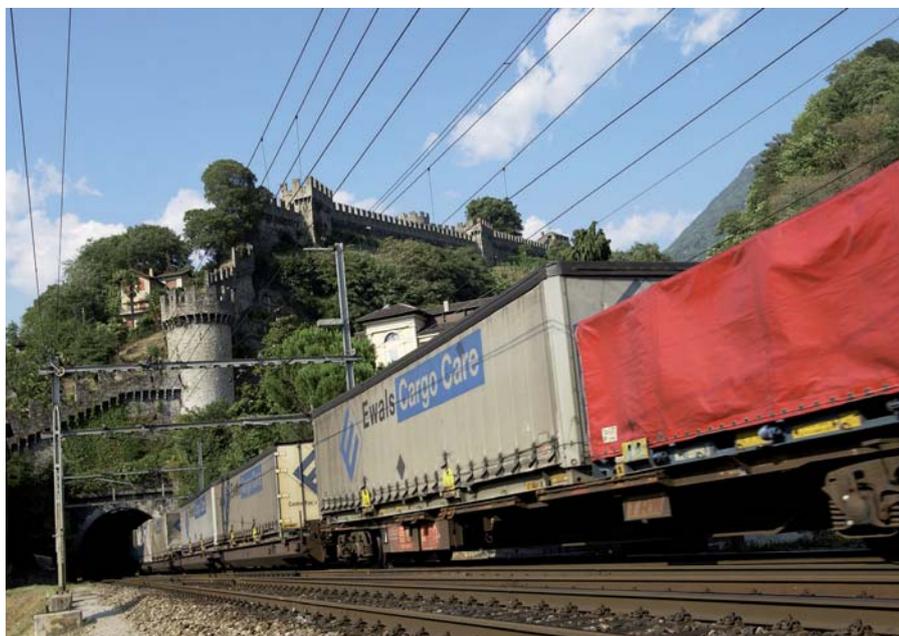


Using derailment detectors on journeys through tunnels – a measure to increase safety in rail-freight traffic

The chance of individual or several wagons derailing in rail-freight traffic is very low. Nevertheless, the large number of freight trains travelling on European rail networks every day means that this does still happen – with more or less serious consequences. If a wagon derails it can not only cause serious material damage but is also a high risk for people who happen to be near the derailment.



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No root no fruit

Dear readers, 2014 is a very special year for WASCOSA, one in which we are celebrating our 50th anniversary. It is at such times that one thinks back to one's roots, pleased with what one has achieved and recalling the past, true to the motto «no root no fruit». We would like to thank you, our esteemed customers and business partners, for your many years of loyalty. But it is by no means a matter of course for us that we can celebrate with you, particularly in a market that is becoming increasingly consolidated. But WASCOSA wouldn't be WASCOSA if we didn't take a peek at what the future holds in store, because what to come is always more exciting than what has past. The current changes in our market hold out some new opportunities that we are really looking forward to! There has never been a more exciting time for a wagon hirer to strike out on new paths with clear visions and innovations. This is why we want to dedicate our anniversary edition to the future of rail-freight traffic. If you are interested in the future of our industry then you shouldn't miss the event of 11 September 2014! I am looking forward to celebrating and risking a glance into the future together with you.



Philipp Müller
Delegate of the Board of Directors

On our own behalf

PAGE 6 & 7 **WASCOSA Future Day**
Trends and perspectives in
rail-freight traffic

On our own behalf

Page 8 Passing on the torch of operative
management
Page 9 Interview with the new WASCOSA
CEO Peter Balzer



Examples from the past show that the damage can be much more severe when transporting hazardous goods. This is why it is important that the safety of hazardous goods traffic in particular be improved so as to increase their acceptance in the population too. One way of minimising damage caused by accidents is to increase passive safety. A hotly debated topic over the past few years has been the use of derailment detectors. Following a series of serious accidents in the 1990ies, the pneumatic derailment detector EDT 100 was developed by Oerlikon-Knorr Eisenbahn-

«The derailment detector can greatly reduce the extent of the damage by immediately initiating emergency braking.»

technik AG. Although this cannot prevent a derailment, it can greatly reduce the extent of the damage by immediately initiating emergency braking. A further deve-

lopment of the detector with changed threshold values is called the EDT 101.

One big advantage of pneumatic detectors is that no electrical energy is needed. The derailment is detected mechanically and the brakes applied pneumatically. If a derailment is detected, the brake pipe is opened at the corresponding point in the train so that this is braked as quickly as possible. This principle largely corresponds to a conventional emergency braking triggered by the alarm signal handle in passenger transport.

Doubts about the direct application of brakes

An emergency braking manoeuvre is usually initiated in passenger transport immediately and with no override option. A system to override the emergency braking and prevent the train stopping in a tunnel over 1000 m in length only became necessary in Germany when the high-speed network went into operation [1]. So-called emergency brake override (NBÜ) sections were defined on which

the train driver has to override the passenger emergency brake. The share of NBÜ sections in Germany that can also be used by freight traffic amounts to around 0.6 % of the overall network [2].

The severity of an accident could be generally reduced in rail-freight traffic too by

«The severity of an accident could be generally reduced in rail-freight traffic too by stopping outside critical points such as tunnels.»

stopping outside critical points such as tunnels. This is in fact required in terms of the infrastructure through the technical specifications for interoperability «Safety in railway tunnels»:

«[...] Nevertheless, the goal in freight traffic is also to move the train out of the tunnel.» [3]

But a derailment also harbours other risks so that an immediate braking of the train is called for throughout Europe, even in tunnels.

«The operating directives of the infrastructure operators must stipulate and describe in detail, wherever necessary, that the following shall apply in the event of an incident (with the exception of a derailment, which requires an immediate stop): – The train must be brought to a stop before entering a tunnel or driven out of a tunnel.» [3]

There is thus a clear regulation stating that in the event of an incident such as a fire, a train may not enter the tunnel or, if the incident occurs in the tunnel, the train has to leave this. All types of derailment whe-

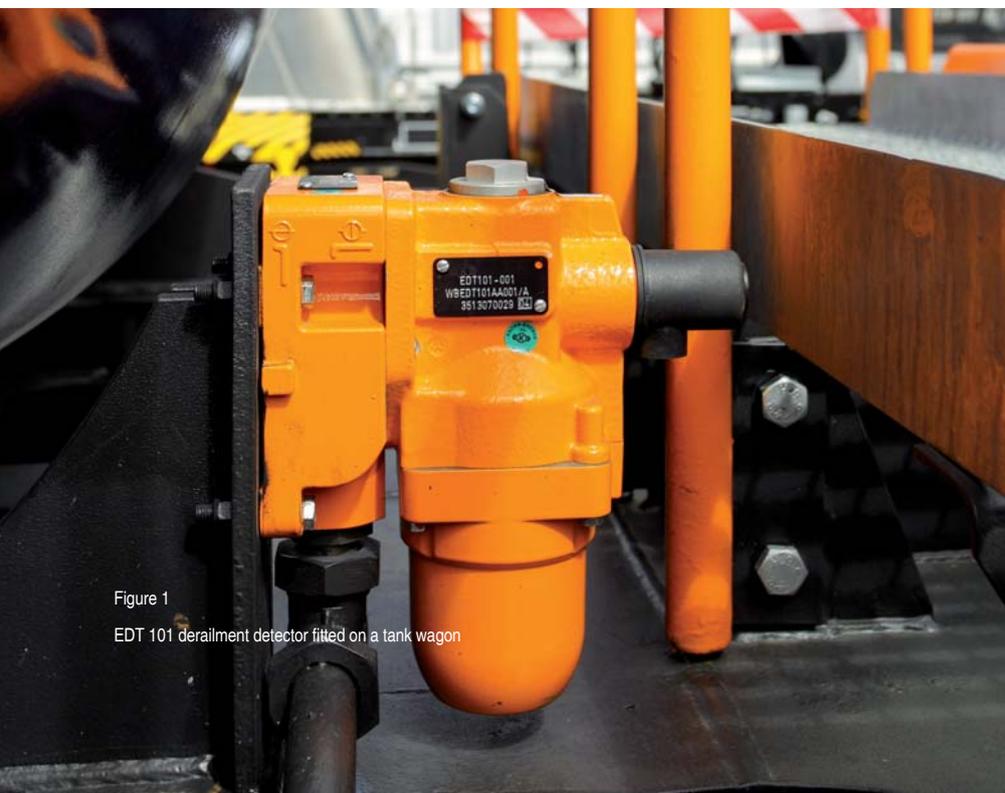


Figure 1
EDT 101 derailment detector fitted on a tank wagon

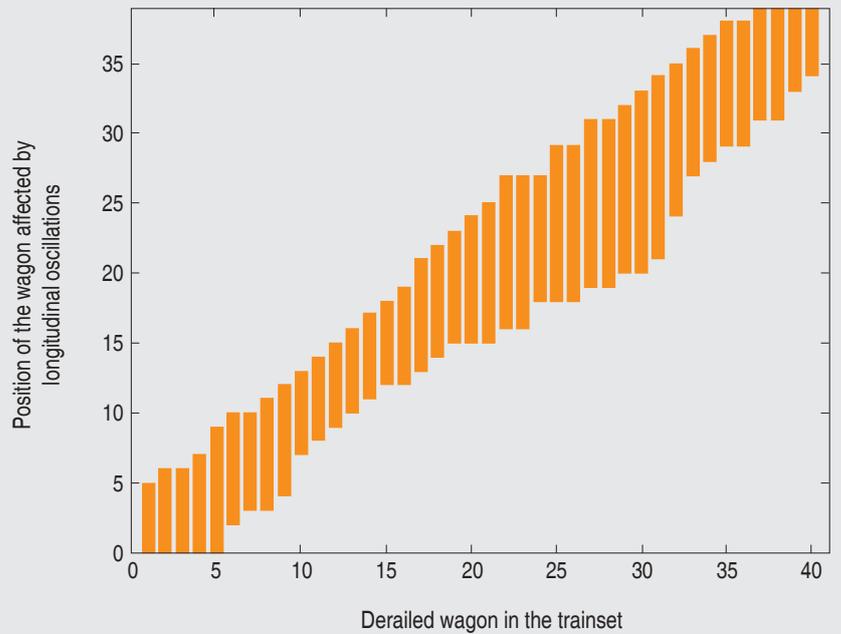


Figure 2
Effect of the derailed wagon's position on the longitudinal oscillations at the individual coupling points

re the train has to be stopped as quickly as possible, irrespective of the nature and severity of the derailment, are defined as exceptions.

This contradicts even the interpretations of the ERA, which in [4] expresses the fear that the inability of a train driver to override braking in a tunnel could contravene applicable emergency regulations.

In an exemplary consideration of an emergency concept for an Austrian railway tunnel, it can be seen that the TSI regulation was implemented accordingly:

«If irregularities are detected that indicate a derailment, the derailed train and all approaching trains should be brought to a stop as quickly as possible as an initial measure, analogous to derailments on free stretches of track.» [5]

The fears currently expressed in [6] would thus appear to be unfounded. The way pneumatic derailment detectors work does not contradict the applicable TSIs, particularly during travel through tunnels.

Possible courses of action for the train driver

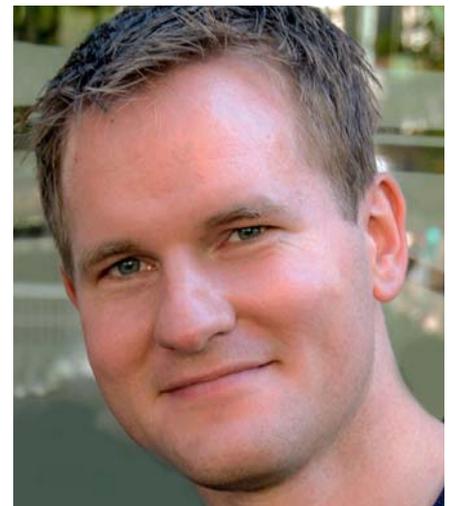
As many cases of at first unnoticed derail-

ments show, it is often impossible for the train driver to notice the derailment of an individual freight wagon. This is particularly true of cases where the derailed wagon continues to be carried along in the trainset. Our own investigations of longitudinal dynamics show that the train dri-

«Our own investigations show that only a derailment of wagons immediately behind the traction vehicle can be noticed.»

ver can only notice derailments of wagons that have derailed immediately behind the traction vehicle on the basis of longitudinal oscillations of the trainset. As shown in Figure 2, the train driver of a train with 40 wagons can only notice the derailment of one of the first five wagons on the basis of longitudinal oscillations. The figure shows a case where only one wagon derails and continues to be carried along in the trainset.

It is thus not feasible for a train driver alone to decide whether to override the emer-



Personal details

Dipl.-Ing. Daniel Bing ...

- ... studied traffic engineering / vehicle technology at the Technical University of Berlin.
- ... has been working there since 2009 as a research assistant in the Rail Vehicles Department specialising in railway engineering and vehicle dynamics.



gency braking if a derailment is detected. In the majority of cases he has to rely on a detection system since he is not necessarily able to detect a derailment of wagons at the rear of the train. According to the operating regulations, the train driver will therefore try to bring the train to a stop as quickly as possible so as to reduce further risks. Leaving the decision as to whether

to override the braking up to the train driver is thus not the right choice.

Outlook

Equipping at least hazardous substances tank wagons with derailment detectors would therefore appear to be an important element in improving the safety of rail-freight traffic. A corresponding obli-

gation would also be an incentive for industry to improve derailment detection systems. This could ultimately also lower the costs of the individual systems. ■

Further information from:
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References

- [1] Mінде, F.: Fahrgastnotbremse und Notbremsüberbrückung. In: ZEV-Glasers Annalen (2007) 11–12, pp. 446–54.
- [2] Schweers, H.; Wall, H.; Würdig, T. (editors): Eisenbahnatlas Deutschland. Cologne 2011.
- [3] COMMISSION DECISION of 20 December 2007 concerning a technical specification for interoperability relating to «Safety in railway tunnels» in conventional trans-European rail system and the trans-European high-speed rail system. TSI Safety in Railway Tunnels 2007.
- [4] European Railway Agency: Recommendation on the provision proposed by the RID Committee of Experts requiring the use of Derailment Detection Devices. ERA / REC / 01-2009 / SAF 2009.
- [5] Neumann, C.; Sommerlechner, C.: Notfallkonzepte für österreichische Eisenbahntunnel.
- [6] Klein, S.: Pflicht und Kür. In: Gefährliche Ladung (2014) 1, pp. 12–14.

Case study for a typical derailment

The majority of freight wagon derailments do not – luckily – occur on high-speed sections of track but during shunting at low speeds.

The latest example in practice: a group of tank wagons were parked in a tank farm after unloading and secured with stop blocks. A shunter forgot to remove the stop block before the wagons continued their journey, leading to the derailment of four wagons.

Thanks to the derailment detector, the train quickly came to a stop so that the wagon did not topple over, which would have meant damage to the wagon, infrastructure and environment as well as associated disruptions to operations, down times and costs. ■



Summary

The use of derailment detectors increases safety and reduces costs.

Latest news

In the 53rd meeting of the RID Technical Committee of OTIE, Switzerland was able to put the topic of derailment detectors back on the agenda. The focus this time will deliberately be on the topic of «railway technology». Together with representatives of ERA, a RID study group chaired by Holland will evaluate today's derailment detectors as well as possible alternatives. The first meeting of the study group will take place in October in Italy.



On our own behalf

WASCOSA Future Day

on 11 September 2014 in the Swiss Museum of Transport (Verkehrshaus) in Lucerne

To celebrate its 50th anniversary, WASCOSA will be looking to the future and has organised a conference on «Trends and perspectives in rail-freight traffic» with some top-ranking thinkers and doers of our times. You are warmly invited to attend!

Speakers and participants in the panel discussion:

Karl Michael Mohnsen

TX Logistics AG

Prof. Dr.-Ing. Markus Hecht

Technical University of Berlin



Matthias Horx, Trend researcher and futurist

Photo: Klaus Vynnyak (www.boe.com)

Dirk Flege

Pro-Rail Alliance

Timon Heinrici

DVZ Deutsche Logistik-Zeitung

Georges Theiler

Councillor and entrepreneur

Dr. Martin Henke

Verband Deutscher Verkehrsunternehmen e. V. (VDV)



Bertrand Piccard, Scientist and adventurer

Peter Balzer

WASCOSA AG

Dr. Peter Füglistaler

Federal Office of Transport

«If you are interested in the future of rail-freight traffic or are personally affected by this, then this is one conference you shouldn't miss!»

WASCOSA Future Day

Trends and perspectives in rail-freight traffic

Facts & Figures

Date	Thursday, 11 September 2014
Time	from 09.30 hours registration, breakfast snack 10.30 hours start of the event 17.40 hours end of the event
Location	Swiss Museum of Transport (Verkehrshaus der Schweiz) Lidostrasse 5 6006 Lucerne
Language	German with simultaneous interpretation into English
Attendance fee	EUR 150.00 (plus VAT) The attendance fee includes refreshments, coffee breaks and lunch

**Don't
miss it!**

Register interest now:
marketing@wascosa.ch

Conference program

Presented by: Christine Biesinger

09.30 – 10.30 hours	Registration, breakfast snack
10.30 – 10.40 hours	Welcome by the presenter Christine Biesinger Word of welcome from Philipp Müller , Delegate of the Board of Directors, WASCOSA AG
10.40 – 11.10 hours	Karl Michael Mohnsen , CEO, TX Logistik AG «Freight wagons as a strategic factor for success in the future of railways»
11.10 – 11.40 hours	Prof. Dr.-Ing. Markus Hecht , Professor, Rail Vehicles at the Technical University Berlin «Technical possibilities and limits when building freight wagons in the future»
11.40 – 12.00 hours	Peter Balzer , CEO, WASCOSA AG «Freight wagon hirers of the future»
12.00 – 12.30 hours	Break
12.30 – 13.30 hours	Matthias Horx , trend researcher and futurist «The power of megatrends and the future of mobility and transport»
13.30 – 14.20 hours	Lunch break
14.20 – 14.50 hours	Dr. Peter Füglistaler , Director, Federal Office of Transport «The encouragement of freight traffic by the Swiss Federation»
14.50 – 15.15 hours	Georges Theiler , councillor and entrepreneur «The future of rail-freight traffic between the priorities of politics and the economy»
15.15 – 15.40 hours	Dirk Flege , Managing Director, Pro-Rail Alliance «Prospects for the future of freight traffic in competition with trucks»
15.40 – 16.00 hours	Chaired panel discussion «Is rail-freight traffic heading for a good or bad future?» <small>Karl Michael Mohnsen, TX Logistik AG / Prof. Dr.-Ing. Markus Hecht, Technical University Berlin / Peter Balzer, WASCOSA AG / Dr. Peter Füglistaler, Federal Office of Transport / Georges Theiler, Councillor and entrepreneur / Dirk Flege, Pro-Rail Alliance / Dr. Martin Henke, Verband Deutscher Verkehrsunternehmen e. V. (VDV) / Timon Heinrici, DVZ Deutsche Logistik-Zeitung</small>
16.00 – 16.30 hours	Break
16.30 – 17.30 hours	Dr. Bertrand Piccard , founder and pilot, Solar Impulse «Surpassing borders and going new ways»
17.30 – 17.40 hours	Summary
17.40 hours	End



Speakers



Karl Michael Mohnsen
CEO, TX Logistik AG

«Freight wagons as a strategic factor for success in the future of railways»

10.40

Cross-border transport networks, modern freight traffic concepts, industry-specific solutions: as the CEO of TX Logistik AG, Karl Michael Mohnsen (58) from Hamburg has been providing some new and strong momentum in the field of rail-freight traffic since 2005. More than 20,000 trains are moved through Europe every year by Mohnsen and his 500 employees – and counting.



Prof. Dr.-Ing. Markus Hecht
Professor, Rail Vehicles at the Technical University Berlin

«Technical possibilities and limits when building freight wagons in the future»

11.10

Markus Hecht has a wealth of experience in the field of rail traffic. He has been in charge of the Rail Vehicles Department at the Technical University Berlin for the past 17 years. Together with his team, he carries out research in the fields of noise reduction as well as the reliability, safety and energy efficiency of rail vehicles.



Peter Balzer
CEO, WASCOSA AG

«Freight wagon hirers of the future»

11.40

WASCOSA AG is one of the industry's pioneers when it comes to the hiring and management of freight wagons for rail transport. Peter Balzer has been at the helm of the Lucerne-based company, which is celebrating its 50th anniversary this year, since the middle of April. The new Managing Director had already assisted WASCOSA for more than ten years as an external consultant.



Matthias Horx
Trend researcher and futurist

«The power of megatrends and the future of mobility and transport»

12.30

Matthias Horx is regarded as the most influential trend researcher and futurist in the German-speaking world. He advises companies and institutions through his «Zukunftsinstitut»; what's more, the lecturer at the Zeppelin University in Friedrichshafen has published several best-sellers on his specialist subject. Horx commutes between London, Frankfurt and Vienna, where he has lived since 2010.



Christine Biesinger

Presenter of the conference
Head of the panel discussion



Dr. Peter Füglistaler
Director, Federal Office of Transport

«The encouragement of freight traffic by the Swiss Federation»

14.20

Public transport in Switzerland is safe, efficient, economical and environment friendly: as the Director of the Federal Office of Transport, Peter Füglistaler is responsible for implementing political mandates and helping shape public transport in Switzerland. Before this he worked for many years on the Swiss Federal Railways (SBB).



Georges Theiler
Councillor and entrepreneur

«The future of rail-freight traffic between the priorities of politics the economy»

14.50

The FDP councillor is not only politically active but also an entrepreneur with heart and soul. As a board member, he watches over the fates of some well-known companies – including the Auto AG Group in Rothenburg. What's more, he is also on the foundation council of the Public Transport Information Service LITRA. This is supported by Swiss transport companies.



Dirk Flege
Managing Director, Pro-Rail Alliance

«Prospects for the future of freight traffic in competition with trucks»

15.15

It is probably the most unconventional transport alliance in Germany: 20 associations and more than 100 companies from the rail sector work together in the Pro-Rail Alliance to lastingly promote rail transport. Dirk Flege has been the Managing Director of this alliance since 2011. He is also an Advisory Board member of the Association of German Railway Engineers.



Dr. Bertrand Piccard
Founder and pilot Solar Impulse

«Surpassing borders and going new ways»

16.30

Piccard's ancestors also became world famous for soaring in the stratosphere and plumbing the depths of the oceans. Today, Piccard is continuing the pioneering story of his family. In the near future, the Swiss adventurer aims to be the first person to fly around the world in a solar-powered aircraft in the «Solar Impulse» project.



On our own behalf

Passing on the torch of operative management

In the middle of April, Peter Balzer took over the operative management of WASCOSA as the new CEO. Philipp Müller will continue to oversee the company in his function as Delegate of the Board of Directors and will devote more of his time to strategic tasks.



The new management duo at WASCOSA: Philipp Müller, Delegate of the Board of Directors, and Peter Balzer CEO.

After more than 20 years at the helm, Philipp Müller has decided to hand over the operative management to Peter Balzer at the general meeting in mid April 2014. This step aims to continue the successful expansion and further development of the

company. Peter Balzer, the new CEO, is 57 years old and lives in Oberwil near Basel and Lucerne. He brings with him decades of experience in management, logistics and project management and has assisted WASCOSA for more than

ten years in various topics as an external advisor. With Peter Balzer we have managed to land a very dedicated and competent Managing Director who will ensure both continuity as well as the qualitative further development of WASCOSA.

The independent management of the operative sector by the Management, leaving the Board of Directors to concentrate on purely strategic management tasks, now permits the correct and comprehensive separation of functions that is required in a company of WASCOSA's size nowadays.

Retirement from Board of Directors

A further change relates to the Board of Directors of WASCOSA. Norbert H. Kern, a long-standing member of the Board of Directors, retired at the middle of April due to old age and for health reasons. During his many years in office he left his mark and played a key role in shaping the company. During this period WASCOSA profited from Norbert Kern's good personal contacts to leading European freight traffic companies, something that on the whole contributed to the very pleasing growth of the last few years. We would like to thank him for his untiring dedication and his wealth of experience, which he was able to pass on to the entire team at WASCOSA. ■

On our own behalf

Interview with the new WASCOSA CEO Peter Balzer

When the torch of operative management was passed on this year, Peter Balzer, a very experienced individual, joined WASCOSA. Peter Balzer, who assisted WASCOSA for more than ten years on various topics as an advisor, talks about the development of and opportunities in the European rail-freight traffic market.

Mr. Balzer, what motivated you to take on the post of CEO at WASCOSA?

Taking over as CEO was a matter of the head and heart for me. I have been following the development of WASCOSA with great interest over the past 15 years. As an external advisor, I was directly involved in various strategic projects in the company's development and therefore gained numerous «insights» into the company and came to greatly appreciate the cooperation with Philipp Müller and his team. Based on a firm foundation that has developed over 50 years, I am convinced that WASCOSA has some very good prospects for the future.

On the other hand, I have known Philipp Müller, Delegate of the Board of Directors at WASCOSA, for more than 25 years and we had always wanted to work together. It just took a little longer than expected for our wish to come true – in keeping with the motto: «Rome wasn't built in a day»!

Over your professional career you gained insights into various industries. How do you rate the freight wagon hirer sector in Europe?

Freight wagon hirers in Europe own around 20% of the freight cars in use in Europe today, whereby the biggest European hirers hold around ⅓ of the existing

fleet of approx. 170,000 wagons. There are also a number of medium-sized and smaller players who are trying to gain bigger shares in the market.

Compared to other industries such as the IT market or the automotive industry,

«Compared to other industries, the wagon hirer sector is not particularly dynamic.»

the wagon hirer sector is not very dynamic. Although changes do take place, the participants have time to gradually adapt to the altered conditions. For a company like WASCOSA, whose claim is to be fast, flexible, innovative and customer-oriented, this is without doubt a big advantage. The strong growth rates of past years in both new building projects as well as fleet management clients show that customers are rewarding the efforts made by WASCOSA.

The rail-freight traffic market is currently experiencing a radical change. How do you see this?

The changes to rail-freight traffic are, on the one hand, of a structural nature, and on the other they have been initiated by legislation.



Let us first consider the structural aspects of the rail-freight market. I am drawing on current studies here.

The driving force behind rail-freight traffic is overall economic growth. On account of the overall negative economic development over the past years in Europe, the European freight car market has settled down at a low level. Although Europe, unlike the worldwide trend, has recently experienced a drop in transport capacity in rail-freight traffic, one can assume a small, but increasing growth in purchases of new wagons over the next few years, due partly to the decommissioning of today's old stocks.

In the long term, it is the container wagon market that will surely grow fastest since



containerisation will continue to expedite intermodal transport. The basic trend is towards more efficient wagons with higher payloads and mileages. A higher mileage, greater capacity and more ease of maintenance are the key requirements for all operators. The efficiency of freight wagon usage (annual transport capacity per freight wagon) is thus a further driver for the renewal of existing fleets in Europe. Europe is clearly lagging behind in a global comparison.

I am convinced that the importance of hirers will continue to grow with the increasing liberalisation of the market. In 2012, around 20% of wagons were owned by hirers. Even if the merger of some former state railways with hirers has led to a reduction of the relative share of hirers, I still believe that hirers will become increasingly important in future. Former state railways as well as private operators will fix their offer of own transport capacities at a lower level on account of the current market situation and compensate any increased demand by hiring external wagons.

And what changes have been brought about by legislation?

The former distribution of roles and tasks of the players as well as the players themselves have changed completely since the abolition of private siding contracts. At the time of the private sidings contracts for the UIC railways, i.e. before 2007, the demands on a wagon owner and their responsibilities were relatively modest. Following the introduction of the General Contract on the Use of Railway Freight

Wagons (GCU), the tasks that have to be performed by the wagon owner as well as their responsibilities have increased remarkably.

«The tasks that have to be performed by the wagon owner as well as their responsibilities have increased remarkably.»

I am thinking here of topics such as ECM responsibility in connection with the development of maintenance plans, the performance of works audits, safety management systems, the management of rail damage, liability topics or document management, to name but a few.

The introduction of the technical specification concerning interoperability (TSI), aimed at guaranteeing uniform specifications to ensue international interoperable and safe traffic within the EU, has also had a direct effect on freight wagons and thus naturally owners of freight wagons; one only has to consider the topic of noise reduction, for example.

And finally, the impact of the accident in Viareggio has to be mentioned, which had far-reaching consequences for all wagon owners, for example wheelset management.

What do these changes mean for the market players, above all the wagon owners?

This new distribution of roles in rail-freight traffic on the one hand means

more costs for private wagon owners as well as new risks, such as the owner's responsibility and the liability for damage. On the other hand, this has also led to new opportunities and scope for design, for example the development of more efficient maintenance plans and intervals. I am also convinced that the «One-Stop-Shop», where wheelset reconditioning, cleaning, inspection, repair and conversion work can be carried out at one and the same location, will become increasingly important.

Changes to general conditions were never a threat for WASCOSA in its 50-year history – on the contrary. They always stimulated self-reflection and a return to basics, namely the question as to how the needs of the customers can best be satisfied and how solutions can be offered for the customer that generate a genuine added value. We have now reached another turning point where our efforts have to concentrate on finding the best solution for the customer.

The altered roles and tasks of the players call for new solutions for leasers and shippers. Partners will be needed who can

«The altered roles and tasks of the players call for new solutions for leasers and shippers.»

offer new solutions for the altered situation. The focus has to be on the productivity of the freight wagons in use, or the



WASCOSA CEO Peter Balzer

productivity of the rail logistics solution as a whole. For hirers, this means a change from hirers of freight wagons to providers of freight wagon systems.

As Europe's leading freight wagon provider, WASCOSA is committed to the highest customer requirements and is constantly opening new roads in the special freight wagon industry.

How do you see the opportunities for freight traffic on rails in the competition with other carriers?

It is hard to say how rail-freight traffic will develop over the next ten years. The Swiss Federal Statistical Office has published some very interesting figures that can also be transferred to other European countries.

In 2012, a total of 19,921 hours of traffic jams were registered on Swiss national roads. This was double the figure for 2008. A similar development has probably taken place in neighbouring countries too.

Of the around 27 billion tonne-kilometres (tm) that entered Switzerland in 2012 as freight traffic on roads and rail, around 9.7 billion tm arrived by rail. Rail accounts for 36 % of total transports. This figure is far above the average of 27 EU countries (19 % in 2011). The transport services offered by rail in 2012 in Switzerland meant that 15,000 truck journeys could be avoided every day.

The Federal Office for Spatial Development in Switzerland forecasts strong growth in goods transported by rail over the coming 15 years.

Deutsche Bahn and McKinsey & Company also published a similar forecast in their study on the topic of «Future prospects for mobility and transport, railways in Germany 2025». The demand for international and intermodal transport will increase, assuming that the necessary expansion of the railway infrastructure takes place in line with demand and does so promptly.

Politics will ultimately play the decisive role in deciding how strong rail-freight traffic develops. ■

Personal closing remarks

I believe in the big potential of rail-freight traffic, from both an ecological and an economic point of view. And I believe that rail and road will complement each other even better in future. If only because this makes more sense. Reason will win through in the long term – true to the motto:

«Rome wasn't built in a day!»



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