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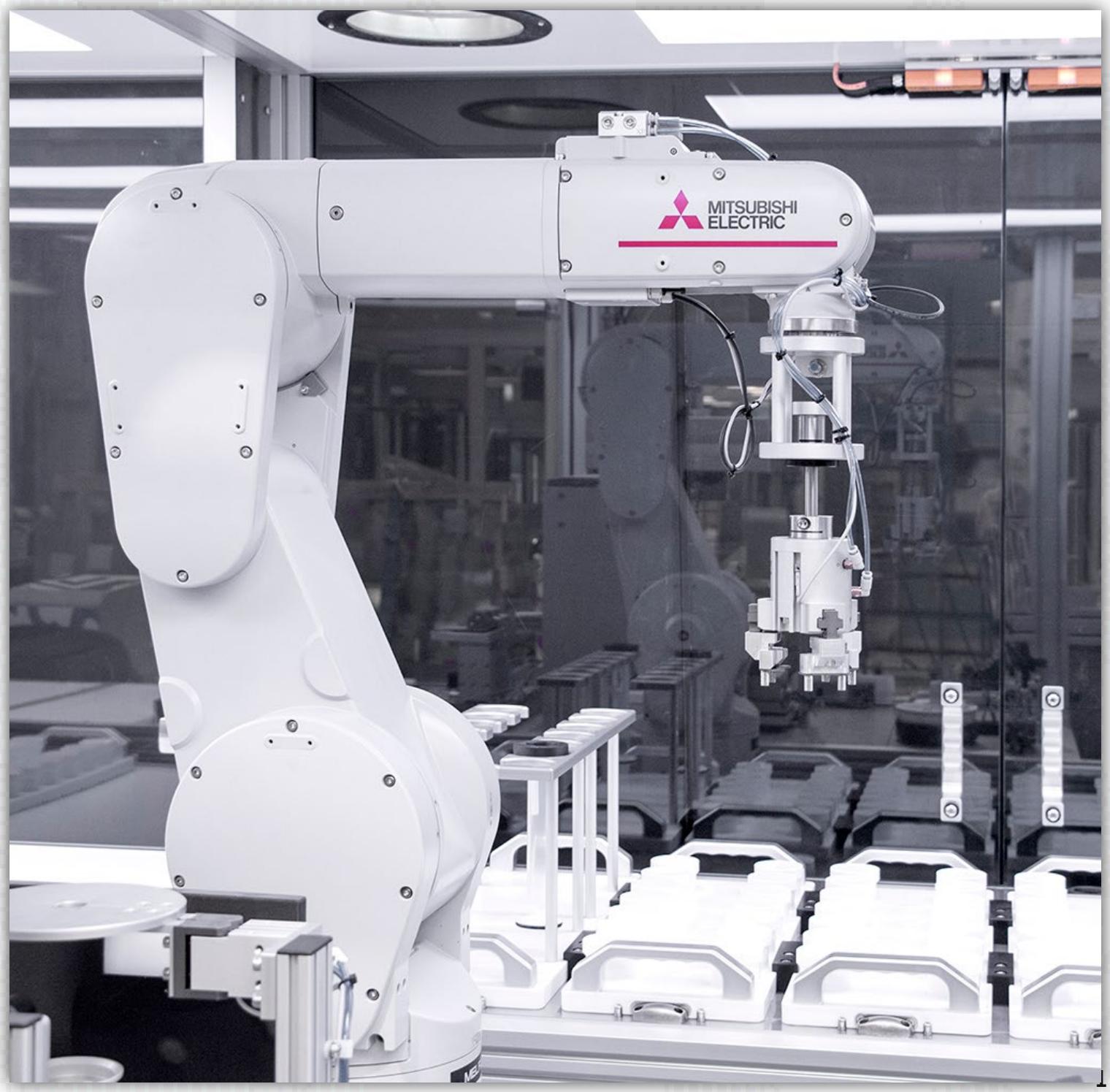

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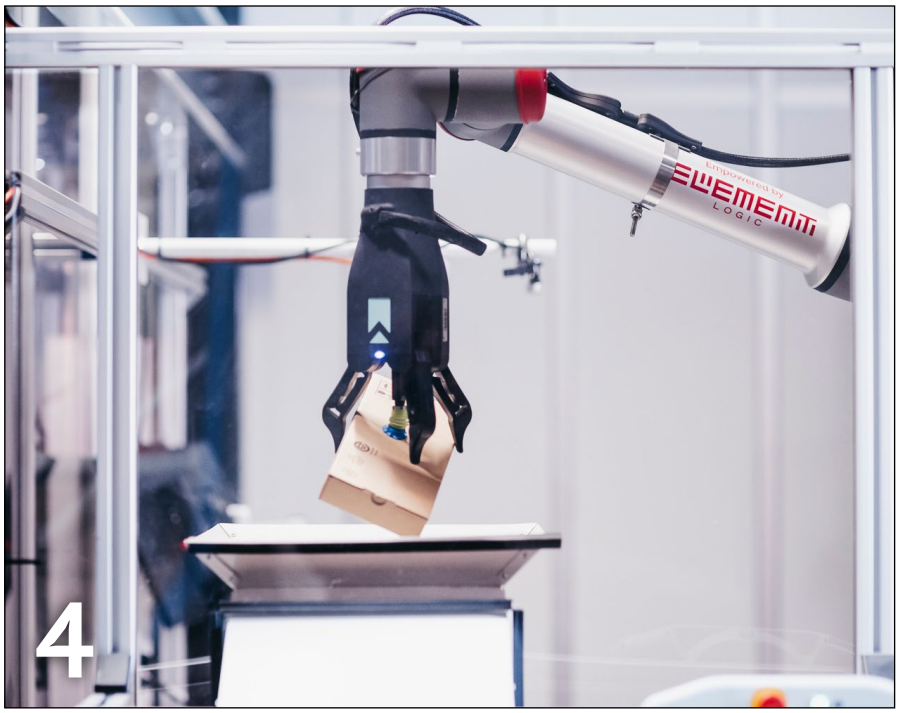

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Ian Whateley and Chris Ball, both Advanced Chemical Etching

ACE bounces back from lockdown disruption to target £10m sales

A Telford precision engineering specialist is now trading 10% above pre Covid-19 levels after it recorded its largest ever monthly intake of orders.

Advanced Chemical Etching (ACE), which employs 54 people at its facility at Hortonwood, has seen volumes in the automotive and aerospace sectors increase rapidly, alongside exciting new opportunities for its titanium, copper and aluminium etching expertise in the race for electrification.

The latter lends itself perfectly for battery interconnects, so important to the development of energy management in existing and future electric vehicles.

With turnover 30% up on last year, the firm has also pressed the button on a new recruitment campaign to find several new production engineers.

"The pandemic put us on pause, but we're now seeing strong signs of growth with aerospace picking up and renewed interest for our manufacturing capabilities in automotive, electronics and medical," commented Ian Whateley, Managing Director at ACE.

"Our sales are back above what we were doing at the start of 2020 and, interestingly, we're doing a lot more in the EU, with 15 new clients already secured in Germany. Many of them are tapping into the lightweighting opportunities our etching can deliver and this is something we are actively looking to explore in the coming months."

He continued: "We're looking to develop the business to hit £10m in three years and then £12m by 2026. The process improvements we implemented during the lockdown have given us the capacity to manufacture well over 1000 sheets per day, that's a 30% increase from before we entered the pandemic."

ACE specialises in the development of prototype components, pre-production and volume fulfilment to customers in aerospace, space, precision engineering, automotive, electronics, medical, telecoms and renewables.

The scope of its activities is far and wide and can include anything from safety critical components for aircraft and F1 cars to meshes and electronic connectors, battery interconnectors, fuel cell bi-polar plates and heat exchangers.

All parts are developed and manufactured at its main site in Telford or at the

company's dedicated sister business, ACE Forming Limited, in Kingswinford.

It works to the most exacting tolerances and can manufacture components in materials, such as stainless steel, nickel alloys, copper, beryllium copper, phosphor bronze, brass and, thanks to groundbreaking new processes, aluminium, molybdenum, titanium, nitinol and elgiloy.

Chris Ball, Executive Director at ACE, went on to add: "To support the recent process improvements we've made, we've just signed off on a £500,000 investment that will see us acquire additional etching machines, new metrology capabilities and an increase in material stockholding."

He concluded: "There has also been the purchase of a new CNC machine that will support our ability to offer domestic and international customers the chance to benefit from both etching and machining of precision components."

For further information, please visit www.ace-uk.net or follow Advanced Chemical Etching on LinkedIn.

3M Commercial Solutions Division targets expansion after £70m investment in new production facilities

A £70m global investment is set to help boost production capacity for 3M Commercial Solutions Division's clients in the UK. The company, which helps customers build brands and transform spaces with total graphics and signage solutions, will now be able to meet growing demand by tapping into additional capacity at the state-of-the-art facility in Hilden, Germany.

Two new graphic film production lines will be capable of delivering an additional five million square metres of film every year, ensuring lead times are maintained and growth expectations can be met.

The site is being celebrated as an Industry 4.0 lighthouse plant, incorporating state-of-the-art graphic film manufacturing, leading-edge energy management systems and world class quality performance, including web inspection, defect identification and automatic converting connections.

Engaging Six Sigma Black Belts to implement LEAN initiatives has allowed the plant to reach optimum efficiencies and deliver on its productivity targets, including automation and a focus on clean energy that will help the facility reduce its carbon footprint by 50% by 2022.

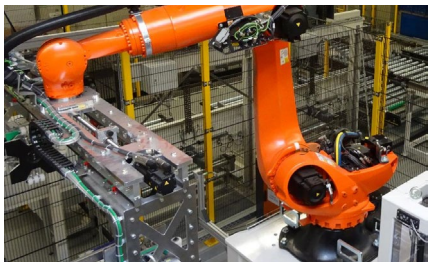
With 2800 sq metre of manufacturing floorspace, the new building took 353 days to construct and reinforces Hilden's position as the largest 3M production plant in Europe, reducing the shipping time to customers being serviced in the UK.

"This investment further demonstrates our commitment to leadership in the Commercial Solutions world and boosts our capacity across key markets like the UK," said Silvia Perez, President, 3M Commercial Solutions Division.

"We are proud that this high-investment, next-generation site with global reach has been established in Europe and we are excited that this is just the first step of a longer-term investment plan."

The Grand opening was attended by key stakeholders from the 3M Commercial Solutions Division, the pioneers behind the development of the new facility, and key dignitaries from the German Government, who commemorated the momentous occasion.

3M manufactures graphic films, flexible substrates and inks used to create finished graphics that are consistent, reliable and durable.



The company also holds training programmes for installers of all skill levels, to help them grow their businesses and build their reputations.

For further information, please visit www.3m.co.uk

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Table 2

RCD Type	Residual / Leakage current components: AC 50Hz	AC 50Hz Pulse	Smooth DC	AC>50HZ<kHz	Transient Resistant 3kA/20µS Current Wave
AC	✓	X	X	X	X
A	✓	✓	* < 6mA(1)	X	X
F	✓	✓	* < 10mA (1)	✓	✓
B	✓	✓	✓ (1)	✓	✓

1. **Type B** detect DC residual currents and trip if the smooth DC current exceeds the trip threshold.
   * **Note: Type A** and **F** will function safely with smooth DC residual currents present up to the levels indicated but they do not detect smooth DC.

Residual current protection or residual current monitoring?

By Chaz Andrews – Technical Manager, Doepke UK Ltd

RCDs (RCCB, RCBO, CBR, MRCD) disconnect and isolate a circuit when the residual current* exceeds a predefined value. The sensitivity of the RCD (milliamps) and its time / current characteristic (milliseconds) determine the protection level. Conversely an RCM is designed specifically for monitoring purposes – see BS7671 4.11.

*Residual Current = Algebraic sum of the currents measured at a point in a circuit.

Table 1

Abbrev.	Residual Current Devices suitable for Fault Protection: Description	Note	Application	EN Standard
RCCB	Residual Current Circuit Breaker	Used with separate OC & SC protection devices in circuit	Circuits ≤ 125 amp Fixed settings Operation by ordinary persons	EN61008-1
RCBO	RCCB + Over current protection	Includes OC & SC protection	Similar to RCCBs, ratings normally < 40A	EN61009-1
CBR	Circuit Breaker with integrated residual current protection	MCCB format + OC & SC protection	Applications > 100A Operation by instructed persons	EN60947-2 Annex B
MRCD	Modular residual current device	Used with a separate protection device i.e. MCB or MCCB	Applications not covered by RCCB, RCBO or CBR	EN60947-2 Annex M

Key OC = Overcurrent SC = Short-circuit

RCD STANDARDS

RCCBs and RCBOs can be used in installations operated by ordinary persons. CBRs and MRCDs are for operation by instructed / skilled persons – see clause 531.3.4.1.

RCD sensitivity and tripping time requirements are given in BS7671 based on the required protection level namely, Additional, Fire or Fault protection and the system earthing. Annex A53 specifies the general product standards for RCDs, summarized in the table 1.

RCM STANDARD

EN62020 allows RCM actuating time < 10 seconds at the rated residual current. Consequently, RCMs cannot provide protection in TN or TT installations. Specific rules apply to RCMs used in IT systems - under the permanent supervision of skilled or instructed persons.

RCMs are designed for monitoring, providing pre-alarm and alarm status. This enables remedial action in situations where the unexpected tripping of an RCD would create a hazard (hospital, public place...) or production stoppage (manufacturing, process industry...).

Note: RCM installed downstream of RCD; set the RCM at < 0.5 x RCD sensitivity to reduces the risk of the RCD tripping before the RCM - refer to BS7671 clause 538.4.

TYPES OF RESIDUAL CURRENT

All AC loads produce leakage (PE) currents at mains frequency and harmonic frequencies. Take this into account to avoid unwanted tripping – see 531.3.2. Under fault conditions some loads produce pulsed or smooth DC residual current components. The RCD or RCM "Type"(see table 2) must be suitable for the PE and residual currents that it could be exposed to – see BS7671 clause 531.3.3.

For further information on RCD / RCM application and related subjects visit www.doepke.co.uk/Downloads-technical-publications.php

Doepke DCTR B-X Hz PoE – smart residual current monitor

The general approach to identifying insulation defects by measuring insulation resistance and leakage currents during periodic inspection and testing poses some risks for the installation. Between tests, a small defect can escalate into a major fault, resulting in system shutdown and lost production.

Continuous monitoring of residual currents unlike periodic inspection, gives real time visibility of the system status. Maintenance staff can investigate potential problems and take corrective action in a planned and timely manner.

The Doepke smart residual current monitor provides an overview of a system's residual current status from 0 to 100 kHz, enabling the setting of specific parameters. Installation is quick and simple with just one connection via a PoE port, for basic functionality.

The DCTR Manager software enables customised display of the system's residual current status for single or multiple units.

Constant monitoring of residual currents via a smart DCTR provides information about the system's leakage current status, for reporting purposes e.g. maintenance records to meet PUWER and EWR requirements, which may require additional tests.

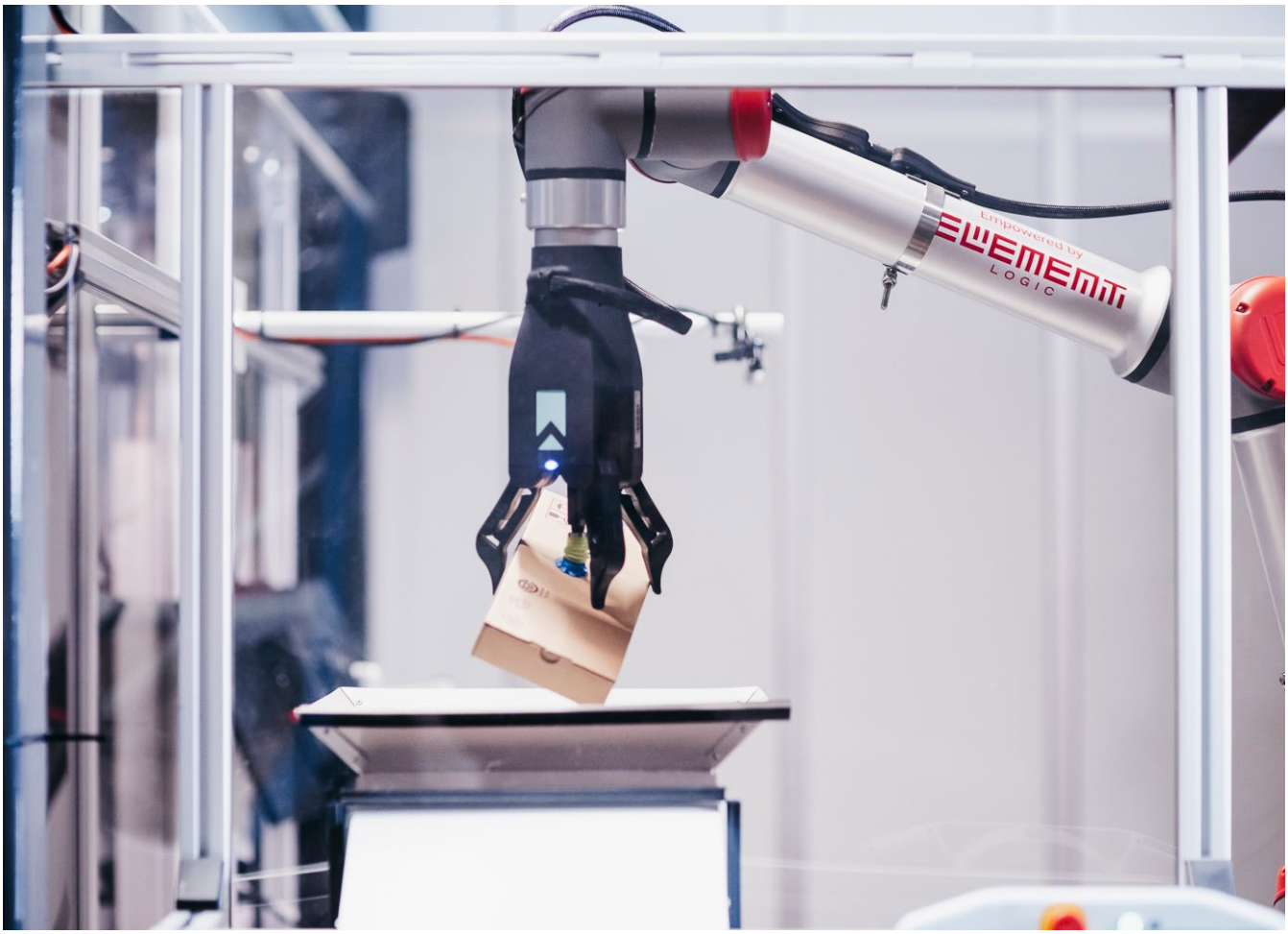
The DCTR B-X Hz PoE is a type-B residual current monitor suitable for use in systems containing VSD, VFD and other inverter based products.

The monitoring concept can be adjusted for the system, depending on the application. In addition two signal contacts can be configured to operate on pre-set values e.g. trigger a visual or acoustic alarm or switch off the system.

Based on the average hourly cost for system downtime, the investment in a DCTR smart monitoring system can be easily recovered, with the prevention of one unplanned shutdown and the associated production losses.

For further info visit Doepke DCTR B-X Hz 070-PoE or email sales@doepke.co.uk

Doepke



Deflating five myths around warehouse automation and robotics

Gavin Harrison, UK Sales Manager, Element Logic

To maintain competitiveness in their respective markets, many companies are now looking at automating their warehouses for faster order fulfilment.

However, despite being a rapidly maturing market, the business case for automation often gets shot down by boardroom sceptics. This barrier to adoption is usually based on misperceptions around warehouse automation and robotics.

Here, we debunk the five of the biggest myths.

1. Automation is complex and difficult to use

Some believe that the automation of logistics infrastructure involves impossibly complex technology. It is, in

fact, much more intuitive and easy-to-use than you might think. Integration is always supported by training, and your employees can get acquainted with their new workflow within hours.

Automation comprises different levels – from basic picking machines to entirely data-driven warehouse systems – and should be tailored to support specific needs and overall business performance. With the right automated system, you'll have a flexible and scalable solution that lets you make adjustments easily whenever your operational needs change.

2. It's too expensive

Like any other major investment, there are certain aspects to consider before signing on the dotted line. However, you don't have to go all out at once but can gradually transform into an automated warehouse. A key point to remember is that automation helps streamline processes by reducing costs in the long run.

Whether you want to scale up during peak seasons throughout the year or maintain a competitive advantage in the market, robotic automation will make your operations more flexible. It will help you control your budget more efficiently by generating higher rates of accuracy and efficiency, thereby lowering your warehouse's cost per error.

3. Robots are only for big industry players

Automation enables businesses to process tasks quicker and expedite orders more efficiently, improving customer service across the board. This is a competitive necessity for both smaller and bigger companies.

Also, customer demands do not differentiate, so size doesn't matter as no automation solutions are the same – the solution is fitted to your business model. In fact, being small may count in your favour, as it allows you to adapt faster to change. With the help of a strong intralogistics provider, a scalable solution also allows smaller businesses to test advanced tech without the associated cost of commitment.

4. It's not suitable for our business or industry

Automation is designed to efficiently handle all kinds of products, from healthcare and consumer electronics to sports and apparel, including the 3PL segment. The only prerequisite is that you must have a warehouse and products that fit into bins. As a result, more and more industries are adopting automation to streamline their value chains to meet new customer demands.

Because of automation's flexibility, some businesses use robots to handle parts of their product line-up while continuing to handle larger items or hazardous products manually. If automation can make the day-to-day handling of your products more efficient, you should strongly consider a tailored solution.

5. Robots are bad for sustainability

The right robots are extremely energy efficient. For example, the AutoStore robots used by Element Logic run on rechargeable batteries and generate much of their own energy – in fact, 10 of these robots use the same amount of energy as a single vacuum cleaner.

They regenerate the energy by slowing down and lowering bins and don't waste energy through friction and resistance associated with traditional braking. Another sustainable aspect is that robots can work in the dark, unlike humans. This reduces the need for heating and lighting and maximises the use of space, thus cutting down on emissions.

With these myths now debunked, isn't it time to make an informed decision about the future of your warehouse?

For further information, please visit www.elementlogic.co.uk

Bürkert launches virtual application centre for online audience

Virtual exhibition pioneer Bürkert UK has released an immersive and interactive online environment that simulates a physical application centre and is accessible from all devices – desktop and mobile. Available at burkertve.co.uk/application-centre, the virtual platform offers a unique experience for everyone in the manufacturing and processing industries interested in the latest fluid control technologies.

With the look and feel of a real physical environment, Bürkert's latest virtual domain offers photo-realistic, 1:1 3D models, videos and key technical documentation. It also features a conference room for live chat, as well as an auditorium for on-demand presentations and video conferences. The online application centre combines some of the best aspects of the physical and virtual worlds; being available 24/7, it is both safe and convenient.

At the heart of this innovative virtual experience are different Application Rooms, which showcase how Bürkert's measurement and control systems for liquids and gases can benefit water, gas, microfluidics, hygienic, food & beverage applications. In these showrooms, visitors can interact with real-world systems and case studies to learn more about Bürkert's key products and solutions.

Kirsty Anderson, Marketing Manager at Bürkert, comments: "For years, we have been at the forefront of innovation in the technologies used in our industry, including new communications platforms. Our latest online application centre continues this tradition by offering visitors a key tool to research our products and get in touch with us to discuss their specific needs. We look forward to opening the doors of our centre to businesses from every sector."

Visit the Bürkert virtual application centre at burkertve.co.uk/application-centre

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ALS Mechatronic – the key role of systems integrators in delivering automation

Tasked with bridging the gap between manufacturer and end-user, systems integrators are playing a crucial role in the delivery of automation systems. ALS Mechatronic is one such integrator, a specialist in bespoke factory automation and robotics systems for a number of the UK's key industries, including pharmaceutical and FMCG.

Here, we take a look at how ALS Mechatronic works alongside FANUC to help its customers improve production processes.

"There's a term we use to describe what we do – 'solutioneers', Andrew Steward, Managing Director at ALS Mechatronic explains. "That's because we're a team of engineers at heart, which means we have an understanding of how production processes work, and in particular automation.

"But where we really add value is by providing solutions to problems, and helping manufacturers to figure out what they actually need to improve their workflow. It's our job to be experts not just in automation, but all of the industries that our customers operate in."

Systems integrators play a critical role in helping businesses to overcome any apprehension and misunderstanding they may have surrounding automation. They serve as a key connection between manufacturers of automation solutions and end-users. Through its close working relationship with FANUC, Gloucestershire-based ALS Mechatronic has helped to boost productivity in factories across the UK and beyond.

Andrew continues: "We primarily work in the packaging industry, with a number of customers in dairy, pharmaceutical, and household wares. A lot of what we do is dealing with bottles, from container handling and inspection through to when they get packaged up and sent off to be filled. It can be anything from house cleaning products through to pill bottle packaging, and it is heartening to see such a diverse range of customers looking to implement automation."

Finding the right solution

2020 was a challenging year for a number of industries, as social distancing measures put a strain on factory processes. One of the defining features

of the manufacturing sector's response has been a greater acceptance of the potential benefits of automation, particularly in facilitating a growth in productivity. With more businesses than ever before open to the idea, ALS Mechatronic witnessed an increase in people reaching out for expert advice.

Andrew explains: "Typically, we'll get approached by a customer with a fairly open-ended question, such as 'what is the best way to get my product to its final destination'? We then set to work on providing an answer, which means visiting the site and identifying the problems. From that point we can outline a solution – whether that's a conveyor system or other machinery that will pick and place the product – and ultimately help them to understand if automation / robotics is right for them.

"It's then a case of getting the ball rolling with designs and budgets. Once approved, we work alongside FANUC to provide the optimum machinery for that particular application.

Work with FANUC

With an extensive portfolio of robotics solutions, FANUC is a logical partner for ALS Mechatronic to work alongside. As Oliver Selby, Robotics Business Development Manager at FANUC UK explains, it is a working relationship that is built on a dedication to delivering the best results:

"Andrew and the team at ALS Mechatronic work closely with their customers, which makes it much easier to identify which product is best for the end-user. We're always eager to ensure the most appropriate solution is provided, rather than simply specifying according to price. When you consider the significant impact that automation can have on a business, it is vital that you get it right, and this is something that both FANUC and ALS Mechatronic is committed to."

Andrew continues: "The other key aspect to working with FANUC is the name itself. They're one of the leading automation companies, and that helps to put customers' minds at ease – especially if it is their first experience of automation. Ultimately, everyone benefits from this kind of thorough approach that delivers tangible results. It's not just that one business that it positively impacts, but if we can help to change attitude to automation, then the manufacturing sector as a whole is stronger as a result."

Andrew Steward - ALS Mechatronic

Queen's Award for Enterprise

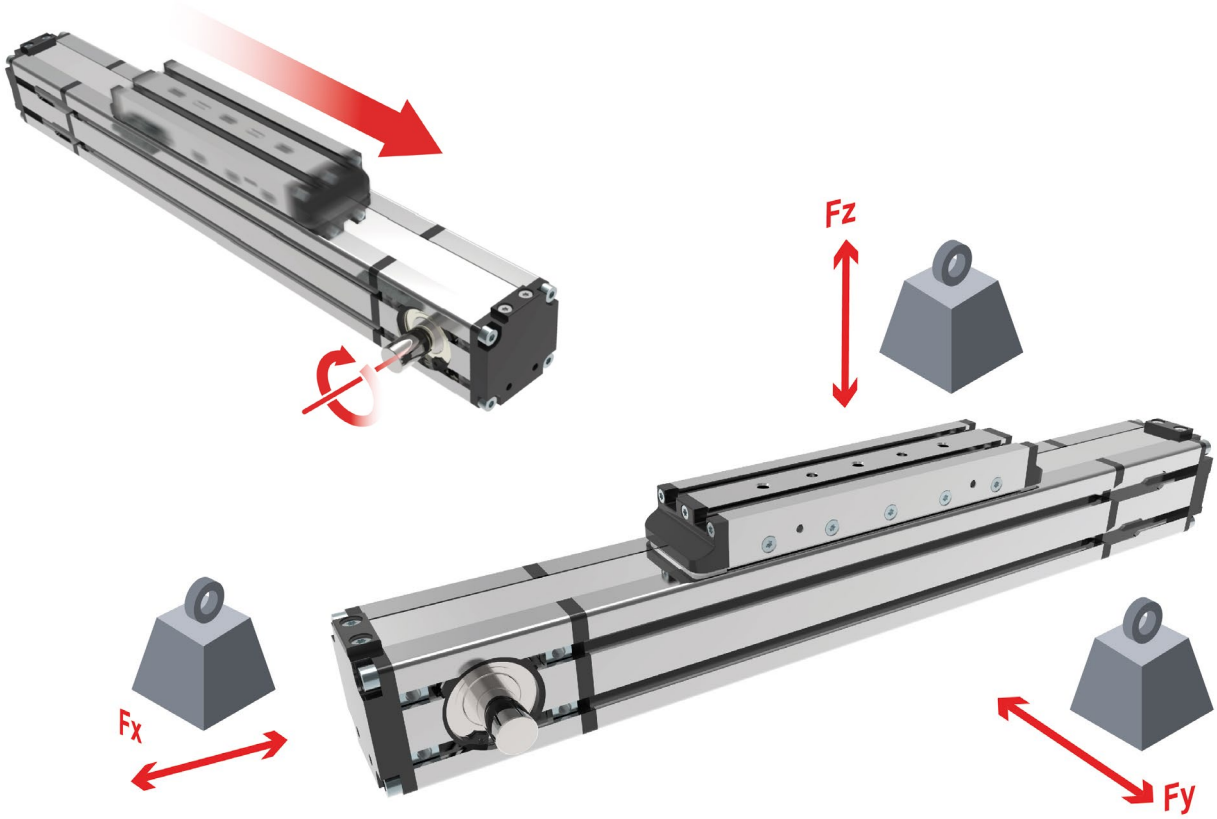
The latest chapter in the success story of ALS Mechatronic is the awarding of a prestigious Queen's Award for Enterprise. Given in recognition of excellence in international trade, it is indicative of the role that the company has played in delivering automation solutions not just in the UK but worldwide.

Andrew comments: "We've witnessed fivefold growth over the past three years, notably in the US market. We're absolutely delighted to have been given the Queen's Award because its representative of the direction that we, and indeed I hope UK manufacturing as a whole, is headed. The latest technology is there to help businesses grow, and our job is to help them take advantage of that."

Despite its international success, ALS Mechatronic remains a true British success story. With manufacturing and development set to remain in the UK, it highlights the appetite for high-quality British 'solutioneering' on the world stage.

Andrew concludes: "Following a period of time that has created untold damage to many companies, it is great to see the signs of recovery in our sector. We firmly believe that automation is key to a strong manufacturing industry, and by working alongside FANUC we are confident in being able to deliver the best solutions for our customers."

For more information, please visit: https://alsmechatronic.com/ and https://www.fanuc.eu/uk/en



Specifying a Linear Actuator: 3 Key Factors

By Japh Humphries, UK Sales & Commercial Manager, Matara UK Ltd.

Linear motion systems are business critical across an extensive range of industries, from food processing plants, to semiconductor manufacturers and packaging producers to name but a few; in fact, virtually anywhere that requires loads to be cost-effectively moved in a straight line, safely, securely and precisely. These systems have improved automation whilst simultaneously lowering production costs, making them invaluable.

Linear actuators are at the heart of a linear motion system, combining linear guides and power-transmission components in a single unit. Whilst machine builders can opt to design and produce these elements in-house, the majority opt for off the shelf, 'ready-made' linear actuators as it reduces overall machine design and fabrication costs and, as they feature application-tested and optimised construction, are highly reliable, accurate and provide repeatability; all of which are core to production machine and automation systems.

Whilst it's important to consider all components of a linear motion system separately and as a whole, choosing the right linear actuator – belt driven, ball screw driven or electric rod type actuator - is fundamental. There are a number of factors that should be taken into consideration, but three stand heads and shoulders above the rest and will 'make or break' a system.

Key Factor 1: Speed

The speed of the process at hand will impact the actuator's longevity and efficiency.

A ball screw linear actuator will usually perform at around 0.35 to 1.5m/s at stroke lengths under one metre, although higher speeds and longer lengths can be achieved by adding supports to the assembly. However, this will only take you so far as a ball screw actuator may be susceptible to 'screw whip' at high speeds, where the screw

vibrates and bows as it turns. Over time this can negatively impact the performance of the actuator, leading to premature wear and shortening its lifespan.

Whilst there isn't a universal cut off point at which a ball screw linear actuator is no longer an option – it's very much dependent on a range of factors including the dimensions and material of the screw and the actuators' use and environment – if you want to achieve higher speeds, up to 3m/s, then a belt actuator should be considered. Belt actuators perform better at higher velocities and also in applications that require a long stroke. Which brings us to our next key factor.

Key Factor 2: Stroke Length

Stroke length refers to the distance the linear rail actuator is required to move a load in one direction.

Linear ball screw actuators are usually designed at around 1000mm stroke length, although smaller and larger lengths can be accommodated by, for example, using different diameter balls. However, we would never recommend a ball screw actuator for stroke lengths over 54000mm. For longer stroke lengths, belt driven actuators are a better option. At Matara, we are able to manufacture linear actuators from 100mm to 6700mm stroke lengths.

One of the most important considerations when looking at stroke length, and one that all too frequently gets overlooked, is the safety stroke. The safety stroke is an allowance that provides room for the actuator to coast to a stop if an emergency stop of the system is necessary. This prevents the bearing table (and the load) from hitting the ends of the actuator, which can cause damage. Even if emergency stops are rare in your particular process, it's still good practice to factor in a safety stroke as linear actuators aren't designed to constantly be run into a hard stop as this can cause wear and tear to the inner workings of the actuator over time.

To calculate the safety stroke, for belt driven actuators specify a distance equal to two turns of the motor on each end of the actuator (or four turns in total). For ball screw actuators, base it on twice the pitch of the ball screw. Other factors may have to be taken into consideration, but this calculation is a good starting point.

Key Factor 3: Load

Stroke length impacts on speed and vice versa, but load has a direct effect on both.

Anyone involved in an engineering capacity will appreciate the importance of load capacity on a structure and linear motion systems are no different in this respect. Miscalculate the load and at best there will be a loss of precision, but at worst you may be looking at catastrophic failure with damage to the actuator assembly and the product, and a potential serious health and safety risk.

Where linear motion systems differ from many other load capacity calculations is the need to base it on the dynamic load capacity. Unlike the static load, which is the load on the actuator when it is in a fixed position, a dynamic load is that which the actuator handles when in operation and in motion. In other words, how much work can the machine actually do; how much can be pushed or pulled.

You need to base the calculation on both the radial and axial load capacity, as well as the moment capacity of the support carriage. Position of the load in terms of its size (including any overhang) as well as the orientation in which the load is being moved should also be considered.

Ball screw driven actuators can generally move higher loads and are widely used on applications that require movement on a vertical axis, such as gantry robots. A belt actuator should mostly be avoided for vertical axis movement as it is at risk of the belt snapping due to tension.

However, belt driven actuators can be 'beefed up' to achieve higher dynamic load ratings by using linear rail and carriages as external guides. Linear rails have two parallel tracks that contain rollers to support a moving load, providing guidance and support for a load carried by an actuator between two points. Linear rails are used in a whole range of applications and can carry loads that vary from extremely light electronic components, through to large loads weighing thousands of kilograms in heavy industry.

Ultimately, the choice of linear actuator will be impacted by all three factors and which factor takes priority for the machine being designed and the process for which it is intended. There will also be other factors to consider, including the direction in which your actuator is mounted, accuracy and repeatability, maintenance requirements and the operational environment. But without getting the big three right - speed, stroke length, load capacity – none of the others will matter!

Matara designs and manufactures a range of pneumatic and linear automation products, including linear rail actuators. Products are available from stock or can be custom built to order.

https://www.matara.com/products/actuator-systems/linear-actuators/
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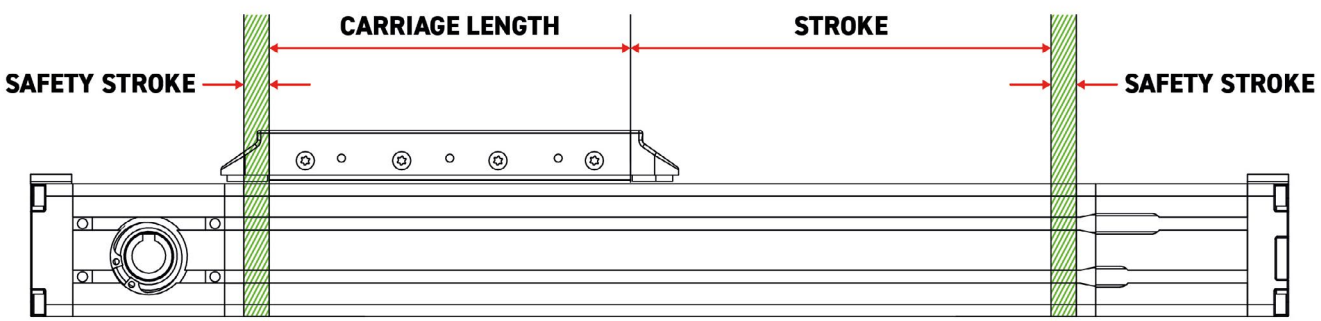


Accuracy and rigidity of actuators are crucial for metal machining

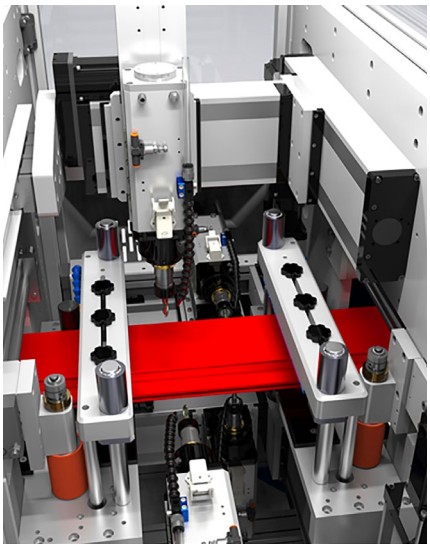
When assembling prefabricated metal components and frames, exacting accuracy is consistently needed to ensure a productive work rate and to avoid rejects. To achieve this, drills, routers and cutters have to provide a controlled action that ensures precision and avoids deflection during high speed operation. This relies on the rigidity and precision provided by the actuators, and a multi-axis linear system can help OEMs design more productive, high performance machines.
Gerard Bush of INMOCO explains the key considerations in actuator selection for metal machining.

When metal framework is assembled onsite, such as aluminium frames for doors and windows in construction projects, it's vital that the prefabricated pieces are delivered with holes drilled and pieces cut with precision. These projects demand speed of installation and if the framework includes inaccuracies or defects, this means time onsite to rectify the issue or the introduction of waste through rejects.

As a result, a key requirement for metal working machines from routers to drills is precise control and stability in the automation process to enable accurate positioning throughout the machine's operation. Without consistent accuracy, this results in poor fit and finish of the completed framework that can impact the quality of construction and efficiency of build.

A major cause of inaccuracy in metal machining is deflection. A common problem when machining with high speed drills and routers on aluminium framing, as the material moves through the machine, the cutting axis can bite, bend or wobble. Crucial to avoid deflection, it's imperative that the machine's actuators securely hold the drill or withstand the force of the press to prevent misplaced drilling or cutting.

The more exacting the specification or intricate the operation, the more



crucial this becomes. If the actuator system can't provide rigidity to sustain secure retention amid high paced machining, the pace of manufacture has to slow accordingly, impacting productivity. Alternatively, the machine risks inaccuracies and defects, affecting product quality and introducing waste.

To combat deflection, ideally the actuator requires a single body frame with a thick aluminium base, factors that contribute to high rigidity. Smooth action and control of the rail stage will also optimise control, and actuators specific to the task, such as Tolomatic's TRS, provide high positional screw accuracy with the roller nut model providing ± 0.0102mm/300mm.

Combined with a controller and its software program, a multi-axis approach to metal machining of prefabricated framework can increase productivity by speeding up production. On such an approach, material can be automatically moved into position.
A three-axis linear actuator system operating across X, Y and Z planes of movement can drill and route the top, bottom and front sections. High-speed tool sets can be mounted on multi-axis actuator system and cut holes and shapes according to the controller and software with a 90-degree upcut saw cutting the product to the required size. Introducing Tolomatic's TRS actuators can achieve a three-axis configuration, mounted carrier-to-carrier with no additional mounting plates required.

The generation of swarf and fine particles is an inevitable by-product of metal machining applications. To avoid this material entering and fouling the actuators and impacting their service life, adequate sealing is required.
A retained exterior dust band will keep contaminants from entering the actuator interior, protecting components to provide reduced maintenance and increased uptime. In addition, positive pressure with air lines and filters will ensure that contaminants do not enter the interior of the actuator. Ideally, the body of the actuator should be constructed from fatigue and corrosion resistant stainless steel. The wiper and seal on the actuator's rail stage surface should also be integrated into the carrier design to provide consistently smooth and controlled operation.

OEMs might have their own choice of motor to power the actuator and INMOCO's engineers can also advise on the optimum combination according to the application's requirements. Tolomatic's TRS can be delivered with mounting hardware specific to the required motor with in-line or reverse parallel mounting. In combination with the actuation system, INMOCO can also specify control hardware and assist in the selection and development of motion programming to optimise throughput and control accuracy for the desired application.

Removing deflection combined with high positional accuracy will ensure precision cutting and drilling across metal machining applications. Adequate sealing and protection of the actuator system will not only ensure smooth, service free operation, it will also reduce the total cost of ownership and enhance the lifetime of the machine.

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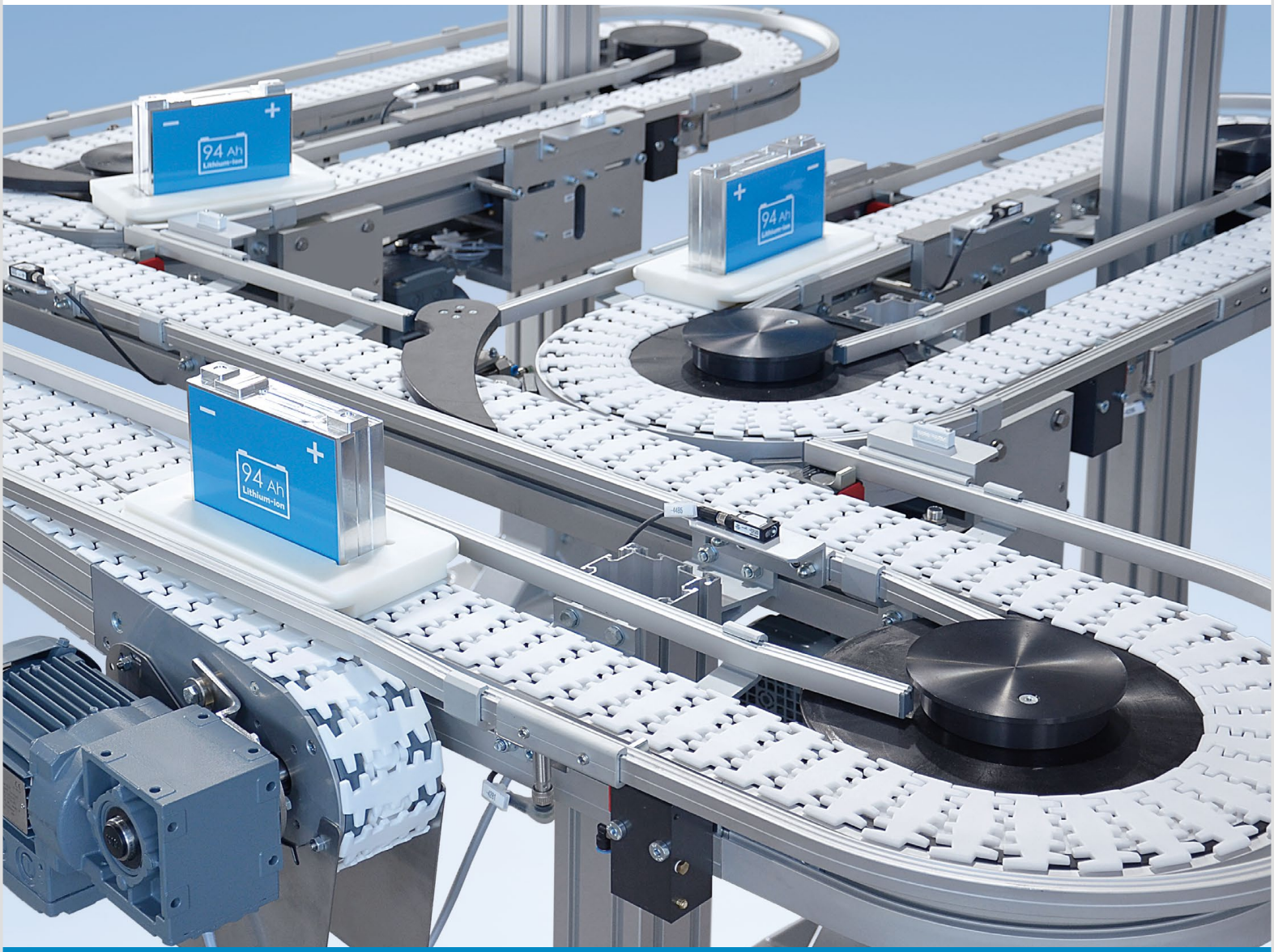

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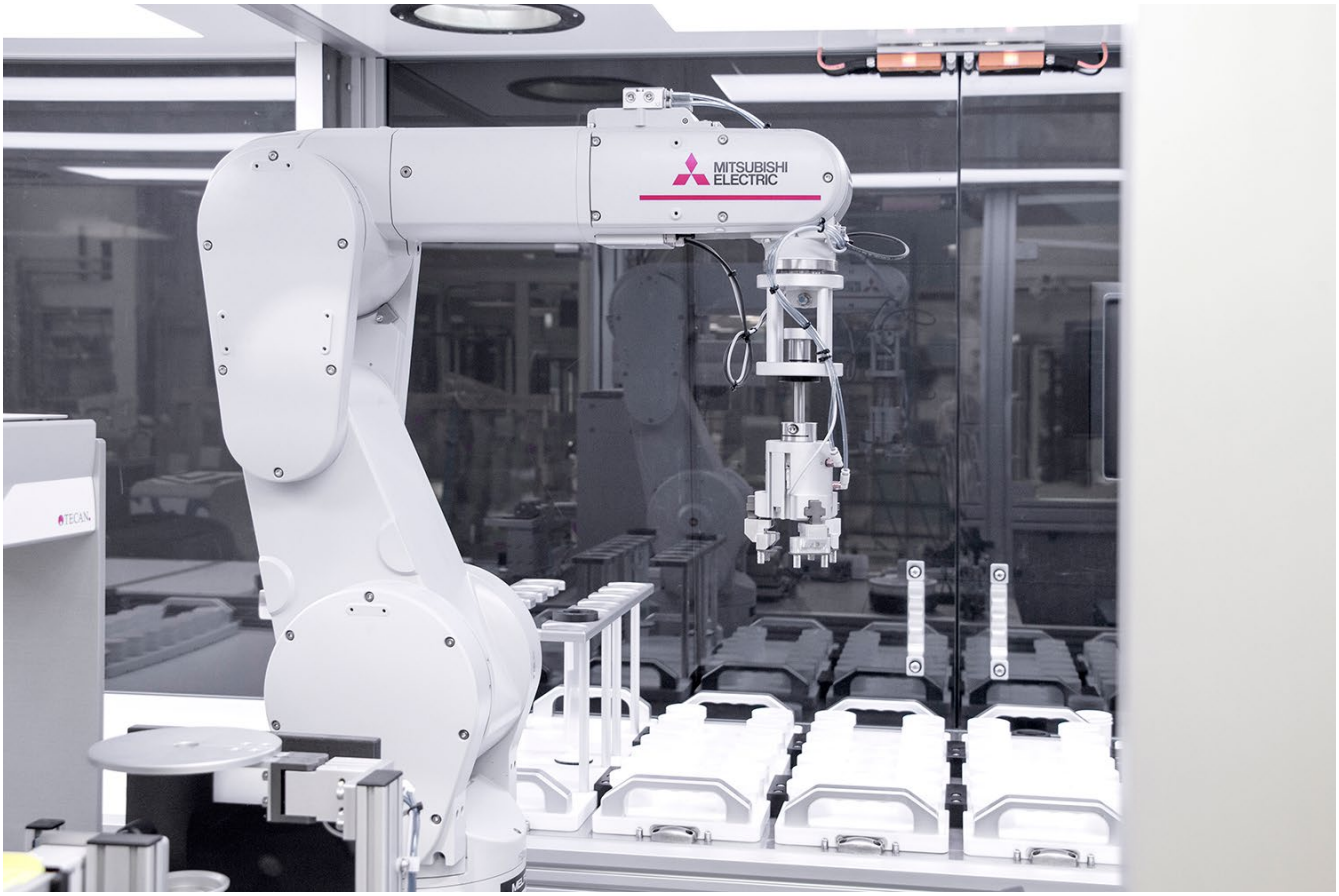
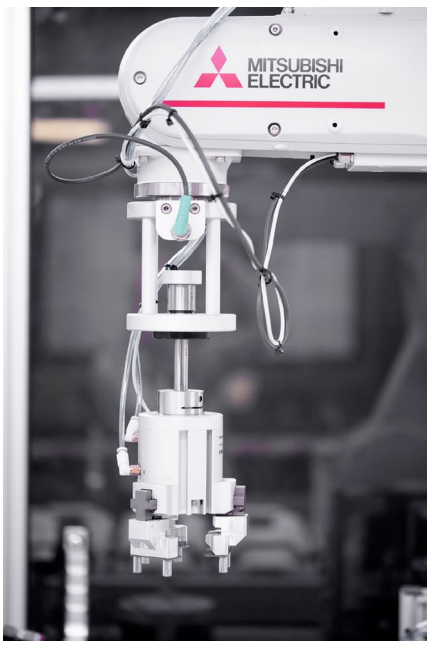


Formulating innovation in chemical handling

Mitsubishi Electric has helped Labman Automation in the development of a compact, fully automated and high-throughput formulation system in under seven months. The innovative unit has been created for CPI's National Formulation Centre and is built around two MELFA RV-series six-axis robots with CR800 controllers. These support processing, dispensing and handling activities for a wide range of materials. This advanced setup can enhance productivity by 5-10 times, improving CPI's offering to companies bringing advanced paint, coating and battery formulations to the market.

CPI is a leading independent technology and innovation centre that connects academia, businesses, government and investors with the aim to bring innovative ideas and research to the marketplace. Its Sedgefield-based National Formulation Centre provides



the tools and expertise to support companies in the commercialisation of their next-generation formulations for active pharmaceutical ingredients, paints, coatings, detergents and batteries.

As part of its continuous programme of investment in new equipment and technologies, CPI decided to develop a self-contained, universal automatic formulation system with a glovebox enclosure that could address even the most ambitious processing needs. This would support the commercialisation of new formulations in a variety of markets and applications.

Creating a flexible processing setup

To develop the new formulation system, CPI contacted its preferred specialist in lab automation and robotics, Labman. Dr. Lynn Donlon, Principal Scientist at CPI, explains: "Labman is a trusted partner for developing customised automation systems. We have collaborated with them on a number of projects across various applications and they have always delivered excellent solutions."

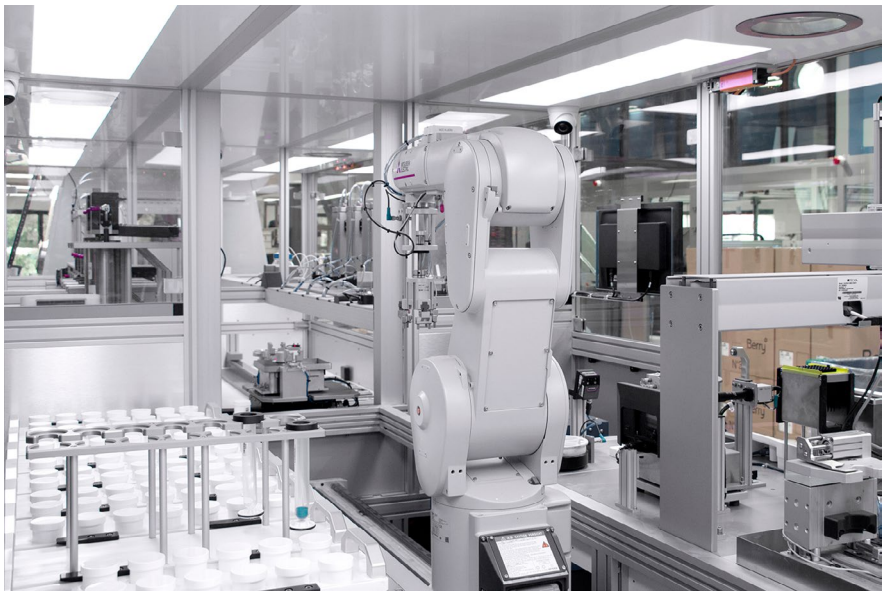
For this project, the two companies designed a compact, modular work cell that could fit three processing sections in an area of only 21 m2. In effect, the system can conduct processing, dispensing and measurements, as well as safe handling of volatile components, nanomaterials and other hazardous substances.

In the first module, sample pots are loaded at high speed and moved to the dispensing unit after their lids have been removed. There, dispensers for solid, liquid and slurry applications quickly fill the pots with accuracies of ±1mg, ±10mg and ±25mg, respectively. The containers are then automatically moved to the processing section and loaded into a dual asymmetrical centrifuge that mixes their contents. At this stage, a pendant drop module can measure the surface tension of the formulations and perform spectral analyses using a multi-function probe station module. Samples can also be transferred to syringes to prepare coatings on a separate, CPI/Labman-designed platform. The final module handles hazardous components by utilising powder feeders for nanoparticles and can also add a range of liquids and solvents to the formulations.

Robotising the unit

Six-axis robots increase the throughput of the system by both handling samples quickly and by supporting continuous operations, processing out of hours and during weekends. They perform key activities, such as removing or applying lids and caps, in the processing and glovebox units. It is important that these tasks are carried out reliably at high-speed and with high accuracy using robots that offer payloads and reach to fit the design of the setup.

For this project, CPI requested a quick delivery and installation of the robots so that the system could be developed, installed and made operational as



quickly as possible. To address these aspects, Labman contacted Mitsubishi Electric. Anthony Cumpson, Senior Engineer at Labman, comments: "We selected the MELFA RV series six-axis industrial robots as we knew that they could provide the performance required. Also, the responsiveness of Mitsubishi Electric's team and the company's ability to promptly deliver the equipment, were crucial for the quick turnaround of this project." Furthermore, the six axes utilised make it easier to reach diagonally into key components, such as mixers.

Dr. Lynn Donlon adds: "We are extremely happy with the RV robots. They are perfectly suited for performing the delicate operations within the unit, such as loading and unloading of pots and powder dispense units."

The project was further streamlined thanks to the compact CR800 robot controllers, which are easy to program and wire. These also enable CPI to implement any basic changes without requiring advanced programming skills.

To optimise space utilisation and reduce the overall footprint of the system, particularly in the glovebox section, Mitsubishi Electric and Labman developed customised solutions that allowed the robots to pick the necessary equipment while moving within set limits. Placing the robotic arms on tracks, for example, was particularly beneficial to making the most of the room available. Such tracks use a Mitsubishi Electric HG-SR52B motor and is linked to the CR800 controllers for accurate positioning.

The RV series also supports the creation of robot safety zones to enable cooperative applications. Human operators can access one of the three sections, stopping any automated activity there, while the other two can continue their tasks without interruptions.

Ready, set, formulate!

The entire system was built in under seven months, half of the time that is typically required for similar projects. Since starting operations, the formulation unit has been widely utilised by CPI and its partners, raising considerable interest from specialists in different sectors. In effect, the solution can increase productivity by 5-10 times compared to conventional operations.

In addition, the flexible and modular build has been designed to support further expansions. Dr. Lynn Donlon explains: "We are extremely happy with the solution that has been developed and technical support provided by both Labman and Mitsubishi Electric. Since building this formulation system we have expanded the scope of our collaboration by adding further modules to the unit. We are working on plans to develop the capabilities of the system even further in the near future."

Ian Patterson, Key Account Manager at Mitsubishi Electric, concludes: "It is great to see our robots used in such an innovative application, supporting next-generation formulations. We've had brilliant feedback and look forward to continuing our work with Labman and CPI."

gb3a.mitsubishielectric.com

Redefine Your ROI: The Bosch Case Study

Bosch, one of the leading tech giants is a familiar household name known for their innovation and long-term presence in the global market.

Bosch's French department in Mondeville explored the ever-growing momentum of the 3D printing industry and decided to bring 3D printing solutions in-house. They required a professional yet affordable solution and so chose Zortrax and the M200 3D printer series. Machines of a top-quality output but at an entry-level price.

The M200 3D printers are designed for reliable, continuous operation and long runs. The machines are built to an Industrial grade for minimum maintenance and to guarantee repeatable and accurate results.

BOSCH'S AIM: To boost the efficacy of their production and product testing while cutting down not only project time, but the overall spend.

THE PROJECT: The Zortrax M200 3D printers were used to 3D print a unique plug casing to prevent wear and tear.

Having succeeded in this task, the teams moved on to implementing 3D printing, to produce attachments on-demand for their production-line robots. Within just 2 hours, they were able to design, print and assemble the "grippers" instead of buying a complete kit, costing approx. £380 each time; thanks to Zortrax 3D printers, they can now produce them at less than 1 euro per part!

THE RESULTS: Zortrax' effects were noticeable almost immediately and the process of prototyping the parts was "smooth and simple". Bosch saved 80,000 euros in just one year. And now, materials made from Zortrax printers stand out as a versatile approach for other areas of their business for making inhouse tools and a fast ROI.

freeform
FABRICATION

www.freeformfabrication.co.uk

This Case study is courtesy of Zortrax in collaboration with Freeform Fabrication LTD, the ZORTRAX reseller and technical partner in the U.K.

Freeform Fabrication and its fantastic team have been supporting manufacturing companies all over the world but primarily in the UK with the supply and implementation of the latest technology tools. We help businesses be more productive and offer high quality products and services.

The company was established in 2003 solely reselling 3D printers and has rapidly expanded to be one of the largest value-added resellers of not only 3D printers, but other technology such as laser welding, laser engraving, 3D scanning and more; all from our head office in Hertfordshire.

Telford's Protolabs opens new €16m European 3D Printing Centre

Protolabs, which employs around 450 people at its UK Headquarters in Telford, has opened its new European 3D printing centre in Putzbrunn near Munich, providing a world class facility that contains future-oriented technologies, highly skilled employees and a host of sustainable benefits.

The expansion means its UK customers will now be able to access even faster lead times and more than 60 industrial 3D printers offering metal and plastic parts through a range of additive manufacturing technologies.

It is perfect timing, with clients in the automotive, aerospace, electrical, industrial, medical and energy sectors looking to invest following the easing of lockdown.

"We are very pleased about the opening of our new European 3D printing centre in Putzbrunn and the strategic importance it will have for customers in the UK," explained Bjoern Klaas, Vice President and Managing Director of Protolabs Europe.

"The new production facility expands our capacity and enables further growth for pioneering 3D printing technologies in the future. Our UK customers will enjoy an even greater range of services and this latest investment will undoubtedly help us meet our promise of delivering prototypes and low-volume production parts in just a few days."

Protolabs has also enhanced its commitment to the environment with several sustainable features included in the design of the Putzbrunn plant, building on its ISO 14001 certification and desire to save resources whilst reducing its CO2 footprint.

This is already evident in energy consumption alone, which has been reduced by leveraging the capabilities of heat recovery and waste heat utilisation, as well as the intelligent linking of engineering processes.

The new location, which keeps noise emissions below 26 decibels, also includes charging facilities for electric

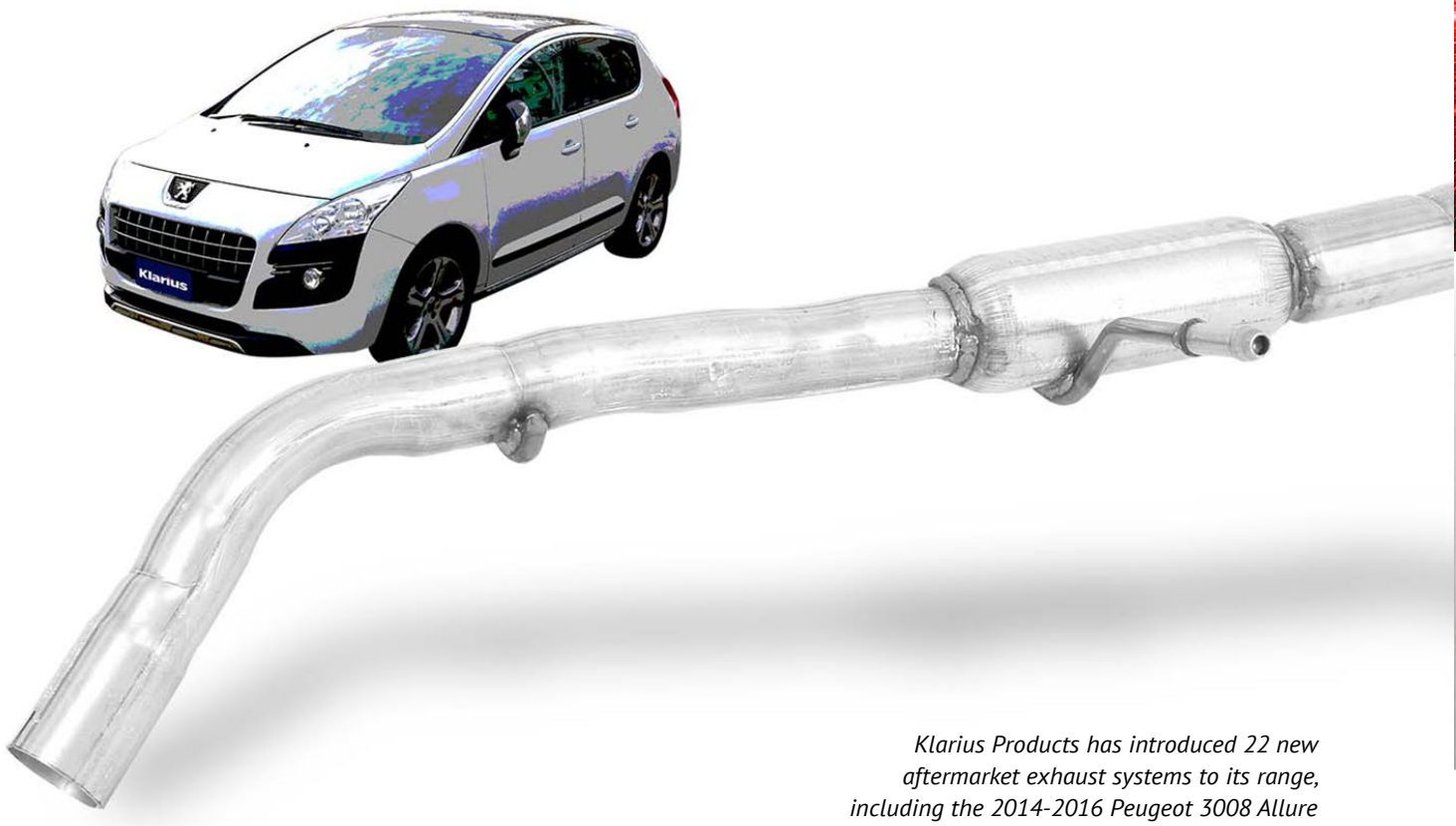
and hybrid vehicles in its own parking garage and draws on a mix of green electricity.

“The opening of the 3D printing centre illustrates our long-term corporate strategy, which is geared towards fast evolving technologies, rapidly shifting markets, environmental considerations and world-class employees,” added Klaas.

“In doing so, we want to fulfil our social responsibility, as well as deliver an unparalleled service through digital manufacturing. This approach enables our customers to more rapidly develop their products, go to market faster, reduce manufacturing costs and achieve a flexible supply chain throughout the entire product lifecycle.”

Protolabs has been operating in Telford since 2005 and provides custom components in as fast as one day, using automated 3D printing, CNC machining and injection moulding technologies.

For further information, please visit www.protolabs.co.uk or follow @protolabs_emea on twitter.



Klarius Products has introduced 22 new aftermarket exhaust systems to its range, including the 2014-2016 Peugeot 3008 Allure

Alluring new Klarius exhausts now available

Klarius Products has introduced 22 new aftermarket exhaust systems to its range, including the 2014-2016 Peugeot 3008 Allure.

See the full list of parts here.

New systems are available for a wide range of hatchbacks too, including the BMW 116 1.5 from 2015 onwards, the 2012 forwards Toyota Auris 1.8, the ever-popular Ford Fiesta 1.0 for 2017 models onwards, the 2015 forwards Honda Jazz ES plus the Citroen C3 and DS3 1.6 from 2014 onwards. Kia Picanto owners now have access to multiple exhausts to fit 1.0 and 1.2 models from 2014-2016.

Additional aftermarket exhaust replacements have been added for light commercial vehicles as well, with the Mercedes Citan 1.5, Renault Kangoo 1.5, the Peugeot Partner and Citroen Berlingo now receiving further support from Klarius. These new exhausts, as well as all systems in the Klarius range, are supplied with a bespoke mounting kit for optimum fit and maximum service life.

During 2021, Klarius has released over 100 new products to market. Currently, the business offers the largest range of aftermarket exhausts domestically, supporting over 11,000 applications and more than 24 million vehicles on UK roads. The range has replacement exhausts, catalytic converters (CATs), diesel particulate filters (DPFs) and accessories for cars as well as vans of almost any make, body style and age.

Every Klarius part features a 2-year warranty and a Fit First Time guarantee as standard. All components are developed, tested and manufactured in-house at Klarius' headquarters in Cheadle, Staffordshire. Applicable parts are type-approved, with independent certification carried out with the Vehicle Certification Agency in the UK and the TÜV in Germany. Consequently, every Klarius component matches or exceeds the performance level of the original part.

Quality is matched with total availability across the range. Dynamic stocking and large warehousing capacity ensure that popular and niche parts have the same lead time. Together with its own dedicated logistics fleet, Klarius offers next morning delivery to stockists and distributors for orders placed before 5:30 pm.

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Factory of the future opts for mobile robots from RARUK automation

A new first-of-its-kind fully connected factory is applying game-changing technologies – including MiR Autonomous Mobile Robots (AMRs) supplied by RARUK Automation – to help advance the manufacture of the UK's next-generation combat aircraft system, Tempest. Located at the Warton facility of BAE Systems, the 'Factory of the Future' has been designed in such a way that it can flex to manufacture different products within the same area, leveraging the advantages provided by the MiRs and intelligent systems to accommodate changes quickly.

Designed specifically to provide a connected intelligent factory for military aircraft technologies, the 'Factory of the Future' showcases manufacturing in a digital age. The facility serves as an experimental hub equipped with state-of-the-art technology to enable the brightest and boldest engineers to research, invest and test new technologies, build new capabilities and harness transformative ways of working.

"Notably, the 'Factory of the Future' demonstrates how BAE Systems remains competitive within the aerospace industry and addresses the challenges we are facing around cost/time reduction for future aircraft programmes," explains Ismail Master, Manufacturing Development Engineer - Manufacturing Technology, at BAE Systems - Air.

Serving as the central logistics function within the new facility are a number of MiR autonomous mobile robots supplied by RARUK Automation.

"The MiRs enable a fully autonomous logistics solution for material flow within the facility," explains Mr Master. "We are developing this capability and exploring how it integrates into existing and new production facilities. The robots will work collaboratively alongside operators, distributing material line-side to assembly stations on a just-in-time basis."

The MiR robots are part of a wider logistics solution with a dedicated cell comprising a pick and place robot, vertical storage carousel and intelligent safety systems.

"This cell is dedicated to storing and maintaining assets from goods delivery into the facility as and when they are required," says Mr Master. "Full system integration facilitates the autonomous collection and distribution of assets to the wider factory and, conversely,

doing the opposite in collecting and depositing assets back into the storage system. We are also assessing the capability to connect with other machines and systems as part of our vision to create a fully connected factory."

BAE Systems' selection of the MiR robots followed an in-depth trade study and technical analysis of available products.

"The purchase decision was based on the maturity of the product and its potential development/integration into our manufacturing environment," states Mr Master. "We had a trial of a MiR100 in which we tested and analysed the system to understand the potential for the product to conduct intralogistics operations. RARUK Automation provided MiR training in terms of the robot, the fleet management system and the REST API it uses. We found the MiRs very user friendly and simple to program/update thanks to the embedding of all functions within the user interface."

RARUK Automation has also provided BAE Systems with complementary products for the mobile robots that include the ROEQ top module, C300 cart and docking station. Together, these products enable a fully autonomous trolley docking/undocking process, removing elements of manual operator intervention. In addition, the 'Factory of the Future' uses a WISE I/O module for the MiRs so they can communicate directly with cell safety systems. As a result, the mobile robots can autonomously ingress/egress into and out of cells without tripping the safety system, again removing any need for operator involvement.

"The main advantage of the MiRs is that operators can focus on high-value tasks, instead of non-value activities like manually distributing assets to the build locations via trolleys," says Mr Master.

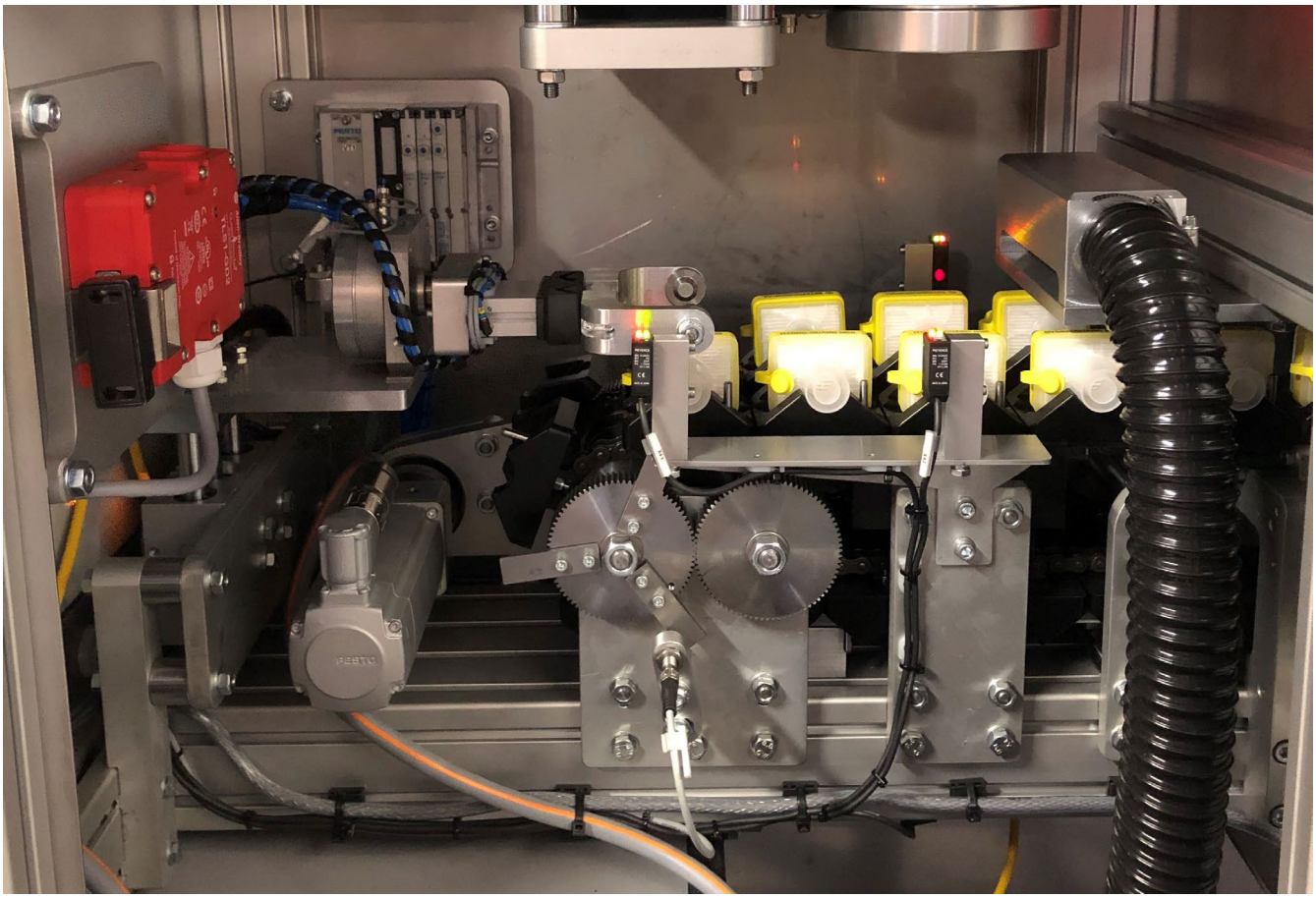
Having the MiRs satisfy this requirement improves the efficiency of the manufacturing environment. In short, it is possible to schedule the delivery of assets so they arrive just-in-time, reducing space requirements for storing assets in working areas and enabling optimised inventory and improved asset management capabilities.

"The robots are very reliable in their operation for logistics activities, but we are seeking exceptionally high levels of accuracy and reliability in our 'Factory of the Future' operations," explains Mr Master. "We are pushing the boundaries of mobile robot operation, which differs from typical usage and so we expect that a level of adjustment will be necessary. RARUK Automation responds quickly to our needs and provides the necessary technology training and knowledge to help address these challenges."

Currently, the MiRs integrate with different cell systems to enable autonomous delivery directly from the working areas. However, the plan is to integrate the mobile robots to an overarching IOT platform for connectivity, data visualisation and mission orchestration.

"This will handshake directly with an MES to enable scheduling of asset delivery/collection based on the build operations," concludes Mr Master. "A future goal is to link the MES to a dynamic scheduling capability that will enable advanced, flexible scheduling of material flow based on the current state of the environment, mitigating any process disruptions via real-time decision making."

www.rarukautomation.com



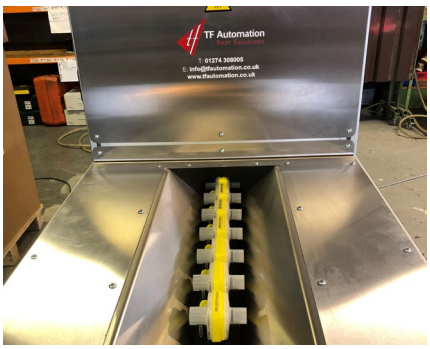
TF Automation build laser marker for medical devices

TF Automation have just completed the build of a repeat machine of one produced some 15 years ago for Intersurgical's plant in Lithuania. Intersurgical is a global designer, manufacturer and supplier of a wide range of high-quality medical devices for respiratory support.

TF Automation revisited the original design and have basically produced the same machine using the latest technology to laser mark the manufacturer's logo and product reference on their Hydroguard Mini medical oxygen filters.

The filters are autoloaded by robot onto a step-feed conveyor and into the Gravograph Laser Marker which marks both sides of the filter simultaneously with the two pieces of information. The feed-in and output are both to pre-determined amounts, with a filter being laser marked every 5.3 seconds.

The new machine was required because of an increase in demand for these types



of products in relation to the COVID pandemic. TF Automation worked effectively and quickly with the team at Intersurgical and were able to re-create the existing machine, which incidentally is still in use to support the demand.

Intersurgical provide flexible patient solutions for airway management, anaesthesia, critical care and oxygen & aerosol therapy, for use within emergency care, hospitals and also in the home. They adopt an integrated approach to provide the highest standards in design, manufacture, quality and customer care allowing them to respond quickly and effectively to their customers.

Tony Hubbert, MD at TF Automation, comments, "We were delighted to build a second laser marker for Intersurgical and also that our original machine is still working well! We are seeing an increase in projects incorporating laser marking for general part identification but also for more specific tracking and traceability requirements too."

This project is available to view on our newly revamped website along with many other projects we have delivered across numerous industry sectors. The new website highlights TF Automation's engineering and manufacturing capabilities and expertise with the focus on applications across a wide range of disciplines using the latest technology.

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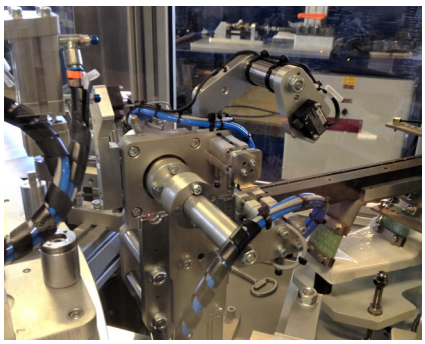

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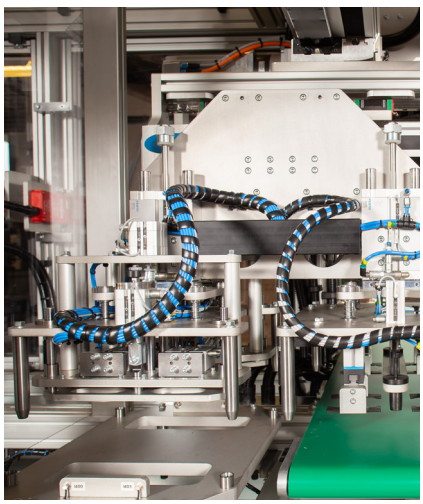

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No longer 'just a box'...

How enclosure suppliers are adding value and engineered excellence in electrical enclosures

The most significant shift in the industrial enclosure market over recent years has been the demand for increased customisation and fulfilment. From CNC machining to pre-assembled electrical terminals, additional services save the customer time and money. In some cases, turnkey solutions are provided and this bespoke approach has also had a knock-on effect for enclosure technology, which is becoming ever more specific to task. Chris Lloyd, Managing Director, Spelsberg UK, explains the trend in the enclosure market and where it's heading.

The most significant change for industrial enclosure manufacturers over the past 10 years has been the requirement to provide not just the enclosure itself, but a customised, partially complete or even a finished unit. This means that customers, typically OEMs but also end-users, increasingly request components to be assembled by the enclosure manufacturer, providing a product that's ready – or almost ready - for installation.

Driving this trend is the reduction in the time and cost of labour for the customer. Shifting this aspect of manufacturing production to the enclosure manufacturer also speeds up project completion, meaning faster time to market.

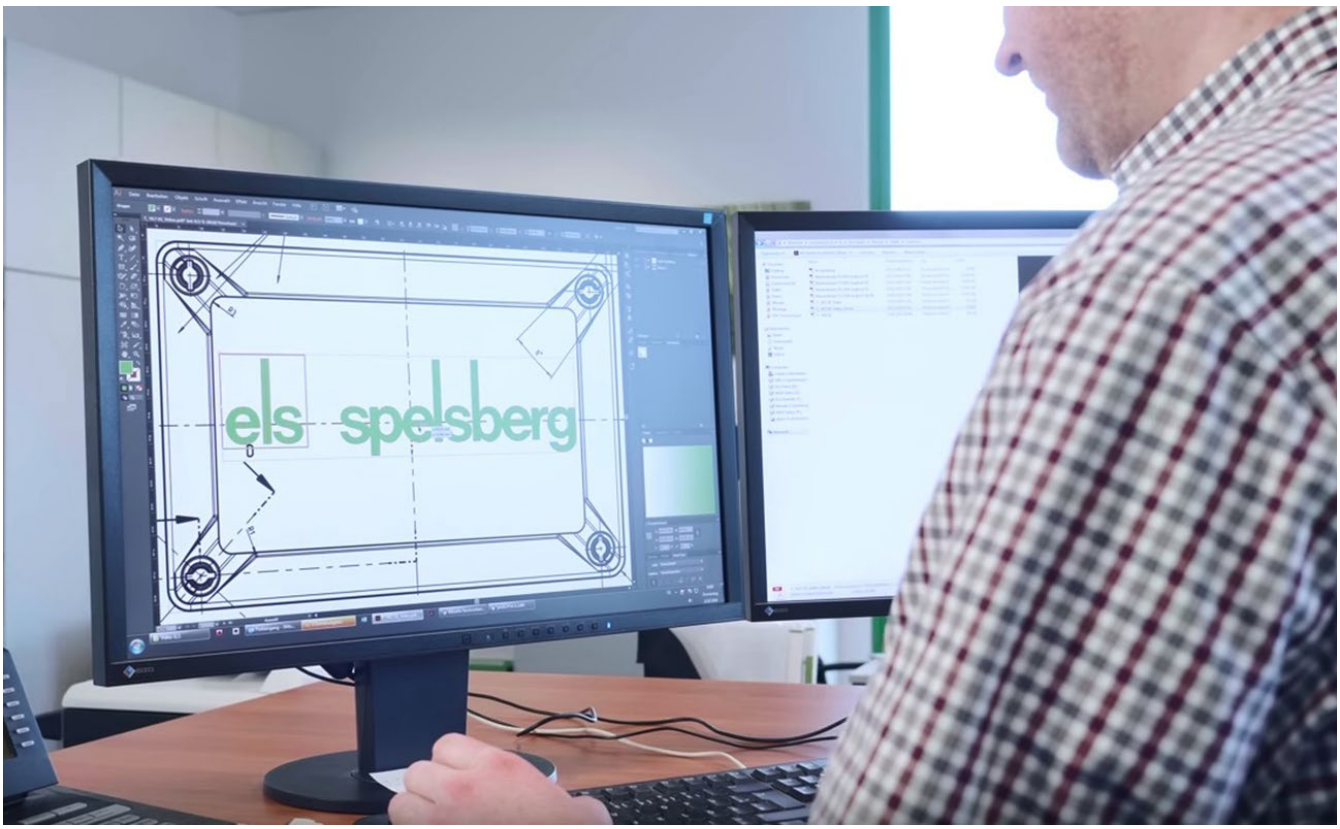
Enclosure assembly and customisation

In addition to providing the actual enclosure, this means that manufacturers are typically requested to fit components such as electrical terminals and cable glands, through to membrane keypads and overlays. Part of the pre-assembly process can also include customisation. Using CNC machining, this can mean drilling specific sizes and locations of holes for optimal cable routing, through to countersinking and tapping to increase mounting flexibility.

Today, the enclosure manufacturer has the skills and technology that the OEM or end user doesn't have available in-house, in order to provide customised and assembled units. This increases the accountability demanded from the enclosure manufacturer - instead of sharing it with third-party machinists or fulfilment houses - which improves the speed and reliability of project completion.

The shift to complete finished products

The extent of progression in the one-stop-shop demands placed on current industrial enclosure manufacturers also includes complete finished products that are ready to install. For example, as a result of the rise in electric-powered vehicles, including cars as well as bicycles and scooters, manufacturers like Spelsberg have been tasked to provide OEMs and local and municipal authorities with complete charging units.



Spelsberg's e-bike charging station, the BCS, is a complete battery charging unit, ready for public installation and use by an e-bike rider. The BCS includes not only a durable IP54/ IK08 industrial enclosure, but also the electrical charging sockets, ready for connection direct to a 230/400 V power grid. Providing completed products like an electric battery charging station means close partnership with electronic component specialists, such as PCB designers and manufacturers, as well as wider technology specialists such as mobile app developers. Each BCS unit can be located by an e-bike rider thanks to the connection of a smartphone app.

The demand on enclosure manufacturers for complete products is increasingly seeing a need for wider skills recruitment as well as additional partnerships with new types of suppliers. Manufacturers like Spelsberg are not only investing more in terms of electronic component development and manufacture, but system design is increasingly coming to the fore. Where previously a customer may have presented their design for the enclosure manufacturer to produce, increasingly the customer gives only their challenge or desired outcome, tasking the manufacturer with the design and development of the solution.

Rapid delivery of turn-key projects

Particularly for end users such as large utilities suppliers, their requirements are increasingly for turn-key solutions. The enclosure of switchgear for solar farms is a tested example, and the renewable energy sector is also creating further demand for complete solutions for wind and tidal power. Telecommunications networks also have similar requirements. Providing major utilities with ready-to-install, completed units, not only gives them benefits in terms of speed and cost reduction, it also improves the efficiency of their procurement process by reducing their supplier count.

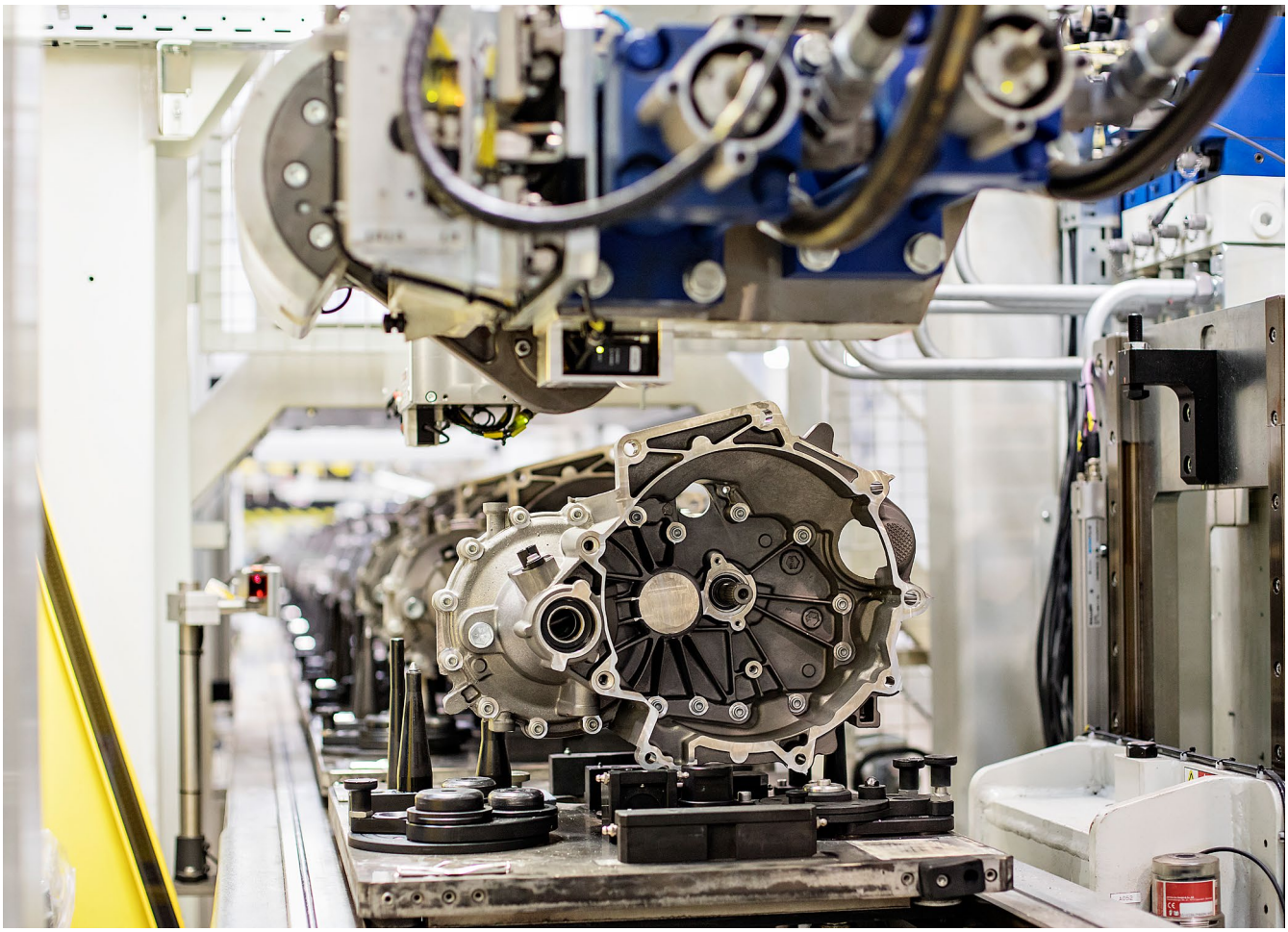
While customers increasingly want a near-ready or ready product, this hasn't reduced the demand on timescale. Producing a customised prototype as a customer sample is often needed on a same-day basis. When it comes to providing the manufactured batch, the operation might typically be required within one to two weeks. This not only means fast production, including customised aspects such as CNC machining, but also involves carrying a flexible stock of items such as membrane keypads, in addition to the actual enclosures.

Specialised enclosure technology

In terms of the industrial boxes themselves, as customer requests become increasingly specific, so do the enclosures. To suit the varied nature of demanding applications, the range of standard enclosures has had to grow to accommodate products such as enclosures for concrete installation for the construction industry, through to fire-proof boxes for security devices such as alarms and sprinkler systems. More specialised still, applications for the military can require non-reflective, self-extinguishing, radar-proof, 'stealth' enclosures.

While there will remain a need for providing enclosures alone, for example to electrical installers, from the perspective of OEMs and end-users, the electrical enclosure industry will continue to move towards partially assembled and complete solutions for specialised applications. Not only is this approach saving the customer cost and time, ultimately it's helping to create better completed projects.

www.spelsberg.co.uk



ŠKODA AUTO has produced eight million MQ200 manual gearboxes at the Mladá Boleslav site

ŠKODA AUTO has produced its eight millionth MQ200 manual gearbox since production started at the Mladá Boleslav site in 2000. The manual five-or six-speed transmission is used in various ŠKODA AUTO models as well as in vehicles produced by the Volkswagen, Audi and Seat Group brands. Around 1,900 units are produced every day. The car manufacturer also produces the MQ100 transmission at its headquarters.

Michael Oeljeklaus, ŠKODA AUTO Board Member for Production and Logistics emphasises: "I congratulate the entire team on achieving this production milestone. This is a great achievement and attests to our technical expertise; the MQ200 manual transmission exemplifies high quality and durability. The production of this gearbox is a clear sign of the importance of component production at the Group level."

383,000 units of the manual five-or six-speed transmission ran off the production line in Mladá Boleslav last year alone, and the daily production volume is currently around 1,900 units. The MQ200 is installed in vehicles with petrol engines with a torque of up to 200 Nm and a displacement of 1.0 to 1.6 litres. It is used in ŠKODA, Volkswagen, Audi and Seat models.

In addition to assembling the MQ100 and the MQ200 in Mladá Boleslav, the Czech car manufacturer also produces the DQ200 automatic 7-speed direct transmission at its Vrchlabí plant. In total, the company employs around 1,700 people in transmission production at the two sites.

ŠKODA also produces high-voltage traction batteries for the plug-in hybrid ŠKODA SUPERB iV and ŠKODA OCTAVIA iV models adjacent to transmission production in the same factory hall in Mladá Boleslav. In addition, production of MEB battery systems for the ŠKODA ENYAQ iV will start at the same location in early 2022.

www.skoda.co.uk

The expansion of the Baton Rouge Service Center will enhance the service capabilities and support for operators of rotating equipment in the US Gulf Coast area.

Sulzer announces Baton Rouge Service Center expansion

To widen support for operators of rotating equipment in the US Gulf Coast area, Sulzer has announced the expansion of its Baton Rouge Service Center in Louisiana. The new purpose-built addition to the existing facility will enhance the service capabilities of the center – which specializes in repairs and reengineering for all types of rotating machinery including pumps and small steam turbines.

The expansion will add 7,200 sq. ft. of floor space to the existing 10,500 sq. ft. service center. New cranage will double the current lifting capacity from 10 to 20 tons, with a large blasting and paint booth to be added. Additional machining capacity will also further increase the number of repair and reengineering projects that can be carried out at the same time. As well as adding equipment and space, Sulzer plans to hire new mechanics, machinists, office staff, sales teams and apprentices from the local area.

Glenn Doerksen, President Pump Services NAM at Sulzer, said: "We are already the premier provider of maintenance and overhaul services for rotating equipment including pumps and small steam turbines. However, we are always looking to further strengthen our capabilities to increase our offering to customers.

The new facility expansion will allow us to repair larger vertical pumps than ever before locally, optimizing project times. Additional equipment such as 3D scanners will enhance our repair and reverse engineering work for equipment from all manufacturers. This growth also enables us to support the local community by increasing job opportunities in the area. We are looking forward to announcing our opening event soon!"

As a leading pump original equipment manufacturer (OEM) and independent service provider for rotating equipment, Sulzer offers a comprehensive range of expert engineering services. The Baton Rouge Service Center is part of the company's global network and delivers turnkey repair, reverse engineering and upgrade projects. A dedicated field services department also provides on-site engineering support to customers in the power generation, petrochemical, steel and heavy-manufacturing sectors, among others.

www.sulzer.com

Setting the limits of deep space research telescopes

High in the arid Atacama Desert, a new observatory is aiming to answer big questions about our universe. Currently under construction, the Simons Observatory will study the cosmic microwave background (CMB) - the radiation signature of the Big Bang. The observatory will include telescopes and antennas manufactured by CPI VERTEX ANTENNENTECHNIK GmbH, which feature Stromag Series HGE and HEG Geared Cam Limit Switches to limit their movements as they observe deep space.
To infinity, and beyond

Telescopes and antennas around the world are constantly scanning the night sky, observing across the electromagnetic spectrum as part of ground-breaking research into the nature of our universe. While the first telescopes relied solely on visible light, now observatories can detect radio and microwaves. An area that has spurred intense research is the CMB, a remnant of the Big Bang. Highly sensitive telescopes and antennas located far from sources of electromagnetic interference (EMI) observe deep space at this spectrum to research the creation, expansion and composition of our universe.

As the Earth rotates, telescopes and antennas must move axially and elevate to keep aligned with a particular observed section of the sky. In addition, in some cases the dishes and receivers must be rotated to ensure accurate reception of signals from space. The rotating ranges of the telescopes are limited because of cabling, cooling hoses and mechanical constraints, which is where Stromag Geared Cam Limit Switches come in.

The outer limit

Marco Niehnus, Global Product Manager Controls at Stromag, explains: "We are a global manufacturer of power transmission solutions and a leading brand of Altra Industrial Motion Corp. At our facility in Unna, Germany, we manufacture a wide range of geared cam limit switches, which are designed to provide slowing and stopping functionality at pre-set limits. Typically, these devices are used on cranes to limit the movement of loads, but one of our customers, CPI VERTEX ANTENNENTECHNIK GmbH, uses our products on its telescopes and antenna for space research."

CPI VERTEX ANTENNENTECHNIK GmbH is a worldwide supplier for ground stations, precision antenna systems and radio telescopes. An expert in this field, the business provides systems to space agencies and leading academic research projects. Located in Duisburg, Germany, CPI VERTEX ANTENNENTECHNIK GmbH utilises Stromag Geared Cam Limit Switches to protect the highly sensitive equipment from damage in case of malfunction, for example, after component failures. Thus, the Stromag Geared Cam Limit Switches are important elements within the telescopes.

"We work closely with the design and engineering teams at CPI VERTEX ANTENNENTECHNIK GmbH to help specify limit switches on a project-by-project basis," Marco continues. "Typically limit switches are required to limit the axial rotation, the elevation and the polarisation movements of the system. As part of this technical relationship, CPI VERTEX ANTENNENTECHNIK GmbH contacted us to provide limit switches for equipment destined for a new observatory being built in Chile."

He who controls the scope

The Simons Observatory is being constructed at 5,200 meters (17,000 ft) inside the Chajnantor Science Preserve, making it one of the highest telescope installations the world. It will join the operational Atacama Cosmology Telescope (ACT) and the Simons Array to aid in the next generation of CMB research, adding several new telescopes1 and cameras with state-of-the-art detector arrays. The observatory is operated and funded by the Simons Foundation, which includes the University of Pennsylvania; Princeton University; the University of California, San Diego; the University of California, Berkeley; and the Lawrence Berkeley National Laboratory, as well as other institutions worldwide2.

"To support the project, we provided Series HGE and HEG Geared Cam Limit Switches. These limit the axial, elevation and polarisation movements of the telescopes and antenna. Devices offer two contact points at both the upper and lower (or left and right) limits, the first for initially slowing the movement and the second for a complete stop. We design each geared cam limit switch to offer a certain number of turns from the upper to the lower limit, which we tailor by modifying the gear ratio. We can offer a switching point repeatability to 1/1000th of the travel pass, which for 20 m of travel would equate to 20 mm accuracy of limit switch adjustment. This level of accuracy is highly beneficial for sensitive equipment collecting scientific data like a telescope or antenna," Marco says.

Stromag geared cam limit switches can be adjusted by almost anyone. By adjusting a worm gear, operators can set the limit as desired. The worm gear is self-locking, which ensures that once set, there will be no subsequent change in position. Encoder integration is also available to provide the information to the control systems regarding the current position in between the contacts. The contacts are responsible for the safe stopping of the antenna at the end of its travel range.

Galactic alliance

"Our proximity to CPI VERTEX ANTENNENTECHNIK GmbH means that, when possible, we can talk directly with their teams to ascertain specifications and requirements. For challenging applications such as antennas and telescopes, this is invaluable. We can take an active part in each project during initial design phase from a limit switch perspective, which helps us to deliver the best possible solution," Marco enthuses.

Construction of the Simons Observatory started on June 30th 2019, so it will not be long until its 5-year journey of discovery into the CMB and our Universe begins3. With astrophysicists at the observatory looking explore the physics of the early universe, dark energy, neutrinos and gravity4 – one of the few boundaries of its research will be movement limits set on its array of telescopes and antenna.

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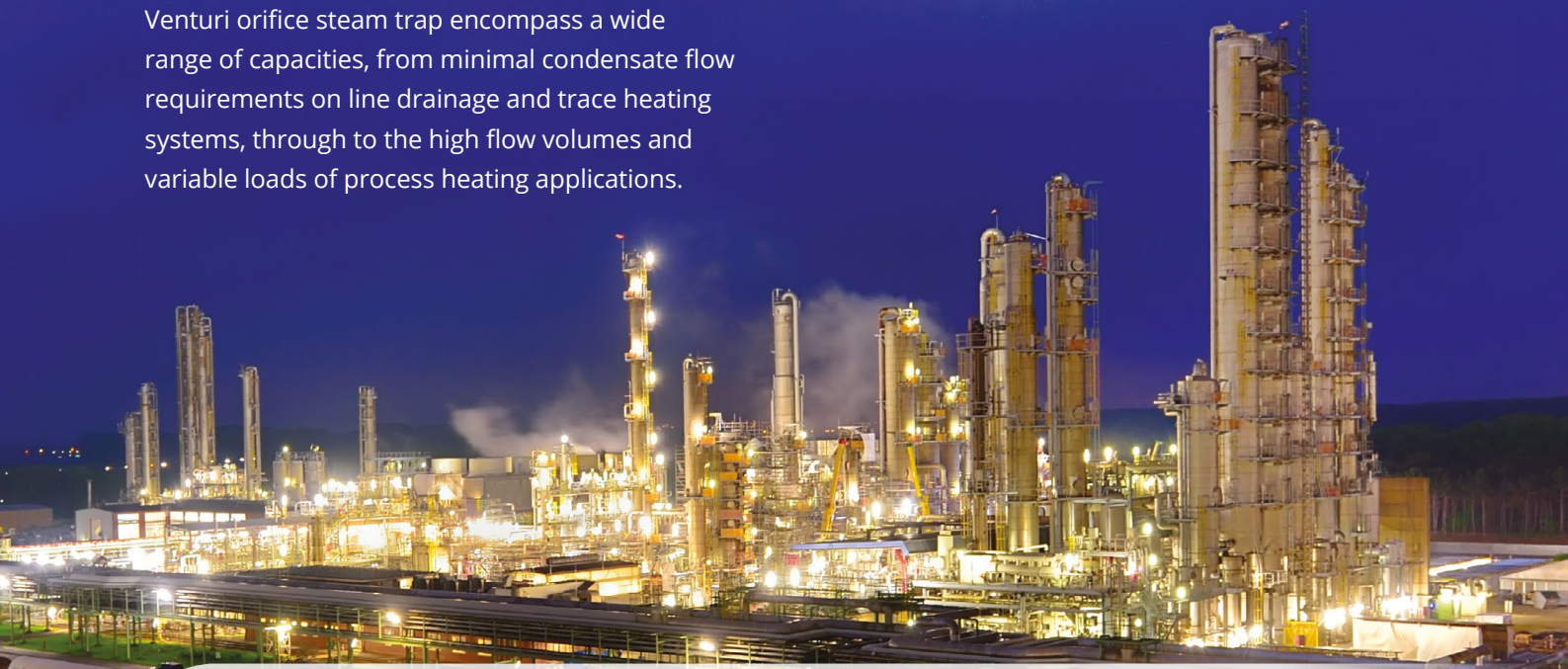

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