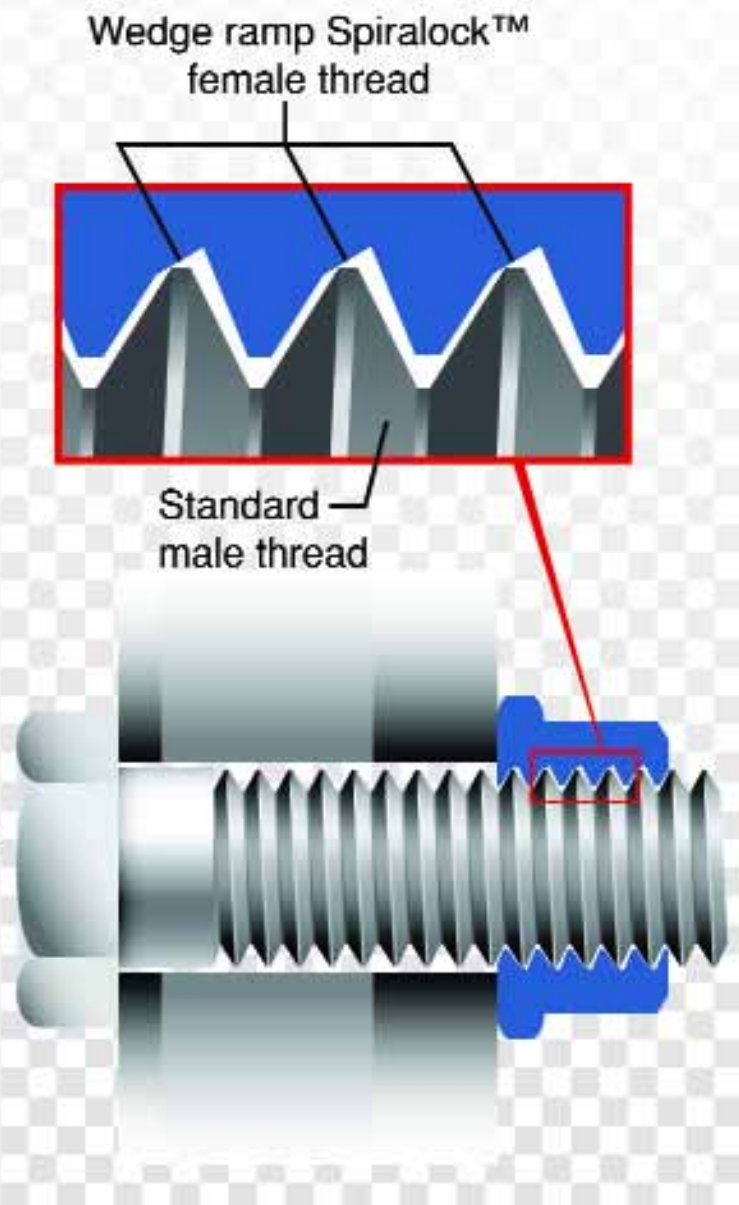


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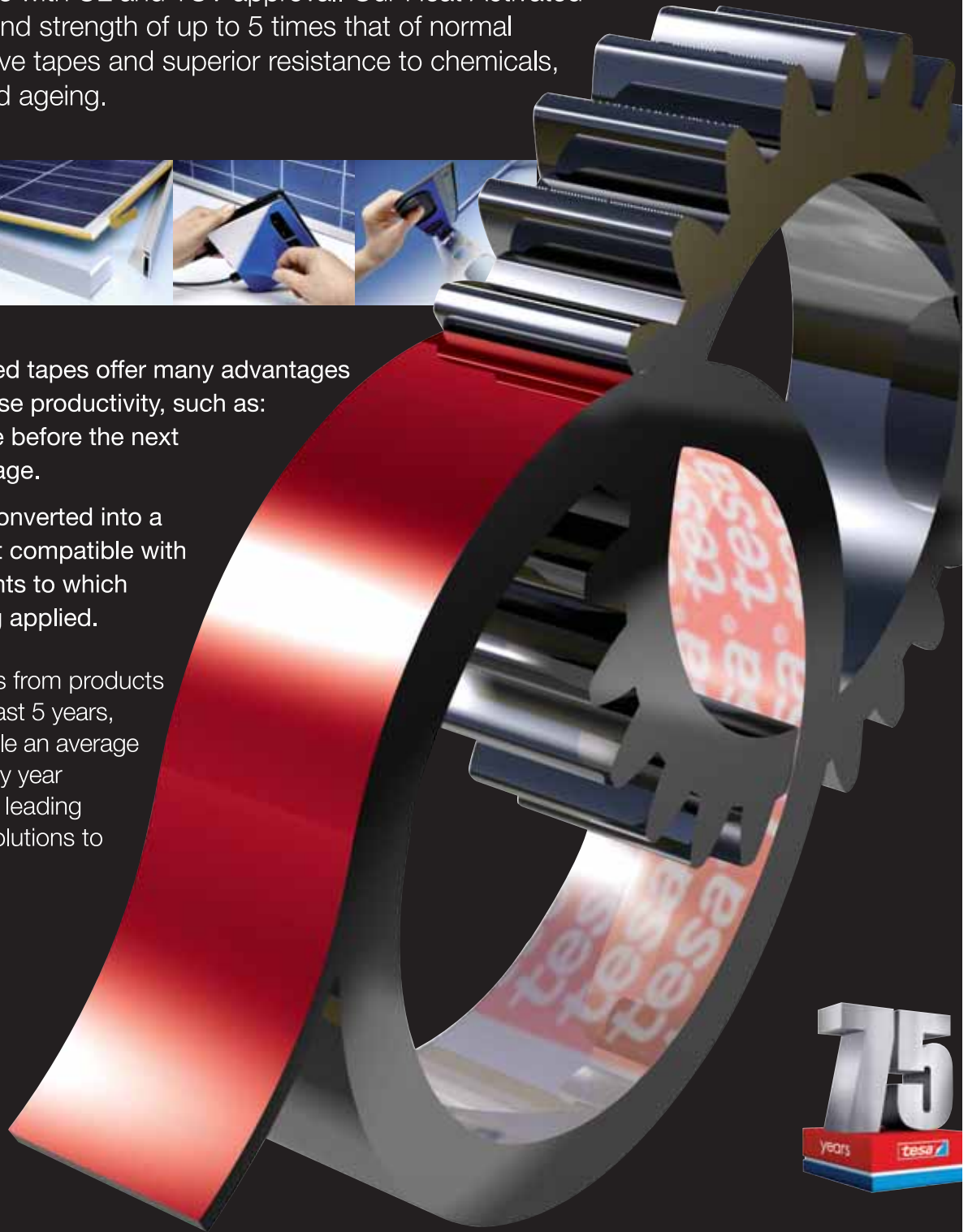
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Mixed messages from a confusing summer



It's been a summer of much confusion; the economy in turmoil, rioters in the streets and the weather determined to remain unpredictable. And what has become of the manufacturing industries? Mixed messages about output and performance

have simply added to the cyclical confusion.

According to one survey, published jointly by the manufacturers' organisation EEF and accountancy firm BDO, Britain's manufacturers are maintaining healthy growth despite the uncertain economic outlook according to a major survey published today. And despite recent sentiment to the contrary, the Manufacturing Outlook survey shows output and orders still growing, with all sectors reporting positive activity in the last three months. Exports remain the main driver behind growth with the gap between overseas and markets still evident.

However, the report continues, as the economic outlook has become more uncertain, a divergence in views of recent trading conditions and future expectations has opened up. A small number of sectors, including metals and electronics, have seen weaker orders intake over the past three months, with corresponding concerns about output expansion evident in the next three months.

The balance between caution and optimism appears to have shifted for small companies looking at conditions over the next quarter, where less visibility around future orders is keeping confidence in check.

Tom Lawton, Head of Manufacturing at BDO reckoned that this was a strong survey for the manufacturing sector despite the economic storm clouds looming in the Eurozone, the US and the UK. The results were showing positive balances in terms of orders and outputs in the last quarter and expected in the next. Lawton did note, however, the stark differences in expectations between small and large companies, with smaller companies seeming considerably less secure about the future.

The economic turmoil in some industrialised economies is a cause for concern amongst all manufacturers. In particular, companies will be worried about how their order books will look in the coming months, as well as their prospects of recovering debt on sales already made. But whereas a large company may be in a better

position to offset losses, to a smaller company the loss of an important customer can be a business critical event. Smaller companies may feel less confident about the future due to the relatively short-term nature of their order profiles, giving them less visibility over future orders.

Lawton points out that SMEs in Germany have been the catalyst for German economic growth. We should not forget how important SMEs are for a strong economy and we should ensure our smaller manufacturing companies are given the support they require to thrive and continue to be an active part of this sector. No one can dispute this sentiment.

A report earlier in September from the BBC suggested that UK manufacturing output shrank in August, led by a sharp decline in export orders. Another survey, this time based on purchasing executives at over 600 firms, suggested that things are not as breezy as the EEF survey indicated.

The Markit produces a survey in conjunction with the Chartered Institute of Purchasing and Supply (CIPS) which measures growth by a manufacturing purchasing managers' index (PMI). The most survey showed that PMI fell to 49 in August – a 26-month low. Any level below 50 apparently implies contraction. According to this survey, new export business, which drove the recent manufacturing recovery, fell at its fastest rate since May 2009. New orders and employment also fell. Export demand had been growing at close to record levels as recently as December, according to past surveys. But August also saw the sharpest fall in new orders for the sector in two-and-a-half years, and the first drop in output since 2009.

The CIPS survey highlighted the increasing risk that the industrial sector – and perhaps even the overall economy – is heading for the much talked about double-dip.

So whose survey is right? Perhaps we are being confused by figures derived from too small a statistical sample so we don't really know if we are going into or coming out of yet another recession.

Paul Gay, Editor
editor@fastmagazine.co.uk

FASTCONTENTS

REGULARS

06 FASTUPDATES

News and comment from the fastening and assembly industry

17 FASTQ&A

Colin Bennett of Viking Industrial Products assumes the role of Adhesives Doctor, answering typical questions about tapes and adhesives. Michael McCarthy, general manager of 3M United Kingdom's Industrial Adhesives and Tapes Division answers questions from the manufacturer's point of view

22 FASTPROFILE

The new managing director of Moss Express is a man on a mission and has big ambitions for the company that is already the UK's largest manufacturer and distributor of small industrial components

43 FASTBUYERS GUIDE

This issue we look at where to source industrial hardware

57 FASTCASESTUDY

Ultrasonic instrument shows new real time measurement capabilities in torque control application

58 FASTPRODUCTS

FAST reviews the latest product releases in the fastening and assembly systems business

70 FASTQUIZ

£100 cash to be won for the correct answers of the FAST quiz. Sort out some tricky engineering and trivia questions and win a cash prize

FEATURES

20 Product Review:

Quick acting fasteners
Market forces are causing OEMs to rethink fastening strategy by reviving a system that had for years been thought of as too expensive for general commercial use



24 Special fasteners

Using some lateral thinking, the humble rivet used in an innovative way came to the rescue of a concrete floor laying company with a jointing problem

27 How to:

Fasten securely

Engineering adhesives ensure fastener security in even the most demanding of circumstances

30 How to:

Specify special fasteners

A shear pin latch gives performance cars an aerodynamic edge

FASTCOVERSTORY

Innovative thread form stays tight under vibration

Spirallock has re-engineered the standard female internal thread form and added a 30° wedge ramp at the root of the thread. Through this innovation, the thread form is exceptionally resistant to loosening and stripping, caused by transverse vibration. It is also free-spinning and reusable. Spirallock products include flange and self-clinching nuts, wire thread inserts, threaded inserts, taps and gages, threading inserts and thread milling cutters. Eliminating the need for secondary locking methods, Spirallock provides reliable threaded fastening solutions for critical applications in aerospace, military, truck, automotive, diesel engine, medical, farm, construction, oil exploration and other industries.

SPIRALOCK 01604 546236



33 How to:

Develop bespoke access control

Manufacturers are always looking for ready-made answers to those difficult engineering questions that can arise in the area of access control

34 Encapsulants

The benefits of low pressure moulding with hot melt resins

37 Bespoke hinges

A special hinge designed with the latest computer techniques has proved so popular that it has been included in a standard parts catalogue

39 Aluminium inserts

The high cost of brass used for special inserts in plastics components has led to the development of an aluminium alternative



40 Transfer tapes

A range of high performance optically clear adhesive transfer tapes has greatly enhanced the assembly process for electronic touch panels

44 Transportation

Self-pierce riveting is an innovative, cost effective and environmentally friendly joining process that has been adopted across a wide range of industries around the world

47 Value added tapes

A Milton Keynes based company has mastered the art of adding value to adhesive tape application

48 Assembly safety

When it comes to safety conformance, machine manufacturers should consider the benefits of working with an inspection body with expertise in standards



51 Top Tips:

Deploying fasteners in key military applications

53 Top Tips:

Meeting the aesthetic demands of the designer

54 Top Tips:

Ten ways to cut the cost of industrial vending



FASTUPDATES

Pay settlements respond to economic pressure



Manufacturing pay settlements in the last three months have shown a slight fall, according to the latest figures from **EEF**, the manufacturers' organisation and JAM Recruitment. Although there is an air of uncertainty over the state of the economy, there is still cause for optimism.

EEF's pay data for the 3 months to the end of August shows that the average pay settlement for the period was 2.5%, down from the level of 2.7% for the three months to the end of July. Whilst this is based on a relatively small number of settlements the data illustrate the tight economic conditions and uncertainty that has been prevalent in the economy in the last few months.

While the trend seen since the recovery began of most settlements being at or below 3% continues, one in ten settlements are still freezes.

EEF chief economist Lee Hopley commented: "Whilst settlements are continuing to hover at the lower range of normal levels, the slight fall in the latest data reflects both a mood of uncertainty which has been prevalent through the summer

months but also realism. If we are not there already then we are rapidly approaching the point where fears of wage inflation are off the radar," she said.

John Morris, chief executive of JAM Recruitment, said: "Whilst the latest settlements reflect a cautious attitude on the part of manufacturers there is certainly still cause for optimism. Recruitment levels in the sector are a neat barometer of manufacturing activity, and we're seeing sustained growth in some areas. The North East and West Midlands are looking especially strong, and demand for candidates that can drive lean and continuous improvement initiatives remains high throughout the UK. The challenge moving forward will be how UK plc can provide the skilled employees the sector needs to meet the demands of economic growth."

The September 2011 Pay Bulletin contains information on 111 settlements covering 15,718 employees. These figures may be subject to revision to take into account settlements for this period that have not yet been received.

EEF 01664 484 270

Discover the latest fasteners and adhesives

It is unlikely that pressure has ever been higher to uncover the latest developments in fastening products and applications – especially while always saving costs and preferably while improving quality. So that the opportunity to do all of those things in one place in a matter of a few hours is a chance not to be missed for design and production engineers in the UK.

Such an opportunity exists at the FAST & IASE exhibitions in Birmingham on October 20th at the national Motorcycle Museum where organisers NewbyCom will once again offer free parking and a complimentary hot bacon roll and a brew for early starters, combined with an eclectic portfolio of exhibitors delivering an unrivalled value experience for manufacturing professionals who

want to put things together better – whether with mechanical fasteners or adhesive systems, with discrete components or complete systems.

To be amongst the first to see, discuss and evaluate everything new (methods, products and practices) in fastening and assembly, simply go to the exhibition websites and pre-register now! Entry to both exhibitions is free. One registration provides a badge valid for both events and pre-registration can be done at either:

www.fastenerexhibition.com or at www.adhesives-show.com.



Custom springs direct service

Lee Spring has introduced a service to speed up the delivery of bespoke customer solutions. Customers can email the company a drawing of their design idea direct to the dedicated custom spring design email address: technical@leespring.co.uk and the team will respond with a quote within 24 hours working from drawings, product specifications or part samples.

The company can now design and manufacture a virtually unlimited variety of spring configurations and specifications and

supply them direct using the Custom Springs Direct service. Since 1918 Lee Spring has been manufacturing custom springs and wire forms for just about any application. Its experienced engineers can work closely with customers from inception to completion so that nothing is left to chance. "Our aim is to turn the engineer's idea into reality; whatever the application, location or quantity," confirmed Darren Eyre, Technical Sales Engineer.

The variety of product on offer is extensive and includes compression and extension wire in a diameter range of 0.005in to 0.500in and torsion wire from 0.005in to 0.187in. A wide range of alloys includes stainless steel 17-7 and 316, phosphor bronze, Hastelloy, Inconel 600, 718 and x750, beryllium copper and Elgiloy. The service also offers fourslide parts, wireforms, stampings and assemblies.



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FASTUPDATES

BOC makes light work of welding

Many car, bike and model engineering enthusiasts occasionally need to weld components and assemblies together. Many small companies also need welding products but not on a regular, large-scale basis. However, up till now the gases used in this process have only been available in large, unwieldy cylinders. And that makes the cost of these operations expensive. However, the UK's largest supplier, BOC, has now come up with an answer.

The company has developed a small, cylinder package for occasional users and hobbyists. It comes with a single annual rental charge of just £18 plus VAT. The gas costs £16 per fill and you can get it refilled whenever you want. Customers in the Wolverhampton and Telford areas are the first in the country to be able to trial this

new shielding gas package.

Argoshield Light is an odourless shielding gas ideal for MIG welding and for using with thin-section alloy steel (including stainless steel).

The two-litre cylinder contains nearly 500 litres of gas – that's almost 30 minutes of continuous welding. BOC tells us that Argoshield Light gives excellent arc stability with minimal spatter during welding; and the oxygen content in the gas mixture means less welding wire is needed.

During the initial trial period, these cylinders are available from the BOC Tradequip on Lower Walsall Street, Wolverhampton WV1 2EP (01902 870999), and from Telford Group at Enterprise House, Stafford Park, Telford TF3 3BD (01952 290800).

Specialised Fastener Products joins TFC Group

Technical fastener supplier TFC Europe has acquired Essex based Specialised Fastener Products (SFP).

Operating from Colchester, SFP was established in 1989 by Paul and Sindy Jepp. Their focus was to provide threaded fastener technology to manufacturing by providing a complete design and application service for three main product ranges: sheet metal fasteners, electronic hardware, and threaded inserts for plastics, timber and metal.

Paul Jepp will assume responsibility for the product management of the Specialised Fasteners business within TFC and will assist the growing number of TFC business teams in offering these new products through existing sales channels.

Morgan Burgoyne, MD of

TFC commented: "We are delighted to welcome Paul Jepp and his team to the TFC family, the joint capabilities and vast expertise will create a strong foundation for both organic and strategic growth with new customers and in new markets. It is a great opportunity to combine an interesting spectrum of products with exclusive supply arrangements.

TFC 0845 643 9024



Quick access fasteners turn heads

A quick access fastener, developed by Dzus Fasteners, has seen sales increase by 28% overall, including 60% growth in the US, in the past year alone. The D8 quarter-turn fastener incorporates advanced manufacturing technology that uses a rolled cam form process exclusive to parent company Southco.

Southco global product manager Ben Goater explained: "The D8 range is a culmination of over 80 years' experience of quarter-turn fastener technology and manufacture designed to offer a far more effective alterna-

tive to the screw. Over that time, our quarter-turn fasteners have served a wide range of industries including aerospace, automotive, industrial machines and enclosures. Primarily, the D8 version came about because we recognised the limitations of traditionally machined fasteners and the many advantages - including improved quality, reliability and feel – that the orientation of head feature to cam feature on a rolled fastener would bring to the quarter-turn quick access market.

The key features which make the D8 line a leading choice for a wide range of applications is its oriented head to cam feature. Other significant attributes include its precision fit, quick assembly, smooth feel and improved aesthetics, superior strength, improved ergonomics, and choice of stud sizes and receptacle styles. These include clip-on, self-clinching, front loaded, rivet-on, side mount, and front mount.

The D8 is particularly popular for fastening access panels in the automotive, HVAC, lighting, enclosures and industrial machine sectors, and for motorcycle fairings applications. In the US, its main growth area is in the automotive sector. Furthermore, more and more Dzus D8 quarter-turn fasteners can be seen in the US on boxes housing fast food menu signs.

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Meet the Editor

Have you ever wondered how editorial teams source their stories and the technical information required to publish periodicals like **FAST Magazine**?

To find out how, you should enrol into our Meet the Editor seminar being held after the FAST and IASE exhibitions at the National Motorcycle Museum on October 20th, 2011 in the Crow's Nest Suite at 1530hr.

This could be your chance to learn about editorial opportunities and how your company can benefit from the free publicity offered through the pages of trade magazines.

The seminar will explain how magazine editorial works and provide some tips on what sort of material is acceptable for publication. Refreshments will be served and one-to-one time with FAST Magazine Editor Paul Gay will be freely available at seminar close.

Your place at the seminar is free if you are a 2011 FAST customer, either an advertiser or exhibitor, or £45 to non-customers. Numbers are limited so if you'd like to book your place, please contact us immediately.

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FASTUPDATES

Hose clip is at the top of its game



Jubilee clips fasten items of rigging to the main tubular structure

Jubilee Clips have been specified and are now installed on the roof of the Forsyth Barr Stadium – one of New Zealand’s most recently-opened 2011 Rugby World Cup venues.

L Robinson & Co. (Gillingham), manufacturer of the ubiquitous Jubilee hose clip fulfilled the contract to supply its clips though Auto Agencies Limited the company’s distributor in Christchurch, New Zealand. The contractors constructing and installing the roof on the stadium in Dunedin used the High Torque clips to fasten items of rigging to the main tubular structure.

A total of 208 clips were air-freighted out to New Zealand in July in double-quick time to meet



The roof is constructed with an ETFE sandwiched in an aluminium frame

the tight construction deadlines and to ensure the project was signed off and handed over prior to the Stadium’s August opening ceremony.

Forsyth Barr Stadium is known colloquially as The Glasshouse due to its resemblance to a horticultural hot house, and its roof is constructed with ethylene tetrafluoroethylene (ETFE) sandwiched in an aluminium frame which is inflated with low pressure air to provide stability and to resist wind and snow loads. ETFE is the same material used at the Allianz Arena in Munich, the Water Cube in Beijing and the Eden Project in Cornwall.

Jubilee ‘High Torque’ clips were specified for the project from the start. Performance characteristics and attributes that include durability, strength and resistance to corrosion were particular advantages that the stainless steel High Torque Jubilee Clips had over other competitor products and were the major reasons why the order was placed.

Dave Jennings, managing director of Auto Agencies was delighted to be engaged in the project: “Being involved in such

a high-profile project is great news for us and is testament to the solid reputation, built on high-performance and value that



Jubilee clips are said to provide twice the tightening torque of standard worm drive hose clips

Jubilee Clips enjoy throughout the world.”

Jubilee High Torque Clips are available in wide variety of working diameter sizes – 20/35-mm is the smallest going up to

470/500-mm at the top end of the scale. Because of their design and construction, the clips provide users with twice the tightening torque of standard worm drive hose clips which in turn results in double the band tension.

For applications that exhibit the potential for heavy vibration or excessive leaking – the High Torque Clip, with its extra high levels of tightening torque, is without equal.

The Forsyth Barr Stadium is a multi-purpose stadium, which was opened by New Zealand Prime Minister John Key on 5 August 2011 and was scheduled to host four matches of the 2011 Rugby World Cup.

The stadium was designed as a versatile venue, and is expected to be able to host a range of events including sports, concerts, trade fairs and other large scale events. The use of re-locatable seating allows for flexibility to suit a range of event requirements the stadium boasts a maxi-

mum seated capacity of 30,000 in a full sports mode, and capacity in excess of 35,000 for concerts.

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FASTUPDATES

Resin mixing is the key to performance filters success



Airwaves Racing's Mat Jackson relies on performance filters from Pipercross

Pipercross designs and manufactures air, oil and fuel filters for bus, truck and train as well as high performance competition cars and super bikes. They are at the forefront of air filter technology with over 28 years of developing for road and race applications.



A fundamental requirement in filter manufacture is to bond and seal the top and bottom of the element

To continue to improve its product, Pipercross realised it needed to update and improve its resin mixing capability and investigated what options were available. The fundamental requirement is to bond and seal the top and bottom of the filter element, to achieve this Pipercross needs accurately to meter and mix a two-component Greenfield Polymer polyur-ethane and dispense into a rectangular or square mould. After its deliberations, the company approached Liquid Control to assist with the resin dispensing technology.

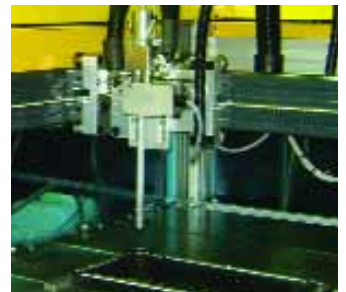
Accuracy of quantity dispensed is important to the quality of the filter; if there is too much resin, even by a small percentage, the effectiveness of the filter is reduced because the excess resin is extruded into the filtering area. If there is too little resin, the filter would leak and be rejected. Also crucial to the quality of the filter is the repeatable viscosity of the mixed resin, a function of accurate ratio metering and temperature both constantly monitored, the ratio by flow monitors enabling a closed loop self-correcting system. If the viscosity did vary then the 'wicking' capability would change, again reducing the performance of the filter. Liquid Control equipment enables improved air filter design

due to Pipercross being able to accurately refine dispensed quantity and quality.

The process of manufacture is to place the base filter mould on the Liquid Control XY Cartesian robot, manual initiation will start the Liquid Control DXE60 resin mixing machine and XY with the resin mixing head on the robot it will dispense automatically around the profile of the mould within a fraction of a millimetre ensuring accurate placement of resin for when the filter element is placed in the mould. The mould with filter element in place is now put on a temperature controlled carousel allowing the polyurethane to cure. When this process is complete the top filter mould is placed on the XY robot

and the dispense process repeated, the half pre-assembled filter is now placed into the top mould and again allowed to cure, this then results in an assembly with a filter element moulded with a polyurethane moulding to top and base.

"Because of the programmable dispensing precision of the Liquid Control Posiflow DXE60, we are able to refine and improve the quality of our filters and save money because of the 50% reduced reject rate which was an unexpected bonus, if you



Accuracy of quantity of resin dispensed is important to the quality of the filter

also take into account the 40% increase in production due to increased speed and importantly improved reliability we are a very happy Liquid Control customer," commented Adam Hughes, Design Engineer with Pipercross.

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Parkalgar Honda rider Sam Lowes heading for Nurburgring's podium in the World Supersport Championship



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FASTUPDATES

Moving away from the traditional fastener

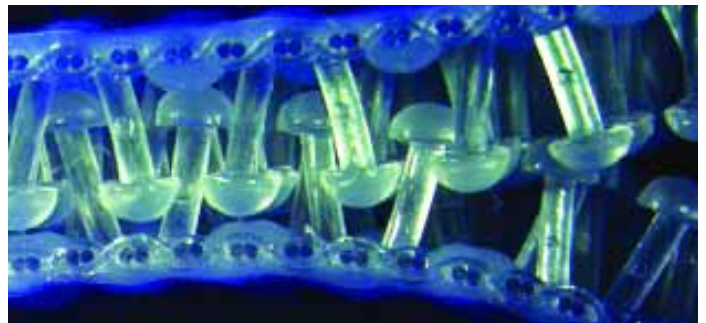
A self-adhesive, single component, interlocking mushroom product from Stoke on Trent based Binder Fastener Systems is proving increasingly popular in a variety of industrial applications.

The Duotec system can be applied without special tools and is a recloseable product which has allowed the design fraternity to re-think the use of textile fasteners. Being many times stronger than some other systems means that it is ideal for the invisible fixing of items for the transportation, machinery, signage, interior design, point of display and business equipment markets to name just a few.

The product's high strength,

multi-directional engagement and uniform performance allows designers and engineers to use Duotec with confidence where more traditional fixings such as nuts and bolts, screws and rivets were the only option. As it sits below the surface it provides a more aesthetic appearance which is becoming more and more important to both designers and their customers.

The system uses a high quality adhesives based on nitrile rubber and acrylic materials which lead to a reliable solutions to even the most demanding applications including low and high temperatures, external and low surface energy substrates.



The product gives a reassuring click when closed

Being a strong, single component, self-adhesive product, there is no need to drill holes, which can greatly improve productivity. The added benefit of not drilling holes particularly in the vehicle interiors market is that you will not fall foul of the stringent anti-corrosion warranties given by the manufacturer. This is often overlooked but given that vehicles are now far more reliable and have longer life spans then corrosion can be a serious issue.

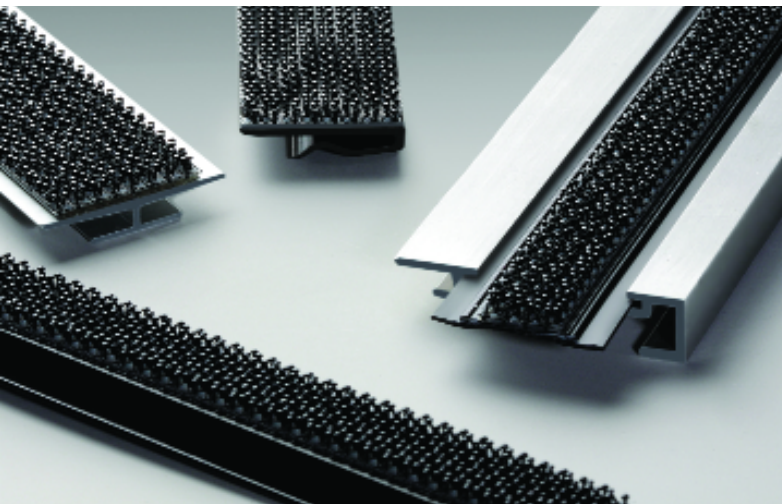
Production speed is also increased as there is no need to line up the components to be fixed; Duotec can engage across the whole of its width in both vertical and horizontal directions. And users know the product has fastened correctly as it gives a reassuring click when closed.

Duotec is simple to apply and needs no special tools so stock

holding is reduced. The product is a one roll component which can replace a whole host of different fixings. The system is designed in-house and produced using a large selection of plastic profiles and components onto which the fastener can be bonded. This broad range means that Binder Fastener Systems customers enjoy a host of different combinations and solutions to suit the diverse markets in which they operate.

The company has access to a world class range of products from its German parent Gottlieb Binder GmbH & Co which is proud of the fact that its products continue to be manufactured at one of three plants in Germany.

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Duotec is a strong, self-adhesive product so there is no need to drill holes

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What's up Doc?

Colin Bennett assumes the role of adhesives doctor and explains what questions the tapes user needs to know about today's technically advanced products

The most frequent question asked on the Viking Industrial telephone help line is preceded with the phrase: "Probably, I want a double sided tape . . ." It's a bit like being in a doctor's surgery when the patient says "I need some pain killers". That's when the doctor's training comes to the fore. So the telephone helpline could be renamed the Tape and Adhesive Doctor.

Viking Industrial is a key distributor for 3M Industrial Adhesives and Tapes. Frequently asked questions to the manufacturer are answered on the next page.

What are the main misconceptions about tapes and adhesives?

Even now, 30 years after products like 3M's VHB (very high bond) tapes were introduced, people still don't believe the performance levels that can be achieved, not only against mechanical fasteners but also against welding. The fact that we are 'sticking' panels on buses, roofs on lorries, windows into buildings, heads onto golf clubs is still a surprise to many people.

There are also misconceptions about the performance of mechanical fasteners given the effect that long term flexing can have on their integrity, let alone the risk of corrosion, nor are the design benefits of smooth unblemished surfaces, tapes and adhesives provide, immediately recognised.

What are the most common reasons for failure in using tapes and adhesives?

In the main there are two: misdiagnosis and incorrect application of the product. To ensure the right product is specified, it is essential that all parameters of the application are understood: Are the surfaces to be stuck high or low surface energy? Are there temperatures involved? Is the application inside or outdoor? In many cases the wrong tape or adhesive is being used. The best advice is to stick by the tried and tested brands.

Regarding the incorrect application of the product, surfaces must be clean, dry and may need to be abraded to get the right result. On some difficult surfaces a primer may be required. With adhesives, especially two part epoxies, attention needs to be given to the open time and working life of the adhesive. Bond strengths even on adhesive tapes increase over a 24 to 48 hour period. Hence handling time needs to be taken into account.

What are the major concerns of the customer?

There is a fear of the unknown and of failure which results in the question:

"Dare we move away from mechanical fastenings even with all the problems of application and long term performance."

This is when the doctor gives reassurance, provides some third party references and then persuades the patient to test the adhesive solution thoroughly. A good bedside manner is essential to gain the patient's confidence.

Are you restricted to the products on the shelf or can you tailor a product for any application?

An ability to provide a cocktail of adhesive and substrate is essential to solve all the issues. Well over 15% of Viking's turnover is in tailored solutions to the customer's application. All adhesive tapes, whether they be foam, filmic, adhesive transfer tape, single-sided or double-sided, can be customised to any shape to suit specific production requirements or individual needs.

Can you provide on-site technical support?

To meet the aim of customer satisfaction, it is essential to provide technical help. Viking Industrial has three 'flying' experts with over 20 years tapes and adhesives' experience each. They are available to provide customers with a solution wherever they are.

What are the most rewarding things about selling tapes and adhesives?

Because of the diverse nature the customers and the multiplicity of applications there is never a dull moment and, a bit like being a General Practitioner, we have to have a broad understanding of the products and applications. Fortunately like our GPs we have recourse to the specialist, such as the 3M Technical laboratory where we can evaluate extreme performance parameters.



Colin Bennett is managing director of Viking Industrial and has over 40 years' experience in specialist tapes and adhesives selling to the industrial market.

In a previous life spanning 20 years with 3M, he was responsible for the development and launch of the 3M range of VHB 'Hi Bond' Tapes and so has an excellent understanding of bonding requirements in industry.

Viking, started in 1989, has a team of specialists in both tape and adhesives and is one of 3M's premier distributors. The company has pioneered the use of the Internet, tailoring its site (www.vikingtapes.co.uk) to provide a safe passage through the maze of available adhesive products.

An on-line helpline manned by experts deals with hundreds of enquiries a month.

VIKING INDUSTRIAL PRODUCTS 01535 610373



See page 18 for further Q & A on this subject from 3M Industrial Adhesives and Tapes

FASTQ & A

Innovation spurs fastening diversity

A company as diverse as 3M attracts customers from the broadest variety of industry. Michael McCarthy answers some questions arising from the company's evolving product range and its approach to innovation

What have been 3M's most significant innovations in fastening?

3M has been responsible for a number of key innovations including masking tape, spray aerosol adhesives, jet-weld, neoprene contact adhesives and two component acrylic structural adhesives that bond surfaces such as polypropylene and polyethylene. Arguably the most important is VHB tape which was introduced in 1981 and so celebrates its 30th anniversary this year.

Over the 30 years we have continued to develop new VHB products as customers approached us with challenges such as high strength bonding to painted surfaces or through high temperature powdercoat paint operations.

VHB tapes are double-sided and flexible, often referred to as adhesive on a roll. This high strength tape has for the first time enabled tapes to be specified instead of mechanical fasteners in a variety of highly demanding applications.

The flexibility or viscoelasticity of VHB tape allows it to cope better with demanding environmental conditions, particularly where metal fastenings could fail due to fatigue.

Meanwhile, the versatility of VHB tapes means they are now used in sectors such as construction where they hold cladding and glazing in place, with no need for unsightly metal fasteners in applications where aesthetics are key.

What is 3M's approach to innovation and new product development in fastening technologies?

In general, 3M takes a two-pronged approach to product development. The first, and arguably the most important, is what we term: Customer Inspired Innovation. By this we mean, when working with customers, we try to not only solve the immediate problem at hand but to see beyond this to how we can solve their un-

articulated needs. In many cases the customer is not even aware that these are problems that can be solved.

What gets 3M people out of bed every day is the belief that we can make our customers more successful. Solving customer problems and helping them to prosper is a fantastic buzz. It is also selfish. If our customers do well so do we. You could say that we live by the motto that 'Your success is our success'.

The other aspect of our product development is what we call the 15 per cent rule. Our research and development teams are not just allowed but are actively encouraged to spend 15 per cent of their time on projects that are not necessarily part of their core job. For example, a scientist in an industrial lab could spend their time working on an idea for a medical or electronics product. This extensive network of thousands of scientists, continually working across business sector boundaries, is what makes 3M innovation so great.

How is 3M continuing to evolve existing technologies?

Let's take the 3M VHB Tape range, which has evolved significantly since its introduction in 1981. Examples include the introduction of tapes designed to bond to surfaces at temperatures as low as 0°C to the opposite end of the scale where we have products that can withstand temperatures up to 230°C. This makes these tapes ideal for bonding substrates that need to go through a powdercoat process. More recently VHB tape products that can even bond to low surface energy materials like polypropylene and polyethylene have been introduced to the market with great success.

At a well-attended 30th anniversary event recently we introduced the latest additions to the range which are VHB RP Tapes. This new family of VHB Tapes truly sum up our commitment to continuous innovation! These tapes have been manufactured to allow cus-



Michael McCarthy is general sales and marketing manager within the Industrial Adhesives and Tapes division at 3M United Kingdom plc. He joined the company in Ireland in 1977 supporting the Business Products Division and, after progressing from technical roles to sales, relocated to 3M in the UK in 1996 as marketing manager for Library Systems.

Since then, he has held both national and European roles, becoming general sales and marketing manager for safety and security systems. Michael studied Electrical Engineering at the Dublin Institute of Technology and prior to joining 3M worked in manufacturing.

3M captures the spark of new ideas and transforms them into ingenious products. Its culture of creative collaboration inspires a continual technology stream. This \$27 billion diversified technology company has, since 1902, been creating innovative products intended to make the world healthier, safer and more productive. Well known 3M brands include Scotch, Post-it, Scotchgard, Thinsulate and Scotch-Brite.

The company employs around 80,000 people worldwide and has operations in more than 65 countries. The UK and Ireland is

home to one of the largest 3M subsidiaries outside the USA, employing more than 3,500 people across 19 locations, including 10 manufacturing sites.

Products manufactured in the UK include coated abrasives, occupational health and environmental safety equipment, adhesive tapes, industrial microbiology products, drug delivery systems, high-performance coatings, secure documents and passport scanners.

3M 08705 360036

tomers who did not need the levels of performance obtained from the current range of VHB tape products or are positioned in price-sensitive markets to now buy VHB tapes.

How does 3M's Industrial Adhesives and Tapes division do business?

3M has always been about providing high-quality and long-lasting solutions to customer needs. However, our approach does not begin and end with product supply. We take time to work with our customers to define their needs in detail. In many cases, we carry out our own laboratory tests with the substrates and possible adhesive solutions, before suggesting a solution to them.

While the sales team all have extensive knowledge of our products, they are supported by a technical group of engineers and chemists who can work directly with the customer's own engineers to identify the most appropriate solution for their needs.

While many of our products can be sourced from general line industrial suppliers, we have an extensive network of technical distributors who also work with our customers to ensure that the right product is specified.

What variety of solutions can you provide?

I have now been in this role for about 18 months and I am continually impressed by the breadth of our product range. At a very basic level, if the customer problem merits a tape solution we can offer this. A manufacturer that only makes an adhesive will try to persuade the customer that this is the best solution because it is the only one they can offer - likewise with a problem that deserves an adhesive rather than a tape.

We make single and double sided tapes for both temporary and permanent fixing, as well as structural and non-structural adhesive products. We are active in the manufacture of both single and two-part products in a variety of chemistries including epoxy, acrylic and polyurethane.

We have speciality products like our 3M Dual-Lock fastener strips which use hundreds of mushroom-shaped stems that interlock when pushed together to create remarkable strength. The durability of the design allows the fasteners to be opened and closed hundreds of times and still retain the same tensile strength.

In 2009, 3M acquired the Rite-Lok brand of instant adhesives, threadlockers, pipe sealants, gasket adhesives and cleaning products all of which have now been rebranded into our 3M Scotch-Weld portfolio. This range of adhesives is well suited to a wide range of industrial applications including vehicle repair and maintenance,

engineering services and maintenance, repair and overhaul (MRO).

Which sectors do you supply?

Our customer base is enormous and ranges from major manufacturers in sectors such as aerospace, automotive and marine to general industry and construction.

Basically, whatever the application, it is likely that 3M can supply a bonding solution for it.

How does 3M differ from other suppliers?

First we believe the extent of our range and capability far exceeds that of any other supplier. Secondly, our Industrial Adhesives and Tapes division is part of the 3M Company which employs some 80,000 people worldwide supplying around 70,000 product lines. This enables us to tap into a vast range of industry and specific sector experience, including the work of R&D teams around the world who are constantly developing new technologies and solutions which we can in turn offer to our UK customers.

What are the key issues facing 3M customers today?

Irrespective of the sector, customers want largely the same thing – the most appropriate product for their need at the best possible price. Their challenge is to identify the product and supplier that allows them to marry the demands of the product technical specification within the commercial expectations of their own customer base.

In this age of global supply, it is easy to find products that are cheap. However, cheap does not always equal fit for purpose. Navigating through these dangerous waters is never easy and getting either one wrong can spell disaster.

How is 3M working with customers to address these?

Over many years, 3M has earned a reputation for the supply of quality products that span a wide spectrum of process requirements and price bands.

In addition to a very strong focus on quality, we also offer a breadth of products across a range of price bands.

The other factor that our customers tell us that they value is the level of customer service they receive when they deal with 3M. I believe that it is the combination of product quality, together with the right price coupled with excellent service is what has enabled 3M to generate a very strong brand loyalty with our customers over many years.

PRODUCT REVIEW: Quick release fasteners

The quick acting fastener is making a comeback

Market forces are causing OEMs to rethink fastening strategy by reviving a system that had for years been thought of as too expensive for general commercial use. Special correspondent Sam Kerr-Smiley reports

In recent years, the quarter turn has been widely used to fasten automotive noise shields. These components have been specified for the removable panels that are fitted beneath vehicle engine bays to provide additional sound deadening. When the vehicles are serviced, these panels are removed to gain access to parts of the engine that require attention, especially with commercial vehicles with shorter service intervals.

The quarter turn was originally developed in 1932 when William Dzus created

6000 variations – but although many tried to develop it to reduce overall in-place-cost, the quarter turn, with its expensively, separately milled external spiral cam has, until recently, been unable to bridge the cost gap caused by Far Eastern bulk production of nuts, bolts and screws, therefore remaining an expensive proposition for OEM's.

Which is really just what they want to avoid, particularly in these constrained times – but show an OEM a way they can demonstrably improve the benefits avail-

techniques, which combined with advances in materials and tooling, allows Unifast to manufacture the system on high speed, fully automated processes and deliver a product that is capable of beating the in-place-cost (IPC) of traditional systems by, in many cases, as much as 60 per cent.

Design and production

The traditional quarter turn fastener has been re-designed and re-engineered into a thoroughly modern joining system, and while the research and development outlay was significant it has ultimately delivered an integrated fastening solution with benefits across production and application.

Luca Bergadano, Unifast's spokesman explained: "Advanced manufacturers are now able to use a cold forming process to make the entire stud, significantly reducing waste and time, and most importantly, completing it without needing to mill on the external spiral cam."

Cold forming delivers near, or absolute, net shape, eliminating the need for secondary operations and as it uses 100 per cent of the metal it leaves no scrap or swarf, generating significant savings in materials cost, as well as through the production process by reducing down time needed for cleaning and maintenance. Larger volumes, especially over longer production runs, will clearly demonstrate improved throughput and significant savings on materials usage.

"We employ cold forming," Bergadano continued, "not only because it delivers cost savings, but also because it adds to the quality of the manufactured component."

"Machining a part from metal bar can disrupt and break its crystalline structure, which could introduce weakness into the



Fast turn studs are unlocked in seconds

his famous fastener for use in the fledgling US aviation industry; although, at that time, its use was primarily military.

Designed for fastening panels over areas where regular servicing or frequent access was required the quarter-turn became a widely used standard with many applications; indeed it's remained in production ever since – at the time of Dzus' death in 1964 there were around

able to their customers and they will pay attention. This is exactly what Unifast did when it was given the opportunity to design a fastening system to secure gearbox noise shields for commercial vehicle giant Iveco – taking the quarter turn principle, re-developing it for cost effective high volume production into the Fast-turn quick acting system.

Fast-turn, as the child of both demand and innovation, uses new production

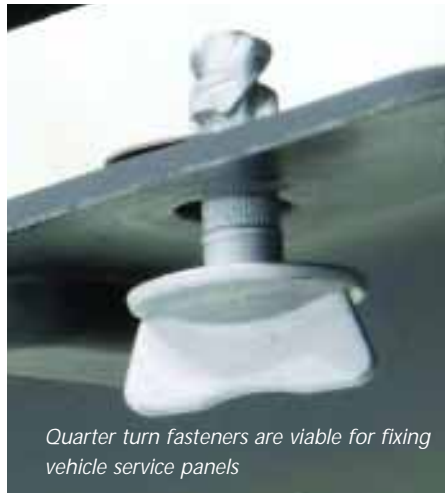
part. Cold forming is done under huge pressures, which make the grain in the metal flow into the contours of the product, enhancing the grain structure and according to a US study strengthening the part by as much as 18 per cent compared to a milled part.”

In place cost

While cold forming has allowed Unifast to cut production cost, the key to the real savings its Fast-turn delivers is in the stage beyond fastener production and even beyond the OEM, where the end user is benefitting from the OEM's choice to use a quick acting fastener.

These days it is harder to differentiate manufacturers by their products so instead customer choice is driven more by the ability to provide the added value of pre and after sales services.

Look at any automotive manufacturer's website and alongside the photos of their latest gleaming product what's their biggest selling point? That's right, it's customer service. The importance of this



Quarter turn fasteners are viable for fixing vehicle service panels

probably can't be over-emphasised – it's this improved ability to offer customers benefits that lead Iveco to a select hand operated version of Unifast's Fast-turn quick acting fastener.

“The fastening system had to allow for easy removability for regular servicing, quick and secure re-attachment, heavy-duty usage and match Iveco's expectations on cost,” commented Unifast's

Bergadano, “no system then available exactly matched these requirements, but we knew it could be done.”

In the Industrial Fasteners Handbook (3rd edition) in-place-cost (IPC) is defined as ‘the total cost of a component starting with the purchase and ending with the assembly and proper function’.

On average the cost of the fastener itself forms only 15% of the IPC, so economies achieved in the assembly, and vitally, proper function become an essential developmental factor for the fastener manufacturer and potentially a point of significant savings for the OEM.

Proper function for a quick release fastening system is defined, in part anyway, by the number of times it is operated and the ease of use, including manpower, when operated. If this is true then the economic efficacy of a fastening system must be determined by testing its entire performance in a commercial environment.

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FASTPROFILE

Customer focus is the key

The new managing director of Moss Express is a man on a mission and has big ambitions for the company that is already the UK's largest manufacturer and distributor of small industrial components. Paul Gay assesses the company's plans

Last year Moss Express achieved record sales levels for the sort of products that most people wouldn't notice but that are essential to a huge range of industries worldwide. From plastic caps and plugs used for protection during storage and transportation, hose and cable guards, to high temperature masking products, Moss has carved itself a niche in the components market. Finishing and protection products are just a small part of the product range.

But that's not good enough for Scott Fawcett, the recently appointed managing director at Moss Express. "Moss is on a journey from being a UK based plastic parts manufacturer to becoming a global distribution company. We're already very successful but the opportunities for product and sales expansion are endless," said Fawcett, who is 39 years old and learned his trade at Electrocomponents, the world's largest distributor of electronics and maintenance products.

In 2010, the Moss Express manufactured over a billion plastic parts and it produces around 3.2 million products a day, all of them available for next day delivery to customers with a typical average transaction value of around £200.

The company's headquarters in Kidlington, Oxfordshire, is home to the



manufacturing operation and also houses the hub warehouse for manufactured goods. "Warehouse storage has just been extended by over 700 cubic metres to increase storage capacity for further new product ranges," said Fawcett. "There has also been considerable investment in tooling to increase the number of products made from a single press and to reduce waste."

Kidlington is the business' hub although predicted growth in production capacity by 2015 will require a hub in Germany. There are currently seven warehouses in the UK and others in Germany, Poland, France and Spain and also a depot in China. And the company is always looking for acquisitions to expand its range with complementary products.

The company re-branded its European businesses to Moss Express to reflect its customer proposition as a one stop shop with next day delivery offered on all parts. To maintain the high levels of service required slow movers are air freight from hubs if necessary.

Fawcett's ambition is to double sales by 2020 and more than double the current number of product lines. At the centre of his strategy is improving service and customer retention by ensuring the business

has a total focus on its customers. This involves developing the e-commerce strategy as a greater part of the sales and marketing mix and improving the supply chain.

"We pride ourselves on our telephone service," said Fawcett, claiming that all the necessary ordering information can be supplied by telephone. "People really make a difference, providing the balance between personal service and interactive, web-based marketing."

At the last count, Moss Express had 101 trained telephone operatives who are from all over the World but all schooled at Kidlington. Telephone sales teams work with product champions in each office and are therefore constantly updating their product knowledge. This knowledge is then shared with other offices over the company's intranet. All graduate engineers recruited by the company spend up to 12 months in customer service before moving into other departments.

But Fawcett is changing the company's image. "Express needs more online input," he declared.

The company has tens of thousands of customers, who are spread over a wide range of industrial sectors including furniture, hydraulics and pipe fitting. The motor manufacturers are also important customers although the business is shifting from high volumes to the small and mid-volumes of the heavy vehicle sector. "A good breadth of customers evens out economic peaks," suggested Fawcett.

A global survey suggests that 60% of Moss Express' customers use electronic search to find their products. "Customers will soon experience a much improved website from Moss with better online search capability and much clearer product classification and pricing," Fawcett claimed.

The website will work alongside the traditional catalogue which was published in September with 2,000 new products and is also be available online to



Scott Fawcett: "People really make a difference, providing the balance between personal service and interactive, web-based marketing."

provide a seamless customer offer. The catalogue contains 14,000 different products and is being printed in eight different languages with a print run of 344,000

The company is also improving logistics and the movement of product around the European hub warehouses to serve the growing global customer base better. Moss currently operates in nine countries with an ambition to grow this significantly by 2020.

“It’s all about making it easier for the customer. Ultimately, I want Moss to be famous for its reliability and range, offering good quality, accessible, value-for-money products, underpinned by a remarkable service,” said Fawcett.



Warehouse storage has just been extended to increase storage capacity for new product ranges

The catalogue is being brought out at the same time as the website is being re-launched. Customers should now find it easier to locate products by browsing application types. The website will also be more content rich with more detailed product descriptions to make it easier to choose the right product type, size and colour. Users can check stock availability and price, access CAD drawings and receive instant e-mail confirmation of order placement with delivery advice.

Both the website and catalogue are designed to be effective product sales tools but importantly are backed up by knowledgeable customer service staff in head office and the regional sales centres.

Most products are available in small quantities and many can be tried out as free samples. Around 500,000 items are held in stock to ensure next day delivery. As Fawcett says, customers love the choice of products and ranges which they can browse and research online but they also want access to live advice from the customer service team. E-commerce will develop taking on a greater part of the sales and marketing mix and improving the supply chain.

The website will always work in association with the knowledgeable customer service team and the product catalogue which was re-issued with 2,000 new products in September and will also be available online to provide a seamless customer offer. The company is also improving logistics and the movement of product around the European hub warehouses to better serve the growing global customer base.

New technologies such as mobile and



The Moss Express ambition is to double sales by 2020

social media will also have their place in future marketing plans. “Why not have a Facebook page to chat about new products and use Twitter to promote them?” asked Fawcett. Social media will certainly broaden the company’s knowledge base and Moss Express will use it as a reactive tool. Statistics gleaned from the customer relations system support the use of social media. A survey highlighted customer preference for next day delivery, breadth of range, the ability to order free samples and no minimum size order.

The e-commerce site, which is a browser based system linked to a back office of the company’s enterprise system, currently accounts for about 5% of sales but is forecast to grow to between 20 and 30% within three years. However, Fawcett makes a strong prediction: “The catalogue will be here for ever”

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SPECIAL FASTENERS

When's a rivet not a rivet?

Some two years ago Lee Irving, technical account manager at Gesipa Blind Riveting Systems was asked to talk to the production manager of a concrete floor laying company, which had a problem. Using some lateral thinking, the humble rivet came to the rescue and was used in an innovative way

In certain floor laying applications, concrete can only be laid in 3m squares and two sections cannot be laid side by side at the same time. If the builder tries this, the two sections of concrete shrink and leave a gap anything up to 25mm wide between both sections. This in time would cause the two edges to disintegrate and would still happen even if the gap was filled after the sections had dried.

To help reduce this from happening, in

this instance the sections were edged with angle iron which had ties welded on the inside edge to help join the metal to the concrete. This still did not allow the contractors to lay two sections next to each other and they had to be laid in alternate sections in a patchwork type order

The contractor had developed a method of bolting two sections of angle iron back to back so that two sections could be laid next to each other. The sections of angle iron were bolted together using nylon nuts and bolts. This method allowed both concrete sections to shrink at different rates but keep a straight joint between them. This was possible because the nylon nuts and bolts stretched as the concrete receded.

Success was achieved as two sections could be laid next to each other making construction quicker and with a more professional finish; the edges are guarded against chipping and allowed forklifts to move across the joints in smooth manner without jolting the load. However, the method of joining edge plates together with nylon nuts and bolts was a time consuming operation and as the method became more and more popular, problems were exacerbated.

"I was asked if a standard rivet could do the job thus speeding up the production," explained Irving. "After testing a number of different rivets we found that a 4.8mm x 35 K16 alu/steel standard rivet joined the two angle sections perfectly."

Next the stretching of the rivet once the concrete started to shrink was tested.

Plymouth University got involved with the testing of some dummy parts and concluded that in the full size production application the rivets would work better than the nylon nuts and bolts because the material specification of the rivet was of a higher quality standard than that of the nylon, also the material used in the nuts and bolts was not of a consistent composition which caused some nuts and bolts to stretch at different rates along the joint which in some cases caused problems with the flooring.

The first sample batch of Gesipa rivets used in a production environment passed with distinctions, assembly time of the angle iron sections was reduced by well over 70% thus allowing them to keep up with demand.

Gesipa rivets are manufactured to TS16949 which means to have a very high material specification with tight tolerance requirements in the chemical composition of the wire used to manufacture the eyelets thus giving constant high quality products at all times.

The stumbling block at the time was the rivets unit price. At this point the original production manager left and the new manager decide he would purchase a similar cheaper rivet and all the hard work proving the rivets had been lost to the competition. However after two years of using cheaper rivets, repetitive reworks and changing rivet manufacturers, the contractor came to the conclusion that high quality products perform constantly from batch to batch and that cheap unit cost is not always the route to cheaper end products. In a nutshell, the cheaper rivets didn't work and cost the company more money.

The firm now takes in the region of 750,000 rivets a year and Gesipa is now half way through the first year of supply without any problems being reported.

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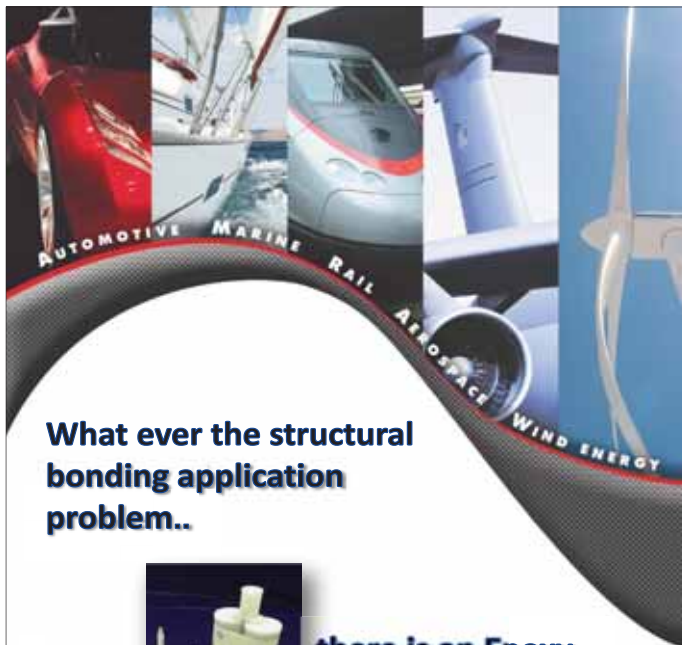
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HOW TO: FASTEN SECURELY

Engineering adhesives ensure fastener security

Engineering adhesives used on fasteners will ensure their efficiency in even the most demanding of circumstances. Colin Chapman explains how threaded fasteners can be safe and secure even under great pressure

Nuts, bolts and screws – in fact, any threaded fastener – provide the clamping force in a whole host of industrial assemblies. This force is generated by tightening the threaded components until adequate tension and friction is created within the fastener in order to check, at least in theory, any movement of the clamped parts. In reality, however, the dual circumstances of shock and vibration can reduce this tension and, therefore, permit loosening to take place.

As soon as this initial releasing occurs, the tension of both the fastener and the clamping load is lost. The result can be component and machinery failure – with all the resultant problems of down time, warranty claims, the expense of new parts and loss of confidence.

These engineering adhesives, commonly known as threadlockers, are generally anaerobic products that can be used on any threaded surface. Applying the adhesive and bringing together the two threaded parts of the fastener forces out air from the joint and thus fill all the inner spaces between the threads. A chemical reaction then takes place which causes the liquid adhesive to harden to form a solid thermoplastic of a known strength.

By employing different grades of adhesive, the strength of the bond can be varied to provide the essential break loose torque. However the locking action of the adhesive does not depend on the force, a relatively low strength threadlocker will still produce exceptional resistance to vibration. And, to carry out maintenance, the parts can be readily separated using normal hand tools.

Colin Chapman is with the marketing department of Henkel, maker of Loctite brand adhesives



Threadlocking adhesives ensure that bolts are secure – even under the most demanding conditions

Independent assessment

But it is not necessary to take an adhesive manufacturer's word for the reliability of engineering adhesives. In a spectacular test, a threadlocker was tested on a Junkers machine used by both the aerospace and automotive industries. This trial was specifically conceived to test anaerobic threadlockers against traditional locking means such as spring washers, patch bolts, distorted lock nuts and nylon rings. During the test, a fastener was assembled in the machine and tightened down to the required tension. Once the air hammers were activated a record was made of the time taken before the fasteners vibrated loose.

These were intense tests, but the results showed conclusively that adhesives provide the most effective protection against parts working loose under

extreme pressure. In fact, all other methods failed within less than a minute of the trial starting.

Of course, discussions – even laboratory testing – involving threadlockers are all very fine, but the proof of their effectiveness is in usage. A few examples will prove the point.

Take, for instance, the maker of fork lift trucks who had a requirement to secure joints between jack cylinders and the bearing carrier, and to connect the cylinder to the end plug. Prior to trying adhesives, welding had been considered the only way of achieving the needed assurance. However, not only was this process time consuming – but also there was an on-going risk of damage to the cylinder.

By switching to an adhesive not only was damage prevented, but also a more

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cost effective production method was discovered. Furthermore, adhesives also meant that preferred pre-chromed cylinders could be utilised and, significantly, the assembly time was cut from several days to a matter of minutes.

Blowing hot and cold

It can also be demonstrated that the characteristics of adhesives are not compromised by extremes of environment.

At the design stage, an anaerobic threadlocker was specified for the threads of bolts on burner frames and swivel joints of several ninety feet high balloons. These balloons, which had been constructed for a transatlantic race, would be required to fly at around 20,000 feet – altitudes that produce temperatures of about minus 30C. Even at such extreme cold, the threadlocking adhesives continued to provide the joint security that was crucial – especially to the balloons' crews.

At the opposite end of the temperature scale, threadlocking adhesives are commonly found in hot environments such as exhaust manifold to cylinder head joints on car engines.

Without doubt, threadlockers provide confidence when it comes to fastener security. However, there are further bonuses on offer to users of anaerobic adhesives.

First, there can be a significantly

lower cost. That's because plain fasteners, rather than specific locking fasteners, can be employed.

Next, the adhesive fills completely the spaces between the threaded components and then cures to a solid. This means no moisture can penetrate the joint to initiate corrosion.

Thirdly, anaerobics allow materials of different thermal expansions to be joined together. Again, the ability to fill completely the gaps between the two materials is relevant, as it means no opportunities for the parts to move in relation to each other.

More than metal

Threaded fasteners made of substrates other than metal – principally plastic – can also be secured through the use of adhesives.

For such applications, a cyanoacrylate adhesive is the best option. These 'instant' adhesives cure in a matter of seconds when they come into contact with air-borne moisture. Alongside conventional locking applications, such instant adhesives are frequently used to tamper-proof threaded components.

Some engineers feel that applying an adhesive is a messy operation. However, that is simply not the case. In many instances, threadlockers can be applied directly from their bottle to the threaded part. And with modern nozzle designs,

directing the adhesive to the exact spot is an easy operation. Beyond that, anaerobics are also available in 'stick' form. The semi-solid formula means there are no drips and each application can be very accurate.

When production targets call for high speed assembly lines or where precise dispensing is necessary, a range of equipment available from adhesives suppliers will usually answer the demands. And there is little or no contact between the adhesive and the operator – so no problems of messy application there.

Secure bonding

Traditional fastening methods have been around for many years. And they have proved successful in numerous instances. But times change, new technologies develop and demands become more acute.

And with these changes there is often a requirement to rethink methods. Without doubt, threadlocking adhesives are the way forward when it comes to nuts, bolts and other fixing systems. Sometimes adhesives will replace former methods – on other occasions, they will augment existing processes. Either way, adhesives represent a highly efficient and very cost effective method to ensure vital parts do not work loose under shock or vibrating conditions.

HENKEL 01442 278100



A threadlocker is used to secure vital bolts on trams

HOW TO: SPECIFY SPECIAL FASTENERS

Giving performance cars an aerodynamic edge

Traditionally the high performance sector of the motor industry used a simple system of a sliding lynch pin, mounted on the panel surface, to fasten removable body parts on competition cars. A perfectly acceptable solution which performed satisfactorily but looks a little dated on modern high performance race and rally cars

The AeroCatch shear pin latch was conceived, designed and manufactured by Specialty Fasteners & Components in Totnes, South Devon and was released to the market in January 2005 as a modern aerodynamic design for fastening bonnet, boot and tailgate panels specifically for the motorsport industry.

AeroCatch was designed to achieve the same effect but with all the locking mechanism below the surface of the panel. A secondary lock design feature ensures a positive closure and from a safety aspect the AeroCatch handle is highly visible when in the open position thereby reducing the risk of the bonnet not being securely fastened, an experience many had previously experienced with the traditional arrangement.

During the course of launch year 2005 AeroCatch was quickly adopted by leading race and rally teams in the UK, and come the end of the year was fitted to many championship winners the most notable of which being the Dunlop MSA BTCC champions Team Halfords Honda Integra-R. As the 2006 motorsport season fast approached dealers were appointed in countries with active motorsport participation and work started on building on the success of 2005. Racing car designers were taking note of the new product and requests for 3D computer aided design files increased. With dealers now appointed in the USA, Germany, Brazil and Australia, countries all with a solid motorsport history, sales began to increase steadily as new car design and builds were undertaken.

Now into its 7th year of production the original AeroCatch has been joined by AeroCatch2 and from January 2011 AeroCatch3 a shear and tension latch designed to meet the demands of the sports prototype style of race car. AeroCatch is fast becoming the panel fastener choice for leading motor industry manufacturers motorsport programmes around the world. The list is still growing but now includes Aston Martin, BMW, Chevrolet, Ginetta and Lamborghini, to name but a few.

The pedestrian friendly nature of the AeroCatch design, no parts protruding through the panels, has been an important feature for the road tuning market and, as with the race and rally markets, the road tuning sector has taken to the AeroCatch range. Widely used in the tuning industry in the UK, Japan and USA, AeroCatch is now available in a choice of finish, traditional black, carbon look and white with the key locking style proving highly popular in this market sector.

AeroCatch is a success story for a new product designed, developed and manufactured in the South West of England. All tooling and component suppliers are local for the complete AeroCatch range ensuring production and ongoing developments meet the highest quality requirements for the demanding industry in which AeroCatch is used. Now available from officially appointed dealers in over 30 countries, including Denmark, Germany, Italy, Spain, South Africa, USA and more AeroCatch is fast becoming a recognised Global brand and has earned a reputation as being the panel fastener of choice; it can be seen in action most weekends at motorsport events around the world.

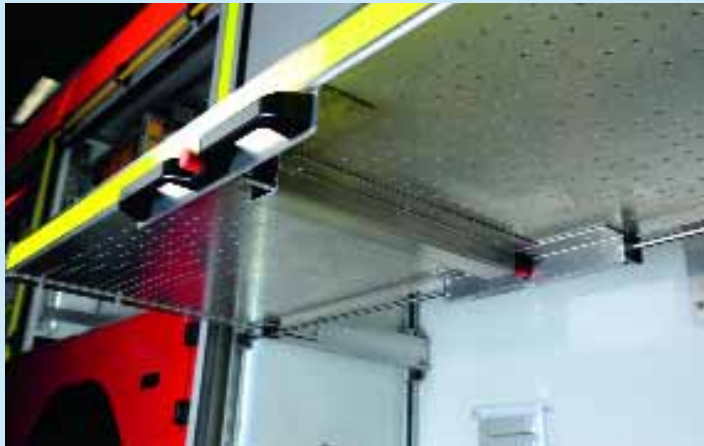
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Built in Cheshire, the BAC MONO was designed to bring formula race car levels of handling, performance and thrill to the public road. At 520 bhp/ton, its power to weight ratio surpasses that of the Bugatti Veyron and it can accelerate to 60 mph in just 2.8 seconds and has a top speed of 170 mph. The car's aerodynamics were optimised in partnership with Stuttgart University and it is constructed in carbon fibre with a tubular steel driver safety cell. The bonnet panel is fitted with an AeroCatch fastener.

Ingenious solutions optimise stowage space

Stowage space is always at a premium whatever the application and a typical problem area is accessing drawers installed at above waist height. Accuride has come up with an ingenious solution to this with their tilt and slide system. When the drawer is opened the drawer slide system



Accuride's double handle drawer mechanism is activated by a centrally located push button on this fire appliance

tilts the drawer forward giving easy access to its contents. The system is easy to fit and fully adjustable, even with the drawer in place. The tilt can also be varied by the installer depending on the height of the drawer. Side rollers, which act as buffers for the drawer, can be adjusted via cams at the front even with the drawer in place. This is a much improved feature that will help installers fit the drawer neatly. Side dampers soften the drop and the distinctive red rollers smoothly guide the drawer open and close.

Another new product that compliments this system is a rugged double handle drawer lock in / lock out mechanism activated by a centrally located push button. The yellow push button is easily seen under sodium lamps, but is also available in red if required. The locking handle can also be used in tandem with Accuride's heavy duty, extension slides. A lock-out conversion kit is a simple and cost-effective add-on to give total stability to the drawer when fully opened.

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HOW TO: DEVELOP BESPOKE ACCESS CONTROL

Innovation through engagement

Paul Gay visited Weston Body Hardware's Redditch factory to find that clever design is providing the company with an edge when it comes to bespoke design

Manufacturers are always looking for ready-made answers to those difficult engineering questions that can arise in the area of access control. Whether a solution is needed for a specialist vehicle or for enclosures and large units like generators, compressors and other items of capital plant, Weston Body Hardware (WBH) is confident it can provide the solution.

The company has four main sectors to its business with some 30% of turnover being derived from resellers and partners. Direct sales to the generators and compressors market – including companies like Atlas Copco, Cummins, F G Wilson and Ingersoll Rand – account for around 25% of turnover while the construction industry, where customers include CAT, Terex and JCB, takes around 20%. Specialist vehicles, such as Morgan, Land Rover, and London Taxis manufacturer LTI, account for a further 15%. WBH can proudly claim that 48% of its turnover is exported to manufacturing companies overseas. Other markets such as renewable energy, medical.

The company's design and technical team have decades of experience in developing products and are on hand to provide expertise relating to design, specification and production aspects for each customer. Design facilities include the latest computer aided design techniques that provide drawings, visualisations,

specifications and production prototypes.

The use of 3D software enables the team to create prototypes using a variety of rapid prototyping methods. And an in-house model shop gives engineers the opportunity to machine and fabricate concept parts.

New designs are often developments of an established theme and involve a degree of lateral thinking. "I do some of my best work in airport lounges and on aeroplanes," said Martin Woolcott, technical director. Not quite drawn on the back of a fag packet but often an idea in the form of a doodle hurriedly drawn in a departure lounge can lead to a novel solution.

All new designs are created back in the office on a 3D Solidworks system; the company sees innovation as a surefire way of keeping ahead of the competition. With the 3D-design capability, entirely new conceptual designs can be created on a contract basis, where volumes are significant.

Smaller volumes are also very important to the company's success. Take for instance the Morgan Car Company where WBH has been supplying door and boot locks for the past 15 years. Here, WBH designed a bespoke access control product by modifying an item from the standard and modifying it for look and feel to use it on the Morgan.

"We are happy to do lowish volume,"

said sales and marketing director Ashley Heath. "Our motto 'Innovation through engagement' is the key. We find people with a problem and solve it."

Northern Irish generator maker F G Wilson wanted a special latch for the doors on its generator enclosure. WBH came up with a weather proof paddle latch to suit the application and solve specific problems being experienced during assembly. FG Wilson had expressed a preference for a standard latch used by one of their competitors. WBH duly redesigned the product specifically for the enclosure and has been supplying them ever since.

Once the paddle latch had been developed WBH found numerous other components on the enclosure which it could either manufacture in the UK or source from reputable manufacturers in the Far East. F G Wilson now produces 18,000 units annually, consuming some £1.5 million of components from WBH.

Heath is a keen advocate of the apprenticeship scheme to the extent that he has adopted the role of learning champion. "We invest in people and ensure that others do the same," he suggested.

By investing in employees personal skills, WBH created a more flexible workforce which could adapt to the special requirements of operating through an economic downturn.

WESTON BODY HARDWARE 01527 516060



ENCAPSULANTS

The benefits of low pressure moulding

Traditional methods of encapsulation can result in parts being damaged. Materials expert Jim Marshall discusses the benefits of using hotmelt resins as an alternative



A typical use of a hot melt resin is the encapsulation of PCB boards in various configurations

Traditionally, high pressure techniques – sometimes up to 200 Bars – have been used for encapsulating applications, including the protection of printed circuit boards (PCB) and moulded connectors. However, with such heavy pressure, breakages are commonplace. Indeed, one PCB manufacturer faced a rejection rate of 65% because of shortcomings with this method. However, once introduced to low pressure injection, where pressures of just 4 to 12 bar are required, this same manufacturer managed to reduce dramatically the rejection rate to almost nil.

Low pressure moulding is an innovative manufacturing process involving the use of hot melt resins. It is a cost effective alternative to epoxy potting for protection of fragile electronic components.

Jim Marshall is with the adhesive technology division of Henkel, maker of Macromelt and Loctite products

Within the automotive industry, for example, the technique can be applied to various electronic systems and devices, such as tyre pressure monitoring systems (TPMS), PCBs for seat occupant sensors, belt lock sensors, ECUs for motorcycles, air quality sensors, antennas for RF devices, and smart entry systems.

Although the automotive industry has been the significant beneficiary of this technology, there are numerous other applications within a vast array of industry sectors. Such applications include the protection of light barriers, connectors and grommets in the heavy environment of machines tools. Not only does the technique offer a high quality end product, but also assembly times are considerable reduced. The traditional method involves making a mould case, palletising, inserting the electronics, pre-heating the assembly, encapsulating, setting or vacuuming, curing and then testing.

Using hotmelt resins, there are just

three steps – inserting the electronics into the enclosure and over-moulding, followed by testing.

Applications

There are three main application groups where this moulding practice comes into its own. The first involves electronic component encapsulation. Here, the low pressure applied during the moulding process prevents damage to the sensitive electronic components and elements. Indeed, the moulding protects the electronics from external influences, such as moisture and mechanical stressing, and is capable of serving as a housing.

The second area includes connector potting. In these applications the hotmelts are used for sealing the plug and also for cable strain relief.

Finally, the process can be used to mould grommets in place. This eliminates the time-consuming process of slipping on the grommet, which can cause repetitive strain injury. The moulding can also include strain relief, which also enhances its aesthetics.

Renewables

The hotmelts used for this technology are polyamides based on dimer fatty acids. These fatty acids are obtained from renewable resources such as soy, rapeseed and sunflowers and then dimerised.

Because they are harder and tougher than other hotmelt systems, products such as the Macromelt range have characteristics similar to those of plastics. In moulding technology, these resin systems do indeed perform the functions of plastics. Put simply, the resin does not form a thin film between two substrates, but actually become integral to the external 3-dimensional form.

In reality, this means housings of thermoplastics can be fully replaced by these resin systems. At the melt temperature these hotmelts actually form a resin bond

with the substrates being encapsulated meaning, for example, that watertight systems are readily created.

Beyond that, the grip on to PVC is excellent, making them highly suitable for sealing and anchoring cables. Also, the resin bonds even to clean steel, solders and other metals commonly encountered in electronic modules.

When cool, Macromelt is tough, retaining slight flexibility at low temperatures, yet good rigidity to 130°C or even higher temperatures with the appropriate grade. Electrical insulation is excellent at typically $1 \times 10^{12} \Omega \cdot \text{cm}$ and dielectric breakdown does not occur up to stresses of 20kV/mm.

The process

The system consists of the moulding product, the mould set, the machine, and the melting unit.

Macromelt products melt and flow at low viscosities (1,000 to 10,000 cps), which is ideal for the low injection pressure process. These hot melts cure quickly by cooling, so there are no toxic fumes and cycle times are short. The materials are available in amber, black and custom colours.

The mould set, which is usually made from aluminium, facilitates the process to trial stage. Aluminium is preferred as it has a low injection pressure, better thermal conductivity, and no abrasive ingredients, such as fillers and glass fibres. Steel can also be used as the material for

the mould set, if the manufactured part includes steel or hard glass filled components. In the latter case, it is recommended that steel inserts be used in the area of the cavity.

There are many types of moulding machines available, although they generally fall into two categories. For small-scale production the option is a manually opened mould set. Where there are production that call for high productivity and

output, the machines come with a sliding stage or rotary table for the mould set. The melting unit is equipment used for injection of the hotmelt resin into the mould set.

So, all in all, the use of hotmelts for encapsulation is good news for several reasons.

First, Low Injection Pressure means that fragile and/or delicate components can be encapsulated without fear of damage. In addition, improved productivity can be achieved through fast cycle times (in many cases just 10 to 15 seconds), there is no chemical reaction, and the single-component material means the process is both simple and clean. Further, the resin qualities mean that water-tight encapsulation with adhesion is possible, and there is excellent electric insulation and water resistance. And depending on their chemical basis, the moulding products are resistant to petrol, oils, alcohols, acids and alkalis. Beyond that, the technology produces good thermal durability characteristics, with temperature resistance from -40°C to +150°C.

Finally, because the products are based on non-toxic and renewable raw materials, the technology is environmentally compatible.

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Security for wires and cabling is assured using a hot melt resin in grommets



Connectors can be safely secured using a hot melt resin

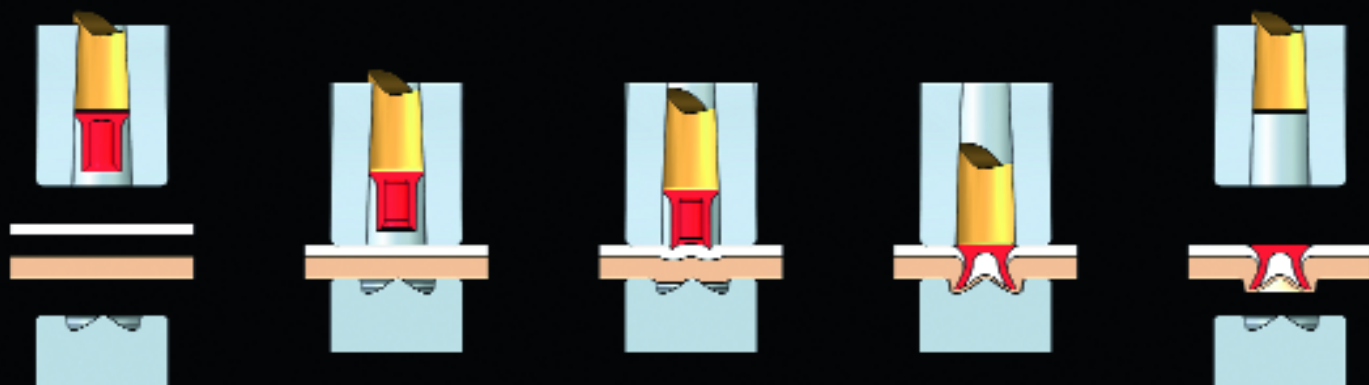
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Bespoke hinge becomes the standard

A special hinge designed with the latest computer techniques has proved so popular that it has been included in a standard parts catalogue

A British manufacturer of bespoke vehicles wanted to develop a concealed door hinge for a new vehicle, which will be used for mobile food sales and is being designed for a major High street supermarket retailer.

The vehicle is being designed with two side doors for easy access. The specification for the vehicle called for the hinges to be concealed and to open curve shaped doors. The major difficulty was in opening a rounded door when it requires moving it away from the frame first. Therefore special attention had to be given to the cinematics of the hinge. In addition to this the door weighed 25 kg and needed to be hinged vertically. It would clearly be difficult to hold this weight in a vertical position with a concealed hinge, so a robust design was an absolute necessity.

The additional feature was to open the door more than 90° because drawers containing food and beverages required to be fully opened.

Pinet's first idea was to propose an existing hinge from the catalogue, but to modify it to a greater size to secure the door weight. One issue with this solution was the existing concealed hinge only opened to 90° not the 110° required. Therefore the shape of the hinge had to be modified to reach opening angle. After a number of design meetings Pinet finally proposed a multi-link hinge which fully met the requirements of the customer.

The bespoke heavy duty hinge had the specific cinematics to open curved doors and was sufficiently compact with enough torsional stiffness to meet the specification. The hinge, which opens to 110°, exhibits high fatigue resistance and had been tested to 10,000 cycles using two hinges on a door with a total weight of 25 kg



The concealed hinge opens curve shaped doors

Prototypes

Pinet has the capacity to produce prototypes in plastic with a fast 3D printing machine. The design team gets quick access to the parts and a faster evaluation of the cinematics. This has proved important when motion issues have to be considered and allows design amendments to be made in just a few hours.

The new product proved so interesting that Pinet decided to include its next catalogue as a standard part and now offers it to other customers with similar needs. The applications found so far include: hatches on rail and road vehicles for catering maintenance, using basket cranes, covers for off-road vehicles and heavy

wall panels for washroom re-fits.

Some time later, the company received a bespoke hinge request for a BBQ project. The customer was looking for a concealed hinge with same features – a concealed hinge for curved heavy doors with 110° opening.

The BBQ design had an unusual shape but it was necessary to open hatches to put a gas bottle inside. Pinet's design engineers worked on another version of the concealed hinge in order to fit inside the BBQ and the result was the same type of hinge which is now used in various applications.

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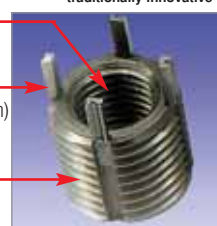
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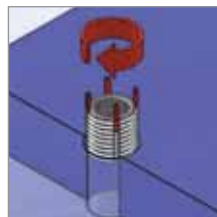
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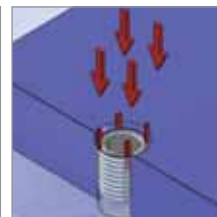


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Advanced fastener design for plastic applications

The high cost of brass used for special inserts in plastics components has led to the development of an aluminium alternative

For many years now inserts used in plastics have traditionally be manufactured from brass because of its combination of free machining characteristics, thermal conductivity and corrosion resistance. However, the cost of brass has escalated in the last two years to its highest ever recorded now making it very prohibitive. This has been the catalyst for PSM to address the situation and has resulted in them designing an insert made from aluminium.

By the selection of aluminium, it not only offers the benefit of low cost of inserts compared to brass but it also has weight and process improvements advantages. Many tests have been carried out to ensure that the type of aluminium used for the PSM Tri-step insert offers similar performance requirements to the brass inserts that are currently in use today.

With regard to weight improvements, aluminium is some 60% lighter than brass material. This helps designers significantly in meeting weight reduction targets that most companies are looking

to achieve in the current economic climate.

From a process point of view where inserts are installed by heat or ultrasonic methods, the aluminium Tri-step insert has 40% better thermal conductivity compared to brass or steel. This reduces the heating preparation time prior to installation of the insert and cools more rapidly once installed. Better production efficiencies and lower use of power to install the insert all add to in-place cost improvements.

Further performance improvements have been made by the geometry of the insert and hole combination. The Tri-step insert has three diameters reducing from the top face of the insert to the leading edge at the bottom of the insert. This corresponds with three stepped holes in the plastic moulding that accommodate each diameter of the insert. The first advantage is that because the smallest diameter of the insert enters the largest of the stepped holes in the plastic moulding ensures excellent positioning and alignment of the insert in the hole. The second advantage

is that the insert enters the hole by 66% of its length before it meets resistance making the installation faster than other types of insert by some 30%. The saving on the process can easily be calculated to add to the in-place cost savings.

The design of the insert and hole ensure that the minimum amount of pressure is applied when installing the insert, resulting in extremely low levels of stress being transferred to the plastic material. This combined with the stepped parallel insert design results in the elimination of spring back, a condition where the insert can move out of the hole to some degree before the plastic material has the chance to cool sufficiently. This can occur if pressure is not applied for a short time after the insert is fully installed.

The Aluminium Tri-Step insert will be showcased by PSM at the upcoming FAST exhibition in October.

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01902 407370

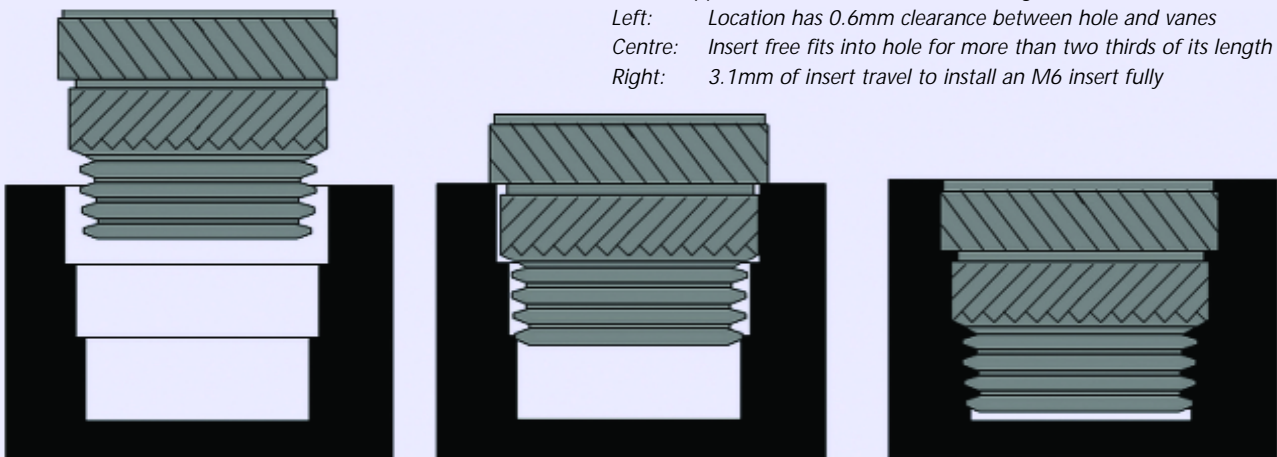


Three stepped aluminium inset and hole design

Left: Location has 0.6mm clearance between hole and vanes

Centre: Insert free fits into hole for more than two thirds of its length

Right: 3.1mm of insert travel to install an M6 insert fully



PRODUCT REVIEW: TAPES

Tape's capability advances touch screen technology

Adhesive tape specialist tesa has introduced a range of high performance optically clear adhesive transfer tapes for electronic touch panels and increased its capability to accommodate customers' process requirements for applying them

Optically clear adhesive (OCA) tapes are widely used in the electronics industry to simplify communication with users through touch screens or touch panels. Applications are diverse and enable consumers to access information, use Sat Nav devices, make purchases and interact with the latest MP3, Smartphones and tablet PCs. Over 700 million touch panel units were sold worldwide in 2010.

Currently most touch panels use either resistive or capacitive systems. The resistive type allows users to select menu options by exerting pressure with a stylus or finger, while the latest, extremely high performance capacitive type, responds to just a light touch of the finger. Here the screen surface generally comprises a high-quality glass, or light weight durable engineering plastic, covering a

sandwich structure made up of multiple functional layers that transmit the impulse from the finger within fractions of a second.

OCA's have to be truly multifunctional. These optically clear, extremely thin adhesive tapes must deliver practically invisible bonding and long product life. They need to be free of dust particles and bubbles in order to deliver maximum transparency while providing outstanding adhesion and yet be highly resistant to major temperature fluctuations, humidity, and UV radiation.

Considerable expertise is required to produce OCA's and advise customers on how to apply them. Apart from the highly sophisticated manufacturing processes required, a comprehensive understanding of lamination behaviour is critical to ensure optimal end product performance. Working with customers, tesa has enhanced the lamination performance of its touch panel tapes and incorporated the most recent technical benefits in these latest products.

Manufactured in thicknesses of between 25 and 125µm tesa OCA transfer tapes are totally dependable, ultra clean and designed specifically for use in touchscreen lamination processes.

Produced under controlled clean room conditions, the tape assortment - tesa 69301, tesa 69302, tesa 69303, tesa 69304, and tesa 69305 - features optically clear pure acrylic adhesives. Each product has high transmission and low haze characteristics, high temperature and UV resistance coupled with enhanced bubble stability (reduced out-gassing) and whitening resistance to protect screen clarity. Additionally the tapes



Highly transparent adhesive tapes are produced under cleanroom conditions at tesa's Hamburg-Hausbruch plant



In mobile phones OCAs ensure invisible bonding of individual components. The extremely thin adhesive tapes need to be free of dust particles and resistant to major temperature fluctuations, humidity, and UV radiation

offer excellent lamination and wetting performance to optimise gap filling and film printed circuit embedding. All the tapes feature good bond strength over a wide range of critical substrates used in touch screen construction such as indium tin oxide – used as a transparent conducting thin film – and decorative covers.

Tests have proven peel adhesion is good on critical hard coatings that provide essential abrasion resistance on substrates such as glass, PC, PET and PMMA. Optical performance test results show all tapes exhibit > 99% transmittance and < 0.5% haze with refractive indices of 1.47. All tapes prove their UV stability in 1000h QUV tests.

To optimise assembly processes for manufacturers the tapes are produced with two different thicknesses of PET-film liners. One side has a 38µm thickness film for easy release and the other a 50µm film for medium release.

In addition to OCAs, a large number of other transparent adhesive tape products are used in electronic devices – some mobile phone models can incorporate in excess of 20 different tesa tapes. As the trend toward increasingly small, lightweight multifunctional devices continues components that have traditionally been fixed with screws or rivets are now bonded with adhesive because this method generally saves space and weight as well as time and money.

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TRANSPORTATION

The cutting edge of vehicle assembly

Self-pierce riveting is an innovative, cost effective and environmentally friendly joining process that has been adopted across a wide range of industries around the world. Automotive manufacturers have found some specific benefits in the technology



Self-pierce riveting is used to assemble doors, bonnet, bumpers and scuttle on the Bentley Mulsanne

One of the most significant areas of growth for the self-pierce riveting process is in the automotive sector where the constant battle for increased fuel efficiency has resulted in the use of ever more exotic lightweight materials in the body structures and sub-assemblies.

Today you'll find self-pierce riveting being used to join car bodies, truck cabs, hoods, trunks, doors, and a wide selection

of smaller assemblies in a variety of materials, either with or without adhesive bonding.

Self-pierce joining is appealing for today's modern automotive assembly plants because it is simple, cost effective and quick as it does not require additional operations before assembly takes place. The process basically involves joining two or more pieces of material using a specially designed rivet. However, unlike conventional riveting which requires a hole, the self-pierce riveting process works without the need for pre-drilling or punching holes.

This means that the self-pierce process is much easier to integrate into high volume production lines than conventional riveting and joining specialist Henrob has developed a range of riveting tools specially designed and equipped to work in fully automated environments.

Today's cutting edge vehicles use a variety of lightweight materials including

aluminium alloys, high strength steels and composites. These materials can't be joined efficiently and reliably using conventional fastening techniques but the self-pierce riveting process offers a viable joining method for many of these exotic materials.

Joint integrity

The demands made on joining processes for automotive structures are extreme. From having to withstand high life cycle fatigue to the ability to remain intact during high speed crashes, the joints in a vehicle body have to meet many challenging strength and integrity requirements. Self-pierce riveting has proved to be one of the most suitable joining techniques to meet these strenuous requirements in modern vehicle structures.

When implemented correctly, the joints exhibit high strength coupled with exceptional fatigue life and energy absorption characteristics, while a highly stable and repeatable rivet insertion process, incorporating real time monitoring, ensures consistent joint quality and properties.

Volvo Truck in Sweden benefitted from the advantages of self-pierce riveting when a weight-saving change of material in their truck cab from standard



Henrob tools in action on the Fisker Automotive production line



Fisker Karma electric powered vehicle is assembled using self-piercing technology



The firewall for the Volvo cab

to high strength steel resulted in early fatigue failures, with cracks starting from spotwelds in highly stressed areas of the structure.

Changing the joining process to Henrob self-pierce riveting eliminated the fatigue cracking and allowed Volvo to remove expensive strengthening panels that had been added to counteract the original problem.

Reduced production costs

Manufacturing vehicles uses a lot of natural resources, not just in the vehicles themselves but also in the factory systems used to produce them. Any reduction in the use of services such as air, water and



Weight-saving in the design of Volvo truck cabs led to the adoption of self-piercing technology

electricity has an immediate and significant impact on a manufacturer's operating costs and, of course, profits.

This is one area where adopting self-

pierce riveting has really paid dividends for forward thinking automotive manufacturers. Using the latest servo driven tools, the self-pierce process requires only a minimal amount of power to implement, and as the process doesn't generate heat or sparks there is no requirement for expensive cooling water, fume extraction or the level of operator protection found in a welding environment.



The Jaguar XJ super lightweight body structure is a mixture of aluminium sheet, extrusion, casting, steel and epoxy adhesive

Indeed, one automotive manufacturer that installed a complete self-pierce production line found that they didn't need to install a sprinkler system, and their insurance premiums had dropped significantly due to the reduced fire risk.

But the benefit of adopting the self-pierce process does not end with the bottom line. There are other less tangible advantages to be enjoyed, such as a quiet and clean working environment for operators and visitors and a reduced inspection requirement due to the consistent and monitored self-pierce process.

As the drive for fuel efficiency and weight reduction continues its relentless pace, forward thinking automotive manufacturers are turning increasingly to alternative joining technologies to produce vehicle body structures that would have been impossible to manufacture



The Jaguar body is assembled using self-pierce riveting and is light enough to lift

and assemble just a few years ago.

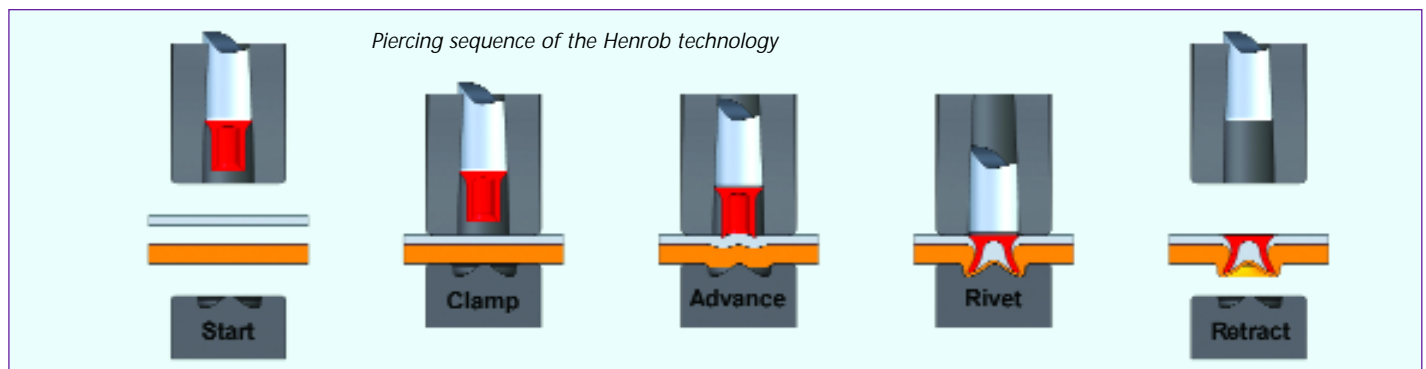
With numerous benefits, both in improved vehicle quality and reduced cost of manufacture, self-pierce riveting is at the forefront of vehicle assembly techniques. Henrob's development team is actively looking to extend the capabilities of the process to meet tomorrow's demands for versatile and practical self-pierce joining processes.



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Adding value to adhesive tape application

Tell Roger Churchill the problem and he'll give you a tape to solve the challenge. Paul Gay talked to the managing director of Milton Keynes based Lohmann Technologies UK

It's encouraging to hear a supplier offering a solution to a manufacturing problem, which may not be comprised entirely of his own products. In manufacturing, the fastening process often works better with a variety of products not necessarily from the same source.

"I'm not beholden to Lohmann products," said Roger Churchill, managing director of Lohmann Technologies (UK). "We will always supply the best tape for the solution. When an application would be best served by another company's products, it will be specified."

Embedded designs can cut overall costs despite higher capital costs at the outset. "We don't just sell sticky tape, we engineer solutions," Churchill said suggesting that if a process can be improved, the cost of the tape is largely irrelevant. "We're not the cheapest and make no bones about it," Churchill declared. "We add value; it's more than just a product."

Research and development is important to help create an engineered solution. Training is also vital and sending staff to visit the parent company in Germany is not unusual.

Non-disclosure agreements and patents are often an issue in this type of business. "We can't suggest a solution which is used by a competitor," said Churchill. "NDAs work both ways so again the value is not just in the tape."

Applications are demanding as they are varied. At one end of the scale, Lohmann has provided solutions for fixing optical lenses when they are being ground in the manufacture of spectacles and equally demanding is the fixing of printing plates to the rollers on the press where exact positioning is essential for registration and clean removal is a requirement.

Adhesion is highly dependent on the surface energy of the material which is akin to the flatness of the surface. A spider can climb up a pane of glass because

the surface is minutely ruttled, allowing microscopic hairs on its legs to grip on the indentations. Surface energy can be adjusted chemically or by coatings.

Sticking dissimilar materials in the automotive industry is an interesting challenge. A recent example involved a tape to fasten the strengthening ribs to the roof of Range Rover's new Evoque model. A tape provided the required strength while maintaining the clean roofline dictated by the design.

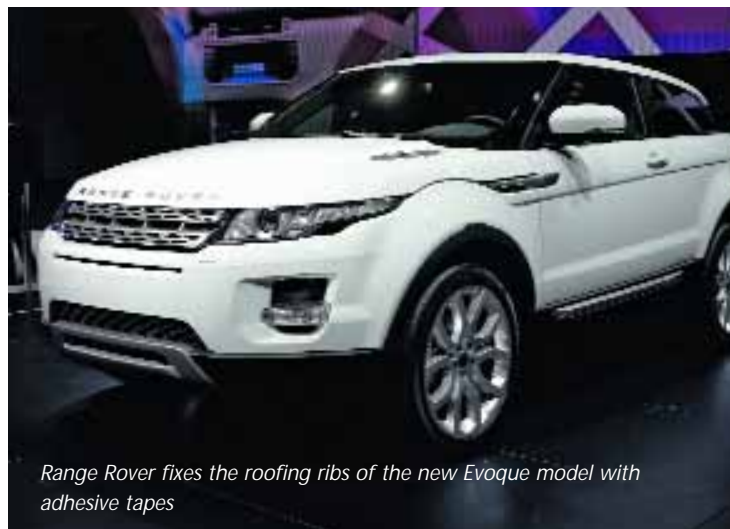
Perhaps the most demanding of all automotive environments is Formula One motor racing. The weights for balancing a traditional road wheel used to be made of lead and clipped to the rim. Due to a combination of alloy wheel, low profile tyres and environmental legislation, lead has now been replaced with self-adhesive steel or copper weights which are stuck to the rims. Lohmann has worked with balance weight specialist Trax for a number of years and supplied the adhesive solution for Formula One wheel balance weights at the end of the Bridgestone era.

Adhesive tapes are used in the lamination of substrates in the touch screen technology featured in electronic devices such as mobile phones, Kindle readers and iPads. UV curable, conductive and printable tapes are die cut and then built into the layers of the screen to make a spacer.

Lohmann Adhesive Tape Systems, headquarters in Neuwied, Germany. Lohmann has 160 years' experience in designing and coating technical adhesive tape. The company was formed in 1851 and is now a privately owned company with around 70 shareholders who are all

related. Globalisation began in the 1990s and now the company boasts three coating and conversion plants in North America, one in Latin America and one each in China and India. In Europe, there are three coating plants and 12 converting factories including the Milton Keynes facility in the UK.

The UK Company was formed 18 years ago to provide specialised technical support to its customers, locally. Operating from its new 19,500 sq ft factory in Milton Keynes, Lohmann Adhesive Tape Systems offers UK and Irish customers local production in any



Range Rover fixes the roofing ribs of the new Evoque model with adhesive tapes

required format, from logs, rolls and spools, to sheets and technical die-cuts using 17 machines which have been either specially built or customised to carry out their die cutting and converting duties.

"We only lose customers for two reasons," commented Churchill. "They either go bust or our products get designed out of the application. Sometimes customers go away but as often as not they come back."

LOHMANN TECHNOLOGIES UK
01296 337 888



ASSEMBLY SAFETY

Looking for improved assembly systems safety

When it comes to safety conformance, machine manufacturers and their end users should consider the benefits of working with an inspection body with expertise in standards who can develop practical, implementable solutions rather than a notified body, says David Collier

The single European market depends on the setting of common and high standards for safety of specific products, including machinery. Directives and standards supporting this free market set guidelines, which include the Essential Health and Safety Requirements (EHSR) found in the Machinery Directive 2006/42/EC, and Inspection of Product in the standard EN ISO 17020.

New machinery introduced to the market will have CE marking applied

through self-assessment. However inspection by an accredited body reduces the risk for businesses and their customers.

The conformance of machinery is the responsibility of the manufacturer through the requirements defined in the Machinery Directive. A manufacturer could be an OEM introducing a machine to the market, or an end user integrating interlinked machinery in order to create an assembly of machines. The manufacturer may use third parties to assist at various or all stages of the safety lifecycle.

Third parties carrying out such work must be competent at the technical and regulatory level. The use of an accredited organisation is a means for clients to manage the associated risks. Such accredited organisations include Inspection Bodies and Notified Bodies.

Notified or Inspection

A Notified Body is authorised by any EU member state to conduct the certification procedures or to perform compliance monitoring on products that are subject to EU directives, or where the conformance procedures for such directives designate a role for a notified body for EC type examination. In relation to machinery, the notified body process applies primarily to Annex IV machines, which are classed particularly dangerous. Notified Bodies point to their worldwide presence, accreditation, test laboratory capabilities and independence from any solution or product – yet herein lies a gap in satisfying real market demand. According to the Machinery Directive 2006/42/EC, a Notified body is required ‘... to maintain its impartiality and independence from all applicants and in no circumstances should it take on the role of authorised representative’. This means that a Notified Body is prohibited from offering

complete solutions throughout the CE marking process; it can indicate where a machine fails to conform to EHSRs, but it cannot propose a remedy or solution. In today’s de-skilled and pressurised work environment manufacturers are looking for remedies and solutions, not just tick box pass/fail reports.

For this reason Pilz Automation Technology has elected and achieved two important accreditations as an alternative to Notified Body. First, Pilz has achieved DAkkS accreditation as a Type C inspection body, which proves Pilz’s international impartiality and objectivity – with Quality Management Systems to IEC17020 – and permits the continuance of lifecycle service beyond any inspection and test phase to Safety Concept. Secondly, Pilz has TÜV accreditation to IEC 61508 for the integration of functional safety which is vital to the subsequent stages of safety design, system implementation, validation and CE marking. It also provides confidence in the configuration, programming, documentation, structure and test.

A key change in the new Machinery Directive is the liberalisation of the conformity assessment procedures for machinery listed in Annex IV, which previously needed EC-type examination by a Notified Body. However, since the end of 2009, if machinery is designed in accordance with the relevant harmonised standards – generally this means machine-specific C-type standards, such as those covering presses, packaging machines and woodworking machines – the new Directive gives manufacturers the option to self-certify machinery, thereby avoiding the previous Directive’s requirement to deposit the technical file with a Notified Body. Nearly all Annex IV machines have an applicable harmonised C-standard, which means that



The new Directive gives manufacturers the option to self-certify machinery



some or all of the administrative and assessment procedures required to CE mark a machine. The current Machinery Directive defines an authorised representative as ‘...any natural or legal person established in the Community who has received a written mandate from the manufacturer to perform on his behalf all or part of the obligations and formalities connected with

this directive’. The role of authorised representative is described under the new Machinery Directive EC 2006/42 - Annex II A.

There are major advantages for a manufacturer that uses an inspection body as an authorised representative rather than a Notified Body. The inspection body is not prohibited from providing comprehensive support throughout the machine

safety lifecycle, so it can help the manufacturer identify non-conformity, propose solutions, engineer these solutions, validate them, certify and CE mark the machine and it can significantly reduce administration and engineering costs as well as time to market.

Industry demands solution-providers who are competent to tackle machine safety throughout the entire life-cycle, which requires a combination of expertise in both safety standards compliance, sound engineering and automation experience on machinery. Accreditation as a Type C inspection body in accordance with IEC 17020 guarantees the impartiality of conformity assessments, while allowing the body to apply its TUV certification and expertise covering the application of a safety management system to IEC 61508 to integrate functional safety systems. This produces safe machines that are both usable and productive.

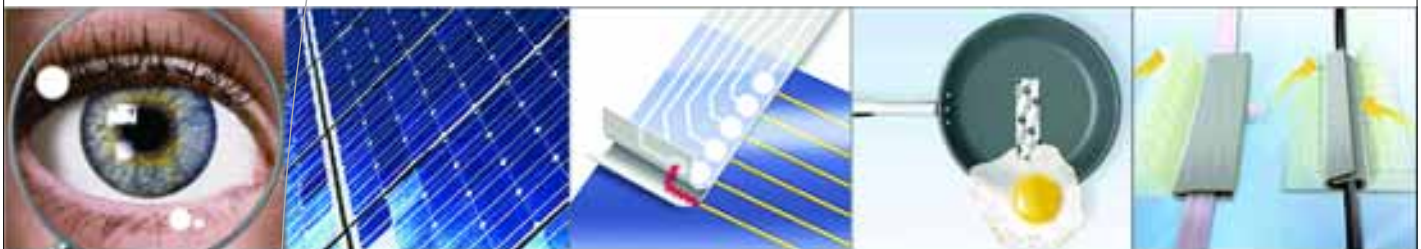
The Machinery Directive anticipates that machine builders may need to appoint competent persons

manufacturers of these types of machine can self-certify or mandate an authorised representative to carry out the conformity assessment, usually a more cost effective route to CE certification without the need for EC-type examination provided by a Notified Body.

The Machinery Directive anticipates that machine builders may need to appoint competent persons to carry out

David Collier is business development manager at Pilz Automation Technology 01536 460766

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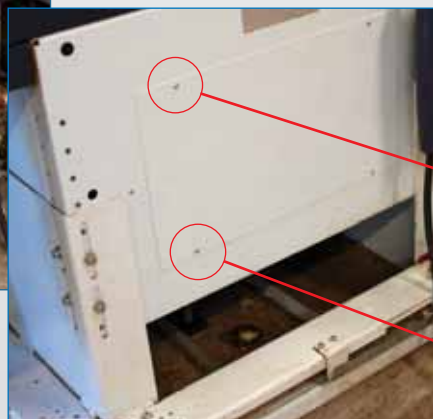
The clock for machine guard compliance is ticking...



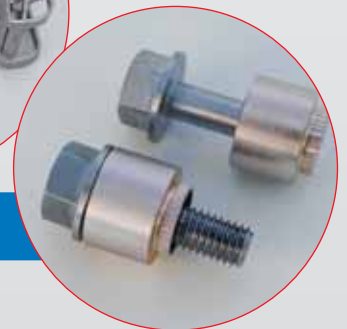
Since 2009, EC Machinery Directive 2006/42/EC has specified that all fasteners on machine guards must be captive. If you have not complied by the end of 2011, you will be in contravention of the directive and will therefore be operating illegally.

You must replace loose fasteners with captive bolts and captive quick-release fasteners. Fortunately, Specialty Fasteners have a range of these products to help you meet the directive criteria. But if you are uncertain of what to do, SFC have a team of applications engineers who will be pleased to consult with you and advise on your situation.

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Fasteners deployed in key military applications

The value of research and development capability AppliTEC, and the engineered properties of EJOT's Delta PT thermoplastics fastener have made a significant contribution in the development of new 'threat detection' equipment now being produced in the UK for military personnel.

Design engineers working on the manufacture of intricate equipment like proximity sensors for armaments and mobile monitoring systems are faced with the demand to produce smaller, lighter units. Yet the very nature of these applications means that there can be no compromise to performance and durability; in fact an increase of the latter is obviously key to the manufacturer's successful pitch.



Delta PT has made a significant contribution in the development of threat detection equipment for military personnel

Traditionally, manufacturing for such applications has relied almost entirely on conventional nut and bolt engineering but as the military theatre demands more mobility and increased efficiency, parts reduction in the manufacturing process has become highly significant.

The core design of the Delta PT originates from automotive assembly design and was specially developed for screw joints in thermoplastic materials. The thread geometry creates low surface pressure and provides for a high clamp force within the finished assembly. It is the evolution of these properties that has allowed application engineers to promote the screws values to designers who have been challenged to meet the very 'size versus strength' issues highlighted.

When looking for increased resistance to vibration, better electrical insulation and overall parts and cost reduction, designers were forced to investigate a 2mm screw requiring an insert of 6mm diameter plus boss of 10mm diameter. Once clamping loads were established, application engineers were able to deploy an online prognosis pro-

gram, DeltaCALC, taking the proposed Delta PT's small dimensioning to forecast its load carrying capabilities. Calculations proved that because the screw fully

engaged in the thread it was forming, the team was able to go one step further and demonstrate that a 1.6mm Delta PT not only withstood vibration more efficiently but reduced the boss diameter down to just 4mm, as the insert was removed entirely.

Conductivity trials were also made at this stage of development, showing that any electrostatic discharge stopped at the screw as the plastic bosses operated as an insulator thus effectively protecting the electronic components. Of equal significance for the development engineers, was the fact that the online prognosis had itself eliminated a test run schedule budgeted and approved at a cost of over £200,000.



DeltaCALC is a prognosis program which can forecast the load carrying capabilities of the thermoplastics fastener

EJOT's application engineer for the project, Malcolm Akers commented: "The contribution of our AppliTEC technology has been to prove quickly and quantifiably the effectiveness of a 1.6mm Delta PT that has reduced the number of components required for assembly, and thereby the overall cost of assembly. The very nature of the screws design means direct fix fastening has created a stronger joint capable of higher resistance to vibration whilst providing higher electrical insulation."

EJOT 01977 687090





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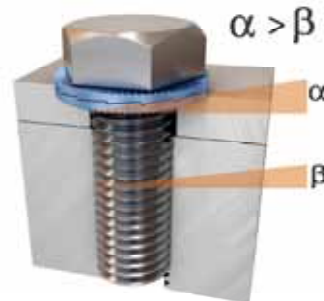
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Meeting the aesthetic demands of the designer

Long bond lines, typically found between a deck and a hull of a yacht, can experience extreme torsional loads



Industry today has many elements where the colour of the structural adhesive is paramount. With so many products in marine, vehicle manufacture and construction being white, the aesthetic demands of designers and engineers require the adhe-

sive to be the same colour. This was mainly due to improve or reduce the clean-up process after assembly but now a neat fillet along the bond line is acceptable and requisite. Whereas white or clear single part mastics have been common place for some years to reduce movement between panels and frames, the emergence of a white structural adhesive has been necessary for structures requiring greater integrity.

This causes the manufacturer some logistic problems in the production line. White epoxy types are rare; they are rigid and take a long time to cure before

handling is possible. Methacrylates are too quick and have unpleasant odours which permeate the work place. When using methacrylates, it is difficult to create a clean edge as they enter the initial polymerisation phase. The continued demand to bond dissimilar materials together means that the bond requires greater elongation or flexibility to cope with the different coefficients of expansion between the substrates being used. In the previously mentioned Industries, materials bonded are usually aluminium to GRP, or where long bond lines of GRP are bonded to GRP, typically between a deck and a hull where extreme torsional loads are experienced. The need for high elongation prevents the use of a stiff epoxy adhesive and methacrylates are too fast to allow assembly. Another advantage that the PU structural 1:1 adhesive has over 5:1 methacrylate adhesive is in its receptiveness to primers and paints, by not having a tacky like quality in the immediate time after curing.

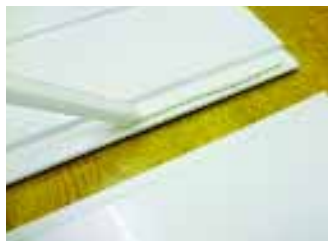


Aesthetic demands of the designer often require the adhesive to be white

The introduction of Adekit A236 developed from the very successful marine adhesive for the bonding of composites XP3550, combines the features of a long open time of 40 mins with a short initial hardening time of 4 hrs. The adhesive is available in 400ml cartridges or in bulk for machine dispensing. With a final cure overnight, the product has a high gap fill greater than 30mm and is white.

Lap shear strength on abraded aluminium is 14 Mpa with an impressive 60% elongation at break, making the Adekit A236 a prime candidate for applications with high vibration, severe torsional movement, long bead lines, and where the adhesive really does need to be white.

AXSON 01638 660062



Adekit A236 has a short initial hardening time of 4 hours



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FASTTOP TIPS

Ten ways to cut costs with industrial vending

Tony Goodwin describes how semi-automated, lineside vending of parts such as fasteners and small components will substantially reduce operating costs and boost productivity



Pro-Vyda semi-automated vending for components needed on a manufacturing line can drive down inventory spend by as much as 40%

Inventory, stock, parts or MRO (maintenance, repair and operations) consumables, call them what you will, provide the 'oil for the engine' in manufacturing and processing plants. They can represent up to 20% of total enterprise spend and account for more than half of all indirect purchasing transactions, yet many

organisations do not have the systems in place to restrict access to inventory and monitor the usage of spares and consumables down the line. Too often, store-rooms are free-for-all facilities, where users take parts on autopilot, squirrelling stock away in lockers and, worse still, pilfering company property as a perk of

the job. As a result, inventory costs run out of control, store-room data is totally inaccurate and the inevitable stockouts of critical spares lead to costly downtime, lost production and cancelled orders.

Emerging from much the same technology as coin-operated snacks and drinks machines,

industrial vending equipment dispenses MRO consumables, PPE, tooling or whatever in a similar semi-automated manner, except that instead of payment transactions, access is normally by means of time & attendance swipe cards, biometrics or personal identification codes. Known as point-of-use or lineside vending machines, because they are located close to the production line or work area, they are nowadays advanced inventory management systems, enabling strict control of stock access, monitoring of usage down to user level and automatic reordering of out-of-stock items.

Although previously designed around an engineering footprint for handling mainly tools and parts, the latest generation of industrial vending technology, exemplified by our own British-made Pro-Vyda equipment, is configured to be genuinely usable by a whole range of industry sectors, from aviation, automotive and energy, to food processing and pharmaceuticals, and to accommodate all manner, shapes and sizes of stock items.

For those new to the technology, semi-automated parts vending offers a secure environment in which to store and dispose a whole range of items and an effective way of driving down inventory spend. In fact, here are 10 ways that point-of-use vending will help you cut costs, typically by as much as 40%.

- 1 Reduces inventory holding – as much as 70% of inventory items are never used or obsolete, so an initial data cleansing exercise and plant-wide amnesty on parts in lockers and toolboxes, as part of a vending machine implementation programme, will bring about immediate stock

reductions; add to that subsequent opportunities for weeding out low turnover items and eliminating duplication across the whole enterprise.

- 2 Frees up valuable floorspace – new lines mean storing spares to meet service and maintenance needs, putting pressure on storerooms already overstocked with excessive inventory; by utilising vertical space and high density storage technology, modern vending machines are designed to hold a vast array of products within a highly compact footprint, freeing up manufacturing floorspace, a commodity usually in short supply.
- 3 Improves staff productivity – a major cause of downtime is when staff have to spend time collecting spares from a central storeroom, building cumulatively into hours of lost production; point-of-use vending machines serve the location where they're installed, dramatically cutting the times taken to travel, locate and retrieve parts, while touch-screen interfaces with 'shopping basket' functions speed transaction times.
- 4 Drives down inventory spend – the most powerful way to reduce spend is to restrict access to inventory, with a complete lock-down ensuring that only authorised users can remove items; a full audit trail and subsequent monitoring of usage down to user level will identify wasteful employees or departments and indicate excessive maintenance activities, in turn highlighting issues of asset reliability.
- 5 Optimises costly parts usage – modern machines like Pro-Vyda can allocate a unique status to each compartment, so that refurbished or reconditioned parts can be dispensed instead of new items, saving on routine costs; the machine will also deliver the exact amount of parts required, rather than automatically dispensing standard packs of 10 or 20, again optimising usage.
- 6 Eliminates staff pilfering – as economic pressures mount, workplace theft tends to increase, whilst at particular times of the year certain items are consumed at greater levels than normal, such as gloves around bank holidays, paint pens and markers during school vacations and batteries at Christmas; locking down access and making staff fully accountable for what they are consuming, has a remedial impact on such behaviour.
- 7 Reduces employer liability – as all transactions are logged against a user, an employer can identify precisely what an individual has received, providing vital evidence of access to essential personal protective equipment in the event of a health and safety incident and helping avoid expensive litigation; real-time access to vending machine data also enables supervisors to immediately question why incorrect items are being taken out.
- 8 Provides 24/7 parts availability – one of the issues that management has to balance is the cost of either paying stockroom staff to support shift workers or allow unmanned stores access out of hours; vending machines eliminate that problem by providing 24/7 controlled access and monitoring, while a feature like Pro-Vyda's reservation facility enables off-site staff to pre-book parts for planned maintenance whenever they arrive.
- 9 Minimises costly downtime – with manual storerooms where there are no routine stock checks, there are often discrepancies between inventory records and physical items on the shelves, leading to stockouts at critical points

and consequent downtime; vending machines ensure accurate data and user-defined depth of stock on vital parts, as well as incorporating expiration and calibration dates against any part.

- 10 Improves budget control – as well as avoiding bloated inventories and restricting access to parts, vending machines like Pro-Vyda can allocate budget ceilings to individuals, cells and departments, ensuring budget compliance; given strict control of parts distribution and automatic restocking, stockholdings can be kept below one or two months in hand and complete stock checks can be carried out within hours, rather than days.

And contrary to the view that workers might object to point-of-use vending machines, Propeller has found that hardworking staff respond positively to the idea of having the right parts in the right place at the right time, rather than wasting energy tracking down items themselves, and appreciate facilities for reserving MRO consumables for upcoming maintenance and repair jobs, instead of finding much-needed parts out of stock at the last moment.

Tony Goodwin is CEO of PROPELLER GB 0191 569 1690

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FASTCASE STUDY

Norbar ultrasonic instrument exhibits real time measurement

A chance experiment on a wind farm in Texas has demonstrated an example of the non-traditional applications that can be carried out by a portable ultrasonic bolt meter, which provides precise measurements for the elongation and load in threaded fasteners.

Norbar's portable ultrasonic bolt meter USM-3 has a resolution of 0.0001 mm and is known to be incredibly versatile, being able to undertake measurements for fasteners measuring from 25mm to over 15m long. What was not widely appreciated

before is how it can provide precise real-time measurements of forces affecting a bolted joint, in this case a 2m long foundation bolt on a wind turbine tower.

The 2m long foundation bolt had already been installed and it was not possible to determine its actual elongation or tension without first loosening the bolt. However, for the purposes of demonstration, the initial length of the bolt was recorded using the meter and a magnetic transducer which was placed onto the bolt end. After a while, the wind farm engineer commented that the elongation measurement did not seem to be stable since the value was constantly drifting.

While reviewing the data, Norbar's ultrasonic specialist, Gregory Young, realised what was happening. "The tower base foundation bolt was located at a 160o angle from the wind direction. As the wind increased, it pushed the tower in the general direction of the foundation bolt, the joint was compressed slightly

and the elongation decreased. As the wind decreased the tower rebounded and the bolt's elongation increased as the compressive forces on the joint decreased. This ability to read minute fluctuations in the bolt tension, real time, can be of value to many companies dealing with bolted joint issues. Many sectors such as the automotive industry will also be interested, since real time changes in bolt tension are highly important in automotive engineering."

Ultrasonic measurement performed by the USM-3 works on a "time-of-flight" principle, similar to sonar, with a small transducer placed on the head or stud end of the fastener sending an ultrasonic sound wave through the length of the bolt and back again. After recording the initial bolt length with no load on the fastener, subsequent changes in the time of flight are converted by the USM-3 utilising material constants to eliminate the effect of stress and temperature variations on sound velocity, providing an accurate




elongation or load measurement.

Measurements are shown on the USM-3's large LCD display, providing easy to read data. The USM-3 incorporates digital signal processing and graphic displays of signal analysis and waveforms to make this a truly user-friendly instrument, thereby ensuring a high level of confidence in the measurements obtained.


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FASTPRODUCTS

Wet area coin lock for the changing area

A wet area coin lock recently introduced by the panel fitting experts **FDB** is claimed to be ideal for Pay for access – coin return applications found in swimming pool locker or group shower changing areas. It is ideally suited to personal lockers in these wet – or dry – open access environments, the company suggests. In this environment, the coin lock can be specified to operate with a wide selection of coins or tokens and encourages the user to return their key, releasing the locker for use by others.

To simplify installation, the product has a Euro-footprint and full wet area testing, high quality brass pin tumbler barrel, coin return tray as standard and the ability to handle many types of coins or specific tokens are other key features. A matching escutcheon is available and keys are in high strength nickel silver to withstand frequent use. FDB's range of hinges and cams complement the coin lock mechanism for a complete installation.

FDB PANEL FITTINGS
020 8568 1616



Quarter turn latch fits using external lugs

An addition to **GBK's** panel access latch product group takes the form of a quarter turn latch and has been designed for a 10.0mm square hole. The product incorporates a new design feature, which allows users to fit the female receptacle into either a 1.4 or 1.8mm panel using external lugs.

The female receptacle is retained

in the primary panel, whilst the male pin travels with the retained panel, but is free to be removed from the retained panel if required for access or service needs. The latch is secured by a quarter turn function internal to the female receptacle which locks with features on the male pin securely in the closed position.

Colour matching can also be provided with this product, subject to minimum order quantities, offering users further benefits for product use and integration. Minimum purchase volumes start at 1,000 pieces.

GBK UK LIMITED
01282 850001



PBT bonding solution resists high temperatures

Polybutylene terephthalate (PBT) is a thermoplastic which is commonly used to make injection moulded parts for automotive, electrical and medical industries. However, certain blends prove particularly difficult to bond. With this in mind, **Permabond Engineering Adhesives** has launched a bonding grade of PBT structural epoxy adhesive.

Permabond ES5741 has been developed to bond even the most challenging blends of PBT, offering good adhesion, high strength structural bonds and high temperature resistance. The product has been found to work well on a number of filled varieties of PBT where other adhesives have shown poor adhesion characteristics.

Many parts manufacturers have previously resorted to using ultrasonic, friction or spin welding joining methods; these are not only costly but they also restrict the choice of materials being joined being unable to bond PBT to metal



for example. The dimensions, fit and geometry of the joint are also limited. ES5741 enables easy bonding of PBT to other materials such as other types of plastic, phenolic and various metals.

PERMABOND ENGINEERING
ADHESIVES 01962 711661

Optic assembly adhesive eliminates parts movement



A fast-cure, low-shrink adhesive for optic assembly from **Intertronics** eliminates parts movement and cures in seconds for bonding of optical components. The low-shrink nature of **DYMAX OP-67-LS** opto-mechanical adhesive virtually eliminates movement during curing and subsequent thermal cycling. Despite this characteristic, the product offers the ability to cure on demand with exposure to long-wave UV and visible light, allowing maximum flexibility in positioning parts prior to cure.

The product is said to offer superior moisture resistance, low outgassing, and good adhesion to a variety of substrates including metal, glass, ceramic and polycarbonate. These features permit its use in many critical and demanding applications such as fibre-optic V-groove bonding, positioning laser diodes, fibre pig tailing, transceiver potting, VCSEL positioning and mounting active devices, or passive couplers, prisms and other optical device assemblies.

INTERTRONICS 01865 842842

Anti-rotation latch is sealed to IP65

The IP65 CSMT-A T handle latch from **Elesa** incorporates an anti-rotational device which prevents the handle and the closing lever from rotating accidentally. The design counteracts the forces generated through vibration or buffeting and is especially suited to use on cabinets and access doors where this may be an issue.

Operation is simple – unlocking by normal key followed by pulling and turning the T handle to release the sprung interlock. Turning the handle back into the closed/locked position automatically engages the anti-rotation mechanism and the handle may be locked again. Elesa offers a selection of enclosure hinges, tubular handles and other cabinet accessories.

ELESA 01526 322670



Moulded inserts join standard range

A range of inserts from **Spirol Industries** is intended for use as a placement in a mould prior to plastic injection. The Series 41 and 45 Inserts can be used in applications where torque and pull-out/through resistance are required. They feature an hexagonal head on each end and a large centre undercut, with this design providing a high level of bi-directional torque resistance and high tensile strength.

The Series 41 is a through hole

moulded-in insert and Spirol Series 45 a blind-end moulded-in insert. They do not require any specialised insertion tools as the operator places the insert directly into the mould prior to plastic injection. In addition, the company has designed this insert to simplify orientation and placement on to the mould core pin, thereby increasing productivity and reducing potential scrap rates.

SPIROL INDUSTRIES
01536 444800



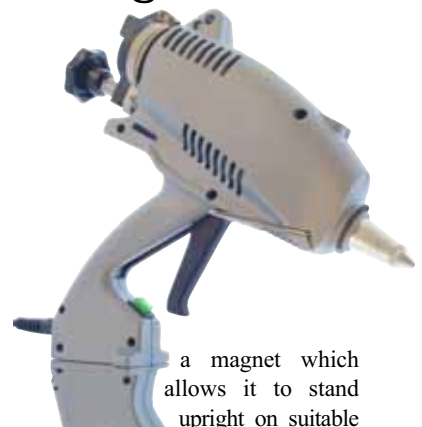
Electrical hot melt gun applies more

Adhesive application expert **Rheological** has launched a product to complement its existing range of industrial hot melt guns. Being all electric, the MS200 does not require compressed air to operate. It has a 250ml pre-melt chamber that can process hot melts in the form of granules, pillows and 43mm slugs.

Because there is a reservoir of molten glue, more can be applied at one time. Another advantage of the system is that more specific grades of hot melt are available in granular and pillow form and they are far cheaper than buying preformed slugs or sticks.

The company tell us that the gun is a lightweight ergonomically designed unit, which is easy to handle and safe to operate. An important feature allows the operator to adjust the resistance on the trigger and the rate of flow from the nozzle thus eliminating any repetitive strain injury or fatigue.

The base of the gun is fitted with



a magnet which allows it to stand upright on suitable surfaces. There is also a wire stand to support the gun when resting on non-magnetic surfaces.

The gun is very powerful at 600 W giving a high melt rate and a quick warm up time. Temperature is thermostatically adjustable up to 200°C making it suitable for all types of hot melt apart from polyamides.

Applications are envisaged to be in packaging, product assembly and in the potting of electrical components.

RHEOLOGICAL 020 7837 1289

Damping out harmful noise and vibration

Vibration damping elements are a mature and ubiquitous item – often hidden away inside or under engines, motors, fans or similar equipment – so it's good news when a new supplier comes to the market. **Elesa** claims market leadership in the production of standard machine parts from handles to handwheels and is now offering a complete range of damper and cushioning elements with steel and stainless steel base mounting.

The DVA range is formed in natural rubber based on zinc/steel and AISI 304 stainless mounts with male or female attachments. The products have been designed to damp vibrations, shocks and noises produced by moving bodies or vibrating masses which can cause malfunctioning and reduction of the machine lifespan. The DVA range will also protect adjacent equipment from vibration pollution and will also reduce its health impact on operators.

Essentially operating in compression or shear, double ended cylindrical units are often required to carry heavy equipment loads while on the other hand single mounting buffers in pad or conical format are ideal for absorbing energy on impact during equipment operation or perhaps door closure or similar.

The DVA range is available in black natural rubber to standard hardness 55 Shore A, as well as 40 Shore A or 70 Shore A to custom specifications.

ELESA (UK) 01526 322670



FASTPRODUCTS

Instant grab hybrid adhesive saves days

A two-part hybrid technology structural adhesive from 3M can save significant time when bonding bigHead and general fasteners. Scotch-Weld Epoxy-Acrylic Hybrid Structural Adhesive 7271

Dispensed using the Scotch-Weld EPX system, the adhesive can be applied with a manual or pneumatic hand-held applicator, saving days compared with the hand lay-up techniques used previously.

Imran Idrees of 3M's Industrial Adhesives & Tapes Division commented: "7271 B/A can instantly hold mechanical fixings unlike commonly used two-part acrylic adhesives which can take anything up to three hours to hold fixtures.

"Moreover, when compared with pungent, basic entry-level acrylic adhesives this instant grab adhesive is odourless. This eliminates the need for a respirator to protect against odour during use, and can be applied vertically or even upside down without the adhesive dripping."

The biggest cost and time savings are for applications where numerous fixtures need to be bonded.

3M 0870 608 0050



B/A has been designed to secure this type of fasteners instantly and is suitable for a wide variety of substrates including composites, GRP, epoxy-based resins, aluminium and stainless steel.

Epoxy developed for engineering materials

Permabond Engineering Adhesives has developed a high temperature resistant structural epoxy adhesive to bond a wide variety of engineering materials such as composites, thermoplastics, metals and ceramic materials.

Traditionally, standard 2-component epoxy adhesives with resin and hardener can only resist temperatures of up to around 80°C before they soften, resulting in joint failure. Permabond ET5401 can successfully survive 140°C continuously and maintain its performance characteristics. It can

be exposed to higher temperatures, such as those experienced in a paint stoving oven, for short periods, providing the adhesive is not overly stressed. Exposing the adhesive to such high temperatures actually increases the adhesive strength and long-term structural performance.

The adhesive is a toughened product which is ideal for bonding dissimilar materials, such as metal to composite, where differential thermal expansion and contraction could be an issue. It is also ideal for applications where good impact and vibration resistance is important. Permabond believes this product will be ideal for the composites bonding industry, the transportation market and automotive industries.

PERMABOND
ENGINEERING ADHESIVES
01962 711661



Fully concealed 3-D hinges suit 300kg doors



BaSys has established an enviable reputation throughout Europe for unrivalled quality and innovation in hinge technology, supplying such prestigious developments as the BMW Headquarters in Munich, the Klum Hotel in St Moritz, and the Raiffeisen Bank in Graubunden, Switzerland.

On announcing the deal, Cooke Brothers National Sales Manager Phil Dicken said: "The addition of the BaSys hinges to our well established Phoenix brand products will certainly open up new untapped opportunities for us. We are already in the process of identifying potential customers whose door and frame specification requires an uninterrupted sight line."

Included in the many options the Pivota DX series has to offer are: solid steel or solid aluminium bodies, door weights from 40kg up to 300kg, three dimensional adjustment, matching cover plates for screws, fire rating and anti-jemmy protection. Standard finishes include: velour-nickel plated, stainless steel coated, aluminium coated or the choice of galvanised finishes on request.

Cooke Brothers has signed an exclusive distributorship arrangement with one of Germany's leading hinge manufacturers BaSys, to market their range of high specification hinges in the UK. The agreement makes Cooke Brothers the sole UK stockist and distributor of the Pivots series of fully concealed, three way adjustable, four knuckle precision hinges and the Objecta range of heavy duty, high performance, security hinges and receivers.

COOKE BROTHERS
01922 740011



Flange mounting blocks have ball bearings insert

A new line of standard duty flange mounting blocks has been launched by **Quality Bearings & Components** (QBC). The four-bolt blocks have a polyester housing and a removable acetal bearing insert with 316 stainless steel balls.

The BBPBLD series has been designed to fit shafts ranging from diameters of 1/2in to 1.25in. These new elements help make machinery efficient, more functional, and most importantly, safer. By giving careful consideration to these basic design features, efficiency and reliability

increase. Plastic two-bolt flange mounting blocks with insert ball bearings are also stocked.

Quotes plus online orders are available at QBC's eStore at www.qbcbearings.com.

QBC also stocks a myriad of bearings, roller clutches, guide wheels and rail systems in both inch and metric sizes. QBC also provides custom-made bearings and shafting to the customer print. Bearings can also be relubed in a certified class 1000 clean room.

QUALITY BEARINGS &
COMPONENTS
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Master Bond develops high purity line

High purity and freedom from contaminants are essential requirements for adhesives and sealants used in electronics, electro-optics and optical manufacturing. **Master Bond** says it has developed a line of high purity, low outgassing epoxy resin systems to meet those most stringent performance requirements. These products are successfully employed in applications ranging from disk drives and flat panel displays to advanced avionics and aerospace components.



The Master Bond product line consists of both one and two component systems. They are available in a range of viscosities and cure speeds to best meet specific requirements. Electrically insulat-

ing, thermally conductive and electrically conductive grades are available. The products will perform over a wide temperature range of +200°C to liquid helium temperatures. Outgassing properties exceed the widely employed ASM E595-84 test standards accepted by NASA for space applications.

EP21TDCHT-LO two part epoxy adhesive/sealant is specially formulated to withstand cryogenic temperatures and meets the low outgassing specifications. This versatile system is used for a wide variety of structural, electronic, aerospace, medical, and oil & chemical processing applications. The product has a mix ratio of 1:1 by weight or volume and is formulated to cure at room temperature or more rapidly at elevated temperatures.

Master Bond's adhesive systems are packaged for ease of use in one and two part syringes, cartridges, bubble packs, jars, metal and plastic containers and in drums. And the two component system is also available in pre-mixed and frozen syringes.

MASTER BOND +1 201 343 8983

Split cable entry frames offer IP54 sealing

A versatile cable entry system available from **M Buttkeireit** has been extended to include the new KEL 183 series. This product features a split black polyamide frame assembly for ease of both initial cable assemblies as well as simple accommodation of additional cabling and general retro fitting applications.

The overall frame size is 202 x 120mm, which can be equipped with grey coloured elastomer inserts to provide IP54 cable sealing, can also accommodate cables and tubes up to 75mm diameter in a variety of cable sizes and grouping combinations. Standard frame plus insert assemblies can be provided to cover maximum size cable arrangements of 2 cables up to 75mm diameter, or one cable of 75mm and four of 34mm diameter, and a third arrangement of eight cables of 34mm diameter. In all cases, cables of lesser diameters can be accommodated, together with cables incorporating pre-assembled terminations.

The ease of achieving both frame and cable run installations at bulkhead junctions, together with the time saving achieved,



makes these products suitable for a wide range of general engineering and commercial applications. This covers control panels up to full machine building projects as well as transportation equipment involving trams, trains and marine projects. The compact, clean lines are also compatible with requirements for commercial building installations including offices, schools and hospitals etc.

Both the Polyamide frames and elastomer inserts are halogen and silicone free and achieve flame class UL-94 Vo with self-extinguishing qualities. The temperature ratings are -40°C to +140°C for the frames and -30°C to +90° for the elastomer inserts.

M BUTTKEREIT 0161 969 5418

Tracking components during manufacture

A range of Allen-Bradley radio frequency identification (RFID) products designed specifically for industrial applications has been announced by **Rockwell Automation**.

The modular 56RF system, which is based on the open 13,56MHz I-Code standard, delivers a rugged plant floor RFID solution for both tracking and real-time localised data storage, with seamless data communication from shop floor to enterprise systems. What is more, its use of an open standard provides much more flexibility for expansion and integration.

Industrial Radio Frequency Identification (RFID) systems have emerged as a rugged and reliable way to track and document products as they move

through the manufacturing process. Unlike barcode systems used for similar, less demanding applications, industrial RFID systems are designed to withstand harsh environments. Plus, reusable read/write tags allow for flexibility in information and application.

Designed to address these needs, the system comprises Allen-Bradley ArmorBlock interfaces, transceivers (read/write heads) in sensor housings and a wide selection of re-usable data carrier tags in different styles for standard and special environments. Flexibility and scalability is maximised as ArmorBlock units offer interfaces for one or two RFID channels, standard I/Os and embedded Ethernet switches with device level ring (DLR)

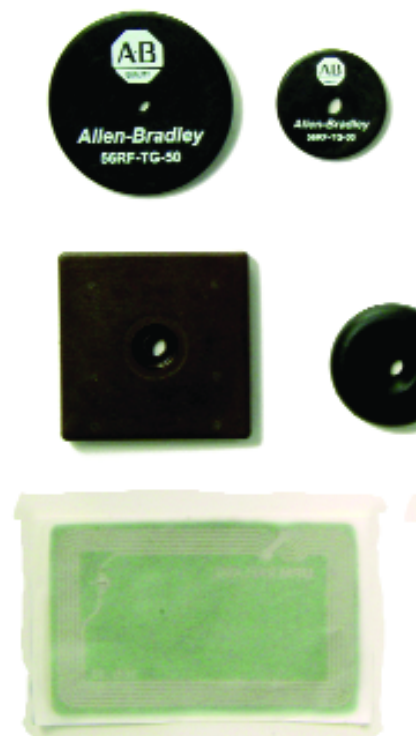
function in order to save wiring and installation costs.

Four rugged transceiver styles are available (40x40, 80x90, M12 and M18) designed for industrial locations. A wide selection of reusable data carriers – tags designed for industrial environments – is also available, from 128Byte up to 2kB with read/write distances up to 170mm, depending on the tag size.

Applications sure to benefit from this new system include: asset tracking; tracking and tracing of raw material, parts, trays, bins, work piece carriers, tooling and containers; intelligent object routing and automotive body assembly, paint and body shops.

ROCKWELL AUTOMATION

0870 242 5004



FASTPRODUCTS: Secure fastening

Combination bolt prevents loose components

The combi bolt is a bolt with an integrated pair of Nord-Lock washers. Based on Nord-Lock's proven wedge-locking technology, the integrated product secures

bolted joints and maintains a high clamp force even under severe operating conditions. With the Nord-Lock combi bolt, the user will be able to increase the effi-

ciency, accuracy and safety of an assembly, while at the same time keeping inventory and part count at a minimum.

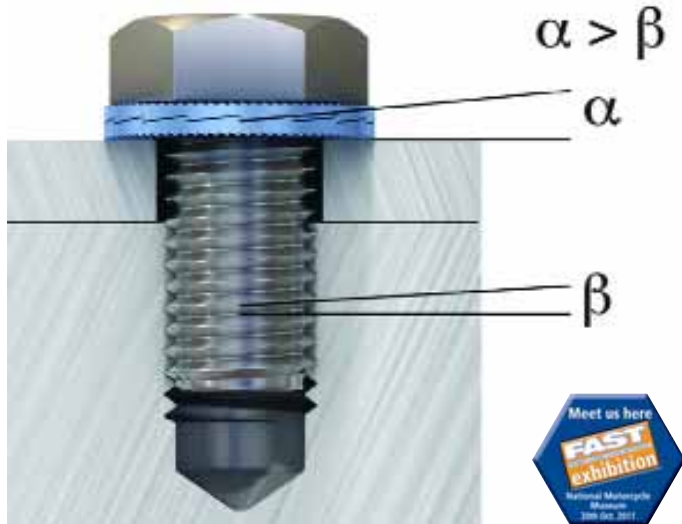
The concept of bolts with captivated washers has been around for several decades, bringing numerous advantages to assembly lines and maintenance and repair settings in all kinds of industries. Nord-Lock takes the combi bolt concept to a whole new dimension by incorporating the superior safety functions of the wedge locking washer. The Nord-Lock combi bolt is offered as a custom made product, so the parts can be adapted to specific requirements.

Loose parts damaging or shutting down assembly lines during manufacturing or maintenance can be very costly. With the combi bolt, users can rest assured

that the parts are not only safely secured, but also correctly assembled. Furthermore, the combi bolt is as simple to use in the field as it is in confined spaces or areas where access is difficult.

Nord-Lock secures bolted joints with tension instead of friction. The system is comprised of a pair of washers that has cams on one side and radial teeth on the opposite side. Since the cam angle (β) is greater than the thread pitch (α) a wedge effect is created by the cams (see diagram), preventing the bolt from rotating loose. The system is proven as a safe bolt securing system according to NASM 1312-7 tests performed by the independent organisation Det Norske Veritas (DNV).

NORD-LOCK 01980 847129



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FASTPRODUCTS: Secure fastening

Integration is the safe route to bolt security



PEM types PF7M and PF7MF captive panel screws, recently introduced by PennEngineering are two distinct mounting styles for permanent installation into thin sheets. Both types feature small, compact, and low-profile designs ideally suited for limited access areas and benefit from patented MATHread anti-cross threading technology that easily corrects off-angle installations, aligns components, and slides through clogged internal threads. Their Phillips recess allows for tool or hand operation.

Type PF7M captive panel screws integrate a self-clinching mounting design providing high pushout resistance. These fasteners install flush on the back side of panels as thin as 0.92mm and are available in two screw lengths in M3 and M4. They can install reliably into panels with hardness of HRB 80 or less or HB 150 or less.

Type PF7MF captive panel screws feature a flaring design, which allows them to be installed

permanently into any panel hardness with minimal force. A closer fastener centreline to sheet edge can also be achieved with the flare-style mounting. They install flush on the back side of panels as thin as 0.79mm and are also available in two screw lengths with M3 and M4 thread sizes.

As with other PEM captive screws, both types feature a shoulder on the retainer portion of the fastener to help simplify installation. These new captive screws join a growing family of PEM brand hardware allowing for subsequent access to an assembly. Captive screws remain intact without risk of loosening or falling out and additionally reduce the number of loose parts to be inventoried and handled.

Detailed specifications (Bulletin PF7) and free part drawings (PEM CAD Library) for these RoHS-compliant fasteners can be downloaded at www.penn-net.com.

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Product developments serve broader industry

EMKA said in a statement that recent group expansion and product developments have resulted in an even wider coverage of UK industries than before. Examples can be found in the new 2500 series swinghandle – a dramatic advance on existing swinghandle design, the 2500 found critical acclaim at the Hannover Fair this year and since then has proven a customer success based on its modular customisation capability, making it eminently suited to electronic racks and other multiple panel installations.

Other new products address the

needs of architectural doors and special locking mechanisms, while specialist flush handles and other hardware are available for caravans and motorhomes. Industries as diverse as railway rolling stock manufacture, HVAC and commercial vehicle production and catering have their fair share of new EMKA products from sealing assemblies, stainless steel hinges, through to custom engineered hardware such as complex hinges for sophisticated truck body designs.

EMKA
024 7661 6505



Non-magnetic torque wrench range extended

Norbar Torque Tools has launched a 50 Nm non-magnetic torque wrench to complement the 20 Nm version introduced late last year. These TruTorque wrenches will find applications in the medical field, specifically for MRI manufacture and maintenance, where there is the presence of a strong magnetic field. Using non-magnetic tools on MRI Scanners can avoid serious risk of injury to the operator and damage to sensitive and expensive equipment.

Torque wrenches are used by

factory staff, installers and field based personnel working on the cable connections and sub-assemblies around the magnet when it is energised. They are also used around the top of the magnet on the refrigeration sub-assemblies, valves and seals. In both cases the magnet is at full field. The TruTorque 50 Nm non-magnetic wrench is acceptable for the majority of MRI scanners in use today and has further applications across a range of industries where tools also have to be used in the presence of a strong magnetic field.

The wrenches are manufactured using carefully selected and tested non-ferrous materials. Accuracy of reading is +/- 3%, exceeding international standards.

NORBAR TORQUE TOOLS
01295 270333



Extreme seals offer high pH resistance

Sealing specialist **Dichtomatik** can now offer fluoroelastomer sealing products that have been subject to DuPont proprietary Advanced Polymer Architecture (APA) technology. These products, called Viton Extreme, feature base-resistant polymers to ensure improved long term performance in the presence of high pH chemicals.

Chemical solutions that have been introduced over the past few years incorporate bases which inhibit metal corrosion caused by the long term effects of acid build up. Chemicals used to clean or purge industrial and food processing equipment can also have strong bases which are similarly detrimental to the performance and life expectancy of fluoroelastomer sealing products. However, these high performance elastomers are capable of meeting the highest challenges by providing overall fluids resistance as well as significant processing advantages compared to existing TFE/Propylene polymers. Performance enhanced variations of the products are available to cover specific applications.



Dichtomatik is an authorised DuPont licensee and approved UK source for all Viton, Vamac, Kalrez and Zalac O-rings, seals and finished products. The company is able to offer full technical support, service and supply for specific applications in the aerospace, chemical processing, oil and gas, energy, utilities, automotive and heavy duty/offroad markets, together with the food and pharmaceutical Industries. .

DICHTOMATIK
01332 524401

Gel exhibit superior heat dissipation for electronics

With five times the thermal conductivity of normal RTVs, **Techsil's** RTV3080 thixo gel has a non greasy consistency, which means there are no leakages at high or low temperatures. The product therefore offers many benefits for electronic applications such as lighting, ECUs, sensors, avionics, power steering modules and power semiconductors. Thixo gel has the advantage of curing at room temperature with a four-hour gel time, but can be heat-accelerated if needed. The material is also able to re-seal itself after cure.

Other important features include: 1:1 mix ratio and easier to pump than similar existing materials; 1.0w/m/k thermal conductivity. RTV3080 is flowable but thixotropic meaning that the spread can be controlled, and it is soft enough

not to stress delicate components.

Based in the UK and Germany, Techsil supplies RTV silicones, adhesives, sealants, encapsulants, conformal coatings, casting and mould making materials to a wide range of manufacturing industries across Europe. RTV3080 thixo gel is available in 50ml, 215ml, 395ml cartridges or manual mix kits.

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FASTPRODUCTS: Assembly systems

Improved accuracy for servo press range

Press or interference fit of parts is a quick and simple method of joining parts. A part is pushed into a recess, which is slightly undersized causing interference. The fit is made possible by the material elasticity, which gives rise to a compressive force between the part and the recess. The join is maintained by the friction, which is usually a function of this compressive force.

Kistler has recently expanded its range of NCF servo press systems with the introduction of the NCFT-B for low force interference fit processes, for forces below 1 kN. The company's servo press actuators range includes a piezoelectric force sensor and a rotary encoder to measure and control position. The actuator is linked to a servo controller and a program/monitor unit. The NCFT has been used where the limited position and speed control offered by pneumatic systems, is inadequate. Most applications have been on plastic parts with a high

quality requirement, such as drug delivery devices.

NCFT-B is a development of an earlier design that improves the accuracy of low force measurements. A force sensor mounted on the end of the shaft eliminates any force measurement uncertainty due to friction in the bearings. The piezoelectric force sensor offers two selectable calibrated force ranges, allowing the same NCFT-B to switch between operations with differing force requirements.

It is possible to specify a series of positions and speeds accurately and clearly define the fit process. A position repeatability of better than 0.005 mm and a speed greater than 300 mm/s is possible. A fit program, consisting of a series positions and speeds, can be entered into the control electronics. For some operations force feedback can be used. Alternative control programs can easily be selected by a master PLC for different parts and materials.

The degree of control offered by electrical systems greatly exceeds that offered by pneumatic systems.

The monitor unit applies a series of tests to the force/displacement curve to provide a quality assessment of all parts. The monitor unit can retain or export manufacturing statistics, as required.

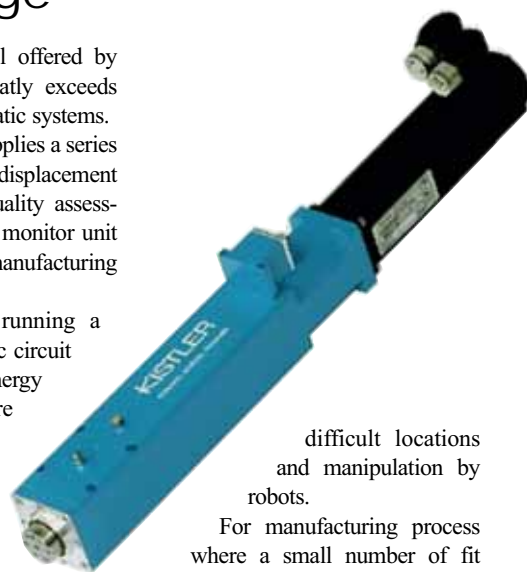
Maintaining and running a pneumatic or hydraulic circuit usually has a greater energy demand and therefore higher operating costs than equivalent electrical systems. An electrical system has the benefit of only using energy when required, which greatly helps to improve its energy efficiency.

The NCFT offers a compact and low weight design. The 1kN servo press actuator module is just 551 mm long, with a mass of 5.8 kg. This makes the NCFT suitable for

difficult locations and manipulation by robots.

For manufacturing process where a small number of fit operations are required and there is no pre-existing hydraulic or pneumatic circuit, an electrical system is a simple and low cost addition to a manufacturing facility.

KISTLER INSTRUMENTS
01256 741550



Bellows grippers provide for fragile assemblies

Pneumatics leader Festo has launched a range of bellows grippers that provide an automation solution to the problem of transporting or holding fragile workpieces. The DHEB series grippers employ flexible bellows which expand in diameter when actuated by an integral pneumatically-driven piston, to securely grip the interior surface of a workpiece.

The grippers are single-acting devices, which simplifies their control significantly. When their air supply port is pressurised, an internal piston optionally draws a wedge up or down within a rubber bellow, causing it to deform outwards to meet and conform with the interior contour of the workpiece, such as the neck of a bottle. This provides a secure but gentle air-tight grip, which is



maintained until the air supply port is exhausted, whereupon the force of the bellows returning to their original shape pushes the piston back into its initial position.

There are two versions, offering a choice of bellows activation directions to suit different handling machine actions; one uses an upward piston stroke to deform and expand the bellows, the other uses a downward stroke. Furthermore, the grippers are not limited to gripping the inside of workpieces - multiple units can be configured for grasping external surfaces, such as the edges of a printed circuit board. The tools are available with

11 choices of contiguous bellow sizes, ranging from 8 to 63 mm.

FESTO 01252 775000

Pneumatic applicators are well received

Specialist applicator manufacturer PC Cox has launched two pneumatic sealant and adhesive applicators, which have already generated significant interest with orders placed in Russia and Japan.

Jetflow3 is a multipurpose applicator that outputs both bead and spray and can replicate the highly accurate spray patterns crucial in sectors such as automotive repairers and refinishers. The applicator is simple to change from bead to spray and is ideal for use with all conventional and sprayable low to high viscosity sealants.

The company believes that its easy and accurate regulation of incoming air flow means there is no other applicator available currently that provides this level of flexibility and controlled delivery. It is also the only pneumatic applicator that can convert between cartridge and sachet; the Jetflow3 does it all, spray, lay beads and accept cartridges, sachets or pouches, it is claimed

The latest in the Airflow series, the Airflow3, is a single component pneumatic bead applicator ergonomically designed for industrial applications and has already been short-listed for a design award.

PC Cox tells us that it is a more efficient, modern and aesthetically pleasing applicator that is straightforward to use in the application of low to high viscosity sealants. A built in silencer delivers a quieter operation and integrated air connectors offer greater protection, as there are no exposed parts. An integrated air pressure regulator allows for precise and smooth flow control. The Airflow3 takes pouches, sachets or cartridges. There is also a combi version accepting sachets and cartridges.

Both new products have been ergonomically designed to be light and comfortable to handle, allowing longer usage time to aid manufacturing productivity.

PC COX 01635 264500



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Lubricant-free linear drive system is compact and quiet



Linear drive expert **igus UK** is now supplying DryLin E actuators with polymer bearings complete with a NEMA certified motor. The compact, light and quiet system is available ex-stock, individually configured to the required length.

Engineers have been using DryLin modules for many years now, fitting their own motors to drive the units. With the new DryLin E module from igus, the unit can be bought in as a complete item, ready to fit. By building up the unit using standard igus parts,

the delivery lead time is extremely fast, a typical system can be delivered in 3 to 5 days.

Initially the igus motor range covers NEMA17 and NEMA23 stepper motors and is optionally available with encoder and/or brake. The motor units work reliably in a wide range of different environmental conditions (depending on the protection class chosen) and the NEMA standard guarantees global availability.

The linear guide itself is based on the igus DryLin W system, which is virtually maintenance-free, and has been in use successfully for many years. It comprises a bearing housing and tribologically optimised polymer gliding film for excellent friction and wear values.

IGUS UK
01604 677240



Getting to grips with micro assembly

The MWPG 20 miniature changing parallel gripper from **Schunk** is opening up new application possibilities in the optical engineering and electronic production sectors. Claimed to be the world's first quick-change miniature parallel gripper with standardised DIN interfaces, the tool has an outside diameter less than 20mm, optical monitoring and a large range of accessories.



This miniature gripper is made of stainless steel and has a weight of just 26g. In order to avoid frictional loss due to mechanical deflection, two horizontally positioned piston areas provide the jaw drive. The jaw motion is mechanically synchronized via a special ring system. On request, if one of the two fingers should be fixed for example, a forced coupling will not be necessary. Free of scope, smoothly running cylinder pins provide jaw guidance. Therefore gripping forces up to 5N with an adjustable stroke of up to 1mm per finger are possible.

The MWPG 20 can be directly mounted to the robot-sided head of a miniature changing system and adapter plates are not needed. It is supplied via two direct hose-free connections with compressed air. The matching MWM changing rack is used for organising and allows a quick, automatic change of tools and grippers.

SCHUNK INTEC 01908 611127

FASTPRODUCTS: Assembly systems

Linear guide interchangeability is guaranteed



The key advantage of a new series of linear guides from **NSK** is high precision that has been achieved despite using combinable carriages and rails. This innovation is made possible by optimised production processes for the guide rails. NSK's dilemma was over the choice of high precision and top running behaviour or compromise on accuracy for the sake of freely combinable carriages and guide rails.

This was the decision every machine tool designer used to face when it came to selecting linear guides to construct linear axes. Linear guides that offered a very high level of precision had the disadvantage that the carriage and rail were generally designed to work together, meaning they were not freely interchangeable.

This disadvantage is now a thing of the past; PH linear guides allow carriages and rails of the same size to

be freely combined, where previously this high accuracy was only possible through paired systems. This makes it easier to produce machines and to replace precision linear guides during servicing. What's more, the linear guides are available off the shelf.

The new PH class, which was launched at last month's EMO trade fair, is available with various different guide carriage types in sizes 15 to 45. All of the designs run much smoother and boast significantly better guaranteed precision than the existing PC class, which already offers very good performance.

With these properties, the PH linear guides are suitable for applications that require very quiet running. The linear units are also rigid enough to be used for demanding applications, especially in the machine tool and assembly industries.

NSK 0500 2327464

FASTTAILPIECE

Wing walking for charity

Each year Eurobond Adhesives Staff hold a fundraising day to raise money for local youth organisations. This Summer, the day took the form of a BBQ at Headcorn airfield in Kent with an auction of prizes that staff could bid for. They raised just over £1,000 which was split between the Swale Youth Development Trust an organisation that exists to support and encourage local young people to develop their special talents such as sporting prowess or musical or theatrical excellence who may otherwise not be able to pursue their chosen activity because of a lack of funds.

The second organisation to benefit was called Challenger Troop.

This is a not-for-profit organisation that offers disaffected or excluded vulnerable young people challenging and engaging activities designed to raise their self-esteem, improve their behaviour and become better citizens.

The highlight of the day was when the boss' wife, Sam took to the skies to complete a 20 minute wing walk standing on top of a Boeing Stearman Biplane. The aeroplane was flown by family friend Tony Richards who is an aerobatic pilot and stunt pilot for TV and Film. Eurobond managing director Simon Dearing commented: "[Tony is] really the only person I would ever trust with my wife's welfare."



The Stearman Biplane was designed and built as a military training aircraft during the 1930s and 1940s. Some 9,783 were built in the USA for use by several allied air

forces during World War II. After the war, thousands of surplus aircraft were sold on the civil market when the Stearman became popular for crop dusting and as a sports aircraft.

For Britain and the Hell of it

In October 1997 Squadron Leader Andy Green, driving Thrust SSC, became the first person, under FIA regulations, to travel supersonic on land. While others may break the supersonic record one day, they will never be able to better being the first to do it, a British driver in a British car.

To celebrate this and other record breaking achievements, Transport Bookman Publications has launched 'The British are Coming' – a 360 page hardback book in landscape (32 x 24cm) with over 1000 photos.

Author Mike Varndell justifies the book's title when he considers how many times over the last 100 years in towns or villages in remote locations around the world people have said those words knowing that near to where they live, a British team would soon be arriving, bringing with them a unique vehicle and an entourage of the world's media and people that just want to see another world record broken, putting that part of the world on the map and into the history books.

In the early days of the land speed record, British drivers were able to break records at locations such as Brooklands Race Circuit, Surrey and Pendine Sands in South Wales. As speeds increased, the requirement of longer locations to run on became a necessity. This meant that British teams had to travel the World to carry out their speed record attempts.

As you would expect, there are

photos of the drivers piloting their vehicles to British and World records, but that is not what this book is all about. The reader gets a chance to see behind the scenes, from the designers of the vehicle, to the engineers who build the vehicle, and more importantly the mechanics that work tirelessly to see the vehicles that they have come to understand pushed to their limits.

So why do they do it? The answer is relatively simple: to be the best, to show the world that designers can come up with an idea, that the engineers can build, that the mechanics can then test and maintain, that the driver will push to its design limits having complete trust in the team behind them. A final comment, and possibly the one that best sums up what this book is about, is from Richard Noble: "For Britain and the Hell of it".

'The British are Coming' is launched on the 13th of October at Brooklands Museum.

The Standard Edition costs £49.99 and there is a Publishers Edition of 150 copies signed by three record holders and the author at £79.99. A Limited Edition of 100 copies is also available for £195.00. These books, which are presented in bonded leather slipcases and signed by six record holders and the author, will make a fabulous Christmas gift for a motorsport enthusiast.

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1. Who piloted the Spitfire on its maiden flight?

- George Errington Mutt Summers F G Miles

2. Approximately how many revolutions will a Top Fuel dragster engine make in a 4 sec/330mph run?

- 900 5,000 10,000

3. Is the speed of sound faster, slower or the same under water than it is in the air?

- Slower Faster Same

4. In which County was Sir Isaac Newton born?

- Derbyshire Northamptonshire Lincolnshire

5. Of which State was legendary US athlete Jesse Owens a son of?

- South Carolina California Alabama

6. Which of these materials was discovered in 1938?

- Nylon Rayon Teflon

Last issue's winner was Graham Harper, Neptune Engineer, Rolls-Royce Derby. Congratulations Graham! The correct answers were:

1. Louis Chevrolet was born in Switzerland 2. Groucho Marx said "I have an open mind, you can feel the draught from here" 3. Noel Chavasse VC & Bar was in the RAMC 4. Alan Shephard was the second man into space 5. Uruguay won the 1930 World Cup 6. Leeds Castle is in Kent
Our thanks to the many readers who entered.



FAST

FASTENING & ASSEMBLY SOLUTIONS AND TECHNOLOGY

exhibition

IASE

INDUSTRIAL ADHESIVES, SEALANTS & ENCAPSULANTS

exhibition

National Motorcycle Museum

20th October 2011

SHOWGUIDE

Collect your floorplan and Addendum on arrival!



HANDS OFF! 

If this isn't your own copy of FAST Magazine, or you have yet to apply to receive regular free copies, you can register online at

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WELCOME

I would like to welcome you to the National Motorcycle Museum for the FAST (Fastening & Assembly Systems and Technology) and IASE (Industrial Adhesives, Sealants & Encapsulants) exhibitions. These 'working' events are designed for busy engineers and manufacturing professionals, who to get around an exhibition, get some answers, ideas and inspiration, and then get out with the minimum of fuss and time expended. Our shows are physically compressed into the halls at the National Motorcycle Museum to facilitate speedy information gathering. The FAST Exhibition is still the UK's only dedicated fastener, fastening and assembly show, and the IASE Exhibition is a specialist event that showcases all that's best in the field of adhesives, sealants and encapsulants for manufacturing industry.



This year's wide-ranging portfolio of exhibitors offers so many opportunities to improve designs, speed up production, solve taxing application problems and provide ideas to professionals like you. The IASE Exhibition is supported by BASA, the British Adhesives & Sealants Association, which is again holding one of its famous Technical Seminars during the event.

Remember to collect your floor plan and list of late-booking exhibitors when you arrive. Parking is plentiful and free. If you haven't already pre-registered in advance for a VIP Visitor badge there may still be time to do so and claim a Complimentary Luncheon Voucher worth £5. All visitors get a free Museum pass worth £8.95.

The Museum is open from 9.30am to 5.30 pm on the day of Exhibitions, allowing plenty of time for show visitors to enjoy the delights of the world's largest motorcycle collection. The National Motor Cycle Museum is located immediately adjacent to the NEC on the roundabout for the NEC exit at J6 of the M42. The shows are open 9.30am to 3pm.

I think you will find the exhibitions useful.

*Paul Gay,
Editor, FAST Magazine*

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Specialising in a wide range of industrial hardware for the design engineer, we hold extensive stock at our distribution centre based in the West Midlands.

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Alfatex develops touch and close fasteners for a huge variety of industrial applications. They range from bespoke straps for bandages to customised solutions for the automotive industry. Our product groups are medical, industrial and automotive. These three sectors attach great value to the quality of our range of products.

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Anochrome Group is a specialist applicator of surface coatings and pre-applied technologies, serving diverse industries such as automotive, aerospace and telecommunications.

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Armstrong Precision Components Ltd, a Bollhoff Group company, manufactures the industry standard Helicoil® wire thread insert range for a multiplicity of applications. Located in Kingston-upon-Hull, UK, and with more than 50 years experience in the manufacture of wire thread inserts, they are accredited with leading blue chip OEM's in aerospace, automotive, rail, defence, power generation (conventional, wind and nuclear) and precision engineering of all forms. APC produce the widest range of wire thread inserts currently available from a single source, including the classic Helicoil®, Helicoil® Plus for ease of installation and now Helicoil® TangFree for those most sensitive of operations. Helicoil® Inserts from Armstrong are in service with the Rolls Royce engines used to power the Boeing 787 Dreamliner and the Airbus A380 jet liner, proof positive of the absolute inherent quality of the Helicoil product.

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Axson Technologies, global manufacturer of Structural Adhesives and Dielectric resins supply their range of products in the United Kingdom and Eire via Axson UK Ltd.

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Baker & Finnemore Ltd manufacture the Starlock Push-on Fastener, a product designed for use where a quick, permanent, cost effective and efficient means of assembly is required to retain plain shafts of steel, non-ferrous and plastic materials. They eliminate costly threading and grooving operations assist rapid assembly and once in position they can not be removed without destruction.

The company also manufactures custom precision pressings made from spring steel, other ferrous and non-ferrous materials.

See our web-site for further information.

BAS COMPONENTS LTD



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BAS Components Ltd setting the standards with 'inpress' fastener technology, having a portfolio of high performance threaded and non-threaded fasteners for use in aluminium and steel. Flangeform[®] is a technically accomplished fastener whose significant cost saving and weight saving benefits are well documented. Gripform[®] offers the same features and benefits but is aimed at use in thicker materials. AVK[®] premium blind threaded inserts are a range of high strength rivet nuts. Their rolled thread form and 'thin wall' splined design make them first choice for engineers who want maximum performance with minimum cost. Also on display will be a range of cold-headed products including weld nuts, spacers, bushes and 'manufactured to print' products demonstrating BAS's broad portfolio and ability to significantly reduce your costs.

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Binder Fastener Systems are the UK subsidiary of Gottlieb Binder GmbH & Co. KG based in Germany. As one of Europe's largest and most experienced manufacturers of high quality, technically advanced, reusable and resealable fastener systems. Binder continues to see a large increased demand worldwide for its products. Our uncompromising attention to quality and customer service sees us at the forefront of our industry. An ever expanding product range including hook and loop, mushroom, extruded film fasteners, adhesive systems and plastic profiles coupled with our passion for problem solving, means that we are able to provide our customers with a truly bespoke service. Our products are used extensively in areas such as construction to medical, transportation to sport and everything in between.

Our commitment to you is this: provide the very best, innovative products. Back this up with our drive to give the highest levels of service possible. This in turn means that you can have complete confidence when using Binder Fastener Systems.

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Bollhoff Direct is the UK sales division of Bollhoff GmbH, with over 100,000 Din Standard parts available from our German stocks and delivered direct to our UK customers.

In today's difficult climate, more and more customers are taking advantage of our direct delivery service to reduce their own stockholding. Specializing in the more difficult to obtain parts, e.g. fine pitch bolts, non preferred lengths etc. in Steel, Stainless, Brass and Nylon, Bollhoff Direct couples the benefits of buying from a major European supplier with the convenience of a local distributor. We hold the stock so that you don't have to.

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BOLLHOFF is a TS-16949 manufacturer of proprietary fastening systems exhibiting a range of proprietary fastening solutions for joining sheet metal where no hole is required. Placing blind threads into thin and hollow section. Providing fasteners, which automatically compensate for tolerance stack-up. Push-On-Pull-Off reusable vibration and noise dampening fixings alongside quarter turn and bespoke plastic solutions.

In short BOLLHOFF provides a basket of innovative and cost effective solutions to the many and varied problems of fastening modern materials. We provide local technical support through a team of UK application engineers.

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BTM, the market leader in providing specialist equipment for the joining of sheet metal assemblies and components using the patented clinching system TOG-L-LOC®. This technology is used throughout the automotive, white-goods, electronic, and construction industries as a cost effective way to join sheet metals. There are no additional fasteners, no heat, fumes, or sparks in the TOG-L-LOC® process which has proven very effective in joining pre-painted, coated, and dissimilar sheet metals. BTM TOG-L-LOC® Clinching is simply the best form of clinching on the market today. The exclusive action of the moving die blades allows the metals to flow into the interlock with minimal stress and force thus providing superior joint strength and tool life. From low production hand held equipment through to high speed high volume dedicated machinery we have a solution for you.

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Cooke Brothers, one of the UK's leading Hinges and Hardware manufacturers, are showcasing the full range of Continuous Hinges, High performance CE marked and fire rated hinges together with a wide range of specialist products for industrial applications.

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Elesa world renowned manufacturers and suppliers of Standard Machine Elements will be displaying some of the latest new product additions for 2011, including industrial magnets, vibration damping elements, rod end and fork joints, clamp mounting systems, electrostatic discharge compatible knobs and handles, mini indexing plungers and ball lock pins as well as various product extensions to existing lines. Full details of all Elesa products including 2D and 3D drawing downloads can be accessed via www.elesa.co.uk and www.elesanow.co.uk. Soon to go live will be the Elesa Webshop where customers will be able to purchase online.

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Eurobond Adhesives Ltd has been established for 27 years, and in this time have built an enviable reputation for supplying high performance adhesives, and adhesive tape products to industry. We pride ourselves in being able to offer expert technical advice on just about any application, all backed up by a first class customer support and after sales service. In addition, Eurobond Adhesives are the sole UK distributor of Reinhardt Technik, metering, mixing and dispensing systems.

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EMMOTT (PAWSONS) LTD designs and manufactures a wide range of springs, clips, washers, pressings and specialist products for most industries and applications. In addition to standard products, George Emmott works in close partnership with its customers in developing bespoke solutions to meet individual requirements. The company has always maintained an ongoing programme of investment in production equipment and machinery, using in-house expertise to build purpose-designed machines where necessary to fulfil specific manufacturing applications. Capacity is therefore flexible and can cater for prototyping as well as large batches and small production runs. Fast turn-round and accurate delivery ensures that where necessary, even very short lead times can be accommodated. Quality is of the utmost importance and George Emmott is certificated to BS EN ISO 9001:2000, with all manufacturing and administrative process and procedures being carefully monitored.

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Expert advice is available from our technical team in the UK as well as our German HQ. Solutions are developed and converted locally; logs, rolls, spools & die cuts, using a variety of adhesive suppliers and sourced materials

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Moss Express will be using the FAST & IASE exhibition to launch their new 2011/2012 catalogue.

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Nedschroef Fasteners Ltd is part of the Koninklijke Nedschroef Holding B.V. group based in Helmond, Netherlands. Nedschroef, as a group, is active in 12 different countries with 22 companies employing ca 1600 staff.

These companies operate in the fastener production and distribution sectors, with specialist sites for machine and tooling manufacture.

In the European automotive industry Nedschroef is recognised as the No1 supplier of Industrial Fasteners and Cold Forged components.

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In the UK, Nedschroef Fasteners Ltd is a highly regarded Full Service Provider accredited to ISO 9001:2008.

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Nelson Stud Welding is a world wide manufacturer and supplier of stud welding equipment and weld studs. With manufacturing plants in the USA and Germany and sales offices around the world. We supply equipment and studs to the automotive, shipbuilding, construction and metal fabrication industries and provide a wide range of cold formed weld studs..

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PROFIL GmbH & CO



Unit 6, Whitwick Business Centre, Stenson Road, Coalville,
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PROFIL develops pierce nuts and studs which are fastened to metal components using a riveting process. We are a system supplier who also constructs automated feeding equipment which is customized to meet the production requirements of our customers. The economic advantages of using the PROFIL system in industrial manufacturing is documented by a multitude of applications, mainly in automotive, appliance and construction fittings industries. All major automobile manufacturers and suppliers are among our customers. Cost savings of at least 30% can be achieved over equivalent welded processes. The quality of the resulting fixing is also superior to welded fasteners. PROFIL fastener technology is suitable for sheet metal components in Aluminium through to high strength steels up to 1500Mpa.

PSM INTERNATIONAL



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PSM International is a world class manufacturer of inserts for plastics, self-clinching fasteners, anchor rivet bushes, direct screw fixings and special engineered fasteners, supplying global manufacturing sectors.

These sectors include the automotive, computers, electronics, aerospace, medical, white goods, power generation, and general manufacturing industries.

Established in 1931, PSM has grown into a global leader in fastener design, development and production, with distribution locations situated strategically around the world. PSM offers a bespoke application engineering service to designers and specifiers. This combined with their Tech Centre testing facilities ensures that the correct fasteners are selected and perform to the applications' requirements.

RICHCO INTERNATIONAL CO LTD



Richco House,
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www.richco-int.com



Richco International will be exhibiting a broad range of fasteners for industry including: Circuit Board Spacers and Standoffs, Card Guides and Pullers, Rivets, Bumpers, Latches, Feet, Clips, Clamps, Wire Routing Products, Cable/Fibre Optic Protection and Management Products, Cable Ties, Grommets, Bushings, LED Spacers, Insulators and Ferrite Cores.

Richco can also provide specialist fixings and fastenings, using our comprehensive design and manufacturing service to exactly meet customers' requirements. Our expertise has been gained working with leading companies in various markets. Having delivered cost effective solutions to the most challenging problems for 35 years, Richco can offer a part for any application.

SAVIGNY ODDIE LTD

Savigny Oddie Limited

Wallows Industrial Estate, Wallows Road, Brierley Hill,
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e: info@savigny-oddie.co.uk
www.savigny-oddie.co.uk



Savigny Oddie Ltd is a specialised fastener company based in the West Midlands, the Oddie Quarter Turn Quick Release Fastener can be used for securing panels or components that have to be speedily and easily removed for essential servicing or replacement work to be carried out. The extensive range of fasteners are available in various head configurations, finishes and materials. We can offer standard stock items or manufacture to bespoke customer requirements.

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For further details please visit our website
www.savigny-oddie.co.uk

SPECIALTY FASTENERS AND COMPONENTS LTD



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Specialty Fasteners, an ISO9001:2008 approved company, is a designer, manufacturer and distributor of quick release fasteners and hardware for the Defence, Aerospace and Industrial markets. SFC design and manufacture the AeroCatch range of panel fasteners used in motorsport applications worldwide, Push Turn Fasteners, Snap-in Captive and SEMS screws for the electronics market. SFC distributes the complete Alcoa Fastening Systems range which includes the well known brand names Camloc and Tridair. Hydraflow fuel couplings and hose assemblies for potable water, breathing oxygen and cooling fluids, Quick Release Pins, Accuride drawer slides and Camloc gas springs complete the range.

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