

ultimate rail

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magazine for wheel detection & axle counting



Asia – The market of the future

Frauscher on track to success in the Far East

Full speed ahead in Berlin

InnoTrans draws the rail industry together once again

High immunity

New GTEM cell in Frauscher EMC laboratory

FRAUSCHER

SENSOR TECHNOLOGY



INSIDE

Extremely sophisticated solutions required: Frauscher receives its first orders in the Middle East!

MASTHEAD

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Dear Reader,

InnoTrans is clearly the yardstick against which all other trade fairs targeting the rail industry are measured. In mid-September, this impression was confirmed once again in Berlin: 2515 companies from 49 countries showcased their products to around 126,000 international trade visitors, equivalent to an increase in footfall of almost 20 per cent compared with 2010.

As an exhibitor, we also experienced four challenging days and can look back on the trade fair as an extremely positive event. With a new presence at the trade fair and a specific theme, we seem to have succeeded in securing a strong position for Frauscher, as one of the definitive technology leaders in the fields of wheel detection and axle counting.

Our visitors expressed an especially high level of interest in the FAdC[®] and FAdC[®]i generation of axle counting systems with serial interface, whilst the new software environment designed for planning, configuration, diagnostics and simulation proved to be particularly well-suited to winning over potential customers. In this edition, we have prepared a follow-up trade fair report for you with further information on InnoTrans.

In addition, we would like to direct your attention towards Asia, where we have already put down long-term roots

thanks to the successful completion of a number of projects. In this context we would, of course, like to introduce you to our Beijing branch, which we are continuing to establish as an important base for opening up the dynamic Asian growth market.

Furthermore, we spoke to Josef Frauscher, the founder of the company, and asked him what he sees as the vital criteria for success underpinning the company's last 25 years of ongoing positive development.

We hope you enjoy reading about this and the other topics covered in the new edition of ultimate rail.

Michael Thiel

Asia – The market of the future

As one of the world's largest economic powers, China is the focus within the rapidly growing Asian market. The demand for modern, innovative and pioneering technologies is enormous, including in the field of transport and railway technology.

Milestones in the Far East:

2010

David Townsend appointed Managing Director for Frauscher Asia

2011

Re-establishment of Frauscher Sensor Technology (Beijing) Co. Ltd as a wholly-owned subsidiary

2012

Establishment of local representative and engineering support network in South-East Asia

Against this background, Frauscher wasted no time in developing a sustainable strategy with the aim of drawing together all of its activities in Asia and providing long-term support to the market. With the opening of the first Asian subsidiary in Beijing in 2010, the most important prerequisite for this was put in place. Consequently, Frauscher now not only supplies this region with leading technology for wheel detection and axle counting, but also offers outstanding assistance and support to local customers and partners, thanks to its qualified team.

China

For many years now, the railway network of the People's Republic of China has been the fastest growing anywhere in the world. Any company that wishes to establish itself in this market is faced with extremely stringent requirements in terms of assistance and support. This is regarded as the prerequisite for ensuring that the latest technologies from overseas can be successfully integrated into high-quality systems from local manufacturers.

"We chose Beijing as the location of our branch so that we would be able to provide direct support to the Chinese railway operators and system integrators. Frauscher Sensor Technology (Beijing) Co Ltd. is located in the middle of the Asian time zones and forms the central point of support for all customers in South-East Asia. This permits us to ensure short response times, on the very same day", explains Managing Director David Townsend.

"Our long-term strategy in China is to see our technologies also being used on mainline railways and high-speed lines. Currently the focus is on the high number of metro projects taking place."

In cooperation with one of our most important partners, CRSC Chengdu Signalling Factory, we are offering an interlocking system which incorporates either the Frauscher axle counting system ACS2000 or the CRSC 'System B' axle counting system. 'System B' also uses highly-available Frauscher wheel detection components that comply with the CENELEC SIL 4 safety level.



On the one hand, this has the advantage that the complete system is principally manufactured in China and, on the other hand, the latest components from Frauscher can be made available directly on site. CRSC and Frauscher share the technical responsibility for ensuring that customers are provided with the best possible standard of support.

Since the first order in 2010, more than 2000 Frauscher wheel sensors have been installed in China.



Images of four reference projects in the Far East (left to right): Indonesia, Thailand, China and Kuala Lumpur are relying on Frauscher with great success



David Townsend (Managing Director), Ma Jin (Sales Manager), Gillian Leng (Marketing Manager), Michael Thiel and Bill Li (Technical Engineer) in conversation (left to right).

Asia

Besides China, Frauscher Asia is conducting many activities in other countries of South-East Asia. In Thailand, Indonesia, Taiwan, the Philippines and Malaysia, support is currently being provided for a large number of projects and trials involving various Frauscher technologies.

Global projects

There is an array of highly-regarded Asian signaling systems manufacturers who sell and deliver their systems worldwide. Frauscher Asia supports these system integrators in drawing up their offers and also acts as the main point of contact for Frauscher Austria. This method has previously been used for projects in India, Pakistan, Brazil and Egypt.

One example of success is a project in Pakistan that was handled jointly with the Chinese integrator CRSC International and Bombardier Thailand. The system was installed and configured by Chinese engineers who were employed by CRSC and trained by Frauscher Asia.

Pleasing conclusion: A well-coordinated, global effort ensuring end customer satisfaction.

Highlights of the orders placed in Asia, in overview:

Country	Operator	Segment	Application	Project start
Malaysia	ERL Kuala Lumpur	Metro/Trams	Track vacancy detection	2001
Vietnam	Vietnam Railways	Main Line	Track vacancy detection	2004 and 2010
Thailand	SRT	Main Line	Level crossing protection	2005
China	Beijing MTR	Metro/Trams	Track vacancy detection	2009, 2011, 2012
Philippines	Metro Manila	Metro/Trams	Track vacancy detection	2010
China	Chengdu Metro	Metro/Trams	Track vacancy detection	2011, 2012
China	Chongqing Metro	Metro /Trams	Track vacancy detection	2012
China	Shenyang bus company	Metro/Trams	Track vacancy detection	2012
Taiwan	TRA	Main Line	Track vacancy detection	2012

The latest knowledge a

For the past 16 years, InnoTrans has played an important role in setting the course for the sector as a whole. Intensive preparation and perfect provision of information are vital criteria for success at the trade fair. In order to face up to the associated challenges, this year Frauscher used a new concept to present the company and positioned itself in a sustainable manner.



No one within the rail sector who has a product to sell or a decision to make can afford to miss a trade fair that has grown in every respect from its first appearance: from 172 exhibitors and 6376 trade visitors in 1996, InnoTrans has developed into an event that welcomed an impressive 2515 exhibitors and 126,110 trade visitors in autumn 2012.

Accordingly, expectations are particularly high – and Frauscher spent a long time preparing extensively for this challenge.

Knowledge and experience with a strong background

Customer-specific adaptations are vital in order to be able to offer highly-available and efficient solutions in the field of wheel detection and axle counting within various rail segments and markets and based on project-specific framework conditions. This is a strength that has helped Frauscher to become a technology and market leader within this niche area over its 25 years of existence – and which therefore formed the focus of the company's InnoTrans presence, under the motto "Global markets, customized solutions".

On the new, generously-sized stand, a separate presentation area was dedicated to each of the two application segments.

Individual axle counting solutions

At present Frauscher offers three axle counting systems which are designed so as to be modular and scalable and can be easily configured, commissioned, maintained and adapted by both system integrators and operators:

- ACS2000 (hardware configuration; relay interface)
- FAdC® Frauscher Advanced Counter (hardware and software configuration; serial interface)
- FAdC®i Frauscher Advanced Counter i (for simplified operating conditions)

Our InnoTrans visitors expressed particular interest in the FAdC® and FAdC®i axle counters with serial interface, whilst the software environment designed for planning, configuration, diagnostics and simulation won over many potential customers.

Wheel detection for a range of applications

Level crossing protection systems, speed measurement, automatic warning systems, deletion of fault signals, hot box and flat spot detection systems and other switching tasks are among other applications for which Frauscher offers a range



Friendly, competent and sometimes typically Austrian: the Frauscher team – here with the ladies in traditional Austrian dirndl dresses

nd experience takes a stand



The recognised technology leader after 25 years, thanks to ideas and competence. Frauscher celebrated this anniversary on the first day of the trade fair, with live music and Austrian specialities. Managing Director Michael Thiel seized the opportunity to thank customers and partners for the trust they have shown in the company and their positive collaboration

of solutions, with five types of wheel sensors and five evaluation platforms. Optimal adaptation to each application in the various rail segments and markets is also a central theme here.

In this field, the highlight was speed measurement using a single wheel sensor: visitors had the chance to participate in a speed challenge and pass a test plate over a wheel sensor as fast as possible. Lukasz Rawski from Elester PKP was the clear winner, succeeding in getting the test plate up to an impressive 37 km/h!

In any case, the competition was an impressive way of showing that the Frauscher measuring system VEB is able to provide speed information in real time, via a serial interface, in a simple and cost-effective manner.

In summary, the sophisticated trade fair concept and the excellent feedback we received from the vast number of trade visitors allow us to conclude that Frauscher's presence at this year's InnoTrans was a successful demonstration of 25 years of Austrian innovation that is now in demand throughout the world.

A gallery of photos from the trade fair can be found on the landing page www.frauscher.com/innotrans



The fastest man in the Frauscher speed challenge: Lukasz Rawski, shown already ranked in 1st place

Insight into the success story

On the occasion of the company's 25th anniversary, Christian Pucher, Head of Marketing and Editor of ultimate-rail, asked Josef Frauscher, the company's founder, and Managing Director Michael Thiel some questions about the development of the company.

Mr Frauscher, in 1997 this was just a green meadow. You have transformed it into an innovation park for metals and electronics. What are the outstanding innovations that enabled this impressive corporate success?

Josef Frauscher: In 1997, the technological cornerstones of the company were already in place in the areas of axle counting and wheel detection. However, my invention of an innovative wheel sensor switch in 1986 was the real starting point. Today, this invention is still used in the RSR180 model of wheel sensor. Customers valued the benefits of this switch and I was encouraged to move into the field of axle counting technology. That was in the early 90s. Since that time we have seen continuous growth and have driven the company's development forward in a consistent manner. I am very proud that many customers in the areas of wheel detection and track vacancy detection now attest to the fact that we possess technological competence that is unrivalled anywhere in the world.

Another milestone was when young companies in the field of metal and plastics processing established their bases in the innovation park. We have maintained a constructive collaboration with these companies for many years. In this way, more than 180 jobs were created in the Innovation Park for Metal and Electronics in St. Marienkirchen.

With Michael Thiel, the change in management has succeeded in an outstanding manner. What is more: In Michael Thiel, I have found someone who will carry on the company philosophy as I intended, on the basis of exemplary specialist knowledge and competence in creating an international presence.

As a very keen engineer, I now also have time to devote myself to new developments and technologies. A number of years ago, I founded Frauscher Energietechnik GmbH under the umbrella of Frauscher Holding. There, I am working together with a handful of engineers to research solutions for combined heat and power, using Stirling engines. Our aim is to generate heat and electrical energy or cold using biogenic fuels – a specialist area with attractive prospects for the future.

Environmental protection and the theme of sustainability are particularly close to your heart as an entrepreneur. Why is this such a major concern for you?

Josef Frauscher: If you consider this on a global level, everybody is aware of the changes to the environment and society. However, the trends seen in developments are particularly unsettling. Personally, I view the unbridled use of fossil energy sources as the real drama of our time. We already have countless options and methods at our disposal which could reduce the use of such fuels in many areas; in transport for example. With trains, the specific energy outlay for personal and goods transport is small compared to other methods of transport. It is good to know that we are also ultimately helping the environment with our products, by contributing towards increasing the efficiency of this method of transport.

Sustainability has always been very important to us, not least in building technology and production, where it has been put into practice in numerous environmental measures: the use of bio-energy, ground collectors, free cooling and solar heating and photovoltaics are major elements here. In a recent development, we now run two electric cars, which are ultimately charged using solar power.

You continually stress that Frauscher is an independent company. What value and/or benefit does this offer?

Josef Frauscher: When I incorporated the company into the Josef-Frauscher-Privatstiftung private trust in 2002, it was with good reason. As a result, the existence of Frauscher Sensortechnik is no longer tied up with my own. The endowment agreement stipulates that the Management Board shall be liable for the long-term existence and continued development of the company. To this extent, the trust model fulfils the prerequisite for a sustainable corporate culture and long-term existence – aspects that are extremely important when doing business with rail customers.

I also see this as the basis for long-term trust among our customers, and among our employees and partners.



"The trust guarantees long-term further development, independent of any one person"



Mr Thiel, in your role as Managing Director you have been responsible for the company's development for over three years now. What particular challenges do you face in this regard?

Michael Thiel: As a medium-sized company, the greatest challenge is definitively to be a reliable, high-performing and innovative partner for all large rail technology groups and for rail operators throughout the world; all this in the demanding context of a growing global market, ever more difficult technological challenges and increasing competition.

And how do you manage this?

Michael Thiel: On the one hand, it is only possible with a team of outstanding employees who are motivated to achieve the company's objectives and support the company philosophy established by the founder. On the other hand, we must offer products with an enduring technological advantage, which meet the demands of our international customers. This can only be achieved through a continuous process of innovation, which determines not only the development of our products and systems, but also the production and quality standards of our company, our partners and suppliers.

We have now established a product range for wheel detection and axle counting on the market, which enables unique customer-specific solutions in this field, principally thanks to its modular nature and flexibility in terms of hardware and software. The challenge is to maintain this unique position in the future, and to build upon it further.

Where do you see the company in ten years' time?

Michael Thiel: The trust model guarantees us stable ownership structures and a clear long-term direction. Consequently, we will not be concentrating on meeting short-term requirements and expectations, but rather pursuing two clear objectives.

The first is the sustainable and long-term opening up of interesting markets such as India, China, the CIS and South America, and the second, the continuous further development of our product range in the field of wheel detection and axle counting. We are already looking at other technologies of the future – not necessarily inductive ones – and I am certain that, in ten years' time, we will still be able to offer a leading product range that does justice to the challenges with regard to safety and availability. Our products will then be integrated even more firmly into our customers' systems and the technological collaboration that takes place will be even closer than at present.

Moreover, the Frauscher team will continue to grow unceasingly and will certainly be even more international in nature, although we already employ staff from nine different countries.

Thank you for the interview.



"We continue to regard customer-specific solutions as a decisive factor in our success"

Focus on optimum availability

Reliable function is one of the most important characteristics for any technology, by a long way. In order to guarantee this to the greatest possible extent for all products, Frauscher has for many years been building on intensive development work in its own, superbly equipped EMC laboratory (electromagnetic compatibility).



Frauscher EMC checklist

Immunity:

Electromagnetic HF field

EN61000-4-3 is covered with GTEM

ESD

EN61000-4-2

Conducted interference quantities

EN61000-4-6

Burst

EN61000-4-4

Surge

EN61000-4-5

Interference emission:

Radiated interference emission

CISPR 16-2-3

is covered with GTEM

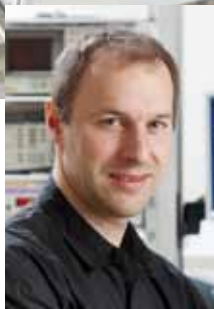
Conducted interference emission

CISPR 16-2-1

With systems for wheel detection and axle counting, ensuring maximum availability is of particular vital importance. All manufacturers are obliged to provide evidence that their products comply with relevant standards such as EN 50121-4:2006 (Railway applications – Electromagnetic compatibility; Part 4: Emission and immunity of the signalling and telecommunications apparatus).

At Frauscher, however, we go a decisive step further: "All our components possess extra high immunity. The design is such that our components can withstand twice the loads that are stipulated in the standards. Of course, the values for emissions also meet all of the requirements. Consequently, the basis for high availability of our systems is exceptionally solid", explains Head of Development Rudolf Thalbauer, describing the working approach of the EMC team.

In order to be able to achieve the ambitious values for each product range, a large number of measurements and checks are carried out at the development stage, particularly since the requirements pertaining to the immunity of the electromagnetic HF field have increased considerably in recent years.



Head of Research and Development, Rudolf Thalbauer, during tests with the new GTEM cell

Up-to-the-minute

The in-house EMC laboratory which was commissioned in 2000 also boasts outstanding technical equipment – entirely in keeping with the company's philosophy. "In addition to the burst-search generator and the ESD generator, a few weeks ago we invested in a new GTEM cell (Gigahertz Transverse Electromagnetic Cell), so as to be able to carry out pre-compliance measurements in accordance with the standard. This means that we are now in a position to carry out tests using a frequency range of up to 20 Gigahertz and with interference fields of up to 60 V/m", explains Rudolf Thalbauer, who is extremely proud of his laboratory's latest acquisition.

Setting a course at the highest level



Against the backdrop of the Austrian-Kazakh economic forum held in Vienna in late October, the Kazakh railway “Kazakh Temir Zholy” and Frauscher Sensortechnik signed a trilateral memorandum concerning strategic collaboration. Frauscher will adapt the axle counting system ACS2000 in accordance with the specific requirements for the modernisation and expansion of Kazakhstan’s rail network, and test this in the field. The first trial systems have already been commissioned in collaboration with the local partner “Kazcenterelectroprovod”.

On the occasion of a working visit to Vienna at the same time, the President of the Republic of Kazakhstan, Nursultan Nasarbajew, personally enquired as to progress of the project and the technologies being put to use.

Kazakhstan has a strategic role as a bridge between Europe and Asia. It is already the largest supplier of oil to Austria and has set itself ambitious economic objectives. By 2030, the world’s ninth-largest country wants to catch up on the 50 most highly-developed countries internationally.

First major project in Abu Dhabi

After being brought on board by the renowned signals manufacturer Ansaldo, Frauscher is currently collaborating on the project to equip the new Shah-Habshan-Ruwais section of track in Abu Dhabi with safety systems. This section, which measures approximately 260 km in length, links the Shah sulphur mining district in the interior of the country with the port of Ruwais and forms the first stage in the new rail network that is to be constructed in the United Arab Emirates by Etihad Rail.

In the first stage of development, 170 counting heads are to be manufactured for 140 counting sections, based on the Frauscher Advanced Counter FAdC®. The deciding factor in this choice was the construction of block sections across existing network structures. The FAdC® offers the option of creating these block sections across open networks (EN50159-2, class 5), whereby the required decentralised distribution of the axle counting technology can be accommodated in an optimum manner. Commissioning is scheduled for 2013.



Cooperation with Atkins in Cardiff



Together with the signal manufacturer Atkins, Frauscher will be bringing the rail network in South Wales up to date. This is a major project, which constitutes the second major order Frauscher has received from Network Rail in the United Kingdom.

The Cardiff Area Signalling Renewal (CASR) project stands out not merely due to its scale, but also due to demanding environmental conditions. The objective is for the infrastructure and signalling technology to be modernised by 2015, and Atkins selected Austrian technology when it came to finding a track vacancy detection solution.

In total, 730 wheel sensors RSR123 will be installed, along with the latest generation of axle counting systems, FAdC®. Thanks to the serial interface, Atkins can be secure in the knowledge that it will have highly-

available and safe wheel detection, maximum flexibility in terms of design, simple project planning, low investment costs and low maintenance outlay in the future.

Using the FDS diagnostics system, Network Rail will have unrestricted online access to all data for the axle counting system. This guarantees preventative maintenance measures, together with rapid and simple elimination of faults, both of which increase availability and reduce life cycle costs.

We are family!

Regular activities that help to create links between employees and the company outside working hours and that are extremely well received show that Frauscher not only develops highly-specific sensors, but also has a well-developed sense for its own working atmosphere.

For example, Frauscher devoted one beautiful summer's day to a large-scale event for employees' families, hosted by the Managing Directors of the Frauscher Group, Josef Frauscher and Michael Thiel.

No fewer than 250 guests gathered for a varied afternoon of entertainment, housed in the perfect conditions of the newly-constructed Hack-schnitzel hall. Culinary delights and fruit cocktails formed the tasty basis for a cosy get-together with family-friendly programme highlights ranging from traditional Austrian folk dances such as the Schuhplattler to a bouncy castle for the younger guests.

Frauscher's Managing Directors from the company's branches in China and Poland visited especially for the event and were unanimous in the opinion that remarkable team spirit is in evidence in St. Marienkirchen.



The family event at Frauscher was a real summer hit for young and old alike!



Dates

Frauscher product training courses:

- 9 – 12 April 2013 (German)
- 23 – 26 April 2013 (English)
- 1 – 4 October 2013 (German)
- 15 – 18 October 2013 (English)

We shall be happy to provide details about our training courses or arrange an individual appointment with you.

If you have any questions, please contact Elke Gimplinger, tel.: +43 7711 2920-9284 or email: training@frauscher.com



First-hand knowledge – the product training dates for 2013 are now available!