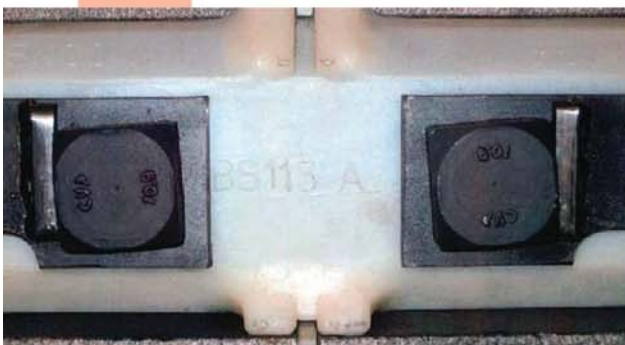


A tale of Swiss precision

The earliest record of Swiss company Tenconi is in 1871 when Mr Ambrogio Tenconi started work as a blacksmith in the village of Airolo, in the south of the country. This coincided with the excavation of the railway tunnel under the Gotthard Pass for which he hoped to provide many of the steel components and tools. He secured the job and, by 1943, the company had grown considerably and was formally known as Fratelli Tenconi.



During the late seventies and eighties, another Swiss engineer, Mr Martin Benkler, had developed a type of insulated rail joint which was being successfully sold around the world - a close tolerance dry insulated joint. By the early nineties, Mr Benkler decided to concentrate on the track maintenance company he had founded and sold all the rights, patents, machinery and know-how for the insulated joint to Tenconi SA.

In the 21st century, transport needs have evolved. With the world's longest rail tunnel now being constructed under the Gotthard Pass for which Tenconi is again supplying metal components, the company's core business has undergone a major evolution in terms of the number of applications.

The basic four-hole dry insulated rail joint is currently available to suit 50 or more different rail sections for the world's railways. For any operator who has not yet benefitted from Tenconi's strength and quality, new joints can be designed, moulds produced and components manufactured within five weeks.

TENCONI SA was certified in 1995 to quality standard ISO 9002 and to ISO 9001 in 2001. It is also Link-Up approved in the UK.

Joints alongside check rails

Wherever we have a joint, as most permanent way engineers know, our colleagues in signalling will want to make it insulated. However, they are not always between two identical rail sections. This is why Tenconi has produced moulds to allow both

compromise and step joints to be formed as well as being insulated to the same high quality and strength as a standard joint.

Insulated joints required at locations with check rails - or at the same place as a joint in a check rail - have always suffered from a lack of space. Historically the choice has been between making a joint with through bolts - where the challenge was always to get all the bolt hole centres to line up - or to manufacture joints with staggered holes so that the bolt heads could be kept out of contact with each other. These joints have, for simplicity, used standard components including flat fishplates which gain some space but introduce the need to hold the nuts with a spanner whilst tightening takes place. This adds to installation and maintenance timescales.

Tenconi has applied some lateral thinking to this problem and has recently introduced its 'check and runner' system - a product that has secured Network Rail product acceptance. Since the check rail receives no vertical forces and minimal lateral forces are seen at a joint, the insulated fishplates need only be designed for these loads. The inner check rail fishplate can effectively be reduced to a small piece of insulating material as the outer fishplate is quite capable of carrying the lateral loads. Adding to this, the use of captive nuts on the load-spreading washer plates makes a joint that can be assembled quickly and single-handedly.

In the UK, the check and runner system can be used with any combination of flat-bottomed or bullhead running rail and FB or BH check rail, with standard 41mm or wider flangeways.

Bespoke product development

During 2008, Tenconi recognised a need for experienced technical support in the UK to assist engineers with product applications and, at this time, formed a relationship with Direct Track Solutions Limited. This provides a local point of contact for engineers and increased confidence in the product range.

Tenconi does not just manufacture products to sell but also commits to full technical support for customers with concerns. If the customers of Direct Track Solutions have

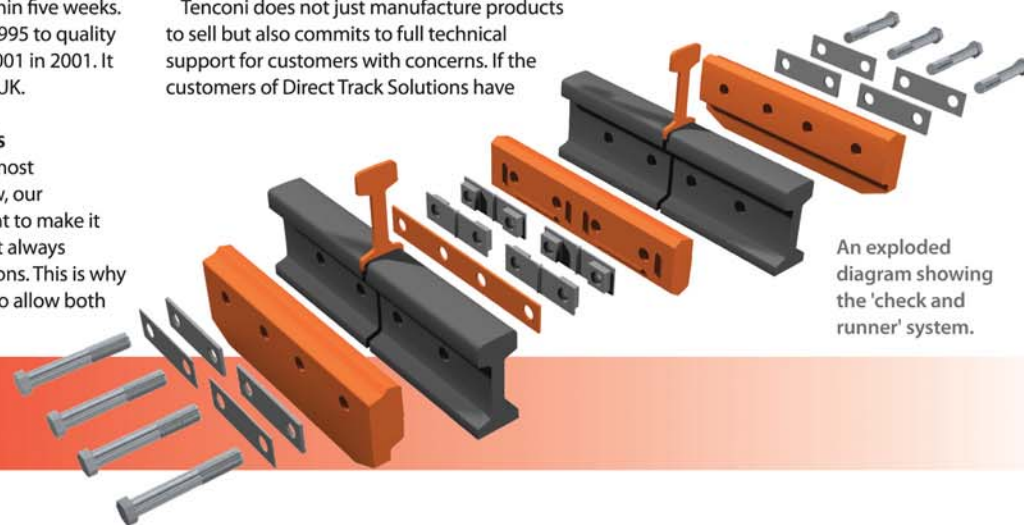


Tenconi's 'check and runner' system.

issues and it is thought that Tenconi's knowledge and expertise could offer a solution then DTS will facilitate this and contribute to the process.

One example of a development carried out by Tenconi at the request of an existing customer is the Labyrinth Joint. In this case the customer, London Underground, was experiencing difficulties that involved metal debris, along with grease and dirt, bridging across conventional IBJs and shorting the track circuit.

The product acceptance process has been initiated and a trial site identified on Network Rail infrastructure in an attempt to resolve an almost identical problem. In this case, copper debris falling from the OLE is contributing to the bridging of IBJs on tight curves and where an element of conventional rail lubrication is present. By altering the end post profile and



An exploded diagram showing the 'check and runner' system.

adding additional insulation to the shoulders of the fishplates, Tenconi has created a joint with a labyrinthine path that is very difficult for debris to cross and short the track circuit.

This potential problem solver was identified during a recent visit by Tenconi Sales Engineer Fabrizio Luchini as part of his continuing UK tour of infrastructure owners, consulting engineers and S&C manufacturers, organised and facilitated by DTS.

Hardomid insulation

The unique insulating material is a so-called Hardomid PA12G. This is produced in liquid form and cast into shape rather than being injected into moulds. As a consequence, the moulds are cost-effective to produce and can be designed to encapsulate partly or wholly a previously forged or cast steel component.

The flexibility of the material and process was used to great effect on a recent HADB project where a hollow steel sleeper needed to have baseplates with different rail fixings - Pandrol Fast Clip and Pandrol E-Clip - to be located and secured at track gauges of 1432mm and 1435mm. In addition, all the assemblies had to be insulated from the steel sleeper.

The cast Hardomid was used to generate a standard footprint to fit on the sleeper and take up the differences in rail fixings. As a result, any steel sleeper can be fitted with either type of rail fastening for either track gauge - this delivered great flexibility for a project where the specific site locations were a little unclear and subject to renewal and maintenance activity between tender specification and final site installation.

Problem solving

Although today Tenconi is probably best known around the world as a manufacturer of insulated fishplates, it is still very much involved in the business for which it was established back in the 1870s - the manufacture of metal products.

The company is the largest supplier of steel power transmission pylons in Switzerland as well as making drop-forged rail anchors for use throughout Europe and forged tamping tines for MATISA Switzerland. Its first hollow steel sleepers were made for the Swiss Federal Railway and a design based on that product has been granted Network Rail product approval. This has developed into the Mk11 which has a fully-removable top surface. As a result, wiring can be passed through the sleeper without first being disconnected.

It was during a visit made by a number of London Underground engineers to Airolo to view Tenconi's facilities that tubs full of hot rail anchors were seen, straight from the forge. They asked, "Can you make some of those for bullhead - ours keep breaking?" The answer, quite simply, is 'yes'. The design skills and machinery, the ability to design and make dies and tooling are all there waiting - sometimes it just needs an acceptance that a problem exists and assistance is required to solve it.

The provision of samples, independent testing of products, the creation and monitoring of trial installations present no problems to the complementary skills of Tenconi and DTS. ■

✉ david@directtracksolutions.co.uk



Before...

...and after the installation of a Tenconi hollow sleeper.

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Available for all UK and European rail profiles in 4 and 6 hole configurations. Joints available in kit form for site assembly or pre-assembled with MGL pins.

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