

ultimate rail

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magazine for wheel detection & axle counting



BEST CONNECTED

FAdC® R2

'Best Connected'
at InnoTrans in Berlin

FAdC® projects
reveal concrete benefits and
additional functions

FAdC® in Kazakhstan
significant pilot project for the
CIS countries

FRAUSCHER

SENSOR TECHNOLOGY



INSIDE

*Good prospects in the CIS countries:
Frauscher Axle Counting System FAdC®
for Kazakhstan railways*

MASTHEAD

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Dear Reader,

2014 is proving to be an important and exciting year for us in terms of market development with the introduction of new systems and technologies and the implementation of innovative production processes.

We will be further expanding our production capacity from more than 15,000 wheel sensors in 2013, which will tend to reduce delivery times and help to limit the inevitable cost increases associated with materials and expenditure.

The ever-growing interest over the years in wheel detection and axle counting systems has so far seen a proliferation in the number of installations – we estimate there are now some 350,000 to 400,000 or more wheel sensors worldwide. Over a quarter of these are produced by Frauscher Sensor Technology alone. We see this as a recognition of both the direction we are pursuing with our technology and our long-term product strategy.

If this has aroused your curiosity, we suggest you visit our stand at InnoTrans in Berlin. This event, which is being held from 23 to 26 September 2014, is the specialist international trade fair for transport technology, innovative components, vehicles, and systems. It has developed into the largest and most significant specialist trade fair for rail transport technology and is also a leading trade fair we cannot afford to miss. We will be showcasing our products there alongside 2,000 other exhibitors from more than 40 countries.

With the slogan 'Best Connected', we hope to use InnoTrans to demonstrate a range of innovative products primarily developed to offer excellent integration and interaction with higher-level systems. This will also be the first time we reveal our new FAdC release, which integrates superbly into any customer-specific system, depending on the technology platform and range of functionality involved. As a result of collaboration with our customers, the FAdC R2 has emerged within a very short space of time as the starting point for a host of new functionalities.

It would be a pleasure to welcome you to our stand at the trade fair. We would be more than happy to book an appointment for you.

Until then,

Michael Thiel

Best Connected at

InnoTrans



International Trade Fair for Transport Technology
23 to 26 September 2014

Highly complex systems require intelligent interfaces. Without a high level of adaptability, it is impossible to apply the many various configurable functions in an optimum way and limit the life cycle costs of the overall system.

With the slogan 'Best Connected', Frauscher will be using InnoTrans to demonstrate a range of innovative products primarily developed to offer excellent integration and interaction with higher-level systems.



Intelligence means adaptability

Signalling and control technology is associated with a high level of complexity and system diversity. Interfaces have a critical role to play in these systems. With its wide range of intelligent interfaces, Frauscher has managed to create an excellent position for itself in this demanding market.

From a development perspective, it has always been Frauscher's aim to offer optimal integration of wheel detection and axle counting systems into any customer-specific system, depending on the technology platform and range of functionality involved. A bonus of this approach is how such high levels of integration often lead to new applications and extensions of functions for the benefit of both the system integrator and the operator. The best example of this is the additional development work for the FAdC.

FAdC® R2: high-level flexibility

Ever since it was unveiled in 2012, the innovative Axle Counting System Frauscher Advanced Counter (FAdC) has been arousing tremendous interest among specialists in the field. Those taking part in product training sessions and configuration workshops recognised just how flexible and adaptable the system is. This

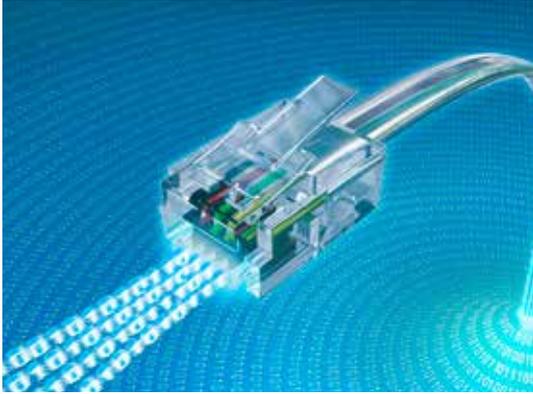
in turn generated new ideas for applications and promoted the development of functionalities. These new features provided the momentum for a comparatively early market launch. The new product, known as FAdC R2, is to be unveiled at InnoTrans in Berlin.

Although just two and a half years have passed since it was introduced to the market, this solution already accounts for more than 40% of sales of axle counting systems at Frauscher.



Optimal integration and interaction with higher-level systems

InnoTrans



Freely available FSE software interface for efficient data exchange

A new standard: Frauscher Safe Ethernet FSE

The open and freely available standard protocol known as Frauscher Safe Ethernet (FSE) offers the ideal solution for system integrators without a software protocol of their own. The FSE protocol was specifically developed for the numerous different applications associated with wheel detection and axle counting. It can be quickly and easily integrated into existing systems.

An efficient exchange of data between systems and sub-systems can only be achieved with high-performance software interfaces. This explains the general trend towards the use of software interfaces. Many international customers are already using the FSE interface on the various hardware platforms in order to communicate with the new generation of Axle Counting Systems FAdC and FAdCi.

The FSE protocol is now well on the way to establishing itself as a kind of standard in the field of wheel detection and axle counting. More detailed information is available online at www.frauscher.com/fse

InnoTrans in September: an invitation

Information on Frauscher's appearance at InnoTrans (23 to 26 September 2014 in Berlin) is available on our website:

www.frauscher.com/innotrans

Please also use this page to enter your preferred times to talk to us and take advantage of the entry ticket.

A convenient solution: the wheel sensor RSR110

Thanks to its open analogue interface, the new high-resistance Frauscher wheel sensor RSR110 supports simple implementation of non-safety-relevant applications. System integrators will find it easy to integrate the sensor into their electronics via the open interface. The evaluation function can also be perfectly adapted to the specific requirements.

This flexible solution offers great availability, takes up very little space, and keeps power consumption and the use of hardware components to a minimum.



New wheel sensor RSR110 with open analogue interface

Quicker means safer: wheel detection system RSR181

A plug-in cable, together with patented rail claws, means the system can be installed and removed, or sensors replaced, in no time at all. This saves time and money and minimises the amount of time service personnel have to spend in dangerous areas. The proven RSR180 system has been enhanced, under the name RSR181, to incorporate a convenient connector for the connecting cable.



RSR181 with plug-in cable and patented rail claw

FAdC[®]: Flexible



A modular signalling project: decentralised control cabinets and communication via a fibre-optic network

On the market for two years now, the Axle Counting System FAdC[®] has a reputation for great flexibility and easy adaptability to suit specific customers' needs, while the host of new functions offers the customer even greater benefits. But what does all this mean for the operator or system integrator in practice? We hope a selection of case studies showing typical user configurations for the FAdC[®] will help to illustrate the concrete benefits associated with the software interface and software configuration.

Case Study 1: network-compatible, decentralised, and customer-specific

In the UK, Network Rail has been working with major players from the rail industry to develop a concept whose primary aim is the cost-effective and sustainable modernisation of regional lines. The modular signalling concept that this involves is based on a decentralised approach. The control circuits for the field elements such as axle counting systems, points and signals

are positioned along the line in 'object controller cabinets'. Communication with the central interlocking is via a fibre-optic network.

In terms of its modular signalling projects, Network Rail opted to use, among other things, the Siemens Westrace Mk II interlocking (formerly Invensys) and the Axle Counting System FAdC. This decision was influenced by the network-compatible interfaces of the axle counting system and a software configuration offering both great adaptability for projects with a decentralised architecture and very economical implementation. In order to ensure communication with the interlocking was as efficient as possible, Frauscher implemented the WNC protocol found in the Westrace Mk II.

Case Study 2: convenient software better than expensive hardware

The implementation of track vacancy detection with axle counters on three-rail (dual gauge) permanent way normally requires a range of additional hardware and adapted systems for the additional functions required of the axle counting system. Such was the requirement to assign the clear/occupied information to the corresponding track gauge. In addition, the standard reset process - reset when the track is clear - was supposed to be used, in spite of there being three rails.

software configuration

Conventional axle counting systems would require many more hardware components for these purposes and an additional, external control system in order to implement the reset logic. With the FAdC, however, the various requirements can be mapped out directly via the software configuration. The result is a cost saving of 30-40% for the components alone.

Case Study 3: clear improvements at the yard

With a view to freeing up space at its steel works, Dillinger Hütte, the leading European manufacturer of heavy plates, decided to build a new ladder track for its sidings. Special emphasis was placed on using dead-end tracks to optimise processes across the entire yard. Another important consideration was the need to improve maintenance intervals and processes. Hanning & Kahl came up with a comprehensive concept involving 16 electrical locally set points. The Frauscher Axle Counting System FAdCi was installed along with the wheel sensor RSR180 to ensure reliable track vacancy detection. The Frauscher Diagnostic System (FDS) is integrated into the higher-level control system via an XML interface. This enables the employees at Dillinger Hütte to see at a glance which track sections are clear/occupied and the number of wagons in the sidings.

Case Study 4: marshalling wagons at the container port

Vostochny Port is an international container port at the Asian end of the Trans-Siberian Railway. In 2013 Vostochny Port JSC decided to enhance the rail system within this port by incorporating a state-of-the-art axle counting system. The modernisation project was also a chance to introduce a facility for automatically directing individual wagons to the right track based on the quality of the coal being carried. To support this, the Frauscher FSE protocol and FMP diagnostics protocol provide the higher-level logistics system from ASK with all the necessary data and diagnostics information. This information enables the software to determine the exact position and direction of all wagons within the railway network. As a result, the wagons can be automatically diverted to the right track based on the quality of the coal carried.



The Axle Counting System FAdC[®]i is also used at Dillinger Hütte to optimise processes at its yard.



At Vostochny Port the FAdC[®] provides information regarding the wagons' position, direction, and load

For more information on these examples of projects, please visit our website at www.frauscher.com/en/media

We would be happy to send you copies of case studies via email: marketing@frauscher.com



FAdC[®]: reducing costs with

Cable connections over long distances can represent a significant cost factor for signalling applications, which raises considerable interest in alternative communication technologies with a proven track record. This is where the Axle Counting System FAdC[®] comes into its own, with its flexible configuration and versatile interface range.

DSL or radio communication via the networks of public operators or railway operators represents an interesting alternative to a system having its own cable network along the railway line and the significant costs and servicing this entails. In many projects it represents a decisive advantage from a system perspective: the significantly lower costs compared with conventional cable arrangements really count for something, particularly when larger distances need to be covered.

Flexible and secure communication

The configuration work involved in DSL or radio communication is anything but a standard task. With each project it is a matter of establishing the transmission options available on a case-by-case basis. The Ethernet interface on the FAdC ensures efficient integration into the various networks.

Once the network provider has been chosen, the next step is to specify the modem requirements and the transmission parameters for the axle counting system with them and make any adjustments accordingly. The FAdC software makes it quick and easy to set the various parameters. The main issues are modem delays, delay times, and timeouts. It is also possible to define the number of data packets sent per

second on an individual basis. The advantage with this option is the opportunity to reduce the bandwidth required when only a small amount of information is being transmitted, which makes transmission much more stable and increases availability.

Case Study 1: radio transmission across the Outback

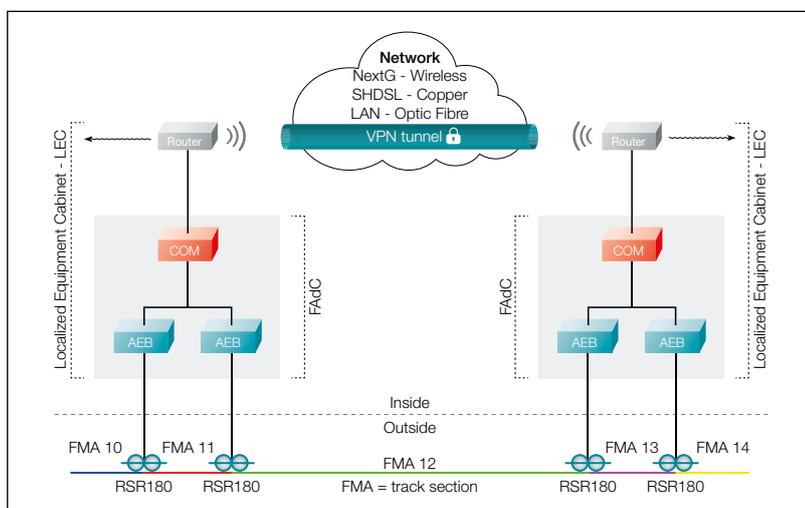
When modernising the line between Spencer Junction and Tarcoola, the Australian Rail Track Corporation (ARTC) also, among other things, chose radio to transmit block information. This project saw the existing track circuits replaced with state-of-the-art axle counting systems. ARTC also chose the Axle Counting System FAdC because of the need for network compatibility. The main means of transmitting block information is a fibre-optic network.



This is associated with high transmission rates, low costs, and easy integration. In the more remote areas with no fibre-optic connections, the Australian Rail Track Corporation decided to use the Next-G radio network from Telstra.

Case Study 2: safety improvements for Schwarzatalbahn

A second example is the Oberweißbacher Berg- und Schwarzatalbahn (OBS) railway, which has made a priority of increasing safety levels. It integrated the AZB plus system (axle-count-controlled train management system) from V+S Ingenieurgesellschaft and FES Bahntechnik.



radio and DSL communication



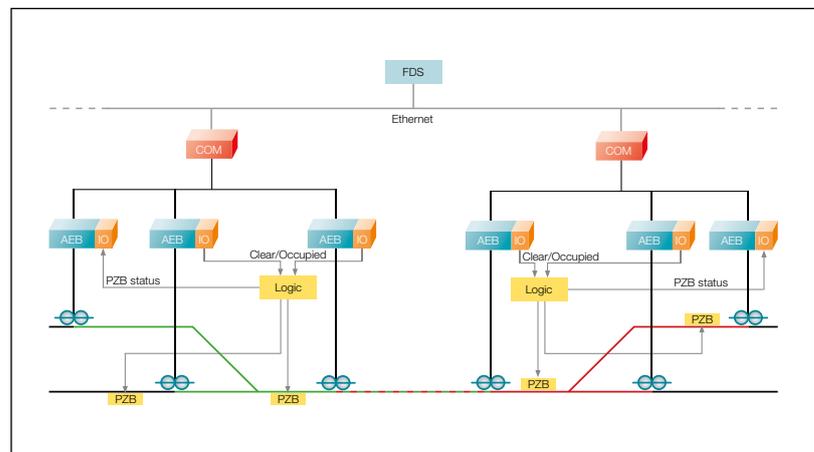
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The TUZ (technical support for train control) system is used on branch lines with simplified operating conditions. The technical support functionality prevents trains from entering track sections which are already occupied. In order to keep costs low for the complete system, OBS dispensed with additional cabling between operating points and transmits data via a public network.

Data transmission via the public network as a cost-saving solution for branch lines

A Lynx modem from Westermo connects the Axle Counting System FAdC with the DSL broadband Internet from Deutsche Telekom and newone GmbH. This data transmission is encrypted by a VPN tunnel. It also represents an ideal configuration from a safety perspective: although the DSL network re-establishes the connection once a day, which leads to a brief interruption, there is no adverse effect on the axle counting system. In the event of any longer disruption to the network during operation, the axle counting system also switches to the safe occupied status.



First order for the Kazakh railway



Uwe Günther, Director of the Representative Office in Astana

Having successfully completed test installations, Frauscher is now supplying the first axle counting systems to the Kazakhstan railway company Kazakh Temir Zholy. The 136 km section of line between Nickeltau and Kandyagash in the Aktobe region in the north-west of Kazakhstan is undergoing modernisation. The new generation of Axle Counting Systems FAdC® is being used as part of this process.

Decentralised is best

The Axle Counting System FAdC is connected to the Westrace Mk II interlocking via a serial interface. Communication is via the Siemens WNC protocol, which has already been used with success for projects in England over the past two years. The evaluation boards (AEB) are accommodated directly in 'object controller cabinets' along the line. From these 49 decentralised control cabinets the communication boards (COM) send the axle counting information to five stations via a network connection. From there the values are forwarded to the interlocking via a serial Siemens interface (WNC protocol). The cabinets are located directly next to the sensors. This kind of decentralised configuration reduces the length of cable required tremendously. Data is forwarded via the existing network. Some 113 wheel sensors RSR180 have already been supplied for the line between Nickeltau and Kandyagash.

'A pilot project for many countries in the region'

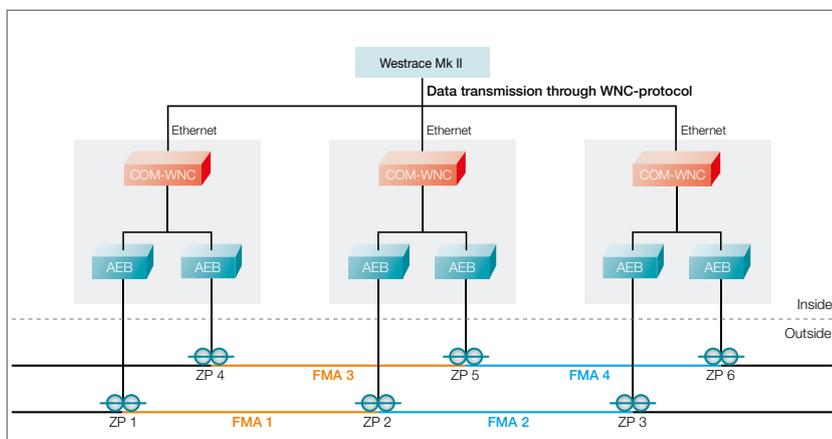
Uwe Günther, Director of the Representative Office in Astana, has an update on the project: 'The collaboration with Siemens during this project is working out extremely well. We had no problem reaching an agreement on the details and we are right on schedule. Commissioning is planned for this autumn and I am very confi-

dent that this will go smoothly. This pilot project is obviously very significant, since the Kazakhstan railway company Kazakhstan Temir Zholy is looking to modernise its network of lines in phases.

The combination of the Siemens Westrace Mk II interlocking and the Frauscher Axle Counting System FAdC with its WNC serial interface is a



very attractive prospect - not only for Kazakhstan, but also for all the other CIS countries and those areas which use the 1520 gauge. The decentralised approach and the use of existing networks for data transmission mean this kind of combination offers tremendous cost-saving potential in these countries, given the large distances involved.'



'It's better to be on the ground!' Frauscher busy in India

Frauscher India is currently building a production facility at Mysore in the Indian state of Karnataka. The plant is due to become operational in September 2014. The facility will handle production and quality assurance for all ACS2000 components approved in India, as well as a range of products and components specifically developed for the Indian and Asian market.

Productive: decisive progress in terms of localisation

The Indian team has already made considerable progress in developing components for installation. These include a trackside connection box with IP65 certification (with the option to upgrade to IP68 level), a reset box which can be used for a manual reset, and new installation bolts specifically designed for the demands of the Indian Railways.

Local: 'Competitive advantages on the Indian market'

Alok Sinha, Managing Director of Frauscher India, is convinced the measures will prove effective: 'The process of localising production marks another important step in the drive to retain a competitive advantage in the market and offer customers a suitably good service at a local



All over the world: well-trained employees ensuring Frauscher technology remains functional.

level. Within the next year all ACS2000 components for the Indian market will be manufactured locally. Our services are complemented by competent and well-trained personnel employed in an installation and technical support capacity - a prospect which holds great promise for many other Asian markets too.'

Mumbai: new training centre for Frauscher Axle Counting Systems.

MRVC/Central Railway has officially opened the new training centre at the Byculla Workshop in the Indian city of Mumbai. 'This represents a big commitment to the Indian market on our part,' explained Michael Thiel, CEO of Frauscher Sensortechnik GmbH, who attended this event in



New training centre for MRVC to provide commissioning and maintenance training

person. 'The centre can facilitate state-of-the-art technical training, development of product knowledge, installation exercises, tests, and both commissioning and maintenance measures for MRVC technicians.'

Free of charge: ACS2000 for the IRISSET training centre

Frauscher assisted the Indian Railway Institute of Signal Engineering and Telecommunications (IRISSET) in setting up a laboratory in the new 'Signalling and Telecommunications' building. The Axle Counting System ACS2000 and five wheel sensors were made available for the simulation of three track sections. The track layout comprises a clear stretch of line, a section of line with points, and a section with block transmission.



Alok Sinha, Managing Director of Frauscher Sensor Technology India Private Limited

New branch office in Brazil: Frauscher Technology Day Brazil

With the founding of Frauscher Sensor Technology Brazil in São Carlos/São Paulo, Frauscher has established a firm foothold in the booming Brazilian market to help it pursue its future activities there. To mark the opening, the branch office organised a specialist conference on the subject of signalling technology. Almost 50 high-profile specialists from Latin America took the opportunity to learn about current trends first hand and compare notes with industry experts.



Vicente Abate, President of ABIFER (Associação Brasileira da Indústria Ferroviária), chaired the conference.

CEO Michael Thiel used his opening speech to thank those present for showing such great interest in the event: 'We are delighted that so many railway experts are taking part in our first Frauscher Technology Day in Brazil. In addition to the interesting presentations on specialist subjects, you can also visit the exhibition area and see systems and products from various manufacturers in action. Please make the most of this opportunity to exchange information and do a spot of networking.'

Maicon Ferrari, MSc, Executive Director Latin America, used his specialist presentation to give a general overview of the Frauscher product range for wheel detection and axle counting applications. He then went on to talk about current



case studies and trials in Latin America. 'I am delighted now Frauscher Sensor Technology Brasil Ltda. has finally been founded here in São Carlos and with the strong team we have put together for you,' Mr Ferrari announced.

*The Frauscher Sensor Technology Brasil team (from right to left): Maicon Ferrari, MSc, Executive Director Latin America
Laura Martinez, Assistant
Gilmar José de Souza, After Sales Service
Ciro Boudaheer de Camargo*



DATES for Frauscher product sessions

16 to 17 October 2014 (DE)
23 to 24 October 2014 (EN)

If you have any questions, please contact Elke Gimplinger,
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training@frauscher.com



Come and see us at the following trade fairs:

InnoTrans in Berlin, Germany
23 to 26 September 2014 | Stand 229, Hall 25

Business on Rail in São Paulo, Brazil
11 to 13 November 2014 | Stand G25

SmartRail Asia, Bangkok, Thailand
26 to 28 November 2014 | Stand K9