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Railway Interiors Expo 2017 The Greatest Show Yet!

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The AeroLiner3000

A Fully Compatible Double Decker Train for Great Britain

RAILWAY INTERIORS EXPO – ISSUE FIVE 2017



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14-15 NOVEMBER 2017

PRAGUE, CZECH REPUBLIC

Letter from the Editor

As the days are getting shorter and we're spending less time outside (unless of course you're in the southern hemisphere!), it's apt that we're focusing our attention on interiors.

Railway Interiors Expo 2017 takes place in Prague, Czech Republic, on 14–15 November. This bi-annual event, which was first held in 2004. After being held in Cologne, Germany, for several years, 2015 marked the first time the event was held in Prague. That year, the show attracted visitors from 76 countries and regularly attracts more than 2000 visitors from around the world. For complete details about the show, you can visit their website at www.railwayinteriors-expo.com.

In this issue we have an interview with

Studios, the studio behind the design of

the AeroLiner 3000, a fully compatible

double decker train for Great Britain,

with additional contributions by Swiss

company Lantal Textiles AG, a leading supplier of railway interior textiles, and

British company Forbo Flooring (stand

no. 2018), both of whom were involved

We also have a review of the recently

with interesting details and architectural

We have a guest contribution by Steven

Consultancy on creating an inclusive

society by providing disability access to

rail. He has worked on rail accessibility

Virgin, Luas, London Underground and

Dave Walker from Parker Hannifin has

customer experience whilst increasing

written his 'Rolling Stock Diet Plan',

asking 'How can we improve our

projects across Europe, including for

Mifsud, Director of Direct Access

know-how. Quite frankly, an excellent Christmas present for a fellow train

published Britain's 100 Best Railway

in this project.

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Network Rail.

Andreas Vogler from Andreas Vogler

capacity on the network, and at the same time reducing both our carbon footprint and the cost of running the railway?'

Tangerine looks to future transport in its contribution 'Transforming tomorrow's passenger experience today', noting that 75% of the world's population will live in cities and 30% of the population in developed countries will be over 60 years old by 2050.

Our next issue, due to be published in February 2018, will focus Middle East Rail held in Dubai (UAE) 12-13 March. There will be 400 suppliers exhibiting at the event with more than 10.000 visitors attending. Confirmed speakers include the Director General for Mobility and Transport at the European Commission, Henrik Hololei, and the Director General of UNIFE, Philippee Citroen. If you are going and would like to be represented in our magazine, please contact Andrew Lush at al@railway-news.com.

Stations by Simon Jenkins for you. It is a Please enjoy our 5th issue of 2017! highly worthwhile read that is brimming





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COVER: © Forbo Flooring









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Railway interiors EXPO 2017

The greatest show yet

Your guide to the must-attend showcase of railo interior innovatio

Railway Interiors Expo heads to Prague, Czech Republic, on 14-15 November 2017, to provide a vital showcase of all of the latest and nextgeneration railcar interior developments. Railcar manufacturers, operators and designers will be able to take a close look at all the very latest railcar interior designs, technologies and components. Visitors will be greeted by everything from seats to flooring, composite materials, sanitary units, lighting, soft furnishings, infotainment systems and so much more. This year almost 100 exhibitors are expected, from countries including Canada, Japan and the USA – not to mention a very strong European contingent.

Another big draw is the carefully curated two-day, two-stream conference, which, like the exhibition, is free to attend. This year almost 50 speakers will share their experiences and ideas – including representatives from Fraunhofer FEP, Idesign Sweden, NewRail, Ostende Vienne Orient Experience, PriestmanGoode, SNCF, Spirit Design and the Vienna University of Technology. Please see our website for an up-to-date, full program. In addition, tangerine will treat attendees to exclusive design workshops.

Networking opportunities continue into the evening of Tuesday, 14 November with a drinks party, which is open to all attendees.

The Expo, which was launched in 2004, regularly attracts more than 2,000 attendees from all over the world.

Register online now for your free entry pas railwayinteriors-expo.com

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The AeroLiner3000

railway-news.

A Fully Compatible Double Decker Train for Great Britain



By Zoe Cunningham and Josephine Cordero Sapién

aeroliner

The AeroLiner3000 is a fully compatible double decker train for Great Britain, first unveiled at InnoTrans 2016. The UK Department for Transport has shown an interest in the AeroLiner3000 and negotiations are on-going.

With capacity a major challenge for UK railways, designing double decker trains already in use on the continent for the UK network is an innovative solution to a problem not easily solved. Space

restrictions mean trains can't be made taller or wider, but nor can they be made longer and longer, because of platform lengths. We wanted to hear more about this solution put forward by Andreas Vogler Studios.

In addition, we have chosen to feature the contributions made to the project by two suppliers to the railway interiors market, Lantal Textiles and Forbo Flooring, as part of our focus on railway interiors for this magazine issue.

Railway-News: Mister Vogler, can you tell us a bit about how you approached the problem of overcrowding on trains? Where did you initially see opportunities for design to alleviate the problem? And what were the design constraints?

Andreas Vogler: Britain has greatly invented the railways in the 19th century, but is also trapped in its historic infrastructure, which grew very fast by many private companies, who made the tunnels as small as possible to cut costs. It is the cost of liberal capitalism that often a greater vision is missing. But that was 150 years ago.

However, British rail is a story of success with growing passenger numbers since the 1990s. British train operators so far have been catching this capacity growth with seat pitches reaching their ergonomic limits and with peakhour travel being very expensive. However, passenger numbers keep on growing, because also the roads and the sky are full in Britain. It is a country on the move.

At the moment we are trying to On the continent, the capacity form alliances to further promote growth has been caught by the train. We are talking to various double decker trains, which authorities and manufacturers to increase a train's capacity by up to invest into a future train concept, 50% without a change in which has not only benefits for infrastructure. On the continent the UK, but through its advanced the loading gauge historically is technology can also save large enough to allow that; in the considerable running costs on UK it's not. standard gauges all over the world.

When the Rail Safety and Standards Board RSSB with its Future Railway Programme launched the competition of a future train in Britain, we wanted to take up the challenge.

The very tight infrastructure in UK is a major constraint in our design. Already 10cm more in each direction would bring great benefits for the design. In the short term, the train we are designing could bring a relevant seating capacity increase without affecting the infrastructure at all, in the long term, we hope it starts a discussion on how UK can create an rail infrastructure for the 3rd millennium. DLR (German Aerospace Center) has already developed some radical but consequent ideas in this direction.

RN: What stage are you in the development of the AeroLiner 3000 prototype? We hear you're

hoping to build a prototype next year.

AV: After a feasibility study we did complete a demonstrator study, where we designed and built half a coach as a full-scale demonstrator, which was showcased at the world's largest railway trade fair, InnoTrans, in September 2016 in Berlin, Germany.

RN: What's unique about the challenges in the United Kingdom's railway system from other systems in Europe?

AV: As mentioned above the British loading gauge is below 4m for the majority of the lines, whereas the main lines on the continent are at around 4.5m. Also the platform level in UK is 915mm, whereas the European Union Technical Specifications for Interoperability TSI target is for 760 and 550mm, especially to accommodate double decker trains. This creates ergonomic challenges when increasing capacity. Also many railway stations are not really prepared for a capacity increase. You also need to think how to get people on and off a train. The train is a system which you always need to





RN: Do you hope your prototype for the UK could be applied elsewhere?

AV: Other countries in the world also have low tunnels (as for example in downtown Sydney). In transportation 200 years ago. It addition, we could conceive of double decker underground trains the rich and the poor before the in mega cities. A train with a lower invention of cars and aeroplanes. profile also has a lower aerodynamic resistance, which saves energy and CO2 emissions.

But the major highlights about the developing high-speed network AeroLiner3000 are not only its lower profile; even build in a standard profile it will reduce weight and energy use as well as wear on wheels and tracks, which brings considerable cost reductions. Beyond that it also brings a new modern design approach: an airline-style train should attract other operators worldwide.

RN: Aging infrastructure is which form little 'trains' on the a challenge in cities and countries all around the world. Generally speaking, could make them automatically

how can they start to think about futureproofing their railway systems?

AV: The invention of the train was the entrance into mass was the major means of travel for And astonishingly still today is one about modernising of the most competitive means of travel in terms of safety and pollution. Especially in Europe the starts to make many airline connections redundant.

But there is still a lot of smallscale historical thinking in the train world. A larger vision of the style and noblesse that train travel had in Victorian times is missing in the UK, but also on the continent. We need to work on that larger vision. Why should Google, Apple and others build automatic cars motorways, all with a lot of loss powered by individual engines running at 80mph, when you

drive on a car carrying train calling a major cities with a speed of 225 mph? Los Angeles - New York in your own (electric) car in 12 hours, while working, dining and charging the batteries of you car. Future trains could even have individually powered high-speed coaches, running independently and on demand, forming trains on the fly and decoupling at highspeed to serve remote locations on demand. Watch out Google and Apple, trains could be the means of travel in the future, if the vision is right. The technology is already in the present.

RN: Can you tell me a bit about how you arrived at the four Cs of the design brief: capacity, lowcarbon emissions through lightweight construction, customer comfort, and cost-sensitive innovation. Is this a strategy that other governments should adopt when thinking infrastructure? Could you explain how your design addresses each of these attributes?

AV: The 4Cs have been adopted and aligned from central government policy and are common to most transport systems particularly aerospace and automotive. We have been expanding the diagram of the four Cs by additional orbits, which all interlock. If you make your coach lighter by clever engineering and you can fit more people you save energy and carbon emission, but also costs while you increase capacity. Initial costs of the train maybe higher, but savings start as

soon as it is running. The challenge is to increase also passenger comfort; that why we also have psychology in our diagram orbit. A lot of the misery of today's train travel, not only in the UK, is poor communication, poor psychology to make passengers happy and poor passenger flow. We are working on a conceptual level on those fields as well. We should not forget, the passenger is the most important element in the system.

RN: Anything else you'd like to add?

AV: Andreas Vogler Studio has experience in the design of small spaces. Working in aerospace design and doing practical research in British architect Richard Horden's Micro Architecture Study Group at Technical University in Munich, we were confident to design a double decker high-speed train for the very tight British loading gauge. It is changing some paradigms of a train, it is more like a Learjet on rails.

RN: Which major aspects design and research u have been doing ace field for ' in this contex

AV: I think this is difficult to highlight with a concrete example, it has more to do with a state of mind and design methodology. For me it was always crucial to work in a transdisciplinary manner and not be

trapped inside the disciplines and inside the specific industries, which all have their mentalities and home-grown limitations.

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In aerospace design one is developing a high awareness of the safety and engineering implications each design decision may have or not. As a designer you get very sensitised to lightweight construction, energy consumption and high passenger comfort in very small spaces. Whereas many in the train world may think a double decker on a low profile is not possible, for us with our background it was clear from the beginning that we can create high business jet-like comfort in a restricted volume, which people will also perceive as comfortable

The same should be said for the engineers of DLR (German Aerospace Center). Although the department we worked with is specialised in high-speed trains, they have the whole background of aerospace engineering, which influenced their thinking about light construction, mechatronics, aerodynamics and so on.

RN: What is "interactive" about the train's controls

AV: We are planning the possibility for the passenger to interact with the environment by an app. The passenger can control light, the shading of the electronic windows individually. But also each passenger could tell the app if he/she feels too cold or hot. The smart system would give the passenger feedback of what the average temperature wished by all passengers would be. It is a kind of crowd sourcing environment. On a psychological level the system would give the passenger the feeling of having

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control over the environment, to give feedback. Furthermore, it would bring in a social component and balance the individual feelings

RN: Which pai principles of a did you apply eriors of this otimal c

Before the interior design comes the architecture of the coach. We were very lucky to work closely with the brilliant engineers from the German Aerospace Center DLR to develop a very lightweight coach structure with generous windows within the extremely confined British loading gauge. Now the interior design has to provide the skin for the engineering and architecture of the coach. It is everything you touch with your senses: with your hands, your eyes, your ears, even smell. This is all essential when you think about colours, materials, illumination, ventilation and heating. You have to understand your design not only from a technical and standard point of view, but from a human point of view. It is not only about durability, maintenance and cleaning, it is about supporting the passengers to experience the relaxation or excitement of travel, give them a temporary home or office. Psychological and physiological comfort. A feeling of safety and trust. All this flows directly into design decisions and the value of this design process for the interior should not be underestimated, especially in trains. Airline operators understand this much better, because there is more competition.







RN: Which materials and finishes did you use in the train's construction and interiors that are not usually found in trains today? Did any of these materials come from your aerospace research? If so, which?

AV: All materials used are traingraded and available for train outfitting. However, usually you don't find it in this combination in trains. This has several reasons. Our approach, however, comes from our airline background, where the choice of materials is also limited by especially fire regulations, but the choice and possibility of the development of patterns and colours is much higher, since all airlines want to be freight rail market.

individual and distinguished. This means, we thought of the train as designing an airline interior and only then started to research the availability of stock products. We also looked at many trains and clearly defined what we didn't want: interiors which look like refrigerators and unmotivated funny and dark colours and wild patterns on seats and carpets, unfortunately often found in public transport.

RN: To provide some context for readers: Why do you (and your client, I assume) think it makes sense to focus design efforts on, and invest in, rail infrastructure today?

AV: Trains were the very first means of mass transportation more than 150 years ago. Trains today are some of the most environmentally friendly and safest means of transport and the development of trains in UK is a story of success. The number of passengers has doubled over the last 20 years and the number of journeys is expected to double again over the next 25 years.

Trains are fast, don't suffer traffic jams and bring you directly into the centre of cities. There are worldwide large investments into high-speed rail infrastructure.

Western Europe dominates the market, followed by Asia and the Pacific. North America ranks third, due almost entirely to its large

Lantal Textiles: Seating

The Swiss company Lantal isn't only known for high-quality products and services for the passenger transportation industries but also for its innovative spirit. As a manufacturer and refiner of premium textiles and a provider of many useful services, Lantal's mission is to do everything it can to make travellers feel at ease en route. The high comfort of the passenger was also a main objective while designing the AeroLiner3000, therefore a collaboration between the two parties seemed like an ideal combination.

Lantal's involvement in the project started with a request from the Swiss architect Andreas Vogler from the Munich-based Andreas Vogler Studio. Mister Vogler knew Lantal already from the aircraft business. He approached the company with the inquiry to sponsor their high-quality leather for the mock-up of the AeroLiner3000 at InnoTrans 2016. Lantal leather is made of first-class central European cowhides with a subtle grain and a polished surface and is also in compliance with all relevant railway safety requirements. Lantal provided Mister Vogler with different leather samples and a colour card, which offered him a wide variety for the future look of the mock-up seats. After Mister Vogler found the right leather, that matched his vision for the mock-up, Lantal sent the final materials to the seat manufacturer Rica Seats in Finland. Rica Seats, which is known for its superior workmanship, then processed the leather on to the seats for the

AeroLiner3000 mock-up.

The participation in a such pioneering and innovative project is associated to Lantal's capability to analyse megatrends that influence passenger transportation. Lantal's design team attends trade shows and exhibitions to obtain information on design directions, and researches the train market to better understand where the voyage will go for our customers and their passengers in the future.

Forbo Flooring

At InnoTrans 2016, we were delighted to see our Tessera FR flooring feature in Andreas Vogler's full-scale mock up of the AeroLiner 3000. Tessera FR is a collection of attractive. hardwearing carpet, offered in various pile constructions and textures, all designed to deliver specific aesthetic and performance advantages. The installation of carpet in rail vehicles adds significant warmth comfort and acoustic benefits.



This new double-decker concept aimed at Great Britain's rail industry received a lot of attention at the show. The UK has yet to see a viable double-decker model that will tackle overcrowding issues but Andreas Vogler's concept fits within maximum height/width restrictions and increases capacity by 30%.

The design has been incredibly well thought out, right down to temperature control – heat will be controlled by passengers with an app, which will gauge an average response and set the temperature accordingly. What's more is that each window section can be dimmed by passengers if the light from outside is too bright. The interior design scheme can only be described as quite beautiful. The natural, muted colours are calming and aid the relaxation of passengers. The wood finishes and modern textures could have been used in a hotel or someone's home walking through the carriage was like walking on to a private jet - a feeling which was at the forefront of Andreas Vogler's design vision.

Everything from onesource

Lantal's all-in-one solutions benefit rail system operators and travellers.

Lantal has one primary mission:

to make the journey as comfortable as possible for travellers, from boarding to arrival. The steady pursuit of this goal as well as high-quality products and services have given this Swiss company an excellent reputation worldwide. All-in-one solutions and product innovations are designed to assure the ultimate in well-being for passengers and to simplify working procedures for railway operators. Lantal serves all major rolling stock and seat manufacturers, numerous specialised completion firms and over 80 rail system operators around the world.

Millions of commuters worldwide use public transportation every day to get to and from work. Some of them have to cope with excruciatingly long travel times. This is why Lantal regularly deals with the question on how to make the travel experience as pleasant as possible for travellers.

Lantal's objective is not only to create the ultimate in passenger well-being with its products but at the same time to support railway operators with competent advice to streamline the implementation of their complex projects. The company's contributions include project management, advice, laboratory tests, engineering services, and in-depth competence in all-in-one solutions. For hospitable interiors, Lantal offers a diversified line-up of seat covers in exquisite flat weaves and beautiful leathers or robust velvets, highquality rugged carpets as well as harmoniously matched headrest covers. All Lantal products comply with the relevant standards and specifications.

60 years of experience in rail interiors

Lantal's know-how is based on decades of experience: in 2016 the Swiss enterprise celebrated its 60th anniversary in the domain of railcar interiors. In the aircraft segment, Lantal was able to leverage its competencies for the development of flame-retardant textiles beginning in the early 1950s, in cooperation with Boeing and NASA. Lantal owes its current status as one of the world's leading providers of all-in-one solutions for railcar interiors to long-standing partnerships and on-going refinements.

Single-source convenience

Lantal leaves nothing unfinished in the customer's hand: the company offers total solutions from a single source, from design development to production and warehousing. This all-in-one approach allows Lantal to implement customer projects quickly, efficiently and to high-quality standards. Lantal's engineering department is authorised to perform

modifications of textile interior elements independently and to rely on 3D drawings to develop seat covers, literature pockets, and floor coverings. These services simplify, expedite and streamline customer projects and strengthen the rail system operator's brand identity. Operators also benefit from bundled competencies with a single point of contact, which reduces their administrative effort. The result is a lower cost and less complexity in the process management.

Conceptual Forecast collection

A harmonious and functional interior ambiance is essential for making trips as pleasant as possible for travellers. It not only contributes to passenger well-being but also enhances the travel experience. Lantal's design team has again evolved its acclaimed Trendletter to create a Conceptual Forecast collection with seat cover fabrics, leathers, carpets and curtains. The current collection features stylish designs that can be transformed into tasteful overall concepts. It offers three "classes" to match the application and the envisaged travel

experience: Modern Luxury, New Premium and Premium Light.

Laboratory services

Lantal's certified in-house laboratory is equipped with the resources needed to test interior components that are subject to the EN 45545-2 standard. Lantal has developed a complete EN 45545-2-compatible line of products that can be delivered off-the-shelf or in customer-specific material combinations with the relevant fire test report. In addition to fire tests, the laboratory also performs other qualification tests involving wear





resistance, pilling, lightfastness and colourfastness. The laboratory is accredited pursuant to ISO 17025. All tests within the scope of its gualifications are available to third parties on a contract basis as well.

Lantal

Lantal is a leader in the design, production and distribution of textiles and services for the international community of aircraft, bus and railway operators. The company offers forward-looking guidance with the objective of achieving the ultimate in passenger well-being.



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E-Leather Limited	3010	www.eleathergroup.com
Flexfab LLC	4046	www.flexfab.com
Forbo Flooring Systems	2018	www.forbo.com
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The Rolling **Stock Diet Plan**

Let's start with the basics: the four Cs challenge that has been with us for some time now.

railway-news.com

By Dave Walker, Parker Hannifin

It originated from the UK Railway Technical Strategy and defines the top-level strategic drivers as

- Cost
- Customer
- Carbon
- Capacity

I don't wish to go through each in detail as they are all fairly selfdescriptive; however as a combined message they ask the following question:

"How can we improve our **CUSTOMER** experience whilst increasing **CAPACITY** on the network, and at the same time reducing both our **CARBON** footprint and the COST of running the railway?"



You may ask, "how does this affect railway interiors, systems, designs and functionality, oh and by the way, what's this diet plan you mentioned?"

Well, the four Cs are inextricably linked; for example, won't an increase in capacity mean an increase in the carbon footprint? Won't more capacity mean a higher cost? Or, if we take cost out, will this negatively affect the passenger experience? This is where we need to think about the relationships across the four Cs and how we, as suppliers, can think holistically to benefit the complete picture.

An example is shown below where, starting with a clean sheet, a pantograph control solution has been developed for use without the need for an auxiliary compressor.

From an interiors perspective, this example illustrates our ability to have a direct impact on the four Cs, the four key top-level drivers, particularly when we employ innovative thinking. Not all projects or activities will be able to affect all four quite so obviously. They may have a significant impact in one area whilst still having a positive impact on another, but the thought process remains.

If you look back at Fig. 1, we can see that two factors affect these four Cs and they are weight and space. These factors are also easier to address and this brings me to the diet plan:

• weight

• space

We at Parker have been looking at these issues for some time, wanting to improve them. It is not

just a case of reducing the size of go some way towards addressing something; performance this, but the optimised design characteristics must be at the very must include a consideration of least retained but preferably access for maintenance and enhanced whenever possible. We service requirements. also have to consider mechanical strength, suitability for the However, the previously illustrated example shows: weight and space can also be reduced by returning to basics and challenging the current thinking. The "we've always done it this way", or "this is best practice", "if it ain't broke, *don't fix it"* sayings need to be challenged; then maybe a new best practice will come to light. Looking at a complete system within the vehicle along with all its interfaces from a completely clean sheet will give us the opportunity to question, review and potentially improve that system utilising the latest technology and manufacturing advances. New technologies that benefit the whole life-performance and lifecycle costs can be considered, including the IoT (Internet of Things). Operating from this level we can also take a holistic view of the vehicle system with the four Cs in mind. The link, then, to innovation - which may not mean a completely new solution, but could include technology transfer from other industries and utilising alternative technologies - can truly be explored and the benefits maximised.

operating environment and the forces that may be applied. The reduction in size may also not result in a proportional weight loss, depending on the construction materials. Therefore, we should look at each point in isolation and then as a whole in order to achieve the ultimate end result. Weight: there are obviously many things that can affect component weight. Size, shape and material are all key, but production method can also be vital in producing the optimum form. Just consider the ability of additive manufacturing to produce components without traditional problems, such as shape and form restraints, or material waste produced by machining. The resulting components can be complex forms that maximise material thickness; this gives us engineered solutions that are both mechanically sound yet of lighter weight, and all in a shape or form to fit and integrate into the interfaces.

Space: reducing equipment weight alone may not affect the space envelope required; however, some gains can usually be made. It is worth weighing up the cost of aiming for using less space against the cost of developing the equipment to fit. Miniaturisation in itself can be an expensive exercise. It may be better to think of the effective utilisation of available space and look at methods to reduce wasted space. As previously stated, additive (or 3D) manufacturing can Manager at rail@parker.com

To discuss how Parker can help you address the 4 Cs utilising a holistic system design approach please contact Dave Walker, Parker's Rail Market Development







The widest portfolio of floor coverings for rail



Flooring for Rail

As more and more people eschew commuting by car, rail has become the mode of choice for many daily travellers.

Roads are getting busier and weekend demand is also increasing. With a rise in rail ridership across all ages, the aesthetic of interiors needs to appeal to a wider range of demographics than ever before. Forbo offers the widest portfolio of compliant floor coverings for rail on the market.

Coral FR Entrance Flooring

If you could reduce the cost and time of cleaning without lifting a finger, what would you say? In the absence of a magic wand, the answer lies quite literally at our feet. It is in the floor covering you choose for your rail vehicle project.

At our Coral FR production site, we manufacture entrance flooring and installation, can do the following:

- stop up to 95% of dirt and moisture entering a rail vehicle
- may save up to 65% of the lifetime cleaning costs of the other interior floor coverings



that with appropriate maintenance • reduce the potential for slips and trips

How?

A passenger entering a train vestibule will be met underfoot by a moisture-removing surface that will get rid of wet and dry soiling from the soles of shoes and suitcases without them having to so much as wipe their feet. Coral FR also reduces premature wear and tear to interior floor coverings, minimises cleaning and maintenance costs and protects passengers by reducing slip hazards, increasingly important in the winter months and in wet weather.

Benefits:

- high moisture absorption
- dirt scraping for effective clean-off

- excellent soil hiding properties
- advanced colouring and design choice
- reaction to fire EN 45545-2: HL2

Coral Move FR

Within the Coral range is Coral Move FR. It features soil-hiding properties but it is also warm and has acoustic benefits, crucially enhancing the passenger experience.

With bespoke customisation capabilities, our design team will work to match brand and colour requirements on an individual project-by-project basis. Coral Move FR is also made from 100% regenerated Econyl yarn making it a responsible choice.

Coral FR is welcoming, attractive, easy to maintain, saves you money and is even environmentally conscious. Who knew you could get so much from a floor covering?

Flotex FR Flocked Flooring

Flotex FR will withstand high volumes of traffic and is very easy to clean because of its short fibres. It is the perfect choice as it encapsulates the durability of a resilient flooring with the comfort, • homogeneous, durable slip resistance and acoustic

properties associated with textiles. • low life-cycle costs - easily We offer a complete custom design service, allowing you to match the floor precisely to your interior design scheme or corporate identity colours.

Benefits:

- high durability
- hygienic
- easy to clean due to short nylon fibres
- slip resistant
- reduces airborne allergens independently approved by Allergy UK
- reaction to fire EN 45545-2: HL2

Marmoleum FR **Linoleum Flooring**

Marmoleum FR is composed of a high percentage of natural raw materials, making it very environmentally friendly. It offers something completely different to other floor coverings. Because of its UV-cured finish, it is scratch and scuff-resistant meaning it will stand the test of time against suitcase wheels and frequent footfall.

Benefits:

construction





- repaired
- resistant to cigarette burns
- wide range of colours per design
- reaction to fire EN 45545-2: HL2/HL3

Tessera FR Carpet

Tessera FR is offered in a combination of pile constructions creating a unique appearance. When installed on a rail vehicle, it can be colourised to create a bespoke design. It is slip-resistant and because of its heat-trapping capabilities as a textile, it will help to curb heating costs

Benefits:

- durability and appearance retention
- flexibility in colourisation
- slip-resistance
- reaction to fire EN45545-2: HL2
- comfort underfoot
- acoustic benefits

To request a sample of any product, email: transport@forbo.com or visit http://www.forbo.com/flooring/ en-

uk/segments/transport/phvxkk



Careers in Rail

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In 2018 Railway-News is launching an investigation into careers in rail that will run as a series in our quarterly magazine: By Christopher Sargent

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what avenues can people take to get a job in the rail sector? What gualifications are required? What are the employment prospects? What jobs are even out there? And what would a typical day in that job look like? We will look at apprenticeships, degree options, special training colleges and more and we will interview individuals working in rail to feature their jobs and personal experiences.

To whet your appetite, we've spoken to Amanda White, Head of Rail at Transport for Greater Manchester, and Thomas Colantuono, who is a Rolling Stock Engineer at Hitachi.

Amanda White Job: Manager

Hi Amanda, thanks for talking to us. What do you do? What's an average day for you?

My work is very varied. I'm a senior manager in transport, so that means I'm responsible for a team, managing and leading people. I represent rail across the transport association, looking outwards from the rail industry with regards to projects, investments and clients.

My role is complex in an operational and technical sense. manage the relationship between this organisation and the public one, and I have to be up-to-date on a lot of live information. I also have to keep an eye on all of the organisations involved to make sure that they're performing. It's also a commercial role. I'm in charge of transferring station assets, such as when TfGM became the owner of Network Rail in the area.

How did you develop to get to where you are now?

I did a ten-week placement that gave me insight into the industry. I liked it, and didn't even apply for

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anywhere else! It's a job in which you can provide for society, and it's a job for life.

I began my career technically, and as I progressed, it became more and more about communicating those plans. What was important with the HS2 project was not only getting it right, but also communicating those plans. It's about evidence-based lobbying, which means telling the public why we're engaging in a project and why we know we'll need it.



Just 16% of rail workers are women, and only 4% of engineers are female. Why do you think fewer women work in rail?

There's already a certain narrative about what it means to be in rail. People don't necessarily know what it's really like. We need to show people that it's more interesting, which has to start at school. For me, I liked maths and physics when I was younger, I was why not you? Also, don't work so different from a lot of girls. I found mechanical engineering interesting. But we need to make it more inclusive to women from very early on.

There are very few women in technical areas, although a shift is Where can people look happening now where there are now more and more females in the workplace. There are sometimes men that are more difficult to communicate with than a woman, and I did come across the tendency in engineering to do things strictly by the book. But there are also a lot of men that are very helpful.

The HS2 project is a good example of an organisation that has more females than males: it's a very diverse project. That made it an enjoyable, dynamic and energetic space to work in.

How will the role change in the future?

There's going to be a lot more investment in rail, for example in infrastructure across the "Northern Powerhouse." The way we use and invest in rail will of course shift, and things like telecoms, signalling and planning will go digital. There will be smarter and more efficient thinking about how rail is used, and the angle of the industry will become more commercial and

outward-facing as Network Rail sells off parts of the business to reduce debts. I hope that it will become more open to customers, and they should be able to understand more of what goes on in the industry.

If you could talk to a young you, what advice would you give?

Believe in yourself. Somebody has to get that job that you want, so hard! I'm a perfectionist, so I would say choose your battles carefully. National Rail is a huge organisation, but getting involved in HS2 made me feel like an individual person.

further for information?

Railway Technology magazine, Rail Engineer and Young Rail Professionals are all great sources.

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Thomas Colantuono Job: Engineer

What's it like being an engineer? What are the best and worst things about your job?

In my profession, I'm a kind of design engineer. I support the production of trains; I have to oversee the process and make sure that every part of the design is correct, that it's delivered on time, etcetera.

The advantage of my job is that I get to interact with a variety of professions, from technicians to project managers. The

disadvantage is perhaps that the plan changes frequently, when another engineering problem comes up. Then, you have to leave what you're doing and do something else. There's also a good opportunity to move up, after gaining five or so years of experience.

It's all challenging and interesting and in an international environment, as Hitachi is a company that does business in Japan, the UK and Italy. Some days are very busy, but I personally prefer to be busy. It's an interdisciplinary job, thanks to the different areas of the company. There are both social and technical aspects, for example.

What are employers looking for?

You have to remember that the first time you send your CV, your employer doesn't know you. For engineers, you should have a bachelor's degree – engineering is of course the best, but they do allow other degrees. My interview process started with a group assessment, then moved on to individual, so it makes a big difference to show emotional intelligence. It's important to be proactive, enthusiastic and polite

What made you want to go into a career in rail?

I really like trains! So in that sense

I'm doing the job of my dreams. In rail, there are a lot of aspects to the engineering that interact with each other; electric, mechanical and communicative parts. Engineers have to network and engage with lots of different people.

If you could talk to a young you, what advice would you give?

That there are many different paths for engineering, not just design, and that my job leaves me tired but satisfied! Make sure you accept every task given to you because it will lead you to interact with different people. It takes a lot

of time to get experience, so be patient, proactive and humble. Even the most experienced leader

has something to learn!

Starting with our February issue in 2018, we will look at the apprenticeship programmes offered by Network Rail and Transport for London as well as apprenticeships on offer by private companies and we'll take a look at the new National College for High Speed Rail, which opened its doors to its first group of apprentices last month.

Additional writing by Josephine Cordero Sapién





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Here Come Broadband Flat Panel Antennas:

A Paradigm Shift for High-Speed Rail Connectivity By David Helfgott, CEO, Phasor

so important. It tops the list of priorities for pretty much everybody today, and this is becoming a very hot issue for train operating companies. The ability to offer ubiquitous broadband access to passengers is a differentiating factor and reliable broadband connections on board puts any passenger rail company at an advantage over competitors and unconnected transport alternatives. Additionally, this capability is essential for rail operations, supporting applications such as scheduling, track condition monitoring, logistics updates, crew communications, security and telematics that monitor the train performance and health of systems on board.

Basic rail connectivity solutions available today rely heavily upon

Staying connected has never been oversubscribed terrestrial wireless SATCOM antenna technology has come a very long way, and the services, which are not uniform growing demand for mobility has and can degrade rapidly in more seen it pushed even further. The densely populated areas, as well in rise in popularity of the regions where coverage is poor, smartphone, the tablet and other such as outside city centres. mobile devices has brought datacentric activity to the forefront. In addition, people want to use these devices no matter where they are to run a plethora of applications from social media, web browsing, streaming services, email – and much more. This need for "always on" connectivity has created a demand for broadband-capable antennas that can meet the requirements of performance and much higher throughput than ever before, and for rail specifically, the requirement for a suitably rugged, reliable and low profile form.

The one, ubiquitous means of ensuring connectivity on board trains is to connect via satellite. Satellites can be accessed anywhere, and they provide a reliable means of communication. To access one, all that is required is a clear line-of-sight to the satellite. Satellite communications (SATCOM), working in complement with terrestrial wireless connectivity, has the potential to enable universal, consistently powerful broadband access for rail passengers and operators, but only with powerful and reliable SATCOM antenna technology.

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So why flat panel antennas? The rail industry is under pressure to cater to the broadband needs





of passengers, many of whom are antennas – very low profile, solidbusiness travellers and commuters state, electronically steered that require access to their work email, internet and social media. Until now, rail operators who wished to deploy SATCOM networks have depended upon traditional parabolic antennas that employ mechanically steered mounts to enable the dish to rotate to maintain pointing towards the satellite and to avoid interference. This requires complex, motorised systems with many continuously moving parts. When they do fail, it takes time for parts to be obtained in order to repair them, which involves the train being taken out of service. Furthermore, these traditional antennas are bulky and must sit under large radomes, affecting their clearance and ability to fit beneath tunnels.

It's not ideal. But there is an alternative to large, domed

antenna technology. These are sometimes called Flat Panel Antennas, but there is a subtle difference in the latest developments.

Flat Panel Antennas (FPAs) have been in use since the 1980s. Narrowband FPAs, which operate in L-Band, can only produce moderate connectivity speeds and airtime can be prohibitively expensive. The new development is for "wideband" FPAs (in the Ku and Ka frequencies) which have the potential to empower true broadband connectivity. However,

there have been two principal factors that have held their mainstream deployment back cost and performance. They are complex pieces of technology and that is why it has taken time to develop FPAs that can finally meet expectations and price points that will enable them to hit the mainstream market. In a report by Northern Sky Research, NSR's Flat Panel Satellite Antennas, 2nd Edition, published in February this year, it was forecast that cumulative FPA equipment sales will reach \$9.1 billion by 2026.

It may also help to take a brief look at what is going on in the satellite sector at the moment. There is a revolution occurring in the satellite communications market. Traditional wideband geosynchronous (GEO) satellites are being designed for mobility with very powerful, interlocking spot-beam coverage areas. These are also called GEO-HTS satellite constellations, and include operators like Intelsat and SES. Additionally, new small satellites, which were previously the preserve of the scientific and

academic communities, have of the market, which necessitates proved to be highly capable and enterprise-grade connectivity to are moving into commercial meet the demands of on-board deployment. The developments in users and operations. Its sleek and the market mean that small extremely compact design (under satellites in Low Earth Orbit (LEO) 2 inches high), will allow it to and Medium Earth Orbit (MEO) will conform to the train roof and it provide high throughput will only require nominal connectivity and therefore can maintenance as it is completely deliver mobile broadband solid state with no moving parts. applications in more locations The Phasor antenna is also "future globally. There are several LEOproof", and it will operate and HTS mega constellations on the interoperate between GEO-HTS table that will be deployed in the and LEO/MEO constellations in near future such as LeoSat, the same frequency. It is able to OneWeb and SpaceX. The track two satellites simultaneously wideband FPA will be the key - essential for LEO small satellite enabler for both the GEO-HTS systems. It is part of a wave of new and LEO/MEO constellations, antennas that will soon come to empowering the delivery of market to accommodate the mobile broadband services to insatiable demand for mobility, passenger vehicles globally. which is driving these mega There are several manufacturers constellations. of Flat Panel Antennas that are working towards commercial deployment and they use different Antenna developers must technologies. Therefore, it is constantly be several steps ahead important to point out that to prepare for the changes that different FPAs will have different are to come in satellite technology capabilities and different strengths and capabilities. One size will not in different applications. It is fit all in this market, so IT important to realise that not all managers and rail operators will FPAs are the same. Certain FPAs need to carefully assess their will be more suitable for use in the connectivity requirements in order consumer market with lower cost to make the right choice. but also lower performance, whereas others will be highly The market for mobile broadband suited to mission critical enterprise is set for explosive growth across communications applications. all market sectors, and the high-Consideration must be given to speed/passenger rail market is the requirements of the user. What integral to this, and demands a applications will be run over the very high standard of connectivity. service? What level of Phasor looks forward to serving performance is required? Can the this market with a highly reliable, user withstand any interruption in high-performance ESA that reservice? How robust, powerful defines the on-board connectivity and flexible is each technology? experience. Phasor will be making its unique **Electronically Steerable Antenna** To learn more about Phasor's (ESA) available to the high-speed ground-breaking technology, visit rail market for commercial service in 2018. As a flat panel, softwareus at: http://www.phasorsolutions.co defined antenna, this will not only meet but exceed the requirements m/phasors-technology







- Compliant with UK, European, Asian & US Rail Fire Standards
- Easy to Clean due to Non-Porous surface
- Pictograms & Logos easily incorporated
- Low Life Cycle and Maintenance Costs
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Sure-Fire Flooring Solutions for Rail

The flooring is being supplied in two colours – light and dark grey – which will help contribute to improved passenger experience on the refurbished trains.

C30 Metro,

Treadmaster are also supplying 17,000m2 of their TM8 product in a mid-grey colour for the new C30 metro cars for Stockholm public transport body Storstockholms Lokaltrafik (SL). Bombardier are building the 96 x 4-car Movia C30 trains in a contract worth US \$771m.

The interior layout has spacious gangways and features an innovative use of indirect light to create an open and bright environment.

The flooring will certainly be put through its paces as the number

of designated priority zones has been increased to eight, ensuring ample room for persons with reduced mobility as well as providing extra room for those traveling with wheelchairs, baby carriages or extra-large luggage. The new trains are scheduled to commence operations on the line in 2018.

litachi, UK

Treadmaster have been working as a key supplier to Hitachi Rail since Using existing technologies the first IEP Class 800/801 trains Treadmaster developed a bespoke were commissioned back in 2014. product that could be used as a The new intercity trains are now water barrier while meeting the nearing passenger service, as part fire requirements of BS6853 of the £5.7bn investment to Cat1b. The product was 1.5mm, modernise journeys along the East half the thickness of their standard Coast and Great Western main rail flooring products. lines. As part of the manufacturing process, there has Additionally, they are supplying been a strong focus on a hightheir standard TM8 product for the toilet modules, driver's cabs and quality UK-based supply chain offering bespoke solutions. cycle rack areas.

The London Underground is used by approximately 1.3 billion passengers every year so their rolling stock requires a floor covering that can handle this amount of footfall while also fulfilling a crucial safety function.

Treadmasters TM7 is the ideal product for metro flooring applications as it meets the highest fire rating of BS6853 Cat 1a and the updated European standard EN45445-5 2013 HL3. Combine this with high durability, slip resistance and a genuine easy-toclean product, then you have what could be considered a winning formula for rail operators who are concerned about the change in passenger fire safety standards.

Transport for London (TfL) have
undertaken an extensivethe p
out a
Stratf
2019.refurbishment of the Underground
rolling stock to extend the life of the
existing fleet, some of which will
eventually be replaced by new
trains from the NTfL (New Tube for
London) tender which is to be
awarded next year.Part of
person
The fit

Jubilee Line, London

Treadmaster are working on the mid-life refurbishment of the 63 seven-car 1996 rolling stock on the Jubilee Line for the London Underground.

The Jubilee Line is the third-busiest on the network and carries over 200 million passengers a year.

Treadmaster are supplying over 10,000m2 of their TM7 flooring for the project, which is being carried out at London Underground's Stratford depot and will run until 2019.

Part of the refurbishment is to improve the ambience inside the cars as well as the accessibility for persons with reduced mobility. The flooring is being supplied in two colours – light and dark grey – which will help contribute to improved passenger experience on the refurbished trains.

Bakerloo Line, London

The Bakerloo Line is the oldest fleet in operation on the London Underground network and Treadmaster are supplying over 9,000m2 of their TM7 product for the refurbishment of the 36 sevencar 1972 rolling stock cars. Treadmaster worked together with London Underground project engineers and the TfL design department as well as with their external appointed designer JedCo to provide two colours palettes, wine and grey, one for the main flooring and one for the vestibule areas.

ey e on

Hitachi's engineers were looking for a flooring product that could provide a dual solution in the passenger cars. Firstly to support the primary floor covering of carpet and help it to achieve the more stringent fire standard of BS6853 Ca1b and secondly to provide a water resistant barrier between the carpet and the subfloor to protect the subfloor from liquid ingress and potential costly maintenance.



Rail Floor Specialists Treadmaster have a proven pedigree in providing the highest fire retardant *applications, the Class 800/801* flooring for the rail sector and particularly for underground rolling stock. They are the current engineering capability to work on flooring supplier to the London Underground and are working on a number of projects for TfL including the new Elizabeth Line trains.

Simon Andrews, Treadmaster's Business Development Manager,

says that *"although we specialise* in metro and commuter rail programme demonstrates that we have the flexibility and bespoke products for our customers.

"We can offer solutions for all types of rolling stock and although fire safety is a higher priority when considering which flooring to specify on rolling

stock, other attributes such as wear and slip resistance, design aesthetics, cleanability and maintainability are also key factors."

Treadmaster are continuing to support Hitachi on their other contracts including Class 385 trains for Abellio Scotrail and the West of England AT300 rolling stock programmes for First Great Western.

New EN45545-2 standard raises burning questions

Simon Andrews, Treadmaster's Business Development Manager, is concerned that the new EN45545-2 standard is a dilemma for metro operators who currently adhere to more stringent national standards such as BS6853 Cat 1a and are now faced with switching to the new EN standard.

The two standards are not comparable so it would appear to be a downgrade in passenger safety if an operator switches directly from BS6853 to EN45545-5

Andrews says he hopes that operators will not feel pressured to reduce costs by switching to materials that would not have previously met the relevant national standard but now meet the new EN standard.

Treadmaster are able to offer rail operators a robust solution as their TM7 product meets both BS6853 Cat 1a and EN45545-5 HL3 and their TM8 product meets BS6853 Cat1b and EN45545-2 HL3.

Upcoming **Railway Events**

October, November, December 2017

ΑΡΤΑ ΕΧΡΟ

09 Oct 2017 - 11 Oct 2017

Location: 285 Andrew Young International Blvd NW, Atlanta, GA 30313

Held just once every three years, APTA EXPO is the nation's largest showcase of technology, products, and services related to the public transportation industry. With more than 800 exhibitors and 15,000+ industry peers, APTA EXPO is the foremost event where innovation and technology converge to determine the future of every entity of public transit. At APTA EXPO you can expect to network with industry leaders and experts from around the world, get hands-on time with emerging technologies, and learn about how these innovations can accelerate every aspect of your organization. Registration is free to the public and includes unlimited access to the expansive show floor as well as free educational sessions in the Learning Zones on a wide variety of vital topics. Register now for free!

Event website: http://www.aptaexpo.com

Nordic Rail 2017 10 Oct 2017 - 12 Oct 2017

Location: Elmia, Elmiavägen 15, 554 54 Jönköping, Sweden

Nordic Rail is the only dedicated railway exhibition in Scandinavia. It's a fair for companies, organisations and individuals with a professional interest in the railways, directly or indirectly. Nordic Rail is the industry's most important meeting place for customers, representatives and other stakeholders. Here at Elmia Nordic Rail you can hear the latest news, share experiences and build transnational networks. Event website: http://www.elmia.se/en/nordicrail/

African Rail Evolution

17 Oct 2017 - 18 Oct 2017

Location: Durban International Convention Centre, **Durban, South Africa**

African Rail Evolution is the only African forum for maintenance 08 Nov 2017 and rehabilitation professionals that features best practices and Location: Central London, TBC. pioneering case studies on maintaining, upgrading and future-This seminar will focus on the future of London transport in the proofing ageing rolling stock, track, signalling, OHTE electrical and cabling, equipment and/or infrastructure. This is a niche context of the new Elizabeth Line, due to be fully open by event for rail maintenance and rehabilitation engineering 2019, and the plans in development for Crossrail 2, following professionals that will look at future rail systems and the impact the joint statement from the Secretary of State for Transport of digitalisation and big data on maintenance and railway and the Mayor of London backing the project. Planned sessions safety. Leading rail operators will also present case studies and will explore the potential impact of the new line and debate how best to manage maintenance and rehabilitation to opportunities for the wider network - including for intermodal





preserve their rail infrastructure and rolling stock in the future. The event will be attended by representatives from government, rail operators, large industry, i.e. mining and manufacturing, international organisations and the private sector

Event website: http://rail-evolution.com/

Rail Network Resilience 02 Nov 2017

Location: Arup, 8 Fitzroy Street, London, W1T 4BQ

Recent news stories of malware attacks on the NHS, train driver strikes and on-going signalling issues have raised questions about the effectiveness of current network operations and what can be done to address this serious situation. In November 2017. Rail Network Resilience will act to resolve issues of reliability, safety and performance that have brought the industry near tipping point. It's practical, delivery-led focus makes it a must attend event for anyone involved with network operations, safety, maintenance and management, as well as strategy and policy-based roles. Receive 10% off when registering using code - 339RNEWS Event website: http://bit.ly/2woPhbg

SmartMetro 2017 06 Nov 2017 – 08 Nov 2017

Location: TBC

SmartMetro is the perfect platform for engaging with global metro operators on how technology can solve the key issues affecting the urban transport today; from signalling and safety to the digital passenger. SmartMetro works closely with the transport industry to deliver in-depth technical and operational content via innovative event formats to foster networking & the exchange of information and ideas.

Event website: https://www.smartmetro.eu

Delivering Crossrail and Next Steps for Crossrail 2



connectivity, and for regional growth and regeneration prospects for areas that will receive new stations. Delegates will also discuss the integration of latest technologies and communication services on-board and along the route, as well as the passenger and business priorities for utilisation of improved transport links. Further discussion will consider the key challenges ahead for Crossrail 2, including remaining issues around route planning, station locations and the further public consultation stages to be cleared before it can be formally approved.

Event website:

http://www.westminsterforumprojects.co.uk/conference/ crossrail-2017/26951

Transrail Connection 2017

08 Nov 2017 - 09 Nov 2017 Location: Cité de la Mode & du Design, 34 Quai d'Austerlitz, 75013, Paris

Over the years TRANSRAIL CONNECTION has become an international meeting place of the railway and urban mobility industry, allowing numerous national and international main actors of the sector to come together. It is an event for technology suppliers with a know-how of the rail sector, contractors, European and global manufacturers and subcontractors who research innovative technology solutions. This is the 5th time this event is being held and we are expecting more than 500 participants from around the world. They are looking forward to meet and discuss with their customers and colleagues. All participants are able to attend the round table, organised by Ville, Rail & Transports, which will debate 'Automatic Undergrounds Around the World?', and various conferences, focused on three main issues: digitisation, innovations and technology transfers, and urban mobility. Event website: http://www.transrailconnection.com/home

Railway Interiors Expo 2017

14 Nov 2017 – 15 Nov 2017

Location: Prague Letnany Exhibition Centre (PVA), Beranovych 667, Praha 9 - Letnany, Prague, Czech Republic

The Railway Interiors Expo is the international showcase of everything within a railcar, from seating and materials, lighting, washroom facilities and flooring to composites, infotainment systems and security concepts. The Railway Interiors Expo regularly attracts far in excess of 2,000 attendees from all over the world - it is a truly global networking opportunity. Event website: http://www.railwayinteriorsexpo.com/index.php

World Rail Festival 2017 14 Nov 2017 – 15 Nov 2017

Location: Mövenpick Hotel Amsterdam City Centre, Amsterdam, The Netherlands

The World Rail Festival 2017 will be in its 7th year and it continues to grow and attract a large audience of rail operators from around the world. The conference will host hundreds of attendees, 100 speakers and 40 exhibition booths. Over 100 different global rail operators will be represented at this event. Event website: https://goo.gl/Bf6573

AusRAIL PLUS 2017

21 Nov 2017 - 23 Nov 2017 Location: Brisbane Convention & Exhibition Centre,

Australia

AusRAIL PLUS is the largest rail event in Australasia, attracting close to 7,000 attendees. The event comprises of a 3-day conference which includes technical streams, keynote ministerial addresses, CEO forums and more, run alongside a large-scale exhibition of 450 exhibition stands. The theme for this year's conference is: Rail's Digital Revolution. **Event website:**

http://www.ausrail.com/?utm_source=Media_Partner&ut m_medium=email&utm_content=Rail_News&utm_campai gn=P17M01

2nd Annual Rolling Stock Procurement Forum 21 Nov 2017

Location: Addleshaw Goddard, Milton Gate, 60 Chiswell St, EC1Y 4AG, UK

The Rolling Stock Procurement Forum is a focused guide on establishing the long-term requirements for new rolling stock in the UK, and on all aspects of the procurement process. Through case studies, expert advice, and project updates explore all factors that impact the delivery of new fleets, from financing and understanding the viability of fleet life extension, to developing maintenance plans, upgrading infrastructure and future-proofing for new technology and infrastructure developments. Receive 10% off when registering using code -338RNEWS

Event website: http://bit.ly/2uHZH4H

HackTrain Conference

24 November

Location: London, UK

The launch event of HackTrain 4.0. Following the first conference held in June last year, which brought together more than 300 rail and tech professionals to see the latest outputs of their accelerator, results of their B.A.R.R.I.E.R.S. report and with five of the transport-owning groups presented what they learned through engaging with HackTrain. Peter Wilkinson, the MD of Passenger Services at the DfT, is the opening keynote speaker for this year's HackTrain Conference. Other speakers are Tom Ewing, the DfT's principal data scientist, and River Tamoor Baig, CEO & Founder of Hack Partners. The event is packed full with panel discussions with topics ranging from cyber security to increasing competition in rail.

Event website: http://hacktrain.com

Future Rail India Summit

07 Dec 2017 - 08 Dec 2017

Location: New Delhi, India, TBC

Working on the Railway Ministry's vision, Nispana is organizing the 2nd Edition of Future Rail India Summit, which will bring together the key decision-makers. Along with that the conference also brings together technology providers, policy makers, and decision-makers from the Ministry of Railways and private and public sector stakeholders, who will discuss, provide insight and identify technology and best practices for smooth operations.

Event website: https://futurerailindia.com



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All Sense of Being in a Hurry Gone

A review of 'Britain's 100 **Best Railway Stations'** by Simon Jenkins

Published in Hardcover 28 September 2017

Philip Larkin's famous poem 'The Whitsun Weddings' is a tale of a train journey from Hull to London on a hot Whitsun Saturday. Generally thought to have been based on an actual train journey made by Larkin at Whitsun in 1955, Larkin scholar John Osborne has said that such a journey could not have taken place because of a rail strike on Whitsun in 1955. Thus this poem is maybe a wry

marriage between the poetry and the reality of train travel in the British Isles.

A more recent example of railway poetry and reality coming together, is in the small Welsh station of Dolau. Due to be demolished, Simon told me, a local action group was set up expressly for the purpose of campaigning to keep the station open as an unmanned request

RAILWAY STATIONS stop. Their activism was successful. They built a small hut on the platform following the demolition of the station buildings. Within this hut selected railway poems are affixed to the walls for the waiting traveller to enjoy.

SIMON JENKINS

BRITAIN'S TOO BES

As the title already makes clear, this book, then, is arranged as a list of 100 stations geographically grouped, following an

introduction that takes the reader on a journey through the history of the railway in Britain. In addition, there is brief mention of stations that still stand but are no longer used as such.

There are a couple of reasons why he was attracted to writing a book about Britain's stations, Simon tells me. The first, the more pragmatic of the two, was that there were many books written about trains themselves and many books about architecture, yet neither the train enthusiasts nor those with an architectural bent had bothered to turn their attention to stations. Leaving this gap unfilled would have been a shame.

The second embodies the spirit of Larkin's poems. Scenes of arrival and departure, human emotion, excited hugs of reunion, tearful goodbyes, sights normally

precluded from public view, but here visible to all, coupled with the ourselves to get to the right anticipation of travel vividly demonstrated by immediacy of the trains themselves, once loud and steam-powered, today possibly electrified and very much faster.

Indeed, this second, emotional aspect reminds me of one of my childhood favourites – The Railway Children. The scene where the eldest, Bobbie, stands on the platform as the train arrives, steam everywhere, concealing the alighting passengers, finally sees her father, at last freed from wrongful imprisonment, and rushes towards him with shouts of 'Daddy! My Daddy!' is still the one to most reliably move me to tears. This is what Simon Jenkins calls the romance of the railway.



And yet, as we're hurrying platform, grab a newspaper and a coffee, buy a ticket and get on the train, we're too focused on our immediate goal to pay attention to our surroundings. Simon Jenkins makes a powerful plea for us to stop and take a moment to really see the buildings in which all of this is taking place. And so this book is in part a lesson in architecture, both in the grand, over-arching sense presented to us at St. Pancras and a celebration of details, such as the capitals of the columns at Great Malvern station, which are described as 'the most remarkable ironwork on the Victorian railways'. As we read about the individual stations, their masterminds, their guirks and their defining features, we are treated to a pleasing

sprinkle of cheerful descriptors -



he hoped his readers would take

the aforementioned Great Malvern, a one-time retirement stronghold, is presented to us as an 'upland Torquay', while Carnforth spent decades being a 'railway Purgatory' – and all manner of guite interesting snippets that would surely please the likes of Stephen Fry.

I was surprised to learn about my local station, Exeter St David's, that to lesser-known, yet splendid it had been there that a young publisher had the idea of replacing citing examples such as Norwich, cardboard with paper as the material for book coverings to make them easier to read on a train. Simon Jenkins writes, 'Exeter St David's can thus claim to have inspired the paperback [...]. A plaque on the station honours this with Tom and Barbara from The event.' I will go in search of it the next time I'm there.

away from his book. His answer was two-fold. We all know that the big London termini such as King's Cross are impressive buildings. We are even likely to recognise them in pictures. And they are undoubtedly outstanding feats of engineering wedded to architecture. However, he says he would like to draw more attention stations throughout the land, Portsmouth or Carlisle. My favourite, leafing through this book with its many lovely colour photographs, is the striking art deco station of Surbiton, a place I'd hitherto only ever associated

I asked Simon Jenkins what it was

Good Life. The other takeaway he hoped for was that readers would appreciate

Surbiton – Picture reproduced by courtesy of the Railway Heritage Trust. Photo Paul Childs

stations as minor works of art. Obviously designed to suit their purpose and, because of their scale, be engineering marvels, stations display a unique commitment to architectural design and to bold beauty. Some, like Bristol Temple Meads, look like veritable cathedrals. Wemyss Bay, in Scotland, Simon Jenkins writes, 'is one of the few stations that, in my opinion, qualify as a coherent work of art', or indeed 'science encased in art'. It is rightfully given the honour of being featured on the cover. Stations are unique in this way; airports and bus stations lack this kind of imagination.

All the stations in this book have been rated with one to five stars in an entirely subjective manner, as Simon Jenkins admits, acknowledging, 'I am acutely aware of the often fierce partisanship of rail enthusiasts'. Though he is clearly less of a fan of Birmingham New Street than I am for example, I give this book a full five stars. It is a most enjoyable, informative read. The hardcover comes out today, 28 September 2017. When then the paperback is published, it would make for the most perfect book to read on a train journey, the pastime chosen by Philip Larkin too.

"At first, I didn't notice what a noise The weddings made Each station that we stopped at: sun destroys The interest of what's happening in the shade. And down the long cool platforms whoops and skirls I took for porters larking with the mails, And went on reading."

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railway-news

BAULTAR ADVANCED FLOORING SYSTEM

Baultar Durable Solutions is a Canadian company that designs innovative products for the transportation industry (railway freight, railway public transit, buses, infrastructure). Baultar's flooring division offers an advanced flooring system called Abrastop[™]. Abrastop[™] is a composite structural flooring system that includes (in its most complete version) a floor covering, an integrated sub-floor, and reinforcing layers that combine the best features of each of these elements. The superb durability of this product helps clients to reduce the lifecycle costs of their flooring, and the product's light weight enables clients to generate energy savings.

HEATING

Abrastop[™] Foam Heating Floors provide superior thermal comfort, energy efficiency, reduced installation time, and lower life-cycle costs – all in one product. Abrastop[™] Foam Heating Floors are complete unitized systems that combine Baultar's highly wearresistant floor covering with a lightweight heating structural subfloor. The heating element, perfectly integrated between the floor covering and the subfloor, is a thin, additional layer that completely covers the panel surface. This high-quality system has been specially designed for mass transit and combines all of the benefits of floor heating systems with the advantages and superior durability of Baultar's flooring solutions.

LOGOS

Through their highly configurable flooring solutions, Baultar offers clients the possibility of integrating reduced mobility logos, bicycle logos, indication pictograms, and other designs into their chosen Abrastop[™] flooring option.

CUSTOMIZABLE COLOURS



minutes and facilitates the evacuation of passengers.

3D BANDS AND SURFACES

Baultar also offers 3D surfaces, which are commonly used for guidance and can indicate the presence of potential dangers or improve adherence.

AddGRIP SURFACES

To increase adherence, various types of AddGRIP surfaces and/or bands with different designs and shapes can be included in Baultar's advanced flooring system.

INSERTS

Baultar offers several different types of inserts that can be added to their flooring system when the flooring is being adapted to meet a client's particular requirements. These include trap doors (by adding handles and trims), seat supports, and tailor-made mechanical fasteners.





Disability access 30

Disability access to rail transportation plays a crucial role in creating an inclusive society

railway-news.com

By Steven Mifsud, Director of Direct Access Consultancy and an NRAC Access Consultant

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The Life Opportunities Survey (Office for National Statistics) identified that 74% of adults with an impairment name at least one mode of transport which they 'do not use at all' or 'use less than they would like' compared to 58% of adults without an impairment. This suggests that disabled people face more (or increased) barriers to public transport use. In the United States, the National Organisation on Disability found that disabled people are four times more likely

to lack suitable transportation than design negates the need. non-disabled people.

To use a public transport system successfully, users need to be able to find the route to their desired destination, understand scheduling information, be aware of cancellations or delays and platform changes. Barriers to people with mobility impairments may result in inconvenience, embarrassment, anger or exposure to injury by poorly trained attendees. Accessible

Accessible design benefits rail operators by reducing workload and increasing user selfsufficiency which in turn leads to increased use. From an economic aspect, accessibility to rail transport encourages trade, tourism and enables disabled people to access social opportunities including employment. Examples of barriers include the following:

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- Difficulties experienced when entering stations and boarding trains are exacerbated at times of overcrowding. Disabled people can find it difficult to move around, hold on to handrails, and reach priority seats
- Audio announcements are useful (when audible and clear) but inaccessible to deaf people if used on their own
- Visual information displays are useful (when updated to match audio announcements) but inaccessible to visually impaired people if used on their own
- Passengers travelling at peak times tend to move through crowds purposefully, intent on reaching their destinations quickly. This means they are not always aware of other passengers, in particular those with impairments which are not immediately apparent
- Factors which can have physical impacts (such as discomfort, pain or tiredness) or emotional impacts (such as lowered confidence, anxiety or frustration) can affect transport use in a number of ways such as changing the modes used, the time of day journeys are made, and how journeys are planned
- Inconsistencies between (and within) modes limit the number of journeys disabled people make which include multiple interchanges.

'Inconsistencies' refers to differences in the design of vehicles, wheelchair access, availability of ramps and information formats

 Visual impairment strips at the edges of platforms do not address the issue of gaps between carriages which may confuse those with visual impairment into thinking it is the entrance to the carriage.

To address these issues, a Disability Access Audit takes a snapshot of a station at a particular point in time. Using relevant guidance in the country of operation, such as the UK's Accessible Train Station Design code of practice or the Dubai Universal Design Code, an audit will consider:

- Plans for concourse and waiting areas prior to departure at terminals and on platforms at other stations to reduce the physical effort needed to transit
- The use of wayfinding systems to find gates/platforms and amenities e.g.: toilets, refreshments, including the fonts being large enough to be seen at a distance, that there is a high contrast between text and background, distinctive colours are used for signs in contrast to the general terminal colour scheme and
- The use of electronic displays to provide information if they are updated promptly. Issues to consider are ambient

placed in overhead locations

conditions that cause difficulties in reading displays. Daily, seasonal and weather-related variations in light quality and quantity may also impact

How to ensure people understand operating policies – New York City Subway operates both express and local trains; it can be confusing to know when to get off the express and on to a local train

How to reduce the gap between a carriage and platform. This gap should be as small as possible to keep front wheels of wheelchairs, walking aids and visually impaired people from falling through the gap. The Jubilee Line in London uses fullheight barriers and Washington D.C. uses platform edges marked with contrasting colours, truncated domes and flashing lights.

The benefits of improving disabled access can assist with others -Steinfield (2012) highlighted how eliminating stairs is a good design solution as it increases the speed of boarding and disembarking.

Steven Mifsud is the Director of Direct Access Consultancy and a NRAC Access Consultant who has worked on rail accessibility projects across Europe including for Virgin, Luas, London Underground and Network Rail.



SENSIT s.r.o., Producer of Sensors for Railway Vehicles

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The Czech company SENSIT s.r.o. has been producing temperature, humidity, CO2, level, flow and position sensors since 1991.



TEMPERATURE + HUMIDITY + CO2 + HUMIDITY TEMPERATURE Ohm Ω

11111 4 to 20 mA 0 to 10 V RS 485 CAN protocole

In the railway vehicles sector, Sensit produces temperature sensors, combined temperature and relative humidity sensors and combined temperature, relative humidity and CO2 sensors. All products for this sector must have specific properties as defined in the so-called railway standards (EN 50155, EN 61373, EN 50121-3-2, EN 45545-2 and NFPA 130). They include especially resistance to vibration and electrical safety; they have to meet fire standards, and electronic components have to meet the conditions for electromagnetic compatibility (EMC). All these characteristics are taken into consideration during development – this is confirmed with a test report and a certificate issued by an independent technical testing laboratory that is properly accredited.

As the latest products in our assortment of railway vehicle components, we would like to introduce to you combined temperature and relative humidity sensors as well as combined temperature, relative humidity and CO2 sensors.

Combined temperature, relative humidity and CO2 sensors

With increasing demands for effective regulation in homebuilding, this trend has also found its way into the transport sector. Railway vehicles are no exception. We have developed combined temperature and relative humidity sensors and combined temperature, relative humidity and CO2 sensors with RS 485 (MODBUS) output and CAN (CANopen) protocol in accordance with the requirements of this sector.

These combined sensors are used to measure two or all of the three variables in passenger compartments of train units and carriages and are a part of the



temperature



temperature, relative humidity and CO2 concentration control system.

With the use of the combined temperature and relative humidity sensors and the combined temperature, relative humidity and CO2 sensors, we secure e.g.:

- the creation and preservation of a comfortable climate for passengers in railway vehicles
- the removal of condensation from train windows and walls
- energy savings based on the CO2 value evaluation by the air-conditioning unit
- increased efficiency of the whole control system
- cost savings









The sensors meet the railway standards and type tests are carried out by the notified body:

- insulation test in accordance with EN 50155
- shock and vibration test in accordance with EN 61373
- electromagnetic compatibility in accordance with EN 50121-3-2
- the plastic box and PCB materials meet a set of requirements for the R 24 materials according to table 5

for the fire hazard level HL1-HL2-HL3 of EN 45545-2:2014

As a modification we can provide this combined sensor in a material which meets the requirements of NFPA 130.

The design of combined temperature and relative humidity sensor and combined temperature, relative humidity and CO2 sensors secures:

• temperature, relative humidity and CO2 measurement in small

- aesthetic design
- better air flow around the temperature and humidity sensing element
- significantly faster response time of temperature and relative humidity
- convenient installation and removal of the sensor

For more information about our products, please visit our website www.railwayvehicles.com



temperature humidity

SENSIT

www.railwayvehicles.com



EN 61373 EN 50121-3-2 EN 50155 EN 45545-2 **NFPA 130**

extend your senses



Commissioning **Applications**

Condition Monitoring Applications

Something we at ASC know all too well is this: rail transport imposes particularly stringent demands on measuring technology. That's why Assessing driving comfort involves our development engineers strive equally hard to develop ultradurable and reliable sensors for our rail sector customers. These are sensors which prove their worth, day after day, in operations travel. The uniaxial accelerometers to monitor safety and wear for trams, underground trains as well as rolling stock carrying passengers and freight; they meet all the key quality and safety requirements.

Leveraging many years of experience and having an established presence in the rail transport sector has allowed us to develop a particularly wide range of these units for our customers, in this key sector. And when there is a need to master individual challenges, we also develop customer-specific sensor solutions that meet even the most complex of requirements.

In the rail transport sector, we offer sensor solutions of unrivalled quality, including for the following applications:

Driving comfort measurement

measuring low frequencies all the way to 0 Hz, to personally record even the slightest impacts and vibrations, which may impinge on the comfort of passengers during

railwav-news.com

ASC 4311LN and ASC 4411LN, boasting low frequencies and exceptional dynamics in signal and noise performance, are ideally suited for assessing driving comfort and go a long way towards ensuring passengers have a more pleasant ride.



Within the railways sector, structural analyses are not only performed on trains, but also drawbridges, tracks and the track bed.

The task of monitoring vibration on drawbridges (structural health monitoring) in particular may require exceptionally long cabling between the sensor and the measuring computer, which results in unwanted signal losses in the process. The ASC CS series of capacitive sensors guarantee loss-free signal transmission over even the longest lengths of cable due to their current output of 4-20 mA. Many customers currently use the triaxial CS-1611LN sensor for such applications.

Accelerometers with lightweight, high-frequency and robust qualities are preferred for the structural analysis of complete trains as well as for individual components. As satisfied customers confirm: the triaxial piezoelectric ASC P203A11 accelerometer more than meets these requirements.

Track bed vibrations are also examined, for example, to record any settling of the subsoil. In this case, underneath the entire stretch in question, the ultradurable and hermetically sealed ASC OS series sensors are used. such as the uniaxial ASC OS115LN or the triaxial ASC OS315LN.

Operational stability test

In rail transport, individual components such as bogies, axles, brakes or wheel bearings, are exposed to extreme and other ambient conditions. Investigations into operational strengths help uncover potential weaknesses at

an early stage and contribute decisively to ensuring the safety and reliability of rail vehicles in the process.

Our customers use numerous capacitive accelerometers from ASC to monitor individual components as well as complete trains. Both the uniaxial ASC 4421MF and the triaxial ASC 5525MF are preferred choices in this context, due to their high shock resistance and their extended frequency range when measuring vibrations at the bogie and its components.

Bridging navigation

The ability to determine the position of rolling stock at all times is a safety must for modern rail transport. For example, trains may lose their GPS signal when entering a tunnel. Under such circumstances, sensors can help ensure continued accurate positional determination. The ASC IMU 7.x.y. is a sensor with 6 degrees of freedom (DOF) which is often installed in rolling stock for the purpose described. The measuring unit is based on a triaxial capacitive MEMS accelerometer and a triaxial angular rate sensor.

With the IMU 7.x.y, ASC offers a unique modular system, allowing a customised configuration to meet an individual requirement. When it comes to measuring acceleration, there is a choice between the ASC LN series and ASC MF series with a measuring range of + 2g to + 50g as well as a rate range of \pm 75 °/s to \pm 900 °/s.

OS 115LN-010 SN 17-12384

///4SC



///ASC



Transforming tomorrow's passenger experience today

railway-news.com

FATS AVAILABLE

With the current focus on elect autonomously assisted drones self-driving vehicles, it's easy to lose sight of the bigger picture for transportation.

With major rail infrastructure projects underway in Europe and the UK, such as Crossrail and HS2, many are asking what the future of minimise dwell times and improve transport holds.

One of the key challenges facing rail is increasing urbanisation and an ageing population that will put new strains on infrastructure. By 2050 a staggering 75% of the world's population will live in cities seat. By subtly shifting passenger and 30% of the population in developed countries will be over 60 years old.

This leads many in the industry to ask: what would a seamless passenger journey look like in 2050, how can we anticipate the changing needs of people and future-proof solutions against new and rapidly developing technologies and how can design transform the customer experience to not only meet but exceed expectations?

Undoubtedly, a vision for the future will include smart stations and adaptable train carriages that passenger flow through a station, with longer trains and platforms to accommodate an ageing, less mobile population. Digital surfaces to get to the platform for your on the exterior and interior of the train departure. train could provide real-time information to help passengers quickly identify an unoccupied expectations on-board a train, the carriage and seating could be reconfigured to better utilise space during peak times to ease overcrowding.

Today's travel experience is already being enhanced by various to make journeys more joyful. travel apps. Looking to the future, big data and IoT devices will help to plug the current gaps in people's experience travelling between different modes of transportation. By utilising shared services, transportation will move towards becoming multi-modal

with a unified end-to-end journey. experience. For instance, your phone could help you know whether you have time to grab a coffee before your train departs by co-ordinating the predicted queue length with how long it'll take you

Whether it's trains, planes or automobiles, consumers are searching for ways to take the trauma out of travel. And in the air, on rail or road, one Londonbased design consultancy, tangerine, has been working with businesses to transform the experience, looking to new technology and intelligent design

"At tangerine, we're thinking about how to address some of the key challenges facing transportation and infrast icture in the future," says CEO, Martin Darbyshire. "Central to this is using a designer's insight to

tify what people's needs will be, anticipating the potential pain points for passengers and points for passengers and creating design concepts which help our clients in rail, aviation and the automotive industries to this intelligence. Our aim is to ences that will enrich all

A combination of customer psychology and design precision saw tangerine successfully transform the first-class passenger experience on the Heathrow Express train service in time for the London 2012 Olympics.

The problem for Heathrow Express was that 15-minute journey between central London and the airport offered little time to make first-class passengers feel special and therefore their premium carriage was empty even at peak times. Tangerine proposed that Heathrow Express would have just one seat on each side of the aisle instead of three seats across, giving passengers individual privacy, with their belongings close by, and a real sense of exclusivity.

"Sitting in first class, I couldn't help but notice that there were lots of seats with no one in them," tangerine Chief Creative Officer, Matt Round, recalls. "So, I thought, better to abandon traditional wisdom, if we can enhance the quality of the passenger experience, drive ticket sales and improve seat occupancy. By changing the carriage format, we were able to provide customers with greater privacy and a sense of exclusivity whilst maintaining 90% of the seats."

It was a truly radical idea – no British commercial railway

carriage had ever been configured this way. Along with other clever changes to layout and signage, the redesign led to a big boost for occupancy levels as well as the Heathrow Express brand. The knock-on effect for all of truly seamless passenger Heathrow Express's customers was reduced overcrowding in standard class, as more people wanted to travel in first class.

> Other ideas to unlock additional revenue streams for the operator and create a seamless passenger journey, from booking to arrival at a destination included: on the move booking, at-seat ticket recognition and online services such as a bookable concierge service to meet you at the airport

Identifying the critical issues that influence how people behave on public transport, and finding the points to improve customer experience is a philosophy that works just as well across all classes of rail travel.

In the standard class carriage, grouped seating with the four seats around a shared table has traditionally held the allure of the passenger, offering a more open and comfortable seating option





within the carriage. Passengers travelling in groups benefit from sharing a face-to-face space in which to converse and interact. Whereas, if the train is quiet, single passengers often select a quad seat to stretch their legs and relax, with a large desk on which to put their things.

At peak times however, with trains at full occupancy, the four-seat grouping becomes undesirable. When carriages are busy, it becomes a space where passenger interaction is awkward. Smaller groups and single passengers are often forced to share the space.

tangerine found that by reconfiguring the seat, they could change the passenger's relationship with the carriage, thereby solving this problem. The design solution angles the seating outwards, improving privacy. A shared centre arm moves up and down, allowing couples, families and groups to use the space more socially, like a lounge sofa. Side arm rests also drop to allow improved egress and wheel chair access, making the seat suitable for everyone and accessible for all





The design focus for any mode of transport should be to identify and enhance the 'touch-points' that improve a person's journey. Understand those and you can create differentiated services that drive growth and build brands.

Whatever the kind of journey, the approach is about understanding the psychology of the traveller. "You identify the patterns that are important, the relationships that matter, to drive the emotions," says Martin Darbyshire. "Then you get it right for consumers, you get it right for business."

More about tangerine: www.tangerine.net/railinterior-design

Mechan's might aids depot development

lechan's distinctive yellow lifting cks are a familiar sight in rail pots across the world.

MECHAN

They are the Sheffield manufacturer's flagship pr a portfolio of lifting and handling equipment that is renowned for its fety and reliability

The tough, yet refined lifting jacks are vital for access to bogies, vheelsets and underfloor components and Mechan's patented Megalink control system ensures they enjoy global popularity. It produces a smooth and safe lift, allowing just one operator to raise an almost unlimited number of units simultaneously from anywhere in the chain.

Lifting jacks may be Mechan's most recognisable contribution to modern depots, but its influence runs much deeper, thanks to a wide range of bespoke products, including:

Bogie drops

Fixed location equipment drops sometimes known as bogie or wheelset drops – enable underfloor modules to be removed, maintained or replaced without lifting or splitting the train. This makes them particularly beneficial when an unscheduled change is required.

Drop systems involve initial investment in pit construction, but can prove very flexible, allowing bogie change to be completed within two hours and saving time on other underfloor work.

Under ca

15t Lifting Jacks

Under car lifting systems allow engines and other modules to be changed without raising the train.

Sitting in a shallow pit below the track, Mechan systems have

removable rails that support various axle loads. In normal circumstances, they are latched into place to keep the road open for general maintenance and when an exchange is required, the car manipulators. vehicle is positioned with the relevant module located centrally above the rails.

Underfloor lifting

พลพาโสก

Mechan produces a range of lifting solutions to raise complete trains or single rail cars, reducing the time it takes to maintain, repair or replace components underneath a carriage.

Cantilever systems are ideal for workshops with space constraints, allowing bogies to be moved beneath the lifted carriage. Alternatively, a column design enables components or complete bogies to be replaced directly behind the lifting equipment.

Rail removal

When it is not necessary to detach located in the workshop floor and a complete bogie, rail removal systems offer a cost-effective alternative to exchanging wheelsets and under car modules. not in use.



ALST

Various handling options are available, to suit the needs of depot operators, including traction motor removal units manual hydraulic units and under

CALSP SC COLST

Stripping down and rebuilding bogies can be heavy work, which is why Mechan has devised a range of products to make their removal, refurbishment and maintenance easier.

Bogie and wheelset turntables enable items to be moved between adjacent roads or around the depot, while bogie lifters and rotators can also be designed to facilitate inspection of other components.

Bogie lifting platforms and their mobile counterparts attach to the frame to raise a bogie to a comfortable working height. Mechan's fixed platforms are will take the weight of a forklift truck, so other operations can continue when the equipment is

©MECHAN Bogie Work Stands





Bogie storage

Keeping large items at overhaul facilities presents space and accessibility problems. Mechan supplies low and high-level stands, stacking frames and pallets to facilitate the safe and ergonomic storage of traction motors, module packages, wheelsets and bogies.

Bogie test press

Once bogie maintenance is complete, a press or test stand is needed to mimic the loads imposed by the rail vehicle and settle the suspension. Mechan recommends adding a spreader beam to transfer weight to the press structure, which can be mounted in the depot floor if tracks are flush, or under a raised section of rail.

Traversers

Mechan is making a name for itself Mechan has sourced flexible in this field, having created the largest traverser in the UK for the Port of Felixstowe's North Rail Terminal.

The firm guides clients from concept to manufacture and installation, producing completely bespoke traversers that meet individual workshop and vehicle requirements. Demand for these unique machines is much lower than other depot equipment, but Mechan is one of the few companies in the UK able to showcase its ability.

Rail wheel profile

Laser measuring is a must for checking wheel, brake disc and rail wear and Mechan is the UK and Irish representative for one of the most advanced systems available. The handheld CALIPRI from NextSense uses three simple lasers to record all relevant wear parameters on wheelsets and tracks, eliminating human error and producing faultless, tamperproof results.

Exhaust extraction

exhaust hoods from Blaschke that guarantee the removal of diesel fumes. They are fitted with narrower pipes than traditional

extraction methods to enable smaller fans to be used, reducing energy consumption and noise.

Sandbox filling

Klein automated sandbox filling systems use a pneumatic pipe to eliminate dust and an ergonomically designed nozzle, similar to those found at petrol stations, enabling the process to be completed by just one operator.

Rail shunters

A greener alternative to traditional shunters is available from Mechan to aid the movement of vehicles around a depot. Zwiehoff's awardwinning, Rotrac electric road and rail shunters are emission-free, relying solely on battery power to trail loads of up to 500 tonnes.

Prestigious partners

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