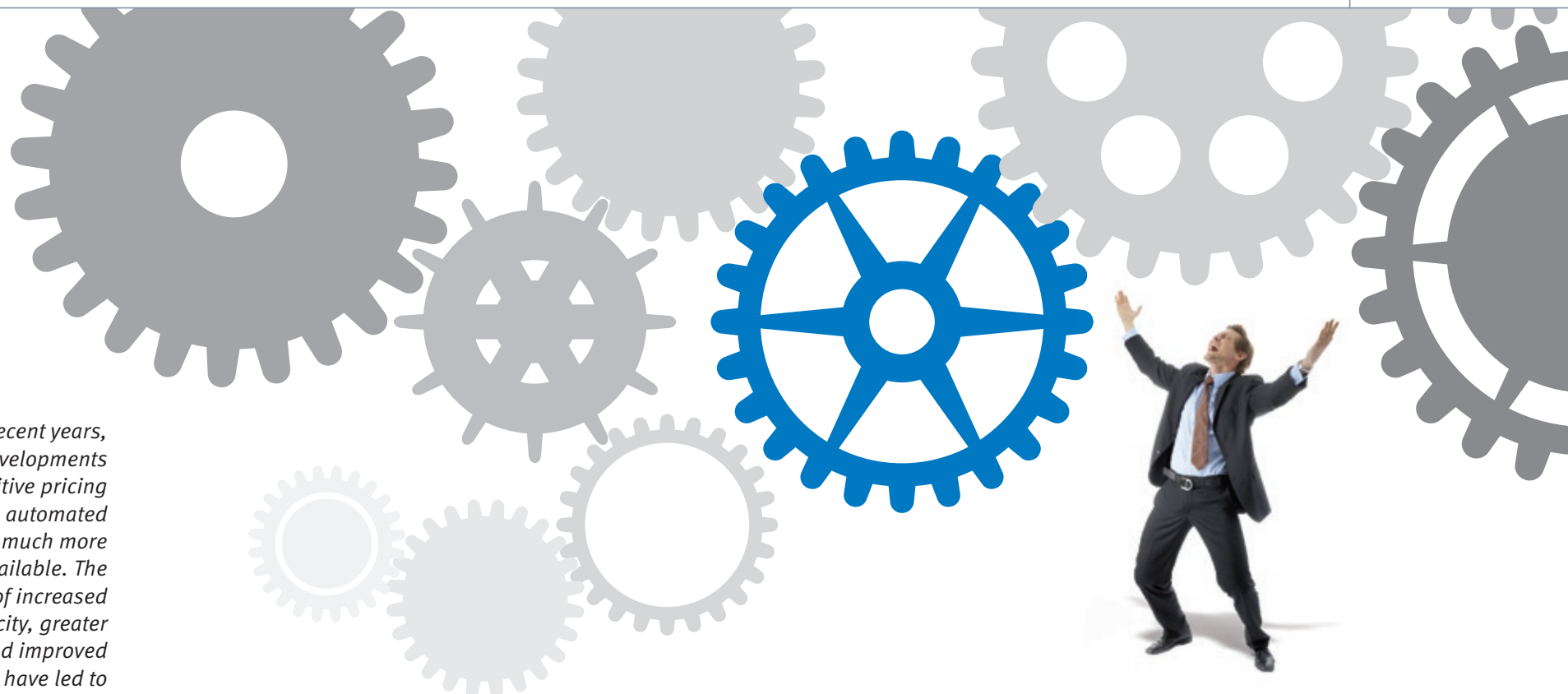
A core criterion in the development of the system was to make it fully scaleable. It is, for example, capable of controlling from four to 30 axes, each of which can run complex interpolation moves, and it can handle up to 14 operations simultaneously for genuine multi-tasking. The servos are controlled over a fast, robust MECHATROLINK-II bus, specifically designed for motion control, which has the speed and accuracy that's essential in this kind of application; inverters connected to the bus are driven at the same update cycle time as the servo drives.

Immeasurable improvement

In parallel with developments in control systems, servo design has improved immeasurably in recent years, and Omron's Sigma series offers a wide choice of rotary, linear and direct-drive motors. This choice is important, because it gives engineers the design freedom to think outside the box, creating machines to meet

the increasingly precise needs of users.

Automated motion control, starting in the development process for new machines and production systems, has considerable potential for reducing both costs and manufacturing cycles. This potential will continue to be realized by manufacturers such as Omron working in ever closer co-operation with customers.





A European manufacturing strategy for the European market.

Achieving our ambition of becoming a pan-European leader in sensing and control systems will impact on every part of the business. An important part of this is the creation of a manufacturing platform that's designed to meet the needs of European customers.



Our existing European manufacturing locations – in the Netherlands, Germany and Italy - have been developed as specialist production centres, with expertise in particular product types. It is a strategy which has served the company well in the past, but it is not really suitable for the dynamic pan-European business that we intend to become over the next few years.

Hugo Sintnicolaas, who is responsible for implementing a new manufacturing strategy for Omron Europe, says that the company now needs to create a strong platform that will link all of Omron's European manufacturing capabilities. "Having strong local product development and manufacturing facilities in Europe enables us to be much more responsive to customers' needs," he explains. "Specialist products are essential for the European market, and the ability to respond quickly is a clear demonstration of our commitment."

Reduced lead times for specialist European products

There are three major advantages to having a strong manufacturing platform in Europe. The first is reduced lead times for specialist products, with much easier customisation. Hugo Sintnicolaas says that within two years the aim is to achieve lead times for these customised products of less than a day. This implies very accurate forecasting – another important strategy for our pan-European

ambitions – and having the right components in stock at all times.

The second advantage is that specialist European manufacturing enables us to develop products specifically for the market. These will be non-standard products that are intrinsically more complex, and which therefore have a higher added value. They will need to have a lower human-capital content, although will involve intensive design investment. The long-term aim is to increase locally-developed products to over 50 percent by value

The third advantage, which is related to the first two, is that local manufacturing will make it easier for us to integrate our product development facilities across the business, and make them more customer focused.

Increased productivity, greater added value

Increasing productivity and adding value are things that we already know we are good at. The proof of what can be achieved is seen in the factory in the Netherlands, where PCB manufacturing is now concentrated. Sustained investment over a five-year period has changed completely the product base, with the result that productivity and profitability have both increased dramatically. The same level of investment is now happening in the German factory.

At the same time, the competences of the manufacturing organisation are being integrated, with components

purchased through a single centre, and administrative systems being streamlined. Hugo Sintnicolaas says that the manufacturing base is increasingly able to support R&D, logistics and the sales force. "We need to get closer to the sales force, with sales people coming to the factories to see our capabilities, and to explain their requirements," he explains. "We're already seeing this work in practice – we now have many more visitors to the factories, and we want to see this increase still further into the future."

Lean manufacturing, flexible customer-orientated production and good quality control are the watchwords for this new manufacturing strategy. The potential benefits are considerable – and as has been shown already, they are well within our grasp.

Identity Identified...

*Flexible, intuitive operation
Competition for the human eye
Vision tool with true colour processing*



Jörg Oelsner
Key Account
Automation & Drives
Omron Germany

Quality assurance plays an important role in relation to automatically manufactured products. The demands placed on the quality assurance methods used are high. One example of this is the manufacture of telephone, bank and credit cards, or the production of identification documents, such as passports or ID cards. Naturally, modern vision tools can only be used in the various areas of application if they can offer the essential level of reliability.

Specialist machine builder Ruhlamat in Marksuhl, Germany operates in the areas of chip card processing and assembly technology and, among other things, specialises in developing modular systems for producing and processing chip cards and ID cards. Modular design means that standard solutions can be tailored to the individual needs of the customer. End-users then employ the machines to manufacture a variety of products, such as telephone, GSM, ID, health, bank and credit cards, or the production of identification documents, such as passports. The final quality check is of vital importance in the production process because missing or incorrect information on the cards is unacceptable.

“Cycle times for quality control are getting shorter and shorter”

Fast and reliable

Production speeds are constantly increasing, particularly when it comes to the production of chip cards. The latest Ruhlamat systems can produce up to 6,000 cards per hour. Thus, the final quality control cannot be allowed to delay the production process. “Cycle times for quality control are getting shorter and shorter,” explains Christian Ortmann, a vision inspection specialist at Ruhlamat. “Because the tested products still need to be fed in,

positioned and then removed again, there is relatively little time left for the actual testing process.” The new vision tool Xpectia was therefore optimised in such a way that, as well as handling times, the

times for actual quality control are kept as short as possible. The emphasis was placed on the speedy processing of data. A high level of reliability was also required. “In the past we frequently encountered problems with text recognition,” remembers Ortmann. “This meant that variations in quality led to extremely high pseudo reject rates during ongoing printing. Adapting to different character sets also proved to be problem.” This is why the OCR (Optical Character Recognition) test algorithm was developed in line with specifications



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in the new system. New fonts can now be loaded more effectively and semi-automatically. At the same time, reading speed was increased dramatically, reaching up to 1.5 ms per character. “This is particularly important in relation to the required short cycle times,” says Ortmann. “Because the new system uses true colour image processing, the measurement results have become more reliable.”

Good cooperation was decisive

“We have been using a wide variety of Omron automation components for over ten years now,” explains Ortmann. “During this time we were constantly aware that these automation experts not only sell products, but are also interested in ensuring that these work smoothly within the overall solution. As users, we receive the support we need, at all times.”

Although Ruhlamat expects a lot from the vision tool it uses, the application has by no means reached the limits of its capabilities. Because it uses true

colour image processing, it is suitable for applications involving difficult lighting conditions or with surfaces that require different colour filtering. Even minimal contrast between the object and background is not a problem. Camera-to-subject distance, image size and lighting can all be adjusted in a flexible way. Thanks to the high resolution, even applications in which very large and very small features have to be examined at the same time are not a problem. Finally, two cameras can be mounted at a fixed distance, enabling three-dimensional measurement of objects on the basis of the stereo principle. Because it is possible to perform two and three-dimensional testing at the same time, shapes and surfaces can be checked in a single process. This makes the vision tool suitable for all applications in which two or three-dimensional coloured objects need to be tested quickly and reliably and in which hardware and software needs to be easy to use and flexible to adapt.



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Mechanical engineers tailor their work to each client and therefore need to be able to adjust their PLC to the client's specifications without having to constantly redevelop the machine. The solution is to separate 'the machine' and its drive systems from 'the control system'. Trajexia was chosen to make the motion controller independent of the PLC or iPC



IPTE is the market leader for production machines and turnkey production lines for the assembly of PCBs. The company supplies everything from stand-alone modules to a complete 'PCB factory'.

With 200 machines sold within a few months, IPTE's EasyRouter, a budget-friendly milling machine for cutting out printed circuit boards (PCBs), was recently recognised by the press as High Tech Bestseller in its field. We had a conversation with Phil Frederix, Machine Automation manager at IPTE.

Expertise needed, not just a product

Eight companies were contacted to do a proposal for the motion control application. IPTE didn't just rely on what it was given on paper. Specific routine programs were written which were tried out on real modules of the various brands. One such test, for example, was to see how precisely

and quickly a weight of 60 kg could be positioned through a horizontal movement. Following in-house testing, the suppliers were asked to provide a specialist to improve the programs that had been written. As a result of these tests IPTE chose Omron as its partner

Freedom for customer standards

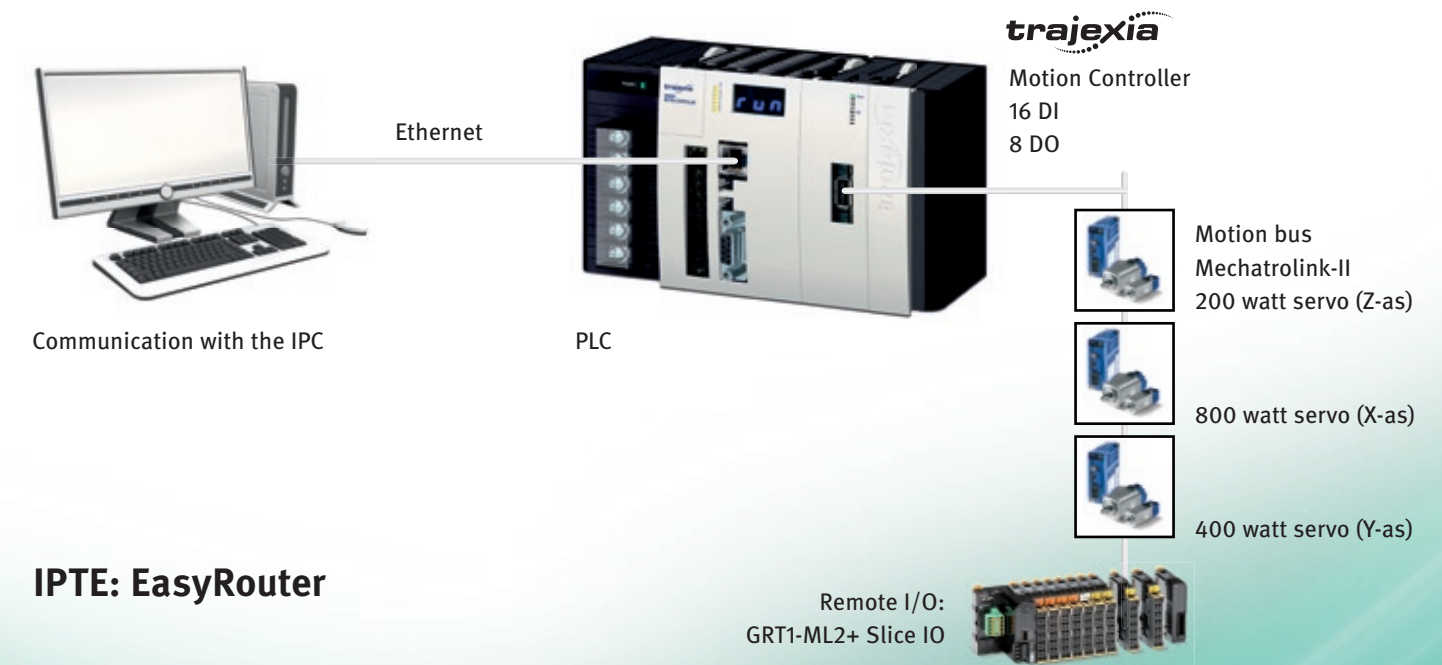
The decision was made to separate the functions of 'motion controller' and 'PLC'. This allows IPTE to tailor the control system, to the client's specific standards easily and without having to rebuild the machine. Using Trajexia to make the motion controller independent of the PLC, or iPC, and setting up a standard link such as an open fieldbus between the two it becomes very easy to change the PLC or to replace the PLC with an iPC.

In order to test the performance of the 'motion' component the speed and accuracy of positioning was

investigated. Also other areas were looked into including the quantity of instructions that have to be written in order to achieve specific functions and the number of parameters that have to be set.

Trajexia was chosen for its intuitive, easy-to-use programming tool that makes it possible to control up to 16 axes. Measurements have been taken showing that the axes are controlled with a repeatability of 2 µm precisely. An additional advantage is that it also has built-in PLC functionalities which facilitate compact machine management.

Total freedom in motion control gives IPTE a competitive edge



IPTE: EasyRouter

Colophon & Contact

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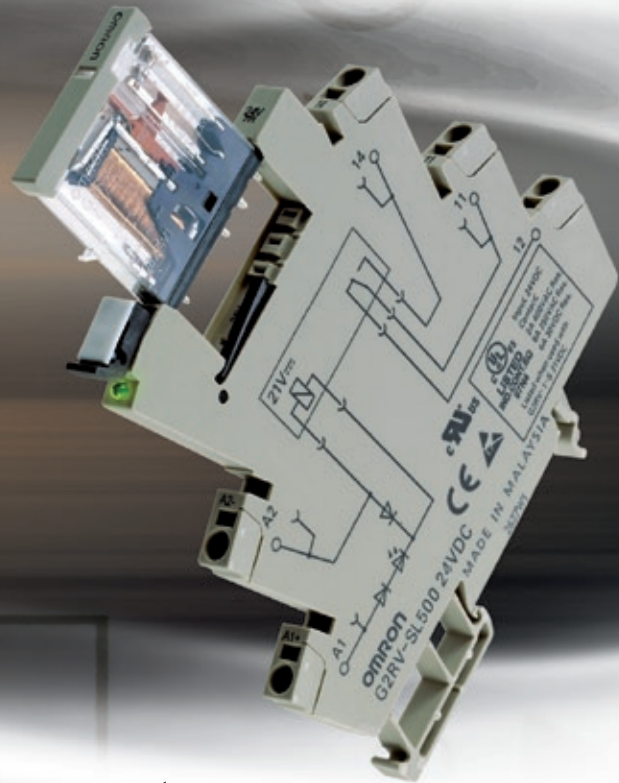
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