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MAGAZINE

The latest news & reviews from the industry

Railway interiors EXPO 2015

Elmia NORDIC RAIL

MEETING-PLACE | CONFERENCE | RAILWAY FAIR

EDITION FOUR 2015

Welcome to railway-news magazine Edition Four.

Railway-News Magazine has now built up quite a following and its only getting bigger and better. This edition focuses on some of our suppliers who are appearing at Elmia Nordic Rail and Railway Interiors and some who just have some great technology and services that they wish to share with you.

We hope you like this edition as much as the last and if you have any questions about any of the products or services promoted within then please do not hesitate to contact our suppliers directly or if it helps contact us and we will happily help make the contact for you.

Enjoy the shows and we will be back again in January.

Andrew Lush

Director

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Contents

Elmia Nordic Rail – creating future opportunities

ON 6-8 OCTOBER 2015 IT IS TIME ONCE AGAIN FOR ELMIA NORDIC RAIL – THE MOST IMPORTANT RAILWAY FAIR IN THE NORDIC REGION.

It brings together decision-makers, experts and industry players to set the agenda for the infrastructure of the future. "Here you can meet 'everyone' in the railway industry in one place," says Jörgen Nyström, Business Manager for Elmia Nordic Rail, as well as Elmia Future Transport and Elmia Nordic Road.

Infrastructure investments in the Nordic region are increasing – both in number and size. Over two years, the Förbifart Stockholm bypass alone will see more than 20 billion Swedish kronor being spent on contracts. Altogether the project encompasses some 50 contracts worth between 300 million and 3 billion kronor. This makes Förbifart Stockholm a historically large infrastructure project in Sweden, and one of the biggest in Europe at the present time.

However, Förbifart Stockholm is far from the only infrastructure project in the Nordic region. Norway is facing massive road investments, while its railway sector needs restructuring. Denmark has the Fehmarn Belt Fixed Link, and in Sweden construction of some stretches of the future high-speed line is under way. So clearly the Nordic countries are facing historically large infrastructure investments, and there is almost a trillion Swedish kronor in the national transport plans relating to investments in railways, roads, bridges, intermodal terminals, technology and maintenance.

Never before has a Nordic railway fair been so important as it is now. Every day we hear reports of how unfit for purpose the Swedish railways are, while more and more passengers are choosing public transport and the need for sustainable transport is rising.

"This is a delicate dilemma, and I'm not claiming that we'll solve it during Elmia Future Transport, Elmia Nordic Rail and Elmia Nordic Road – but a quick look at the conference programme does suggest we will make some progress," says Nyström.

Elmia Nordic Rail, Elmia Future Transport and Elmia Nordic Road are held every other year and welcome around 5,000 visitors from across Northern Europe. "These really are three intensive days where the visitor has a unique opportunity to see what's on the market, meet and talk about solutions with suppliers, while also replenishing their knowledge at one of our seminars," says Nyström.

Elmia Nordic Rail not only shows the latest products and innovations. The fair also hosts several conferences where experts, industry players and politicians discuss the most important issues in the field of infrastructure.

On each day there is a key seminar focusing on a topical issue. The seminar on 6 October is entitled Tramways in the Nordic Countries and looks at the opportunities in this segment in Norway, Sweden, Denmark and Finland.
This is a highly topical subject for Sweden. "We lag behind the other Nordic nations, partly because the framework for financing is so unclear. For us it's always about special negotiations for regions and municipalities, and every project is a unique result of lobbying, negotiations and discussions. There's simply no direct route to take," says PG Andersson, Vice President at Trivector Traffic, a consulting firm in sustainable transportation.

Historically, Sweden has been a forerunner in tramways as a public transport network in the main cities, certainly in the early 20th century at least. However increased road traffic, the changeover to driving on the right, old carriages and modernisation were obstacles that gradually put an end to tramways in many cities. Now only Norrköping and the Stockholm and Gothenburg regions have tramways.

However, the many benefits of tramways make them a new winner for the future. Comfort, capacity and a smart use of city space are some of them, while others include reliable operation and opportunities for new combinations with other rail-bound modes of transport. Discussions are under way in at least seven Swedish cities to extend or build new tramway networks, and some of these discussions have been ongoing for several years.

The Tramways in the Nordic Countries seminar will discuss future strategies with a panel of representatives from Norway, Denmark and Finland, and Trivector Traffic of Sweden. Since Sweden's Nordic neighbours have taken the lead in the region when it comes to tramways, PG Andersson says there is a lot to talk about, but also a lot to learn.

"You might easily wonder why we in Sweden have been talking about trams for 10-15 years, while Denmark has four funded tram projects opening in the next ten years. A lot of it is of course because financing and subsidies are regarded and dealt with differently in other countries," says Andersson.

Another hot topic on the conference programme for the three transport fairs – Elmia Future Transport, Elmia Nordic Rail and Elmia Nordic Road – is the question of the European Commission's Fourth Railway Package, which primarily contains proposals for the deregulation and opening of the European railway market. "Our seminars demonstrate the breadth and innovative power in Nordic infrastructure. On the Tuesday we will focus on tramways in the Nordic region, and the day after industry will be discussing the future of Nordic transport," says Jörgen Nyström, adding:
"We have never had as many seminars in English as we have this year. There is great international interest in our seminars. Logistics solutions and transport systems are also being given a more prominent place on the political agenda, which means there is a tremendous amount to discuss – especially between the Nordic and Baltic nations, where co-operations and experiences are laying a new foundation for business and development," he explains.
There is also Elmia Nordic Rail Matchmaking, where this year the Swedish Transport Administration is specifically looking for suppliers and partners abroad.

"The entire Nordic railway industry comes together at the fair, and our Matchmaking scheme is a great way of going into even more detail about possible business in the future," says Nyström.

Infrastructure investments in the Nordic region relate to new construction as well as maintenance. In Sweden the government recommends earmarking 620 million Swedish kronor in 2015 for

railway maintenance. For the period 2016-2018 the figure is 1.24 billion kronor annually. An increasing need for transportation is making these investments necessary. The Fehmarn Belt Tunnel in Denmark and the Förbifart Stockholm bypass in Sweden are two gigantic projects designed to help meet these needs.

"It is therefore no exaggeration to say that there's a lot happening in infrastructure in the Nordic region. This is also something that we at Elmia Future Transport, Elmia Nordic Rail and Elmia Nordic Road are clearly noticing when we talk to exhibitors, visitors and the many speakers who feature in the conference programme. If you want to meet the right people, Elmia in Jönköping is the place to do it," says Nyström.

Denmark alone has invested 150 billion Danish kroner in infrastructure and transport in recent years. The main project is the Fehmarn Belt Fixed Link, which will reduce distances between city regions in Sweden, Denmark and Germany.
"It is a project of strategic importance to all European countries. The Fehmarn Belt will secure the future for the central transport corridor between Scandinavia and Europe, partly by reducing time considerably for businesses and citizens alike."

"Elmia is a unique meeting-place for decision-makers. I look forward to bringing my Danish and European experience in transport and infrastructure policy to the table," says Michael Svane, Director of Transport at the Confederation of Danish Industry, and now also on the Programme Council for Elmia Nordic Rail, Elmia Nordic Road and Elmia Future Transport.

Norwegian trade and industry is now also represented on the Elmia Nordic Rail Programme Council, in the shape of Are Kjensli, Director of NHO Logistics and Transport. Norway is facing some historically large infrastructure investments, including a major restructuring of the national railway organisation.

"This is fully in line with our wishes for a reorganisation of the railway sector, and a move away from outdated old approaches that are not compatible with the future. We will also open the door to competition both in passenger transport and at the terminals, all in the best interests of customers," says Kjensli. Moreover, the Norwegian government is planning an investment of 130 billion Norwegian kroner to upgrade parts of the road network.

"This is good, although not enough in the longer term since the Norwegian Public Roads Administration is also responsible for other construction projects. Altogether NHO is calling for an investment of 530 billion kroner for roads and 250 billion for railways, a total of 780 billion kroner, for the next plan period," Kjensli explains. The southern corridor from Oslo to the Fehmarn Belt via Gothenburg, Malmö and Copenhagen is crucial to communications between the Nordic countries.

"At present it takes 6.5 hours to drive a freight train from Oslo to Gothenburg, but just 3.5 hours to drive a truck. There is great potential for rail transport on this route, because 2,500 trucks cross the Svinesund sound between Norway and Sweden every day," says Kjensli.

So what does increased investment in infrastructure mean to Nordic trade and industry?

"It's of the utmost importance to the

competitiveness of Nordic industry, and of our three countries as trading nations. As mentioned before the most important transport corridors must be linked together within the EU and Europe. Examples are the Gothenburg-Oslo route and the Fehmarn Belt Fixed Link."

Elmia Nordic Road and Elmia Future Transport are held alongside the Elmia Nordic Rail fair. Elmia Nordic Road replaces and builds on the old Vägmärkesdagarna road event, which was organised by the Swedish Transport Administration. Elmia Nordic Road encompasses services and products in areas such as road infrastructure, social and urban planning, safety, road tolls and charging systems, road technology, research and development, as well as operation, maintenance and servicing. The fair focuses on business and knowledge for companies involved in maintaining old and building new roads.
"There has never been a fair in the Nordic region focusing exclusively on new construction and maintenance of the road network – until now. So altogether, our three fairs cover the most important aspects of Nordic infrastructure," Jörgen Nyström explains.

Elmia Future Transport is the overriding fair during the three days, and an important forum for discussing challenges and opportunities for the entire transport and logistics chain. The focus is not only on railways, but also road, air and water transport.

Elmia Future Transport is the natural meeting-place for anyone interested in future transport solutions and their infrastructure.

"Elmia is where you can meet the industry, make valuable contacts and lay the foundation for new business. The fairs are of crucial importance to future infrastructure," Jörgen Nyström concludes.

About: Elmia Future Transport, Elmia Nordic Rail & Elmia Nordic Road.
Date: 6-8 October 2015
Venue: Elmia, Jönköping, Sweden.

Elmia Future Transport 2013

No. of visitors: 4,105 (3,795 in 2011).
No. of exhibitors: 293.
Countries represented: 21.
No. of seminars: 100.
No. of seminar seats: 2,935.
No. of participants: 5,868.

Elmia Nordic Rail 2013

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Elmia Nordic Road

The meeting-place covers products and services within:

- Road infrastructure
- Research and development
- Social and urban planning
- Land and construction
- Safety, security and monitoring
- Operation, maintenance and service
- Parking
- Info/direction/road signs and sign technology
- Ticketing systems, road tolls and charging systems
- ITS
- Road technology
- Sub-systems and components
- Lobbying
- Training, further education and recruitment

The meeting-place is targeted at:

- Politicians at national, regional and municipal level
- Authority representatives
- Officials at national, regional and municipal level
- Employees of regional and municipal development companies
- Road owners, individual roads and road associations
- Researchers

New transport routes to the future

6-8 October are the dates for the transport industry's most important meeting-place – Elmia Future Transport, Elmia Nordic Rail and the new fair Elmia Nordic Road. Three intensive days at Elmia in Jönköping, Sweden, featuring all the latest issues about the various modes of transport in the Nordic and Baltic countries.

Elmia Nordic Rail is the biggest railway fair in the Nordic region, the natural meeting-place for everyone who works with railway-related issues. Everyone in the Nordic railway industry is here – track managers, rolling stock manufacturers, service operators, component manufacturers, consultants and forwarding agents. Elmia Future Transport is the leading transport and logistics fair in Sweden, an important forum for discussing the transport systems of the future throughout Northern Europe. The new fair in the transport family, Elmia Nordic Road, is a trade show for roads and road maintenance.

Topical issues

The meeting-place comprises three fairs and a shared conference. The conference has now been finalised, where experts, industry representatives and politicians will discuss the most topical issues in the field of infrastructure. There are also key seminars every day, "Tramways in the Nordic countries", a seminar linked to Elmia Nordic Rail, will be held on Tuesday 6 October and will focus on the development of the tramways in Norway, Sweden, Denmark and Finland.

Matchmaking event – a unique opportunity

The Matchmaking forum has been a success since it was first introduced in 2013, and this year it is being expanded further. This is where new infrastructure projects meet suppliers, bidders and business partners to see if they match. This year, for instance, the Swedish Transport Administration is presenting four projects for which they have specifically said they want to find suppliers and business partners outside of Sweden.

"When it comes to infrastructure investments, there are many projects worth hundreds of millions, and even billions, of euro. Our Matchmaking forum gives potential suppliers a 20-minute one-to-one meeting with a prospective client – so a brief meeting could be the gateway to business and partnerships for you and your company in one of the world's most developmental future industries", says Jörgen Nyström, project manager for Elmia Future Transport, Elmia Nordic Rail and Elmia Nordic Road.

TRAMWAYS IN THE NORDIC COUNTRIES

What is happening in Denmark, Norway and Finland with tramways? The Nordic representatives will talk about similarities and differences in planning and implementation.

Come and listen to the key seminar
October 6 at 1 pm!

SEE THE CONFERENCE PROGRAM ON OUR WEBSITE

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ELMIA NORDIC RAIL & ELMIA NORDIC ROAD
JÖNKÖPING, 6–8 OKTOBER 2015

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TE Connectivity

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In the world of rail, te connectivity delivers the broadest portfolio and systems expertise required to connect power and data safely and reliably, from the high-voltage supply and on throughout the entire train.

In this white paper, Lee Smith, Materials Engineer, explains how TE Connectivity's ZHD identification marker meets the demands of rail applications, where low toxicity and diesel resistance are paramount.

Cable identification markers perform a vital role throughout the life of rolling stock. As covered in the companion white paper 'A single cable identification that delivers low fire hazard performance and diesel resistance', their only role is to remain in place and legible throughout their life – a phrase that is deceptively simple.

The operational life of a locomotive or car lasts 20 years or more. With constant pressure to ensure high reliability and availability of assets during their lifetime, rolling stock will undergo many maintenance inspections, proactive and reactive maintenance, refurbishments and refits of key instrumentation and key equipment.

It is during these inspections that the operator's up-front investment in cable identification will pay dividends. With cable identifications markers in place and legible, maintenance engineers will be able to find any wire or cable with a minimum of delay, meaning that maintenance work will be carried out quickly and efficiently.

Reducing inspection time by just a few seconds per cable adds up to significant timesavings during maintenance and inspection, enabling cost savings as well as the prompt return of rolling stock to service.

While the identification markers have the role of remaining in place and legible, they must also meet stringent safety standards, particularly on passenger services. A drive in the industry is to continually improve the use of materials.

All products and materials used must both meet safety standards and minimise the risk to passengers in the event of fire. Many years ago fire retardancy was the focus and products contained halogens to prevent the formation of fire. However, these products increased the level of risk during fire situations because halogens form toxic fumes during fires. Today's Low Fire Hazard (LFH) products have been developed to exhibit low smoke and low toxicity behaviour in the case of fire.

Today's safety standards and codes of practice are more stringent than ever in terms of material selection, and are directly linked to passenger safety in the event of fire.

Until recently, some rail operators in Europe had their own controlled substance lists. These developed from the introduction of European REACH legislation (EC 1907/2006) in 2007, which covers the registration, evaluation, authorisation and restriction of chemicals.

In 2011, these were superseded when UNIFE, the Association of the European Rail Industry, launched a comprehensive list of the prohibited and declarable chemicals used in the railway industry.

The list defines and categorizes materials and substances that may be prohibited or controlled within the European rail industry.

The larger European rail operators now demand that UNIFE's substance list is embedded in their procurement processes, so they can be certain that rolling stock is safe and secure. This means that, as a product used on board rolling stock, cable identification markers must comply with UNIFE's legislation.
Two basic types of cable identification product have emerged, to perform in two very different passenger train environments.

On one hand, diesel-electro powered locomotives require identification products that are resistant to the fuels and fluids that might be present, whereas on the other hand the diesel-free environment of electric services require LFH products that ensure low smoke and low toxicity. These are particularly important for underground services, where passenger escape times will be longer than above ground.

TE Connectivity's identification products evolved to meet these very different sets of criteria. D-SCE was designed for applications where superior diesel and fluid resistance is needed, and HX-SCE was created or environments where the risks to people and equipment from fire are high, and where LFH properties are prized.

The technical specifications for the interoperability of railway infrastructure are fostering the development of a single railway system in Europe. National standards are being replaced by European norms, and train builders are looking for smarter materials that can span this development.

As operators and train builders aim for

ever-higher safety standards, they have been calling for a product that meets the requirements for both diesel resistance and LFH specifications and standards. In response, TE Connectivity has developed ZHD, a heat-shrink sleeve that bridges the gap between diesel and LFH standards. The systematic approach behind its development is covered in detail in the companion white paper 'A single cable identification that delivers low fire hazard performance and diesel resistance.'

When developing ZHD, TE Connectivity was highly aware of the flammability performance demanded by industry standards, and their impact on the composition and structure of the heat-shrink product.

Filler loadings in a zero halogen product typically need to be around double the loadings of a halogenated product. In some cases, the loading can be as high as 60 parts per100 resin (PPHR).

This level of filler typically has a negative impact on the mechanical and chemical performance of the identification marker. In developing ZHD, the challenge for TE Connectivity was to maintain good performance in both diesel and LFH environments.

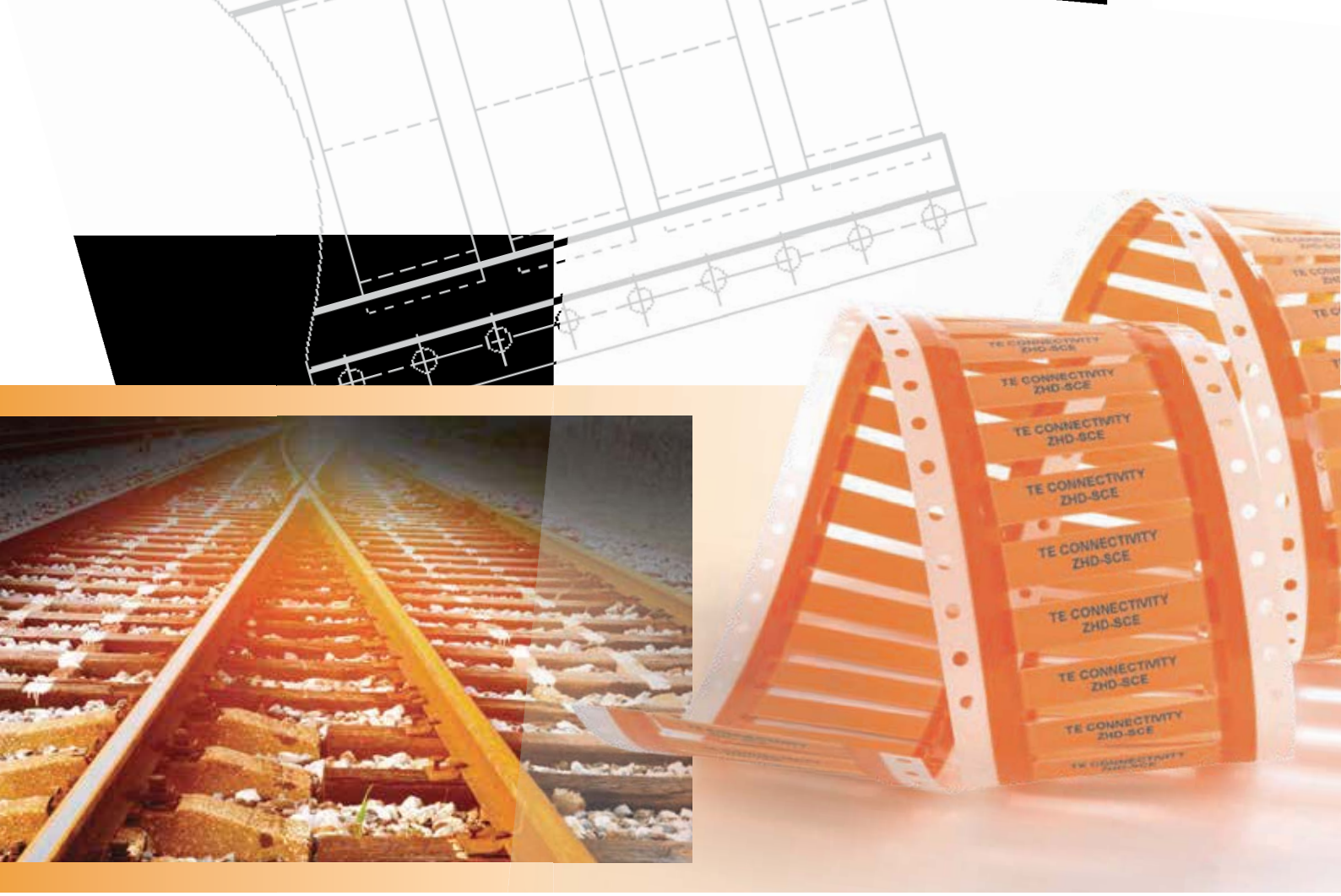
On a molecular level, basic chemical interactions and reactions from substances in the operating environment can represent challenges to cross-linked polymer products. As more zero halogen filler is added to the polymer matrix, to ensure the product meets LFH standards, the structure of the material changes. The polymer matrix must be 'stretched' further to encapsulate the fillers, and in turn, the fillers become more mobile within the matrix.

This leaves the matrix vulnerable to damage from a number of sources:
• Loss of valuable additive, reducing both desired effect of ingredient and longevity of the component
• Chemical attack on the polymer chain itself can reduce physical properties
• Reactions with functional groups in or on the chain, and depolymerisation
• Softening and swelling of the polymer due to physical changes such as absorption of solvents
• Stress cracking as a result of interaction with agents such as detergents, lubricants, oils and other substances

These can lead to symptoms such as cracking, softening, swelling, and dissolution of the identification itself, or loss of the printed mark - leading to failure of the identification as a system.

The true challenge in developing ZHD was in selecting and testing the fillers and bonding agents, rigorously testing them to gain a deep understanding of their properties (alone, in combination and through different manufacturing processes).

Only after evaluating the many combinations of possible materials against the standards of the rail industry was TE Connectivity confident that it could offer a product, which bridges the gap between diesel resistance and LFH standards.



ZHD - TWO INDUSTRY CHALLENGES. ONE INTELLIGENTLY COMBINED SOLUTION

ZHD is the ONLY Low Fire Hazard, Diesel Resistant heat shrink cable identification solution in the market today. It's a unique product, created in response to a clearly identified customer need - something which no other provider has been able to deliver to the Rail industry. Until now, heat shrink cable identification systems were either Low Fire Hazard or Diesel Resistant, but never both. ZHD changes all that. With this combined technology, train manufacturers can standardise and simplify cable identification, and still remain compliant with the latest industry regulations, including the EN 45545-2 standard for fire safety in rail vehicles. We call it the Next Generation of Cable Identification Solutions.

Find out more at www.te.com/zhd

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WINDHOFF NEWS: Ready for the future

WITH TWO SALES AREAS - THE RAILWAY TECHNOLOGY AND WITH THE COMPLETE RANGE OF RAILWAY VEHICLES - WINDHOFF BAHN- UND ANLAGENTECHNIK GMBH IS WELL PREPARED FOR FUTURE CHALLENGES.

The companies success is based on the realisation of customer-specific demands due to a perfectly designed modular system which achieves all appropriate certification criteria and provides for maximum customer value.

The vehicle technology focuses on rail vehicles and dedicated accessories for main lines, branch lines, commuter lines and metros. Windhoff rail vehicles are successfully used world-wide for the construction and maintenance of rail tracks, overhead catenary systems, and dedicated designs serve as fire-fighting and rescue vehicles. The use of modular concepts has been a major factor for the success of the variety of rolling stock manufactured by Windhoff. Customers can choose between 2-axle and 4-axle versions of self-propelled units as basic carrier vehicles for a choice of superstructures or changeover modules. At this time, 21 units are under production for the Norwegian infrastructure operator JBV.

Since 2014, 'HOPS' is in use at Network Rail in Great Britain. HOPS stands for 'High Output Plant System' and describes a 550 m long train system applied for the electrification of the line from London to the west coast. The mission of the HOPS train comprises the placing of masts, installation of the overhead catenary system including measuring and calibrating, plus complete service and maintenance details. The modular train system is also the basis for the unique fire-fighting and rescue vehicles. Further to

the existing fleet, Windhoff delivered two additional units to SBB Swiss Railways for use at the Gotthard tunnel. A special feature of these units is the ability for independent operation. Thus the first unit suppresses a fire, and the other unit can take up injured persons and operate as a shuttle. Sprayed water curtains and pressurised cabins protect operating personnel and passengers.

Railway technology including lifting equipment and shunting systems is another main sales area at Windhoff. Railway depots around the world have selected workshop equipment made by Windhoff. Besides the production of lifting jacks and complex lifting installations, work platforms, turntables, bogie measuring stands, bogie drops, bogie scales, wheelset lathes, wheelset change assemblies and traverses, the company also provides full planning and system management services for major construction projects.

The shunting sector covers dedicated solutions for state or industrial railway operations and for the special demands of quayside railways, starting with simple rope winches, rope traction and shunting systems with slingchains as well as solutions with wheelset carts or buffer wagons. In addition to that customers can select from a range of rail-bound shunters with different drive systems (battery-electric, hybrid, electro-mechanical or diesel-hydraulic). Rail/Road shunters - battery-powered units for workshops and depots, larger diesel-powered units for loading lines as well 2-way lorries for track applcations and a new generation of smaller diesel-powered shunting locomotives - complement the choice of shunting solutions.

Windhoff focuses on dedicated and professional project planning as well as product quality and reliability in order to fulfill costumers needs on the domestic and international markets. Experienced engineers and well-trained specialists for all relevant disciplines are Windhoff's assets to ensure competent consulting and professional customer service at all levels.

Providing the best possible technical solution – no matter if a special customised unit production in outstanding qualitiy is required or in case of an economical serial production – is the Windhoff mission statement.

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NOW SOME YEARS SINCE THE ESTABLISHMENT OF ITS TURBOCHARGER FACILITY AT HEDEMORA, SWEDEN, HS TURBOCHARGER (HST) BUSINESS IS INCREASINGLY CONFIDENT ABOUT THE RETROFIT MARKET FOR ITS HIGH EFFICIENCY HS SERIES PRODUCTS.

"We are actively working with operators in Europe, Asia and the Americas on retrofit projects to improve both engine performance and operating costs" said Ernst Dahlin, HST Market Development Manager in an interview. "Many operators are concerned about spares availability and service costs for currently installed older turbochargers, and fuel savings are also a typical outcome when using our advanced technology products. The main factor, however, is the improved reliability we typically see after the retrofit of our equipment." The company has already increased its business significantly, mainly through replacing older less efficient and less reliable turbochargers originally supplied by OE and other major turbocharger manufacturers, and expects the trend to continue.

HS Turbocharger product management points out that many operators are now taking on their own maintenance work internally, rather than relying on service from turbocharger suppliers or engine manufacturers many of whom are exclusive in their support offerings. The HS products offer good opportunities for owner maintenance, as few special tools are needed for on-site service work and the company offers product training in the maintenance and overhaul of its turbochargers. Customers who have trained personnel on hand reduces their downtime through the avoidance of time wasted for the mobilization and travel of OE or service centre staff to the location of the breakdown, which may often be difficult to access.

The HS Turbochargers production unit in Sweden has worked to develop all component manufacturing and assembly aspects to an optimum level. Working with high quality suppliers, the manufacturing processes have been refined with a focus on retaining part integrity and reliability whilst applying strict principles of cost control. Looking forward, the company plans to further develop component designs, identifying where additional improvements can be made. Favourable and proven design features will be retained but emphasis will be placed on further improving both component life and performance. Further confidence in the performance of HS products has been gained from a project where HS5800 turbochargers retrofitted to two Kolomna D49 engines running in difficult conditions on a Mongolian Railway locomotive. HS units were installed on the 2,640kw, 16-cylinder engine as a trial in cooperation with TMH-Service as a pilot for further retrofit opportunities.

One aspect examined closely in the Mongolian trial was that of bearings and their resilience to aggressive environments where contamination by dust and sand can occur. Data gathered from inspections will be used to evaluate further improvements to bearing arrangements designs and to the mechanisms used for thrust balancing within the turbocharger rotor. In this way, HS Turbocharger design engineers anticipate a further increase in mean times between field inspections.

At the present time the HS Turbocharger development team is also well advanced with the design and development of a new range of larger frame turbochargers which aim to have an air mass flow capacity above 8 kg/s. These will be larger than the current HS4800 and HS5800 frame sizes, which are rated to deliver engine equivalent powers of between 1,000kW and 3,700kW and offer up to 74 percent overall turbocharger efficiency. "Having studied the market, we anticipate a major retrofit opportunity for these larger frame products and are confident that we will be able to offer a very attractive solution for many operators around the world" said Ernst Dahlin. "We will again be designing to meet value and reliability imperatives but will also focus on delivering efficiency levels for which the HS products are well known." As part of this work the designers will also be working to further simplify the turbocharger construction whilst maintaining the product's proven robust design.

Development work on the new products are being carried out in Sweden and the first prototype is planned to be running in the Hedemora test facility during the last quarter of calendar year 2015. The first engine trial is expected to be in early 2016, again as a retrofit to an operating application. Although by direct arrangement with the operator, the test similar to others carried out by HST, will be closely monitored in conjunction with the engine manufacturer.

A further line of development work being followed by HST product segment is that of turbocharger instrumentation. With experience drawn from the build and operation of their own highly complex test cell in Sweden, the company is now investigating the potential of offering HST specific instrumentation on operating turbochargers. With costs of monitoring equipment decreasing, HST now believes that there are opportunities to benefit from trends in turbocharger operation monitoring which would help to indicate early signs of excessive wear and damage so as to potentially avert the cost and inconvenience of mechanical failure.

HS Turbochargers

HS Turbochargers

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Railway Security: On The Right Track

IN THE WEEKS FOLLOWING THE ATTACK BY A HEAVILY ARMED MOROCCAN MAN ON AN AMSTERDAM-PARIS TRAIN, QUESTIONS ARE BEING ASKED AS TO HOW THIS HAPPENED.

In an age of constant surveillance and high security at major train terminals, how did someone manage to board a transnational train carrying a machine gun and a side arm and proceed to open fire on his fellow passengers?

Law-abiding citizens live in fear of being caught putting their feet up on the seat opposite, such is the prevalence of CCTV and staff on board most trains, but while a gun-toting maniac slips through the net, it begs the question as to how secure European transport networks really are.

However, the likelihood of being blown up on the 18.45 from Templecombe to Tisbury is statistically low. More mundane safety concerns such as trespass, petty theft, vandalism, assault, and sexual harassment are pressing to most travellers in the UK. As such, train operating companies are under pressure to improve their current security systems.

Trespass onto railway lines is the most high-profile security concern at the moment, in the form of migrants trying to illegally enter the UK via the channel tunnel. At least 30 migrants have been killed trying to enter the UK since January this year; suffering horrible deaths due to burns, falls and drownings as well as being crushed or hit by vehicles. Eurotunnel have said that, "our greatest concern for the migrants is their own personal safety and consequently our efforts aim at keeping them away from the electrical installation" adding that "railways are not safe places if you are not trained to be there".

In light of this summer's immigrant crisis, Eurotunnel are working closely with the UK and French security services and investing an additional €13m on security in the last two months, including more fencing and improved access points to prevent migrants from gaining access to the tunnel. These measures have caused a "decrease of attempted intrusions down from about 2000 per night in late July, to just 100-200 per night today [29 June, 2015]".

In the UK, crimes such as bicycle theft, criminal damage, arson, violent crime and sexual harassment are dealt with by the British Transport Police (BTP). Their database of statistics shows that crime is down from last year, in some stations the rates have been cut by more than 50%, as against a 7% decrease of crime nationally. This indicates that measures taken by the BTP, such as stop and search and trembler alarms to detect theft of cables, have taken effect. Further measures such as women-only carriages to tackle sexual assaults on trains are proposed for debate by MPs in the coming months.

Therefore, on the evidence, the UK's railways are safe and getting safer every year. The international threat of terrorism is tackled at all levels, from MI5 to the BTP, and judging by the number of domestic terrorist attacks on the UK in recent years, is doing very well at it. In France, the SNCF has over 15,000 cameras watching customers day and night, making it one of the largest private surveillance networks in Europe. Even with this level of precaution, one gunman slipped through the net. It seems, therefore, that isolated incidents are unavoidable, but this should not stop the railways to strive to be ever safer for passengers.

The 2015 Budget has pledged £56 billion to transportation, which includes improving railways, roads and viaducts. Railway providers are always looking for ways to improve security, and are

constantly updating those measures already in place. They work closely with the Government and security services, tackling domestic and international threats to security hand in hand, and long may this cooperation continue. Improved surveillance techniques and gadgetry, such as infrared cameras and x-ray machines at terminals, may or may not make travellers safer, but in so doing reignite the age-old tension between safety and privacy.

The most obvious security prevention measure is CCTV, though while the presence of CCTV cameras provides a chimera of safety, studies show that they have no statistical or real impact on crimes on railways. Indeed, despite the increase in the number of CCTV cameras, there has actually been a rise in sexual and violent crime on the railways. Therefore, surveillance is not the definitive answer and certainly not effective enough to sacrifice any more of our privacy for. Measures such as women only carriages, recently in the media as a possible proposal of Jeremy Corbyn's, could go some way towards reducing sex and violent crimes against women, but the effectiveness of this is questionable; if a man is prepared to break the law by sexually assaulting a woman, he is probably not going to have any qualms about entering a restricted area to do so. The answer may be to put more staff on trains, but even this depends on the level of staff training; it is alleged that SNCF staff barricaded themselves in their office until passengers had disarmed the terrorist. The presence of BTP on all trains would be logistically unsustainable and financially unjustifiable. What then, should be done, and is there any need to do anything that is not already being done? A multi-pronged approach is the most obvious answer, and which is already in operation with ongoing success. In conjunction with CCTV cameras to reduce dishonesty offences (where they are most effective), increased numbers of well-trained staff on trains, obvious BTP presence at stations and ongoing cooperation between railway providers and national and international security services, will keep us safe on trains. But all of this requires investment by both railway providers and Central Government, which in the current political climate is unlikely to be forthcoming. So while it is highly unlikely, it remains that without ongoing investment in security, a gun-toting maniac may slip through the net and one day board the 18.45 from Templecombe to Tisbury. I that event, you don't want your best chance of survival being the handy presence of a couple of US Marines and an IT consultant from Reading.

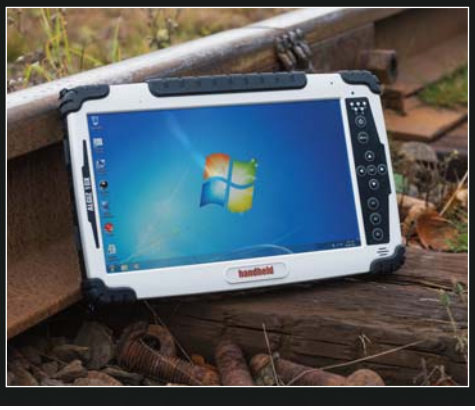
*BTP offer the public the opportunity to check out the crime rates in their local area http://crimemaps.btp.police.uk/ click on the link to see how your local station is effected by crime. Companies are also faced with people who choose to steal cable from the railway line in order to sell the metal.

Rugged Tablets Optimize Railway Maintenance Operations

RUGGED TABLET COMPUTERS ARE IMPROVING BOTH SAFETY AND EFFICIENCY FOR A LARGE RAIL OPERATOR IN DENMARK.

Its maintenance crews use Handheld Group's rugged Algiz 7 tablet PC with RFID technology and Siemens software to minimize unnecessary downtime, keep workers safe and maintain open lines of communication with railway operators.

When maintenance workers arrive at a repair site, they use the Algiz 7's built-in RFID reader to scan tags mounted on markers along the track. The Algiz 7 rugged tablet then transmits the scanned data over 3G to the railway's main server, and if the tag data matches the location of the scheduled railway possession, railway operators confirm closure. After completing a job, crews follow the same RFID-scanning procedure to confirm track reopening.



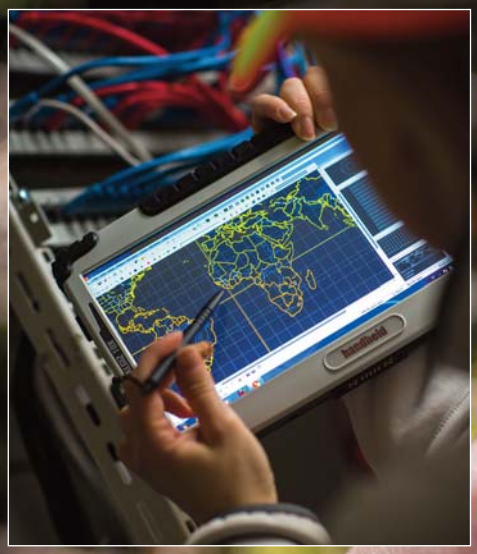
Rail locks can only be activated when crewmembers are on site, and can only be released when they have left the restricted area safely. This process enables operators to carry out corridor closures knowing the crews are in a safe position, and reduces downtime when work is delayed.
If a repair takes less time than expected, crews use the Algiz 7 to communicate this information immediately upon job completion, which means operators can reopen tracks faster. In the same way, if a job takes longer than anticipated, staff can submit notes directly from the tablet to request provisions such as extended possession or speed limit restriction.

This smart mobile solution can also be applied to unplanned maintenance: If crews discover a repair that needs to be made immediately, they can use the Algiz 7 to request short-term possessions and receive approval in real time.

Robust hardware for daily use

Working in variable outdoor conditions along a railway corridor requires hardware that's specifically designed for outdoor use. The Algiz 7 rugged tablet meets IP65 and MIL-STD-810G military standards for withstanding drops, vibrations and exposure to dust and water, and it can operate in temperatures ranging from minus 33 degrees Celsius (minus 27.4 degrees Fahrenheit) to 63 degrees Celsius (145 degrees Fahrenheit).

Powerful hot-swappable batteries allow the rugged tablet to operate for a full 6 to 8 hours on a single charge. And since extra batteries can be charged using convenient stationary or vehicle chargers, then changed during operation, long workdays present no problem for the Algiz 7. Maintenance personnel also use vehicle mounts to install the tablets in emergency vehicles quickly and conveniently.



Intuitive touchscreen control

Workers operate Siemens railway software via the Algiz 7's state-of-the-art resistive touch, sunlight-readable touchscreen. The Algiz 7's user interface was designed specifically for efficient and intuitive touch operation, and an attached stylus makes precise control easy, even for workers wearing gloves.

Erring on the side of safety is always a good idea — unless, of course, you can find a way to avoid erring at all. The Algiz 7 adds reliability, convenience, speed and improved communication to railway operations, so workers don't have to sacrifice safety or efficiency on the job.

Challenge

Increase safety and minimize downtime for railway maintenance staff

Solution

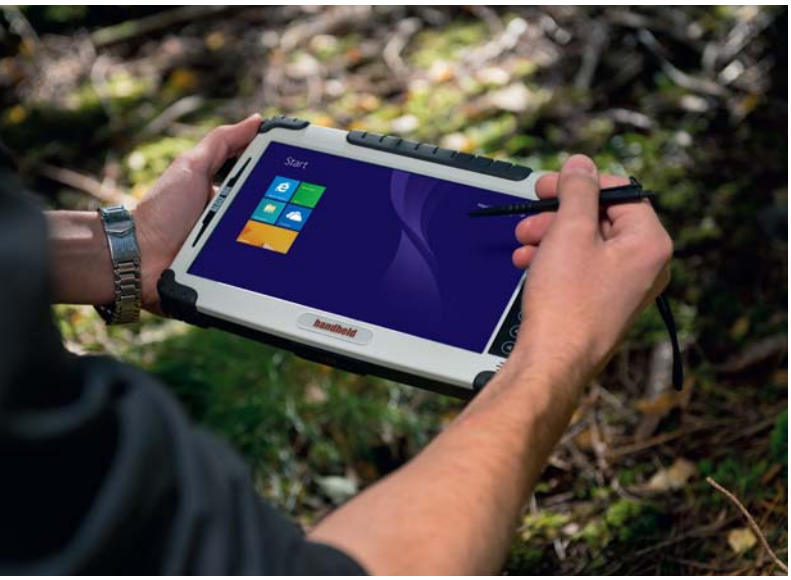
Manage rail closures using the Algiz 7 with integrated RFID technology and Siemens software

Result

Crews perform necessary maintenance with decreased downtime and improved worker safety

For more information about rugged computers visit **www.handheldgroup.com**

RUGGED COMPUTERS FOR TOUGH ENVIRONMENTS



Our rugged computers are best known for the combination of high performance and the strength to be able to handle the most demanding field applications. Laughing off the roughest weather and harshest handling, they are perfect for today's mobile workforce.

No matter what mobile application, Handheld can provide you with rugged mobile computers to get your work done faster, more consistently and with greater efficiency.

NORDIC RAIL

Meet us at Nordic Rail
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Can Fuel Cells lower your TCO for Off-grid Railway Applications?

Railway applications include PTC, signaling, lubrication, communications & telecom, sensors & detectors, rock fall mitigation lidar, track surveillance and signage among others.

Railway applications include PTC, signaling, lubrication, communications & telecom, sensors & detectors, rock fall mitigation lidar, track surveillance and signage among others. Each have their own load profiles that identify the continuous wattage needed to power the mission and/or data critical application configuration. If off-grid power becomes unavailable it could mean that critical safety and security systems are down, so backup power contingency plans are often important. In many cases solar power is used but in selected locations and in winter months the power generated is not guaranteed and snow fall can cover solar panels rendering them less effective an unreliable. This means that railway maintenance logistics are burdened with frequent, expensive, and sometimes dangerous site visits. In selected cases these systems are down for the duration of time associated with site visit related delays caused by storms or resource issues.

Sirius Integrator has been marketing and manufacturing off-grid fuel cell based power solutions for over six years now with hundreds of deployments across North America. They offer the largest selection of Methanol (Neat & Reformed), Propane, Natural Gas, and Hydrogen fueled fuel cell battery chargers on the market and manufacture specialty enclosures for harsh outdoor weather. Off-grid Power can be 'backup power to the grid', 'backup to off-grid solar', or continuous primary power. Typically the railway applications we power are under 500w of continuous wattage and use either 12v, 24v, or 48v battery banks that range in size from 60ah to 2000ah. Some deployments are on mobile trailers, others portable, but most are located at stationary sites by the track. Both lead acid and LiFEPO4 battery systems can be recharged with our fuel cell battery chargers. These configurations could be in hot, windy, very cold or just normal outdoor environments and in all cases they need to ensure that enclosures are properly setup for successful fuel cell deployments. They have deployed standalone fuel cell solutions as well as solar & wind hybrid configurations in the US and Canada. In most cases a hybrid of a solar panel and fuel cell makes sense, if the application is not covert in nature. On occasion a tri-power configuration has been used that couples typically a small 100w thin solar panel with a 50w micro wind turbine and a < 100w fuel cell system all tied directly to the battery bank. These hybrid power generating configurations make most sense with smaller load requirements and in stationary or trailer based applications.

The benefits of using fuel cell generators include a quite operation, reduced fuel use, longer durations between site visits, maintenance and emissions free charging, longer battery lifetimes, smaller battery banks, use of warm air exhaust, low vibration, and lower TCO. In many cases the railway application battery configurations and solar components can be reduced in size by adding a fuel cell changer. In locations where CO2 emissions are taxed, fuel cells can lower

your site monthly CO2 taxes. Compared to fuel cells, engine based generators are loud, dirty, need frequent service, and use a great deal of fuel, making them more expensive for off-grid remote locations. Fuel cells can even be deployed for only winter months in selected locations, when snow fall threatens solar power production and heaters are used for electronics. Our newest solid oxide propane fuel cell systems run hot and the warm exhaust could make possible the 'designing out' of heaters from your winter configurations. This brings down the load profile significantly and the fuel cell's hot air is used to warm batteries and electronics as it generates power. Sirius Integrator can work with railroads to integrate our fuel cells into existing sheds, trailers or enclosures to maximize efficiencies and runtimes.

When it is determined that a (neat or reformed) methanol or hydrogen fuel cell is the right solution for the application it is important to house the cold or hot PEM fuel cell in a properly designed enclosure or to at least review the planned deployment plans with the railroad to ensure that the operational range (temperature) is taken into consideration. If a PEM neat methanol fuel cell is deployed in a very hot location hybrid with solar then you must ensure the fuel cell is periodically started to keep hydration levels operational. For methanol and hydrogen fuel cells a thermostat triggered fan must be installed to keep heat levels in range. When either fuel cell is installed in very cold locations then systems must be housed in properly designed sheds/trailers/enclosures to ensure the system doesn't freeze, warm air is used from the exhaust while fresh air enters. If enclosures are poorly designed for very cold there is more risk of the system shutting down due to over heating. The inside temperature must be keep in an acceptable range to keep the fuel cell operating without using more fuel than needed. If methanol is used then railroad operations must ensure that fuel cartridges are swapped out periodically to ensure applications continue to run and systems do not freeze. Hydrogen fueled PEM fuel cells, our lowest priced offerings, are preferred by railways for specific locations where local hydrogen deliveries can be made by the supplier directly by track locations for backup power configurations. For more remote, inaccessible locations, methanol or propane fuel cells would be preferred and these fuel's portability and density is an advantage.

For mobile applications the system must use a fuel cell that is vibration tested and the trailer's design should be sensitive to the system's attributes. As an example, if you are using a solid oxide ceramic tubular or planar system, you will want to know that the trailer when mobile will not crack the ceramics of the fuel cell stack if roadway vibration is excessive. Systems have to be protected and may have to be installed onsite in the trailer if the trailer's suspension quality is questionable.

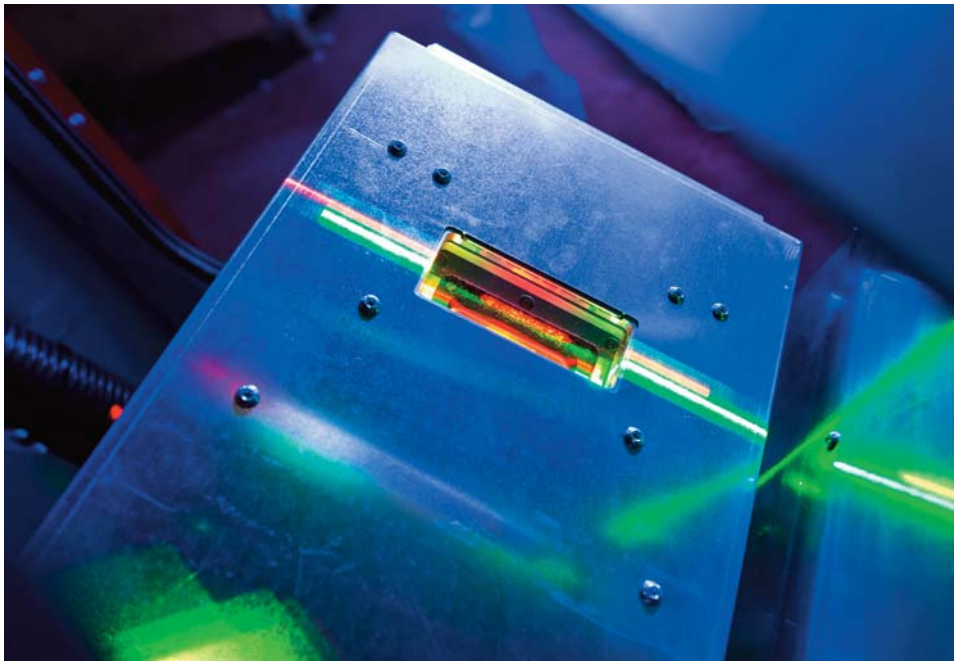
Remote off-grid application configurations are either connected or disconnected. Each fuel cell has its own remote monitoring and management capabilities and website interface options are available. Using remote monitoring and alerting, customers can be notified of battery bank voltage levels, the need to replace fuel cartridges or tanks, and forewarned regarding the need to change gas filters. Fuel cell command sets allow for customers to start and stop the remote system, modify settings, and check on the health of each configuration without a site visit.

As the railroad reviews our offerings they will realize that based on the fuel cell stack technology used, lifetime charging hours and cycles (system on/off), initial purchase price, second lifetime refresh options, and fuel supply will all be factors in their selection decision. Sirius Integrator offers US, German and Chinese fuel cell systems with different value propositions to maximize your choices. Railway customers should consider warranty, repair logistics, sparing requirements, remote management options and lead times to delivery for each system.

Railway applications like PTC, railway signaling, track lubrication, communications/telecom, sensors/detector, rock fall mitigation lidar, track surveillance and signage can all be powered more reliably and for longer periods of time to minimize site logistics using fuel cell battery charger technology. Based on each railway application's setup, load profile, battery bank size, and respective deployment's requirements, Sirius Integrator would propose the right fuel cell solution and service strategy. The first logical step after system selection is to schedule a month pilot field trial for our newest fuel cell offerings. Please visit our website at www.siriusintegrator.com for more details or email use at john@siriusintegrator.com 855-747-4874

Nextsense takes Research & Development to the next level

INNOVATION AS A USP: SPECIALIST FOR SENSOR TECHNOLOGIES ENFORCES R&D AT THE HEADQUARTERS IN GRAZ



Graz, 4th September 2015 – The Austrian specialist for optical sensor technologies NEXTSENSE GmbH strengthens its strengths: The company – well known for being an innovative trendsetter – expands its R&D activities considerably. They make sure to transform market demands directly into technological developments for the customers' benefit, by creating a research center at their home base Graz and by adapting the organisational structure to future needs. With this Nextsense stays on its growth path which has led to a more than 10-fold increase in staff numbers over the last eight years.

Over the last few years, optical sensor technologies have entered into a new era: Highest precision, top-speed data processing and best usability are the new standards. One of the main drivers of this development is the Austrian enterprise for measuring technologies NEXTSENSE GmbH. With its applications for gap and profile measurement and for non-contact inspection of surfaces, the high-tech company has risen to become a central partner in the automotive, railway and steel industry. Now, Nextsense extends its research & development department (R&D) even further, striving for an interdisciplinary cooperation that promotes fast and market-based innovation.

Smart growth

Thanks to the massive success of its first two products – a handheld profile measurement gauge for the non-contact inspection of railway wheel sets and a device for the evaluation of car body gaps – the company grew rapidly. Within only eight years, the workforce grew from four people to more than 50 dedicated employees. "We know that innovations are crucial for defending our position as a supplier of state-of-the-art optical sensor technology." says Clemens Gasser, CEO of Nextsense. "This is why we are strongly committed to R&D and willing to align our entire organisation accordingly."

From innovation to application

In doing so, one of the central steps is the creation of an R&D center at the headquarters in Graz. From now on, this is the playground of all employees devoted to customer oriented research. And these are not just a few, as Gasser explains: "Our commitment to innovation through in-house R&D is clearly visible in our personnel structure. Altogether, 35 percent of our staff operates in this area. The by far largest part of it is now based in the new center." Here, three new departments were established: Technology Management, Software Development and Test & Quality Management. Especially the first one will play an essential role in the future, as

Gasser states. “New technologies and applications will be evaluated in this division. Our product roadmap will be defined there, taking into account market observations and considerations related to patent law. This is how we will define the mid and long term future of Nextsense.”

The importance of cutting edge software for Nextsense products is displayed in the number of employees in the software department. Eleven specialists work diligently in order to retain the competitive technological edge of the enterprise. By creating a separate department for hardware development, an extra weight was given to the creation of new hardware designs – enabling the company to perform as a full-range supplier on the market.

Matrix – the x-factor of success

Altogether, there are now four departments in the area of research and development at Nextsense. Another novelty is the cooperation of departments based on the principle of matrix organisation. This should foster creative solutions through interactions across division structures and enhanced interdisciplinary. Aspects of market competitiveness can thus be transferred to research and development much faster and more efficiently than before. "We as a company are convinced that innovations are vital for sustainable competitiveness on our markets. This is why we invest more than 25 percent of our yearly expenses only in this area“, as Clemens Gasser emphasises the importance of R&D for Nextsense.

About NEXTSENSE GmbH

In the fast growing market of optical technologies, NextSense GmbH provides laser-based profile measurement devices and surface inspection facilities for various industries. Next to well-known enterprises in the railway sector (e.g. DB, SNCF, SBB, Siemens, Stadler, Bombardier, Alstom), companies active in the automotive and steel sectors are part of the customer base of Nextsense (e.g. Daimler, Ford and voestalpine). The high-tech company is a spin-off of the Austrian research institute Joanneum Research and nowadays employs 50 people located in Graz.

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RAWIE®
SINCE 1882

TRACK SAFETY SYSTEMS

A. RAWIE GmbH & Co. KG based in Osnabrueck, has been supplying equipment to the railway industry at home and abroad since 1882. In 1902, after an accident at Frankfurt Main Station, Rawie started developing a mechanical energy absorbing device to prevent overrunning trains from climbing over the end of the track and ending up in the concourse areas. From 1905, Rawie has concentrated on the production and supply of energy absorbing buffer stops and bumping posts.

The designs have developed from a simple sand drag type buffer stop to high tech-units capable of arresting vehicles up to *v = 65 km/h at m = 250 t and v = 15 km/h at m = 5,000 t* due to its carefully designed fricton technology.

In the 1950s, Rawie was invited by the then Federal German Railway to assist in establishing a mandatory standard for track closures. Due to the booming market in Light Rail, Metro and Tram Systems worldwide, Rawie fricton buffers are used in almost all these systems as a safety component at track ends in main lines, depot lines and in maintenance workshops.

FURTHER RAILWAY RELATED PRODUCTS CONSIST OF

- Loading Ramps with or without friction buffer stops
- Wheel holding devices for use as a static brake
- Kinematic envelope and loading gauges
- Engineering and planning for stations

Other products are car park barriers and ticketing systems plus related products.

Since then Rawie has often been invited to assist with the planning of track closures both in stations and yards, as well as sensitive areas such as tunnels etc.

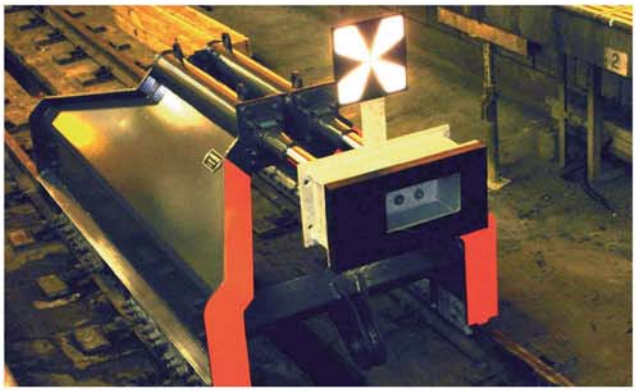
CONTROLLED AND SAFE

Our Friction Element Buffer Stops are an indispensable safety feature to counteract human or technical failure. They protect and safeguard passengers, rolling stock and buildings.

CUSTOMISED CONSTRUCTIONS

We design our products individually for special applications and vehicles which are operating in the line. The size of the buffer stop is depending upon the kinetic energy to be absorbed.

Type 10 EB M+S Standard Friction Buffer Stop
for Main Line including vehicles with center-coupler
Installation locations: e.g. ProRail, Netherlands



Type 12 EB Friction Buffer Stop
including hydraulic shock absorbers for MetroSystems
Installation location: Tokyo, Japan

Fixed Buffer Stop
including hydraulic shock absorber at the end of High Speed Lines
Installation locations: e.g. Toledo, Spain

Type 6 EB Friction Buffer Stop Special design
for work shop tracks
Installation location: Northampton, Great Britain

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SWITCHPOINT HEATING – Ge-Tho AB **www.switchpointheating.se / www.vkts.se**

We have been working with industrial heating about 30 years and with switchpoint heating for about 20 years. It all started when we got a contract with SL subway in Stockholm who had problems with getting a working system easy to maintain.

We began to develop a system regarding low energy consumption with high durability easy to maintain, and that resulted in a product that we started selling to SL at the same time other companies in Sweden and Europe started to take interest in our product.

In the late 90´ts Our MD Thomas Thorin together with several European railway companies and railway suppliers formed a commission to discuss improvement for switchpoint heating systems and as well trying to write a international standard for working systems. This work has progressed along the years hopefully improving safety and economics for all parts.

Today we have a well working system with all parts included, elements, installation details and control panels with remote administration over the Internet that we deliver mainly to England and Sweden but several other countries are buying smaller amounts for evaluating function in their switchpoints. System has its big advantages in low energy consumption, easy installation and maintenance with short “time in track”

We try to be open-minded and keep on developing our system to suit all climates and at the same time bringing down cost for energy, installation and maintenance with highest SAFTEY as a goal.

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SwitchPointHeating – Ge-Tho AB

Office and production in GOTHENBURG

February and December 2010 saw two of the worst snowfall events in recent memory hit the UK.

The unusually heavy snow led to disruption across vast swathes of the country, affecting every type of industry.

If cold winter spells are to become more common, Britain's train operators will need to do more to make sure their routes stay open and services run despite the weather.

Switchpoint Heating AB supply electrical heating systems and accessories for railways, industry applications and building sites. The company delivers complete custom-made heating systems for railway, industry and buildings including installation, details and control systems.

Railway switch-point heating

Railway switch-point heating is installed in order to maintain the function of the point mechanism without the need for manual clearing. The installation involves positioning flexible heating elements that can be made up to 25 meters along the foot of the stock and switch rails.

In extreme cases, double elements will be installed in the section of the point blade with the most movement, in order to quickly melt any snow or ice falling off passing trains as a result of vibration.

The point rod pit may also be provided with heating by means of point rod heaters, which are connected up to extension terminals on the heaters positioned on the stockrail.

The heating elements are covered with stainless-steel protective channels fixed to the rail using spring steel clips.

The channels are supplied in lengths of 1 meter and are available in rigid and flexible designs. Clips are available in several different types fitting most rail profiles found in the switch-points that exist today.

The VELOX switch-point heating system can be used with most existing control systems providing 230VAC to the point heating system. The heating elements are of a self-limiting type, which means they are energy efficient as they decrease the heat output when the temperature rises. The elements are also double-insulated and lack protective earthing in order to avoid causing signalling faults if damaged.

Heaters are powered by a waterproof IP68, quickconnect system simplifying maintenance.

VELOX rail-point regulator

The company also manufactures customdesigned, automatic-control cabinets containing thyristor control devices and soft-start regulators, as well as equipment for remote control and logging of energy consumption and temperature, amongst other data.

The parameters of the Velox rail-point regulator can be checked and adjusted from a remote computer connected to the internet, and logged temperature and current values may, in the same way, be read or downloaded for further analyses.

Communications are possible by a fixed telephone connection or a 3 /4 G modem. With cold winters seemingly becoming more frequent, Swedish company Värmekabelteknik outline their rail heating system that can keeps routes open

SwitchPointHeating – Ge-Tho AB

Office and production in GOTHENBURG

Description of system (Short summary)

Velox switchpoint heating system is based on heat loss compensation and rail sensors are normally set to maintain switch rail between +1- +4°C to keep switch point free from ice at all times during cold season.

Velox switch point heating system is designed for easy installation and easy service.

Heating kits are ordered with adapt customized length to customer need and comes with all details needed for installation and connection, elements are power feed by special quick connect plug IP68 connecting to a four way molded power distributor mounted at a sleeper.

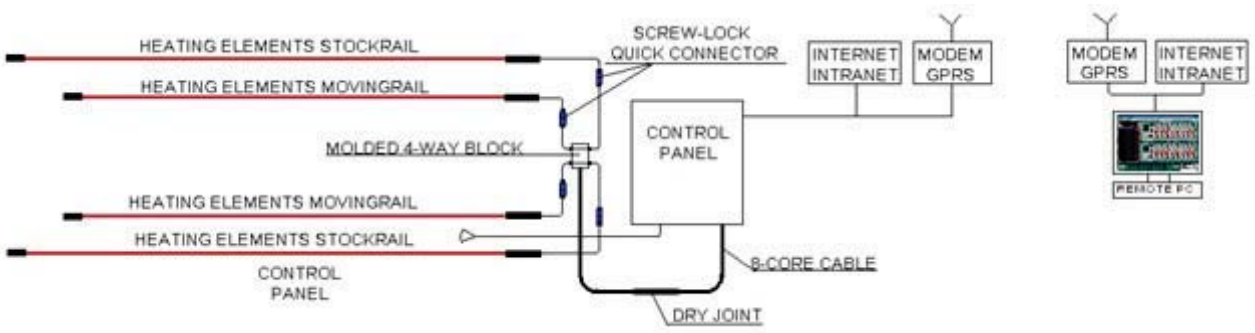
Elements can be ordered in length up to 20 meters, this means that most switch points can be supplied from one power distributor.

The standard system has totally 4 heaters (100W/m) – two for stock-rail and two for moving rail. Heaters are installed on the outside of stock-rail and at the inside of moving rail (with 400W / m switch point)

The system is supplied by 110-240 VAC. Elements of self limiting type 100W/m are fixed to the base of rail covered by stainless steel channel (1 m length) for mechanical protection and to keep heater pressed against rail to give maximum heat transfer. The heaters are kept in place with stainless steel clips of compliant size spring steel clips with various size depending on the rail profile.

Elements are double insulated to meet the requirements for safety. Heaters have an outer jacket of flour polymer (FEP).

Heating system can be expanded by a pair of switch rod heater (330 x 1200mm 900W) connected to end of heaters by quick connect junction.



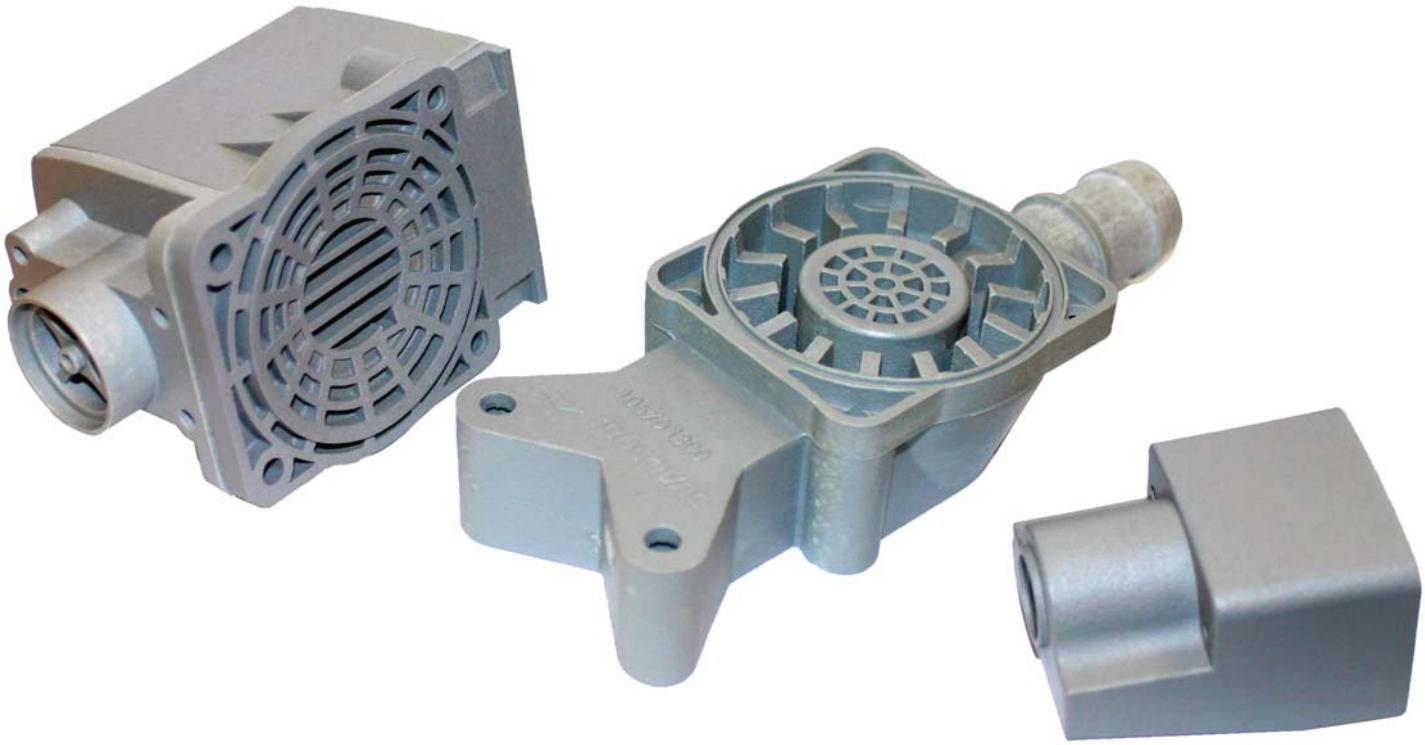
Benefits of Additive Manufacturing (3D printing) for the Rail Industry

3D PRINTING OR ADDITIVE MANUFACTURING HAS OVER RECENT YEARS EXPLODED IN TERMS OF POPULARITY.

As the technology has advanced and costs have reduced, the benefits it can bring to manufacturers cannot be underestimated. In many industries, including Aerospace and Formula 1, it is revolutionising the manufacturing process, and possibilities for its use in the rail industry are emerging.

Here Dave Walker, Market Development Manager for Rail Transportation at Parker Hannifin takes a close look at the subject and underlines some of the advantages it can bring to rail industry OEM's and refurbishment specialists alike.

We need to understand that 3D printing is anything but new. The term '3D printing'



is also frequently applied incorrectly, and now tends to be used as a much more generic term covering many if not all of the various technologies available.

The true terminology for "3D" methodologies is Additive Manufacturing. The reason for this is simple – all of these processes involve manufacture by the addition of material, whereas conventional manufacturing machines such as lathes, mills and drills produce results by subtracting material from an original billet. One real benefit of this process is the virtual elimination of waste materials that are typically produced from material cutting processes, whilst another is the freedom of design without many of the traditional process restraints.

Parker's engineers have over 16 years of experience in developing a deep and extensive knowledge of additive manufacturing technology, and how to use it to engineer and manufacture prototypes plus production parts fit for customer specific application needs. This experience can further enhance your prototype, bringing innovation and expertise into producing cutting edge products.

What's more, the team works closely with customers throughout the project, optimising the design and changing the prototype as needed in very short timescales.

Whether you develop your own products or you need to provide solutions to specific client requests, additive manufacturing gives customers the opportunity to physically handle, review and check designs as early in the development process as the first concept stage.

Preparing and presenting a prototype at an early stage of the project saves time and cost allowing any required modifications to be made, this is before any metal has been cut or plastic moulded that would prove expensive to correct later. The use of 3D models can help clarify the design by providing a true visualisation and remove any doubts or drawing misunderstandings. The prototype can be manufactured from engineered materials, which can also often be functionally tested, therefore the product performance and the concept can actually be proven together. A prototype can be provided very quickly by Parker, allowing engineers to actually fit the solution into the available space. It can then be viewed, interfaces proven and again any modifications made before serial production starts. This is key as with traditional manufacturing techniques the prototyping and then any subsequent design changes can add significant time pressures to achieving project deadlines.

Some specific issues and challenges facing the rail industry include both space available for installation and the overall weight of a solution. Engineers can face significant challenges in defining components that need to go into space restricted projects and this is where additive manufacturing can deliver great benefits for development engineers.

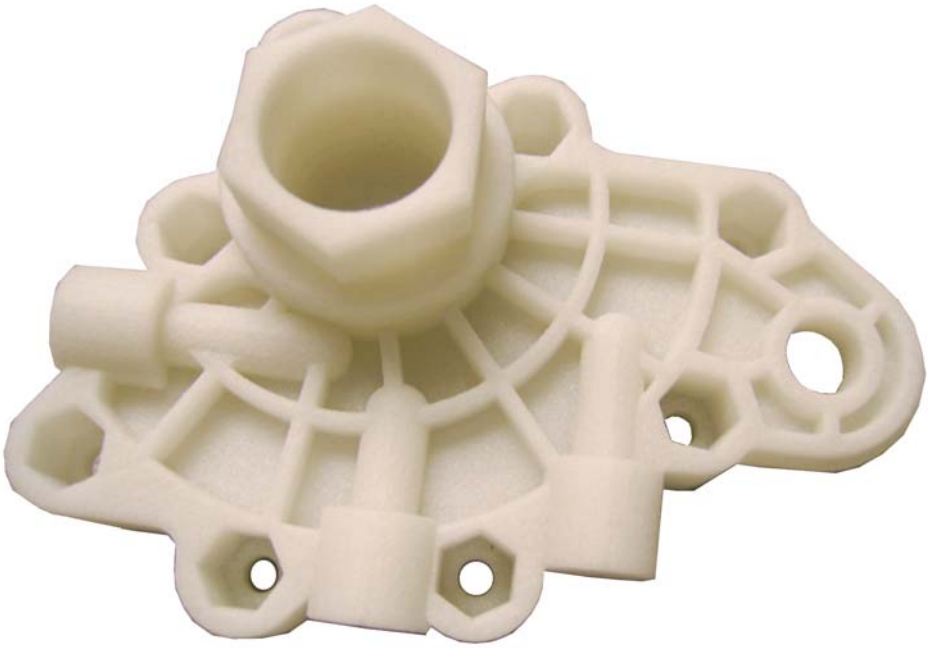
When it comes to weight, traditional manufacturing techniques often use more material due to process restrictions, whereas additive manufacture can offer solutions with optimised designs using lower material quantities to achieve the required product characteristics. There is also the ability to use modern engineered non-metallic materials that are lighter than the traditional metals, all of which can contribute to weight savings affecting overall vehicle weight and therefore efficiency.

An example of an application of this technology in rail is a project where Parker had been contacted regarding the manufacture of train door control systems. Parker's additive manufacturing specialists used their extensive expertise to provide an integrated system that addressed some very specific key concerns for this particular application.

The door control module is designed to control the opening and closing of doors on train carriages. What's more the system also includes a safety interlock and features detection to stop passengers becoming trapped in closing doors. The system requirements demanded reliable pneumatic components mounted on a robust module which includes a range of standard valves along with bespoke control valves where required.

Using a Parker patented process, valves are both surface mounted and embedded as appropriate using a Parker patented process. This incorporates a complex pneumatic circuit, including timer volumes for the obstacle detection relay circuit. Passenger obstacle detection timing volume was also incorporated as part of the moulding produced in the process instead of adding another component, which ultimately would have added significant cost to the solution. This

is great for the OEM, allowing them to be much more competitive. It's also important to note that utilising the 'moulded in' process eliminated a potential pneumatic leak path as there was no interface between volume and module, which could be a weak point. With this application if you can eliminate leak paths then the reliability in operation can be increased significantly. Further cost savings were also achieved as the electrical terminal separation was incorporated in the modules thus eliminating the need for surface mounted terminals.



It's clear that additive manufacturing delivers advantages for new design projects but it can also provide significant help with refurbishment. Whilst new rolling stock is appearing across the rail networks, there are still a significant amount of vehicles that have been in service for long periods. It is imperative for rail operators that services operate on time and reliably or they can face bad PR and even fines, so aging rolling stock has to be regularly maintained and refurbished. However, some of this rolling stock relies on components that were designed and manufactured a long time ago, thus the procurement of direct replacements can be quite difficult. Some parts may even be obsolete and the potential for additive manufacturing processes have the potential to assist in significantly addressing this subject for the rail industry.

If parts are to be remanufactured using the same materials and processes then the costs can be prohibitive, mainly due to the fact that production tools, methods and drawings may no longer be available, but also sometimes because relatively small production runs and sporadic usage patterns make planning difficult. However this is where prototyping and additive manufacturing comes into its own and Parker's activities here are focused on reverse engineering legacy components. Tooling doesn't have to be commissioned and short batch runs can be manufactured both quickly and cost effectively, unlike most traditional manufacturing techniques. This revolutionary method has already been used to help to ensure that maintenance times and refurbishment cycles are reduced significantly, satisfying the need to keep rolling stock in service to meet the service demand placed on it.

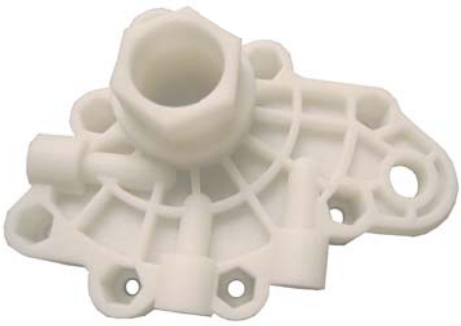
Parker utilises key additive manufacturing processes including Stereolithography (SLA), Fused deposition modelling (FDM) and Selective laser sintering (SLS).

So whether you are looking to develop a prototype or space model of a new design or concept, investigate the potential and design freedom offered by additive manufacturing for production parts, or seek innovation in vehicle improvement and refurbishments, contact Parker to discuss the future in 3D by mailing rail@parker.com

Parker

Together, we can move from concept to reality...

Using advanced additive manufacturing processes including Stereolithography (SLA), Fused Deposition Modelling (FDM) and Selective Laser Sintering (SLS).



With over 16 years of experience, Parker have developed a deep and extensive knowledge of additive manufacturing technology to engineer and manufacture prototypes to meet specific application needs. The impact potential for the rail industry in terms of component **size** and **weight** as well as significantly improved **obsolescence management** are now emerging.

So whether you are looking to develop a rapid prototype or space model of a new design or concept, investigate the potential and design freedom offered by additive manufacturing for production parts, or seek **innovation** in vehicle improvement and refurbishments **contact Parker to discuss the future in 3D by mailing rail@parker.com**

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The Adaptable Carriage

TURNING EMPTY SPACE ON PASSENGER TRAINS INTO SPACE FOR FREIGHT

When we talk about problems with capacity on passenger trains, we immediately think about the standing room-only services that run closely packed commuters into the cities during peak hours. We don't tend to think about the off-peak hours, when trains regularly and reliably travel around the country just a quarter full with passengers.

Meanwhile, the heavy goods vehicles used by logistics hauliers to move goods around the country are facing increasing fuel costs, increasing traffic on the roads, and increasingly congested city centres. All of which makes it more difficult for the logistics industry to meet growing demands for immediacy, efficiency and low costs.

What if the spare space on trains could be used to move low-density, high-value (LDHV) freight around the country? This could move traffic away from the roads and city centres, create a path for same-day deliveries on eCommerce purchases, and create new routes to market for the sustainable growth of regional SMEs.

This all sounds good so far, so why is this not already happening?

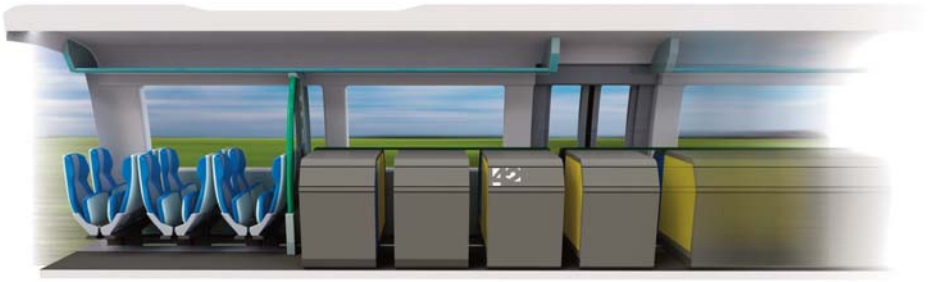
Well, not that long ago it was happening. The Red Star Parcels service ran successfully from the early sixties until the early nineties, delivering parcels around the country on scheduled passenger services. The loss of the national network following privatisation and the creation of discrete train operating companies however led to the demise of the service.

And in fact, it is already happening. Today, companies like 5PL Ltd. use passenger services to carry LDHV freight on passenger trains – and this is a growing trend – but the amount of space on modern trains available for carrying freight is growing ever smaller as the train classes with space in the driver's van are phased out.

An innovative solution is clearly required to create more space for freight on passenger trains, but will an industry as conservative and slow-moving as the British rail industry be able to adapt?

While many people support the idea of innovation, the fragmented nature of the industry means there is a large number of people who need to buy-in to an idea to get it off the ground. The value proposition needs to be clear for every stakeholder, and it only takes one of them to fail to see the benefit and effectively block it. This is exactly the situation that Future Railway was set up to combat.

Established by the Rail Safety and Standards Board (RSSB) and Network Rail, the Future Railway programme aims to support innovation across the rail industry and currently has over 100 active projects which aim to connect innovative companies with real-world industry problems.



The Tomorrow's Train Design Today competition was just such an initiative. Engineering companies, architects and industrial designers were invited to submit their innovative ideas to identify passenger rolling stock designs that could provide a glimpse of the future and deliver real consumer benefits.

Forty-eight initial entries were whittled down to ten, each of which was given some funding to further develop their ideas before the final favoured concepts were selected.

One of three successful concepts to share in £2.2m of funding, 42 Technology's Adaptable Carriage seeks to create a flexible train interior that can be used to carry passengers during peak hours before automatically reconfiguring to carry LDHV freight during off-peak hours.

One of the key considerations is that passenger trains are first and foremost vehicles for carrying passengers, so their experience and the ambience within the carriages should not be affected while in 'passenger mode'. Furthermore, the loading and unloading of freight should not impact timetables and turn-around times at terminus stations.

Analysis suggests that flexible carriages could generate an additional £100m of revenue for train operating companies and reduce carbon emissions by 100,000 tonnes per annum. Furthermore, they could create a vehicle for same-day deliveries and new route to market for the sustainable growth of regional SMEs.

Train operating companies are already showing a strong interest in the concept, with leading manufacturers stating that they believe that the technology required to realise the concept is already available.

Potential users of the service have also registered strong interest with parcel service Doddle saying that the technology would have a "dramatically beneficial effect" on their business with the reliability and regularity of train services giving them a strong advantage over road deliveries.

Cycle courier companies have also registered an interest in using the service to create linked delivery networks where couriers are able to carry out the first and last mile deliveries, with train services being used to link the city centres. One company estimated that it may even be faster to send parcels by courier and train from Edinburgh to London than by any other means.

The company behind this innovation is the Cambridge-based technology consultancy, 42 Technology. Founded in 1998, 42 Technology solves complex engineering problems and designs next-generation products for the energy, healthcare, consumer and industrial sectors.

The company – which currently, happily, numbers forty-two engineers, product designers and scientists – specialises in creating and proving innovative solutions to a range of interesting and exciting problems. Recent projects include: award-winning gas valve designs; payload delivery mechanisms for spaceplanes; exciting new chocolate, beer, ice-cream and coffee products; and drug delivery devices for the medical sector.

Over the next 18 months the consultancy is going to develop, test commission and demonstrate a working prototype while fostering relationships with rail industry partners. However, it is not simply enough to create the technology and offer it up to the industry, the business case needs to be further developed and verified through a pilot trial in order to ensure that the technology is adopted into industry.

42 Technology is seeking partners to work with from across the industry including: train operators wanting to see how this technology could enhance their business; manufacturers thinking about integrating this technology into their future rail vehicles (either as new-builds or retro-fits); and rolling stock companies.

If you are interested and want to learn more about getting involved, then please let us know by sending an email to adaptablecarriage@42technology.com

Alumast cares about safety in rail infrastructure

HOW TO REDUCE DANGER ON ROADS, AT RAILWAY STATIONS AND LEVEL CROSSINGS?

Because the road and rail infrastructure, including lighting poles, is in a bad condition, every year hundreds of accidents and collisions happen in Poland. Our roads are full of old lighting poles without required certificates and standards. According to the statistics, the safety of drivers and pedestrians depends mostly on road and rail side infrastructure. The installation of modern composite technology helps to reduce number of injured and victims due to a car crash with lighting pole. What is more, thanks to an innovative pole marking, the visibility on level and road crossings can be much better. Alumast S.A. in collaboration with PKP PLK SA (Polish State Railways) implements new solutions which increase safety of all road and rail users. Depending on the speed, point of impact and momentum, the car after a collision with train is most often thrown with a great force on the roadside where various lighting poles are mounted. After hitting a steel reinforced concrete construction, the car can be literally cut to two. Our solutions consistently replace the old

constructions with new ones - based on polymer composites.

Composite poles are characterised by many advantages and undoubtedly they are more favourable products than their aluminium and concrete counterparts:

- composite poles are compatible with standards of passive safety of road construction and they are manufac-tured in accordance with EN 40-7 standard;
- Alumast's composite poles are characterised by index IK10 and IP44 which guarantees high level of safety for users;
- they are light, easy to transport and to assembly. Moreover, composite poles are distinguished by high strength;
- they do not require any painting or maintenance which significantly lowers operating costs;
- composite poles do not corrode and they are resistant to road salt, cleaning agents and pollution resulting from traffic;
- they are characterised by high passive safety, low energy absorption, very good mechanical and UV resistance
- composite access doors do not have any scrap value which reduces the risk of theft, devastation and dismantling.

Moreover, composite lighting columns can be produced in any colour according to RAL palette. To increase the visibility of dangerous areas and level crossing we offer multicoloured lighting poles. We are able to produce i.e. white and black poles with yellow stripes; such poles have been installed at railway station in Gliwice, Poland.

Alumast products are developed on the basis of innovative technical and technological solutions, including nu-merous patents. We have all required certificates and our composite lighting poles were tested by Railway Institute in Warsaw, Poland.

The safety issue is particularly close to our business and we want to treat it as our mission.

For more information about our products, please email us at **info@alumast.eu**

alumast

New and revamped trains for abellio's fleet

FOLLOWING THE TAKEOVER OF OPERATIONS ON THE SCOTRAIL FRANCHISE ON 1ST APRIL THIS YEAR, ABELLIO SIGNED A CONTRACT WITH HITACHI RAIL EUROPE TO SECURE 70 BRAND NEW ELECTRIC TRAINS.

Once delivered from September 2017, these faster, quieter and longer trains will operate on Scotland's busiest route – the Edinburgh-Glasgow via Falkirk High Line which is part of the Scottish Government's Edinburgh to Glasgow Rail Improvement Programme (EGIP).

The new trains will also run between Glasgow-Stirling/Alloa/Dunblane; between Edinburgh-Dunblane, and on south Glasgow suburban routes (Cathcart Circle) as well as be phased into services to Neilston, Newton and Shotts.

EGIP will enable eight-carriage electric trains to run between Glasgow and Edinburgh, providing almost 50 per cent more seats in the peak than current services and reducing journey time.

In an industry-first deal, the Scottish Government could buy up the full fleet of trains after 25 years for just £1 – securing the carriages for use in Scotland well beyond Abellio's 10-year ScotRail contract.

The contract also includes a long-term maintenance deal, with plans in place to stable and service the trains at depots in Edinburgh.

A significant step in delivering the new trains took place in early September with the opening of Hitachi's train manufacturing facility in Newton Aycliffe in North East England.

Dominic Booth, Managing Director of Abellio UK, said: "As the opening of Hitachi's train manufacturing plant in Newton Aycliffe shows, it is all systems go for new faster, quieter and longer trains for Scotland. These 70 brand new trains will deliver shorter journey times, greater capacity and better quality of service for passengers."

"New and refurbished trains were a pledge of Abellio's ScotRail franchise bid and I am delighted that the delivery programme is well on track at such an early stage. Scotland's rail industry is going through a renaissance at present – wonderfully exemplified by the re-opening of the Borders railway – but our programme of substantial investment will bring benefits to passengers and communities across the country."

He added: "The new Hitachi trains will mean shorter journey times, greater capacity and better quality service for our passengers, and these coupled with our newly refurbished trains will improve people's journeys and contribute positively to the economy."

Benefits will be experienced not only by ScotRail Passengers but also by Abellio Greater Anglia passengers who will soon see the results of Abellio's £12 million refurbishment investment.

ScotRail recently unveiled the first of 40 new-look trains which will have improved seating, better lighting and power sockets for customers. The 137-seat Class 158 trains will also be fitted with new CCTV systems and automated passenger-counting systems.

The first refurbished carriage was deployed at the successful opening of the new Borders Railway, and the remaining revamped trains, with modern carpets, finishes and toilets and improved disabled access, will be rolled out at a rate of around one per month until April 2018 on routes across Scotland.

ScotRail Alliance managing director Phil Verster said: "Completing the first refurbishment is a big moment for this exciting project, which I believe will make a real difference for passengers using Scotland's railways.

"We've listened to customers, and that feedback is reflected in the upgrades being made. For example, seats are better aligned with windows, interiors are brighter and more modern, and people can charge phones and laptops during their journeys."

Abellio Greater Anglia is delivering an extensive upgrade programme despite two short franchise terms that only began in February 2012. The programme includes Abellio Greater Anglia's intercity services £12 million refurbishment upgrade that is underway for the MkIII carriages. This will see customers benefit from power points, new carpets, new seat covers, new lighting, new controlled emission toilets, an interior and exterior re-paint and extra seats (enabling over 600,000 Standard seats to be provided annually).

In addition, refurbishment has been completed on the train operator's local Class 153 and 156 diesel units and is underway for the first ten Class 321 suburban electric units, whilst smaller scale refresher projects are taking place for other electric trains including the Class 317/6 units, 40 Class 321 units and all 21 Class 360 units.

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We hope you have enjoyed our latest Railway-News Magazine, be sure to look out for our next edition.

We are now producing a magazine on a quarterly basis so please do not hesitate to contact us at al@railway-news.com if you would to feature your latest technology in an upcoming edition and also please take a look at **www.railway-news.com** for all that latest Rail news, events and technology.

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