



## TR PRESS PACK PRESS RELEASES

**TR FASTENINGS** IS RECOGNISED THROUGHOUT  
THE INDUSTRY FOR WORLD CLASS PRODUCTS  
& SERVICES

WE MANUFACTURE, STOCK & DISTRIBUTE  
A VAST RANGE OF INDUSTRIAL  
FASTENERS & COMPONENTS

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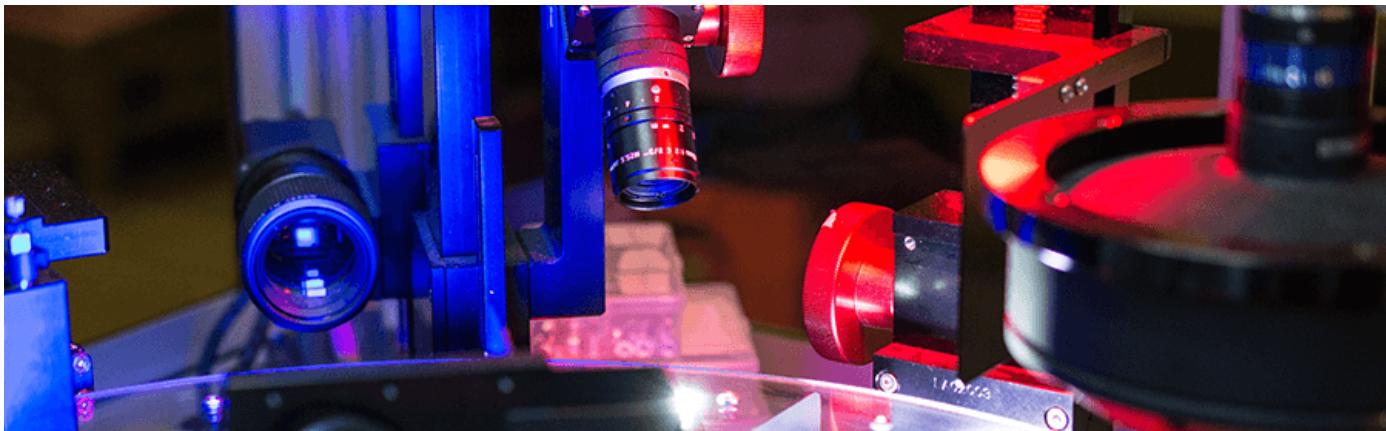


# TR Press Release

## TR Fastenings Advises Manufacturers to Prepare for RoHS 2



2013



**With the European Commission formally adopting an extension to the Restriction on Hazardous Substances (RoHS) Directive, many more electronic devices will be impacted by the strict new regulations on the use of heavy metals and dangerous chemicals.**

EU Member States now have 18 months to introduce the revised directive 'RoHS 2' into their national law. This will lead to a phase out list of banned substances over the next 8 years. Owing to the time necessary to design and manufacture new electronic devices, TR Fastenings ([www.trfastenings.com](http://www.trfastenings.com)) is advising manufacturers to prepare for RoHS 2 now.

The original RoHS regulation was introduced in 2003, setting the global electronics sector high targets for a gradual phase out of hazardous substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl (PBD).

A key revision to the legislation is the wider scope of products that it now affects. The original RoHS legislation applied to products whereby the primary function was electronic. RoHS 2 now states that products with any 'intended' electronic function need to comply, thus affecting a wide range of manufacturers outside the electronics sector.

Jenni Morland, European Business Manager at TR Fastenings said; "*The scope of RoHS 2 may take some manufacturers outside the recognised electronics sector by surprise. This sector is aware of its need to comply with RoHS 2 and has been waiting for the publication of the new revision. However, manufacturers within other market sectors may be unaware of the regulation and the design and manufacture changes that it requires. An example would be furniture manufacturers with motorised reclining chairs in their product range who will now need to comply with RoHS 2.*"

Another important change to the legislation requires all products falling under the RoHS 2 requirements to have a CE marking indicating that the product complies with the rules. To achieve this the supply chain is now required to risk-assess the process behind the product.

*"At TR Fastenings the products supplied are compliant with the original RoHS, therefore giving our customers the confidence that their products comply with the legislation. However we need to do more, and have initiated a process of actively partnering with our suppliers and customers to ensure we are able to supply products that meet the requirements of RoHS 2 in the timescales set for introduction of the legislation. The key to this is to provide our customers with a detailed risk assessment that reassures them that our products meet the standard,"* says Jenni Morland.

One of the main reasons for the introduction of RoHS 2 regulation is that recent surveys have uncovered that approximately 20% of products affected by the original regulations are still not RoHS compliant. As a result, RoHS 2 heralds a harder stance, with the EU Environment Commissioner Janez Potocnik stating that it will be unacceptable for manufacturers not to comply with the new regulation. It is therefore vital for manufacturers to prepare now and to review their products to ensure they are compliant.

# TR Press Release

## TR Fastenings Celebrates 40th Birthday



2013



Global fastenings manufacturer TR Fastenings celebrates its 40th birthday this month and reveals ambitious future growth plans.

TR Fastenings supplies around 150 million components to customers worldwide every day. It has seven global manufacturing centres in Asia and the UK and 500 assembly sites around the world.

The multi-million pound business has grown over the last 40 years both organically and through strategic acquisitions. In addition to its own-branded product ranges, TR Fastenings owns a number of prestigious world-class licences, including the Pozidriv® trademark for the UK, Pozi® in the EU and the MAThread® and Torx® licences, and now has the rights to manufacture the Philips Drive Systems.

Managing Director Geoff Budd, who joined the company in 1976, commented on the company milestone being celebrated this month: "*TR Fastenings has evolved from a small local business into a leading manufacturer and supplier with a global presence, but we are never complacent. The energetic attitude and spirit of innovation at TR ensures we will continue to maintain our high standards of customer service and enables us to explore new opportunities and technologies.*"

Growth at TR Fastenings has been particularly strong since the appointment of a new board in 2009. Profits have grown for four consecutive years and are set to double by 2016.

# TR Press Release

## TR Fastenings Celebrates 40th Birthday



2013

### Company Timeline

1973: Company founded in Uckfield, East Sussex, by Mike Timms and Mike Roberts.

1976: Manufacture of threaded sheet metal fasteners commences in Uckfield.

1980s: Rapid expansion of company, with distribution sites established across UK, along with self-locking nut factory and a factory for turned parts and cold heading of screws.

1994: TR Fastenings floats on the London Stock Exchange and is listed as Trifast PLC.

1990s: Growth and profitability grow dramatically year on year, driven by TR Fastenings' expertise in component logistics management directly on to the assembly lines of mainly multinational electronics customers. Company also invests heavily in Asia – with fastener manufacturing acquisitions in Singapore, Malaysia and Taiwan together with a distribution centre based in Shanghai, and distribution acquisitions in NW UK, S Ireland, Norway, USA and Sweden.

2000s: TR Fastenings rides the storms of the Dotcom boom and crash, acquires Serco Ryan, a large UK fastener distributor in 2005, and by late 2009 has moved back into profit as the first stage of a three-year recovery plan put together by the new Board introduced in March 2009. The growth of financial performance and strength has continued consistently since, resulting in the ability to acquire the high-quality Malaysian-based manufacturer Power Steel in late 2011. This recent addition has broadened TR's capacity in larger diameter cold-formed components that particularly meet the demands of the automotive sector, which now accounts for 30% of TR's global revenue.

2013: As TR Fastenings celebrates its 40th Anniversary in June 2013, the company continues from strength to strength, thanks to its dedicated and skilled management and staff, who now amount to 1,300 personnel working in 21 divisions across 15 countries within the three main global continents of Europe, Asia and the USA.

# TR Press Release

## Bridge Failure Sparks Concern Over Hydrogen Embrittlement



2013



**Engineers know hydrogen embrittlement is a bad thing. However, ask many to explain what it is and how to avoid it, and you may be met by silence.**

The phenomenon occurs when hydrogen atoms penetrate the crystalline molecular structure of metals and weaken the bonds.

The effect is that elongation and ductility is severely reduced. Parts that fail because of hydrogen embrittlement have almost no plastic deformation, with the fractured cross-sections looking more like a ceramic. The problem is well known by industrial fastener manufacturer, EJOT. Its sales manager for industrial products Steve Wynn, explains the problem: *"There are two causes of hydrogen embrittlement; where hydrogen from the environment assists with the failure i.e. corrosion, and where hydrogen from the manufacturing process assists with the failure."*

Hydrogen embrittlement is well known to fastener suppliers that know it can be induced during electroplating, heat treatment and also cleaning (pickling) processes during manufacture. However, overlooked and misunderstood are the effects of the environment, especially on highly stressed large bolted joints. This is the realm of designers and specifiers. Uckfield based TR Fasteners has experienced various cases in the past where large bolted joints have unexpectedly failed because of poor specification, and not manufacturing errors.

*"We are a manufacturer and supplier of components and we don't always get told where our fasteners end up,"* says Geoff Budd, managing director at TR Fastenings.

*"And that is why this is such an important topic. People think when they have this sort of failure it is caused by problems during manufacture, but actually it's often the specification that has brought on the phenomenon. That is why we want to educate customers, and get designers to fully understand it."*

# TR Press Release

## Sunseeker and TR Fastenings – A Partnership Forged on Excellence



2013



**Synonymous with the ultimate in marine luxury, Sunseeker is an iconic, global brand whose success lies in its tireless pursuit of excellence and innovation - from the overall design of the boat's hull and the high-performance of its powerful engine to the exquisite craftsmanship of the interior and the quality of its tiniest components**

One of Sunseeker's key supply partners is TR Fastenings, with which it has worked closely for many years. A leading manufacturer and supplier of industrial fasteners and fixings with extensive global resources and manufacturing operations in the UK and Asia, TR Fastenings is well-positioned to supply Sunseeker with a vast range of essential fasteners and chandlery fittings.

*"As a leader in fastener distribution for the marine industry, customers such as Sunseeker depend on us as a proven source, known for the exceptional quality and range of our products,"* explains Jerry Howe, General Manager of TR Fastenings' Marine Division which is based in Poole, Dorset.

TR Fastenings prides itself on the service and support it is able to offer too and works closely with Sunseeker to save them time and reduce their costs. *"We aim to tailor the most efficient solution for them,"* explains Howe, *"whether for boat fastener kits for gearboxes, exhausts, trim tabs and water inlets, brass buzz bars for the electrical division, chandlery fittings or small value, 'high hassle' items such as brackets, caps and hinges."*

Corrosion is a major consideration too and TR is able to supply Sunseeker with suitable non-corrosive parts, including a new MT3510 Organic Finish black screw – cosmetically superior and with the benefit of a 240-hour salt spray test for protection.

Similarly, TR's new range of strong, lightweight and non-corrosive plastic Cable Management and wiring accessories provide the ideal water-resistant solution for Sunseeker. Manufactured in high-performance and incredibly versatile Nylon 6 and Nylon 6/6, TR's extensive plastics range includes UL-approved nylon cable ties, push mounts and screw mount cable ties, knot ties and releasable cable ties. In addition, TR offers a range of self-adhesive and push mount plastic fasteners and standard injection-moulded fasteners.

*"TR's Marine Division, based in Poole, is ideally situated to service the Sunseeker sites with fasteners and other add-on products",* comments Nick Low, Procurement Manager at Sunseeker International. *"Its portfolio has grown with the business to become one of our key suppliers, and with its product knowledge and direct support of our staff at all levels, it meets our demanding production needs. We rely on TR, not only to supply our production fasteners, but also special and bespoke parts that can often make a huge difference."*

All TR's products are quality-certified, with batch traceability as standard. TR Fastenings is also able to offer further inspections, including salt spray testing, optical sorting machines, ductility testing equipment, torsional strength testers, optical comparitor, vickers hardness tester, x-ray plating thickness test equipment.

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### *A World Of Opportunity*

TR Fastenings Ltd, Headquartered in Uckfield, UK, celebrated its 40th Anniversary last month. Will Lowry visited the company to find out how it has developed from a buying and selling operation initially set up in an old convent - to a global fastenings manufacturer that supplies 150 million components to customers worldwide every day.

Established in 1973 TR Fastenings (TR) began by focusing on delivering high service levels to the customer. *"Right from the start our aim was to get the product to the customer as soon as possible. The business was about receiving an enquiry, identifying where the sources of supply might be and getting the product to the customer quickly,"* explains Malcolm Diamond MBE, Executive Chairman at TR Fastenings. *"Being able to offer a service level that wasn't available anywhere else at the time was why we had such a strong appeal. It became the foundation on which TR has been built – to provide consistent high service levels."*

Being able to get products to customers quicker than its competitors saw TR go from strength to strength in the early years.

The company started to manufacture its own range of threaded sheet metal fasteners in Uckfield, which it still does today, and also established a variety of sub-contractors within Europe who manufactured a range of products to TR's design. However, by the mid 1970s the prices for manufacturing standard products such as nuts had become inflated in Europe. TR therefore decided to source products from Asia – specifically Taiwan and Japan. *"With the help of an inspection company we started importing cold form nuts and nylon insert nuts, which at the time was quite a unique thing to do,"* mentions Geoff Budd, Managing Director at TR Fastenings.

An important development in the 1980s was a specific contract with a large electronics business.

*"We embarked on a programme that was dubbed 'partnership sourcing' in collaboration with a specialised fastener manufacturer,"* comments Geoff. *"The programme saw us work together to produce some fairly large diameter stainless steel bolts, that had to be hot forged, cleaned and electro-polished. The products had to be perfectly clean because they were being used in an application within a Class 100 clean room."*

The electronics customer wanted to develop a zero defect/nil overdue concept, which led to TR Fastenings further developing its service concept and introducing Vendor Managed Inventory (VMI).

# TR Press Release

## A World Of Opportunity



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*"We adopted VMI as a philosophy and put into place the necessary processes to make sure that we could supply the correct products as and when the customer needed them," says Geoff. "VMI enabled us to build stronger connections with the customer and was a significant step in continuing to offer even more advanced service levels to all our high volume assembly customers."*

Glenda Roberts, Group Sales Director at TR Fastenings adds: *"After introducing VMI our relationships with all our key electronics companies boomed. They had been so used to having to store large amounts of stock, but now we were offering them a service that was a lean and efficient JIT supply chain."*

The introduction of VMI saw a marked increase in growth both in sales and profits for TR Fastenings, leading to the company floating on the London Stock Exchange in 1994. *"There was fantastic growth within the electronics industry and we also decided to move into the telecommunications industry, which again saw our sales grow considerably,"* says Geoff.

In the 1990s the markets developed again, with it becoming essential for TR to be able to pursue customers globally. *"We recognised that principal companies had started to get out of manufacturing themselves and started to sub-contract the complete construction to third parties,"* comments Geoff. *"There was a huge migration of manufacturing business to Eastern Europe and Asia. This meant that if we wanted to continue supplying the customer we would have to be based near the sub-contractors."*



This resulted in a series of acquisitions over a number of years including companies in Norway, Sweden, the Netherlands, the United States, as well as companies in Singapore and Malaysia.

In total TR Fastenings now has seven global manufacturing centres in Asia and the UK, as well as providing supply logistics to over 500 multinational customer assembly sites around the world. *"One of our key strengths is being able to follow businesses globally,"* states Glenda. *"We have facilities in key developing markets around the world and our ability to produce high quality parts and safety critical high strength parts puts us in a uniquely competitive position."*

Glenda continues: *"An example of this is the emergence of the ASEAN region, which is becoming more important. The fact we have manufacturing based in the ASEAN region is giving us a vital commercial advantage, as customers can benefit from the same quality that is traditionally provided in Europe locally."*

A significant development for TR was during the recession of 2008/9 when it decided to re-shape the business with a greater emphasis put on sales to the automotive industry. *"Focusing on the automotive industry was the right decision because it spearheaded our recovery out of recession,"* states Glenda Roberts. *"We were in the right place at the right time, with the right attitude, and we had to put a lot of training and new processes in, because servicing electronics is mainly about responding efficiently to rapid product life cycle changes, but servicing automotive is far more demanding in terms of customised designs, applications and testing, often with safety critical implications."*

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Through the acquisition of Malaysian based Power Steel and Electro-Plating Works Sdn Bhd 18 months ago, TR is now in a position to have a holistic approach to the automotive industry. TR can supply every type of fastener needed for a car. *"Recently we have been particularly focusing on the interior of cars and the fasteners and C-Parts needed,"* says Geoff. *"Another interesting development is the increase in demand for weight reduction. This has led to us receiving a lot of interest in our wide range of plastic fasteners, and just recently we have acquired the manufacturing licence for Moretorq drive recesses in screws and bolts that effectively reduces the component weight by 25%"*

TR is always looking to see how and where it can develop the services and products that it is able to offer its customers either through product development or through targeted acquisitions.

This is underlined by TR's recent agreement with Phillips Screw Company to manufacture the complete range of Phillips drive systems. This new agreement is in addition to the number of other licences owned by TR Fastenings such as Pozidriv® for the UK, Pozi® in the EU and the MAThread® and TORX® licences.

*"We are always working on what new products we can introduce to help further expand our range, as well as being prepared for any strategic acquisitions that enable us to take advantage of certain geographies or get us into different industries,"* explains Malcolm Diamond. *"When we make acquisitions we do, where possible, like the management to stay on at the business. This means there is continuity and enables us to work with them on focusing on the right product lines and support services for that company."*

This commitment to working together is something that runs through the core of TR Fastenings.

*"We encourage both individual personal and team development within TR, we have an on-going senior manager programme where every site manager is brought together and they go through all aspects of the business. The benefit of this is that it is a method of achieving standardisation and encouraging open communication and networking internally, both in the UK and globally,"* says Geoff.

*"Having a global customer base and global sales teams means that it is essential to discuss best practice, sourcing information, and targeting markets,"* continues Glenda. *"As a business we focus on getting the priorities right and delivering a high service to the customer. We brand ourselves as the clear alternative because a lot of other companies are wrapped up in their brand, and brands attract a premium price. We give customers a high quality product at an attractive commercial price."*

In the last 40 years TR Fastenings has developed into a global tier one supplier to a host of industries including the demanding electronics and automotive sectors. Over 1,000 employees work across its manufacturing and distribution sites situated around the globe, with the company also offering Vendor Managed Inventory, in-house engineering support and full design, a vast range of fastening and C-part products, as well as application service and support for customers.

So what's next for TR Fastenings?

*"It really is a case of more of the same,"* states Malcolm Diamond. *"We are looking for further organic growth, to develop our VMI and product range, as well as to constantly pursue strategic acquisitions that fit our very selective profile. Our strapline is a 'World of Opportunity', and at TR that is definitely the case."*

# TR Press Release

## TR Group majors on the design



2013



Celebrating its 40th anniversary this year, TR Fastenings is one of the world's leading manufacturers and distributors of mechanical fasteners. It supplies over 150 million components every day, majoring on the design, manufacture and distribution of mechanical fasteners on a global basis to OEMs, their subcontractors and other fastener distributors.

This competitive combination has fuelled sales and geographic expansion over the past two decades and today the TR Group has over 5,000 customers and has attained 'Preferred Vendor' status with over 30 global customers; offering a cradle to grave solution, from design through to VMI logistics service and aftercare.

### Product design

The electronics sector has been the key growth area of TR's business for many years. This sector encompasses a wide range of manufacturing industries and is often best described as 'a product that ends up being connected by a plug into a power supply'; from a PCB assembly, enclosures for telecoms and servers, fire and smoke alarms, screws for disk drives through to ATM machines. To support this diverse product TR has developed new designs and thread forms and acquired licences for products that are used in new materials or give more efficient drive torque and speed of assembly.

The TR Group has 14 hub sites globally supported by smaller satellite locations. Seven of these are manufacturing, of which six are in Asia. Having manufacturing within the group is a distinctive advantage, as the inherent knowledge of materials, capability, processes including heat treatment, different finishes and electronic sorting to ensure final quality, is available to our teams. This also assists with quick turnaround of enquiries, product trials and testing. TR has also increased the numbers of application engineers who rely heavily on this support to provide for the growing needs of our customers. This is not just on new design but also for VA/VE initiatives.

Recent licences from the Phillips Screw Company and Acument have added to the growing portfolio of products and solutions on offer. The Mortorq® Super Spiral Drive recess from Phillips is the most recent of the licences acquired, and is a unique drive solution which reduces the head height without any loss of torque and takes the weight out of the product – a critical factor for many companies.

# TR Press Release

## TR Group majors on the design



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During the last 12 months TR has expanded the range of plastics and cable management product, branded as 'a clear alternative', that compliments the other products we supply to the end user. The core range is extensive and we have increased this by proving our value when requested to assist in the design and manufacture of specials. We have the ability to tool up and supply samples in 5 weeks, which is significantly better than the competition.

A comprehensive matrix of this product range is on the TR website making it easier for designers to access this and their fastener needs from one source. We provide samples so that the integrity of the product can be verified or for use in trial builds.

Within the UK we are seeing a growing number of new start-up electronics companies emerging following the demise of businesses that have transferred to low cost countries. Skilled engineers and new entrepreneurs are finding there are still opportunities within the UK and Europe to open niche businesses. We are keen to support these and have business models to cope with both small and large companies offering the same level of service to both.



The TR self-clinch range of fastenings is widely used in enclosures and telecoms cabinets, and this includes panel fasteners, product for PCBs, clips, rivets, screws and plastic components. The Antennae telecoms product is another niche area for which TR has perfected the supply of product. This varies from fixing kits to the complex tuning screws used in microwave filters, and designs for special screw thread forms into magnesium castings. Micro screws, miniature parts and screws for specialist plastic applications are also showcased on our website.

### Global supply chain

It is not just about great product design; the logistics of serving the multi-nationals is vital too and the TR global footprint is key. Originally products for the electronics industry were designed in America and Europe. But with the shift to lower cost countries, such as China, and the ASEAN Region we are seeing the emergence of ODMs and design centres in these locations. Finding a good manufacturer in Taiwan or China is one thing but getting the same product to the production line in Mexico, Hungary, USA and Thailand needs additional skills from a company that manage the logistics and give a lean supply chain. TR can therefore provide a holistic supply capability that is particularly attractive to the corporate teams of the multinationals. We are expanding the manufacturing sites increasing capacity and opening new locations in Thailand and Pune in India in response to the growing needs of our clients.

### Working together on fire safety products

Celebrating 50 years of manufacturing excellence in Ireland, E.I. Electronics is an acknowledged market leader in residential fire safety products. One of Ireland's largest indigenous electronic companies, E.I. Electronics employs over 400 people and produces over 5 million smoke alarms and 600,000 carbon monoxide detectors a year, which are sold throughout Ireland, Europe and Australia.

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## TR Group majors on the design



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### Long-term partnership with TR Southern Fasteners

E.I. Electronics has achieved continuous growth through the development of a stream of innovative new products manufactured on state of the art process technology, delivered to the highest customer service standard. One of its key supply partners is TR Southern Fasteners, with which it has worked closely for many years. TR Southern Fasteners, which is based in Mallow, is wellpositioned to supply E.I. Electronics with a vast range of essential components for smoke alarms and carbon monoxide detectors.

TR Southern Fastener's extensive product knowledge enables it to work closely with E.I. Electronics at every stage, from product design to the production line, and it is on hand to provide support 24 hours a day, seven days a week. Furthermore, TR is one of Europe's largest providers of Vendor Managed Inventory (VMI) solutions, so, it has been able to design and implement a specific supply system for E.I. that saves the company time and money.



*"The combination of continuity of supply and high quality of service that we provide E.I. Electronics gives us the competitive edge,"* explains Dara Horgan, general manager at TR Southern Fasteners.

Gerry Murphy, purchasing manager at E.I. Electronics, adds: *"E.I. Electronics and TR Southern Fasteners enjoy a mutually beneficial partnership. It has been a long standing relationship where we have received a high level of service as we expanded over the past 20 years, and we look forward to their support in the future."*

### Global reach, local presence

As part of the TR Fastenings group, TR Southern Fasteners is supported by extensive global resources and manufacturing operations in the UK and Asia. This combination allows TR's Irish locations to supply a vast range of fasteners and associated components to small, medium and large Irish manufacturers and engineering subcontractors while meeting each individual company's needs. Customers come from many different industries, electronics, automotive, IT, home appliances, security, medical, agricultural farm machinery and general industry.

Core products sold by the company include general fasteners (for instance, nuts, bolts, screws, washers) in steel, stainless steel and brass; and TR branded products including: self-clinch fasteners, screws and inserts for plastic, security fasteners and thread-locking nuts. Finally the company also prides itself in manufacturing stud bolts to order on-site in its Mallow facility.

# TR Press Release

## Sticky Fingers at TR Fastenings!



2013



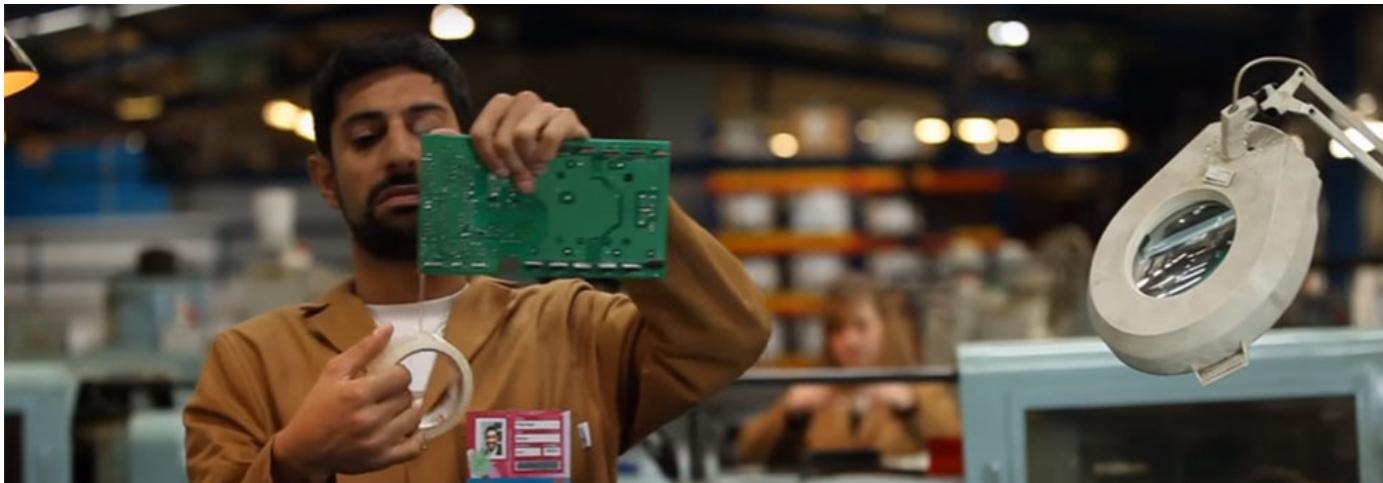
### Innovative Team-Building Ideas Prove Recipes for Success

Paul Hollywood and Mary Berry beware! Employees at TR Fastenings, a global manufacturer and distributor of industrial fasteners and fixings, are proving they are as adept at baking as they are at business, with the success of two new initiatives.

Quality specialist Maddy Webb is currently rolling out a mouth-watering PPAP (Production Part Approval Process) awareness training scheme across TR's UK sites based on an entirely fictional 'Sticky Fingers' Cake Company to help sales staff relate the concepts of PPAP to a simple assembly process.

Meanwhile TR's North East Division in Newton Aycliffe in County Durham is running a Bake Off competition in the lead-up to Christmas, with over 20 members of staff keenly contesting for the title of Master Baker! *"The Bake Off has been great fun and proved extremely popular with all our staff,"* comments Phil Hall, Operations Manager at TR Fastenings' North East Division. *"Although it has been light-hearted, the standard of the baking and the fierce competition to win reflects the drive and commitment of our hard-working teams."*

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2013 has been a landmark year for TR Fastenings as it celebrated 40 years at the forefront of the fastenings distribution and manufacturing business. From small beginnings, TR Fastenings has now grown into a £100 million business, with global distribution, manufacturing and sales networks.

TR's products are used by electrical engineers every day and advances in product technology and design means that TR is constantly adapting and expanding its range in response to customer demand.

### Sheet Metal Fasteners

TR Fastenings has positioned itself as a market leader in this sector with its own-brand range of sheet metal fasteners, which come in a range of shapes and sizes and in many materials, including the Hank Rivet Bush, Hank Self-Clinch, Weld Nuts, Blind Rivets, Blind Rivet Nuts, Cage Nuts, Weld Studs and Swage Nuts. TR Fastenings also supplies the K-Series nut, which offers a permanent female thread that can be installed without the need for specialist tooling. Once fixed, the product offers a permanent thread with a high prevailing torque.

K-Series nuts are manufactured in a case hardened carbon steel, plated and tested to ISO898, though stainless steel can be supplied to order. Sizes range from M2.5-M16, with three different spigot lengths; the body of the product is hexagon with a serrated spigot.

TR's range of Hank Rivet Bush, Hank Self-Clinch, Blind Rivets, Euro Rivet Bushes, Swage Nuts, Weld Nuts and K-Series products all offer threads in a variety of materials where the sheet is too thin to be tapped by conventional methods.

### Tuning Screws

Reflecting the diverse range of fasteners and fixings solutions offered by TR Fastenings, we also pride ourselves for our success in manufacturing and supplying tuning screws to major global telecommunication companies and their sub-contact base. Tuning screws are used in microwave filters and power amplifiers and are part of base station and antenna systems predominately for the mobile telecommunications network. As networks expand and data rates increase these units play a very important role.

The tuning screws are generally brass with a silver plated finish and have a fine pitch thread plus a matching brass locking nut. Stainless steel is also used in certain applications. Sizes vary in both diameter, thread size, thread pitch and length depending on the application and space constraints.

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Different drive types such as Slot or TORX™ are most common and the “nose” design of the tuning screw is also a very important feature for ensuring precise tuning capability and stable signal/power performance. New developments for faster and easier tuning functionality have led to self-locking possibilities being implemented in certain applications.

### Products for Plastics

Further investment in product development for the thermoset and thermoplastic industries has enabled TR Fastenings to expand its screws for plastics range with the introduction of the new Plas-Fix 45 screw. This product has a 45-degree angle and Tri-lobular thread form, which makes it ideal for harder plastics, offering superior screw performance with low torque drive and high pull out strengths.

TR Fastenings’ range of products for plastics also includes a comprehensive selection of brass inserts. Consisting of sixteen different types, both headed and un-headed, these brass inserts are available in sizes ranging from M2 up to M10. The variety of styles offers a number of installation methods with varying performance levels, allowing users to easily find the product to suit their individual application.

TR’s products for plastics meet virtually all assembly requirements within the thermoset and thermoplastic industries and can offer considerable time and cost-saving benefits. Additionally, they are designed for optimum performance and therefore can be used in a number of different industries, including electrical, telecommunications, sound and vision.

### Plastic Fasteners Range

One of the most exciting developments at TR Fastenings has been the launch of a new plastic fasteners and fixings range for Printed Circuit Board (PCB) hardware and Cable Management requirements. Plastic fasteners and fixings are set to be a core part of TR’s expansive product portfolio, with a comprehensive range available, on demand and competitively priced.

Manufactured in high-performance and incredibly versatile Nylon 6 and Nylon 6/6, TR Fastenings’ new PCB range includes circuit board hardware, rivets, screws, Cable Management and Wiring Accessories. Combining functionality and reliability without compromising on quality, these plastic fasteners feature extensive benefits which can assist in efficiency and productivity of production **processes**.

Not only can one plastic fastener be used for a variety of purposes, but they also have other qualities, including ease of use, being formed from a lightweight material, strength at low and high temperature, resistance to impact, abrasion, organic solvents and gasoline, retention of shape and stiffness at high temperature. Furthermore, TR’s plastic range meets with the necessary industry standards and sizes, all products satisfy the RoHS compliance (Restriction of Hazardous Substances) legislation, are ISO 14001/2004 compliant and available in flame-retardant versions.

The new moulded Nylon range for PCBs addresses a multitude of application needs, but the range is especially beneficial in the electronics and telecoms industry, such as ATM machines, PCs, laptops and mobile phones, as well as in lighting. In such applications, with their closely grouped electrical components, plastic fasteners offer the ideal solution as they are a non-conductive material. Furthermore, TR is introducing an extensive range of Cable Ties, Cable Management products and Wiring Accessories, for effective Cable Management.



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