wascosa
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LATEST NEWS FOR THE TANK AND FREIGHT CAR INDUSTRY

CargoCBM – condition-based maintenance in rail-freight traffic

The strong growth in global trade that has been going on for some time now will continue to lead to an increase in flows of goods in future. Despite political support and a number of ecological advantages, the share of rail-freight traffic in the modal split could not be increased compared to road traffic. The inadequate availability of the rolling stock and costs of its maintenance in particular are regarded as the bottleneck for above-average growth. Telematic systems to monitor the condition are thus indispensable if we want to improve the competitive situation of rail-freight traffic.

Have you heard of Gandhi?

Dear readers, Innovations are a recurrent topic in the freight wagon industry, but generally with reservations. For every new idea or concept, you will just as quickly find critical voices that explain why these won't work in railways. Over my twenty years of work in the railway industry I have repeatedly discovered that there are more preventers than doers. Maybe this is the reason why there are not more innovations.

«And yet there are», one could say, slightly changing Galileo's famous quote. They can be found in weight optimisation, the automation of loading and unloading, the flexible loading of cargoes and mileage-dependent maintenance. Not forgetting noise and safety.

But ideas and the courage to tackle these are absolutely indispensable. And perseverance. Or, as Mahatma Gandhi said: «First they ignore you, then they laugh at you, then they fight you, then you win».

Philipp Müller
Delegate of the Board of Directors

Operational trials CargoCBM

Whereas systems that monitor the condition have long found their way into locomotives, there are still huge potentials for savings in freight wagons, especially in the optimisation of maintenance strategies. This is where the CargoCBM-System for condition-based maintenance comes in. The stocking and transport of spare parts can be reduced, workshops can work at optimum capacity and costs caused by consequential damage minimised through prompt damage diagnosis. This improves the reliability, availability and safety of the rolling stock so that the better efficiency leads to an effective increase in transport capacities. Based on basic statutory specifications, freight wagon maintenance is currently carried out at fixed intervals of six to eight years. The condition of components, which normally depends on the mileage and not the operating hours, is ignored by this time-based maintenance. An approach that is unsatisfactory for many components.

«Wheel flats in particular are a serious problem.»

A lot of damage such as brake wear or the appearance of wheel flats are also based on the operational profile or individual events and are not covered by mileage-

dependent maintenance. But wheel flats in particular are a serious problem in view of the noise caused by freight traffic and possible consequential damage to wheel discs and wheelset bearings.

Condition-based maintenance

There is a huge potential for improving the situation by developing condition-based maintenance strategies based on

«There is a huge potential.»

the electronic monitoring of relevant components and an assessment of the service life using this data.

In a syndicate made up of TU Berlin, Eckelmann AG, PC-Soft GmbH, Vattenfall Europe Mining AG, WASCOSA AG, Lenord, Bauer & Co. GmbH and the HARTING technology group, the CargoCBM-System for the condition-based maintenance of freight wagons was developed with the support of the German Federal Ministry of Economics (BMWi).

Sturdy system design

The CargoCBM-System is divided up into the fields of vehicle-mounted components, stationary components and a user interface. The heart of the system is an On-Board-Unit (OBU) installed on

«The heart of the system is an On-Board-Unit (OBU) installed on every wagon.»

every wagon. This collects the measurement signals from all of the sensors, pre-processes the data and contains the vehicle-based communication equipment. A powerful CPU on the OBU takes care of the complex calculations to extract damage features, thus reducing the volume of data transfers in normal operation. The OBU also has CAN-Bus and ZigBee interfaces, which also permit the connection of wireless sensors. The ZigBee modules allow the realisation of a radio-train-bus by a combination of several OBUs. The OBU contains an acceleration sensor to record the shunting impacts, a temperature sensor and a GPS receiver that provides information about the current position of the freight wagon and its mileage. The Machine to Machine (M-2-M) communication between the mobile system and stationary servers takes place via the GSM network so that all of the information can be called up online by the customer. Furthermore, software updates can also be downloaded to the OBU via this interface.

Combination sensors with an integrated A/D converter and CAN module that are customised for the specific application case provide speed, acceleration and temperature information about the axle bearings.

The vehicle-based hardware has been tested for resistance to water and dust in accordance with IP68 and is designed for permanent operation under the toughest of conditions.

Automatic data evaluation

The algorithms to diagnose damage in their current stage of development offer functions to detect wheel runouts, to monitor running dynamics and an associated check of the wear condition of the wheel profile, to document heavy shunting impacts and to monitor the tempe-

In brief

- More than 400,000 test kilometres in the toughest environment
- Condition-based maintenance strengthens the competitive situation
- Condition monitoring as a technical basis for wear-dependent business models in intermodal logistics

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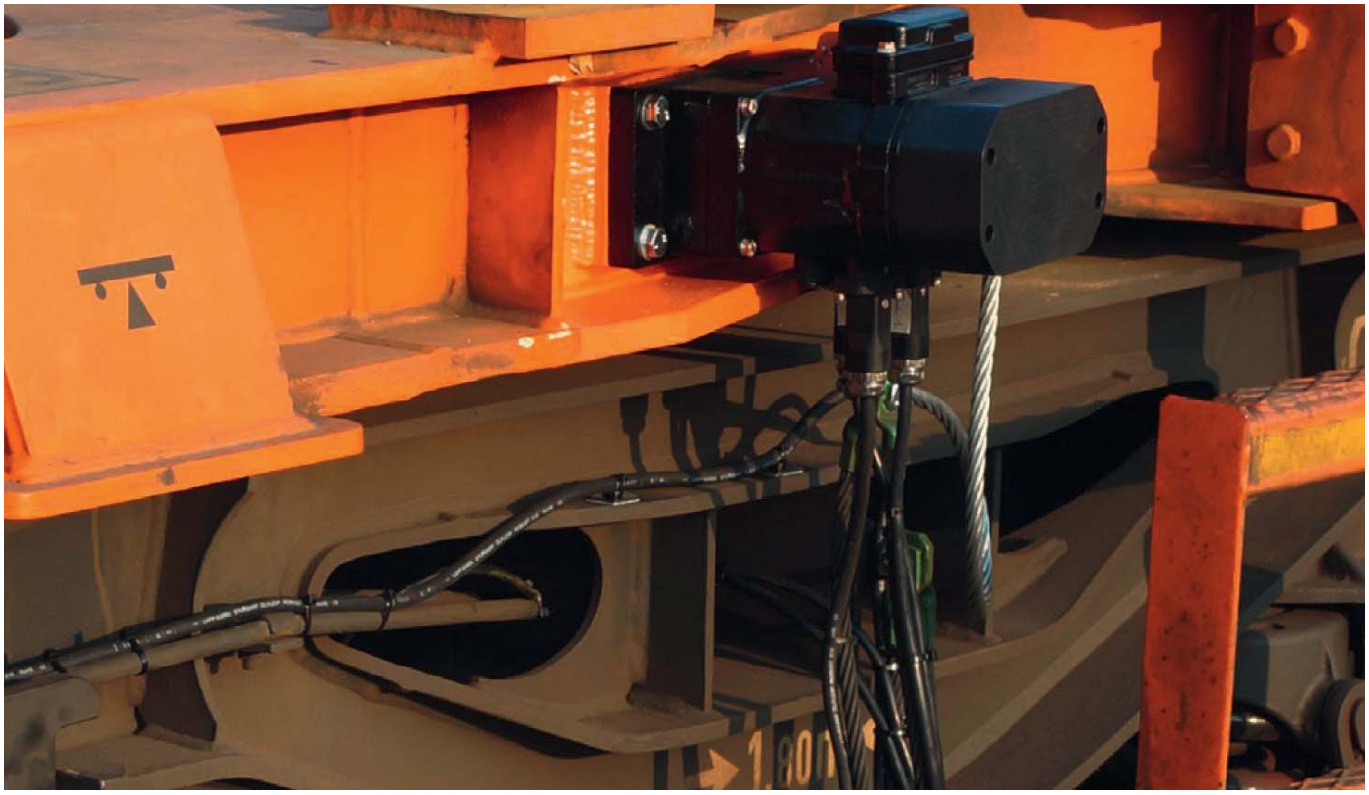

On-Board-Unit

rature of wheelset bearings. Information about the current position of the freight wagon and its mileage is provided by the system. The vibration-based monitoring of wheelset bearings and monitoring of the brake shoe wear are under development. Tasks such as monitoring the function of the brakes, an automatic brake test or cargo monitoring can be implemented thanks to the flexible system design and the efficient hardware and software. Systems to monitor the cargo can be integrated via the radio interface.

The greatest possible customer benefit is achieved through an automatic analysis of the data that is generated. This data is fed directly into a database and the results sent to the maintenance planning program (ISP) zedas®asset for a final analysis. This software provides all of the tools needed for the management of maintenance and planning processes and thus permits workshop and fleet management.

«This software allows workshop and fleet management.»

Successful trials

The CargoCBM hardware has been in use since March 2012 on several wagons of Vattenfall Europe Mining in Lausitz. There have been no system failures over the entire period despite the tough conditions in the open-cast mine. The function and accuracy of the developed algorithms could be confirmed by a comparison with workshop reports and measurements by stationary systems. The CargoCBM System has been in use on Wascosa freight wagons that are in regular operation between Austria and northern Germany in a second test phase since April 2013. The CargoCBM-System allows not only a reduction of primary costs by optimising maintenance strategies and improving the safety of the rolling stock. It also offers the technical basis for completely new business models to strengthen the competitive situation and for a deeper integration of rail-freight traffic into intermodal logistics concepts. ■

Personal details

Dr. Lutz Tröger ...

- ... studied physics at the University of Hamburg, doctorate at the LMU Munich and the University of Osnabrück.
- ... has been with the HARTING technology group since 2010, where he is the head of the «New Technologies» department.
- ... performs research projects with his team of highly-qualified scientists in a wide range of technologies from nanotechnology, industry 4.0 through to rail-freight traffic.
- ... is a member of the telematic study group of the Technical Innovation Group for Rail-Freight Traffic.

The transport logistic 2013 – a great success

The «Who's who» of the industry once again came together. And WASCOSA, Europe's most innovative freight wagon hirer, also attended for the sixth time. Under the motto «going new ways», WASCOSA presented innovations from its fleet of wagons. Interesting talks were held and a number of valuable, new contacts were made.

The latest innovation from Europe's most innovative freight wagon hirer, the WASCOSA tank car 3000®, is based on the WASCOSA safe tank car® design. This new industrial standard is prevailing over all RID classes. More than 700 wagons had been ordered or were in use in six European countries even before the trade fair got started. This standard offers an ideal level of safety, leading to significant savings of risk-based costs for the transport of hazardous goods by rail and to an increased safety level thanks to the use of best practices for users of the wagons.

As always, it was a special experience for everyone involved at WASCOSA to attend the transport logistic. The WASCOSA stand was a great success and was very popular with not only the WASCOSA team but also interested visitors and co-exhibitors.

The trade fair grew in size again this year: More than 2,000 companies from 64 countries with numerous international market leaders were in attendance. The remarkably high number of international exhibitors has also increased and will continue to rise in future. ■

Save the date!

The next transport logistic will be held from 5 to 8 May 2015.

New safety wagons to transport carbon disulphides

Lenzing AG is particularly concerned about the safe transport of chemicals. The firm of Grillo drew Lenzing's attention to the use of the «safe tank car®» from Wascosa for deliveries of sulphur dioxide back in 2010.

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This prompted Lenzing AG to demand this highest safety standard for deliveries of carbon disulphides, a key chemical in the viscose fibre process. The safety standard includes a crash buffer, ride-up protection module, reinforced tank bottoms

«The safety standard includes a crash buffer, ride-up protection module, reinforced tank bottoms with a second, optimised brake platform, rollover protection and derailment detectors.»

with a second, optimised brake platform, rollover protection and derailment detectors.

Following a complex selection process, the decision was taken in favour of the «safe tank car®» from WASCOSA. There were a number of criteria that tipped the balance. What ultimately clinched the matter was that WASCOSA leads the way in the industry and is the only hirer offering this kind of safety tank wagon. The project planning for this new wagon project was carried out just as professionally by WASCOSA as its implementation. The wagons were not only delivered in the desired quality but also punctually within the agreed period.

«Various criteria tipped the balance in this complex selection procedure.»

These new safety wagons are hired partly by the supplier and partly by Lenzing AG directly and set a new standard in the transport of carbon disulphides. Consequently, the at present highest safety standard is guaranteed for all deliveries of carbon disulphide. ■

Lenzing AG

The Lenzing group ...

- ... is a world market leader with its headquarters in Austria and production facilities in all important markets as well as a global network of sales and marketing offices.
- ... supplies the global textile and nonwovens industry with top-quality, industrially manufactured («man-made») cellulose fibres.
- ... offers high-quality products in the form of fibre pulp, cellulose and special fibres right through to engineering services.
- ... is celebrating its 75th anniversary this year and is the only manufacturer in the world that combines all three generations of man-made cellulose fibres – from classic viscose via modal through to lyocell fibre (TENCEL®) – on an industrial scale under one roof.

From left to right: Bernhard Nader (Head of Global C. Chemicals), Hans-Peter Schinkowitsch (Planning Manager), Andreas Griebl (Waste Mgmt. Officer and Dangerous Goods Safety Advisor), Norbert Wannebauer (Unloading Supervisor) from the Lenzing Aktiongesellschaft and their account manager Thomas Karsten from WASCOSA.

Figure 1: 15 kV overhead contact line near points in Mannheim railway station

Interesting facts

Electricity systems in Europe for international freight traffic

What is technically and legally possible for numerous freight wagons in Europe thanks to the RIV agreement first signed in 1922 is a high technical obstacle for motor vehicles. Both the control and safety technology as well as the power supply system of the national infrastructure companies differ greatly in some cases. This article provides a brief overview of the latter.

There are four main electricity systems for main-line tracks in Europe that have developed over time. These can roughly be split into single-phase alternating current (AC) and direct current systems (DC).

Alternating current with 16.7 Hz and 15 kV

In Switzerland, Germany, Austria, Sweden and Norway the single-phase alternating current system with a frequency of 16.7 Hz and a voltage of 15 kV is used almost everywhere. This frequency differs from that in the public mains, which is usually operated at 50 Hz in Europe, and is due to the drive technology that was available at the beginning of the 20th century. Various technical problems at the time led to an unfavourable constellation of the motor vehicle engines used and the 50 Hz frequency that was common in the national mains power supply. One big disadvantage was the high wear of the carbon brushes through so-called «commutator sparking». This led to the first standardisation of the traction current system for German state railways in 1912 to the frequency 16 ⅔ Hz and 15 kV, which remained in operation for many years.

Direct current with 3 kV and 1.5 kV

The direct current system with 3 kV has become established in Italy, (Spain with broad gauge), Poland and other eastern European countries, and with 1.5 kV in France and the Netherlands. The distribution of the direct current system can similarly be traced back to the drive technology in the early years of railway engineering. The characteristics of the DC inverse-speed motors, which were favourable for use in traction vehicles, and the control possibilities, were decisive for the

«There are a number of different light rail systems around the world.»

choice of this system. There are a number of different light rail systems around the world that are operated with direct current in the lower power range, e.g. 750 V. One disadvantage of the direct current system is the rise in the power loss with an increasing traction vehicle output due to the occurring currents.

Alternating current with 50 Hz and 25 kV

In France and Italy (and Spain too with normal gauge) the new high-speed tracks under construction are being equipped with the 50 Hz/25 kV technology that is now standard throughout the EU. This was defined in 2011 as the target system for the European rail network according to the resolution on the technical specification for interoperability relating to the 'energy' subsystem of the trans-European conventional rail system. In Germany there is exactly one railway line with 50 Hz and 25 kV, the Rübelandbahn. Geographically speaking a rarity – from a European point of view the standard.

If the 16.7 Hz system that is widespread in central Europe is converted to a European 50 Hz system, extensive work has to be carried out to bridges in addition to the outlay for the systems that provide the power. For example, the safety gap between the contact line and the bridge construction has to be increased. This is one reason why new sections of track continue to be built with the 16.7 Hz system that exists in these countries.

Multi-system locomotives

Industry has answered the market's demand for a cross-border transport solution without having to change motor vehicles by developing multi-system locomotives. These combine several of the four electricity systems explained above, thus technically allowing borders to be overcome. Either two or all four of the

«This allows borders to be overcome.»

common electricity systems are usually combined in a locomotive. The modular design of locomotives is also industry's response to the disparate standardised conditions in the various European countries. It is therefore possible to offer an economical solution despite the technical differences. Figure 2 shows a prototype of a new multi-system locomotive. The 187 series in the TRAXX family of locomotives from Bombardier satisfies the technical requirements for operation

An overview of the electricity systems used by European railways can be found on the last page of this edition.

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Figure 2: Prototype of a multi-system locomotive

on the 16.7 Hz/15 kV networks as well as the 50 Hz/25 kV networks. What's more it also has an additional diesel drive unit so that it can overcome the last few miles without electrification.

What does this mean for rail-freight traffic?

The strategy adopted by system houses of offering rail vehicles for all European countries despite different technical standards shows that answers to the market requirements do not have to wait for the necessary, but often very protracted introduction of uniform standards. Functioning, Europe-wide rail-freight traffic is also possible in consideration of specific national peculiarities. However, it is also obvious that a cross-border freight wagon will only be able to fully exploit the advantages of standardisation if it is hitched to a train with a corresponding locomotive. If the traction vehicle has to be changed on account of the different systems this means a corresponding loss of time

«A modular and multi-function design for freight wagons can be constructive.»

for the freight wagon and thus the shipment too. From the point of view of the freight wagon owner it has to be said that the approach taken to overcome borders with the help of multi-functional locomotives will also set the trend for freight wagons. A modular and multi-function design for freight wagons can be constructive to satisfy different transportation tasks and customer requirements.

Effect on the brake wear of freight wagons

With respect to the aforementioned electricity systems, the close ties between technology and operation are apparent in practice for freight wagons that can be used in all areas. For example, the fact that

«The close ties between technology and operation as regards the electricity systems are apparent in practice.»

the aforementioned direct current systems have fewer possibilities to feed power back into the mains than the alternating current systems for technical reasons can lead to an altered braking behaviour of traction vehicle drivers and thus cause different wear patterns in the vehicles. The use of diesel-powered locomotives that also offer a solution for the uninterrupted crossing of borders can also lead to different braking patterns by the traction vehicle driver. This is important for the owner and ECM inasmuch as experimental values with new materials in the brake system, for example, have to be evaluated in consideration of the operational situation. ■

Sources:

1) Panier, F.; Feuchter, F.; 2009/12, Deine Bahn, Deutsche Bahn AG Konzern, Eisenbahn-Fachverlag GmbH/Mainz, page 41–46, Generationenaufgabe europaweite Standardisierung, ISBN 0948-7263

2) FIS, Forschungs-Informations-System, Federal Ministry of Transport, Building and Urban Development (BMVBS); Siegmann, J., «Differierende Stromsysteme im Eisenbahnverkehr Europas», State of the art: 27.02.2013, http://www.forschungsinformationssystem.de/servlet/is/324814/?clsId0=276654&clsId1=276659&clsId2=276929&clsId3=0, called up on 23.09.2013

New developments in the GCU 2014

There will again be some new developments in the GCU in 2014 as a reaction to altered economic, legal and technical parameters. These will necessitate some amendments, which will be presented here. Apart from the named changes in the GCU, mention will also be made of the implementation of the European statutory specification regarding the «remarking of wagon numbers» at the end of the article.

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GCU changes on 1 January 2014

The revised edition of Appendix 5 pays tribute to the technically more complex and higher quality design of new vehicles and creates an unambiguous ruling on the question of the «change of ownership with damaged vehicles». The settlement ruling based on the weight of a damaged vehicle that applied up to now was deemed to be no longer reasonable and will therefore be replaced by the possibility of a flat-rate calculation of the current market value (based on the replacement cost and taking into account a reduction in value). This does not affect the alternative of a concrete calculation of the current market value by means of documentary evidence. The problem as to whether and when the damaged vehicle changes its owner is solved inasmuch as the owner has to inform the rail transport company of his decision in writing in every single case with the invoice.

Technical innovations are incorporated in the GCU in Enclosures 9 and 10, for example the specification of damage codes and the introduction of composite brake blocks. The contents were adapted identically in the UIC languages.

The update to Article 34 specifies the languages to be used in mutual communication. One named exception are invoices, which can continue to be issued in the relevant national language.

Topics under review for possible revision

The items in Appendix 6, which deals with the regulation of «compensation for downtimes», are currently being reviewed according to their topicality with respect to profitability and the clarity of the specification of the periods to be calculated. Article 18 is being assessed with regard to a more uniform and applicable procedure to prepare damage reports (Appendix 4), amongst other things.

Special topic – wagon numbering as of 1 January 2014

As already mentioned in a previous edition, reference is once again made here to the obligatory implementation of the reform regarding the system of «wagon numbering» on 1 January 2014. To refresh your memory: the first four digits of the wagon number no longer necessarily identify the current owner or country of origin of the wagon but only the country in which the wagon was first registered. The wagon retains its «fixed» wagon number for its entire lifetime (unless it is technically modified). In future, the VKM (vehicle keeper marking) on the wagon will be the sole means to identify the owner. Irregularities in the settlement of freight or ancillary charges may occur temporarily with leased wagons (whose VKM has not been altered). ■

> «In future, the VKM (vehicle keeper marking) will be the sole means to identify the owner»

Routes of freight wagons

The routes taken by freight wagons, provided these are not shuttle services with wagons or block trains between fixed loading points, are always based on the same principle: empty wagon delivery → loading → load run → unloading → empty wagon return. Empty wagons are hereby often delivered in wagonload freight networks, even with block train traffic. The routes of both empty and laden freight wagons are always determined according to the same principles. The only differentiation made is whether the freight wagon is transported in a block train or as an individual wagon.

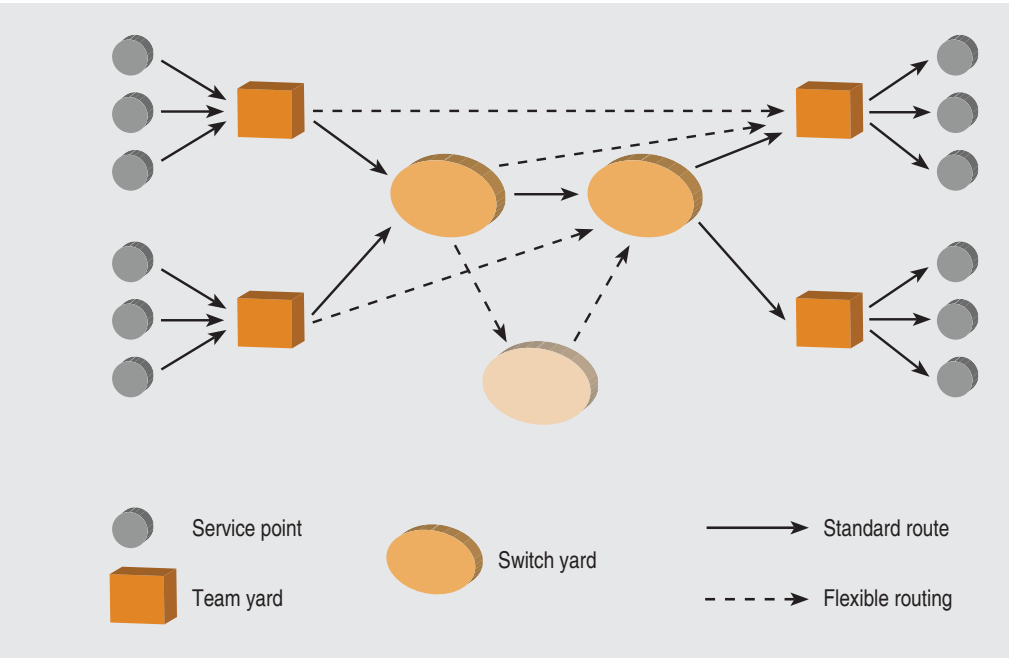

Figure 1: Flexible hub system in wagonload freight

Block trains are used to transport larger quantities (from around 300 to 500 tons depending on the marginal conditions) from a loading point to an unloading point. Since the trains are transported as a whole and there is no shunting and addition of wagons en route, these trains travel by direct routes on the rail networks. Restrictions – in other words diversions – only occur when overloaded sections are circumnavigated, for example if the structure gauge or permissible axle load is inadequate on certain sections or inclines have to be avoided. On the whole, however, block trains and the freight wagons contained therein can be routed very flexibly in the railway network so that the routes of freight wagons in block trains are based on the optimum economic route. The freight wagons themselves in block trains, above all in combined traffic, are

«On the whole, however, block trains and the freight wagons contained therein can be routed very flexibly in the railway network.»

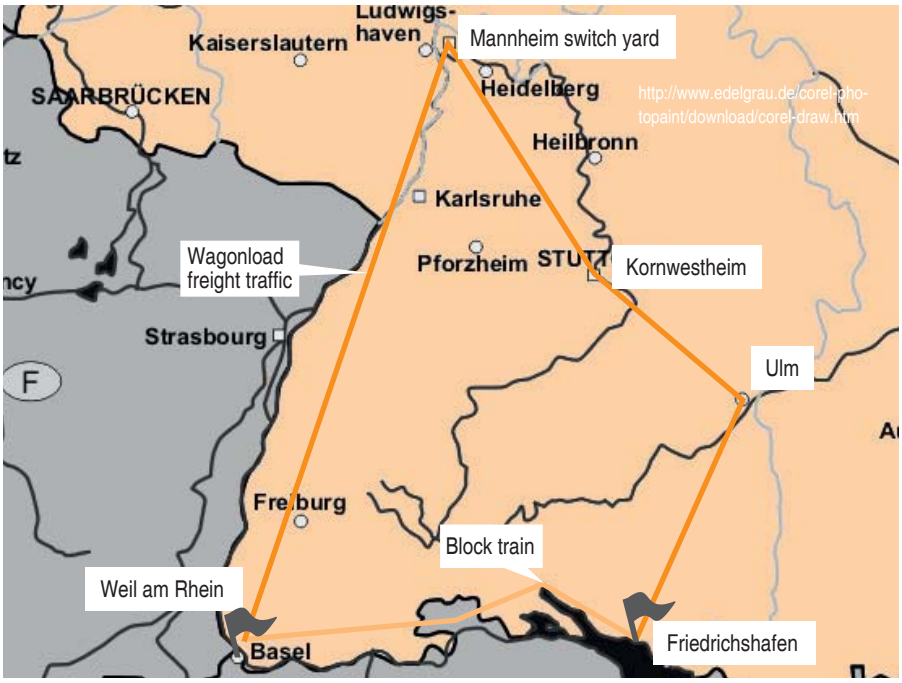

Figure 2: Routing for the relation Weil am Rhein–Friedrichshafen[3]

either operated in shuttle compositions on fixed routes or the wagons are delivered in wagonload freight networks – above all for spot traffic – and compiled to block trains. At the destination, the wagons are then once again distributed in wagonload freight networks.

Complex wagonload freight

The production of wagonload freight is much more complex since only one or a few wagons are transported on one relation. In this case transport as a direct train journey is not economical. This is why these wagons are coupled with other wagons on certain sections and shunted at suitable locations.

The flexible hub system has established itself for the production of the wagonload freight network in European railways. The freight yards in the railway network are hereby classified in a hierarchic system of three or four levels depending on the size of the country being served. In Switzerland the lowest level is the service point with the corresponding loading points (sidings or free in). The wagons that are loaded here are run to the corresponding team yard where they are collected. The wagon is then moved from the team yard to the corresponding switch yard. The wagons

«The flexible hub system has established itself in European railways.»

are then shunted there and distributed to the trains for the destination's switch yards. At the destination switch yard the wagons are then sorted to the individual team yards and the wagons are ultimately assigned to the service points.

The in principle very hierarchic system achieves its flexibility through its ability to serve «external» switch yards directly from the team yard in the event of very strong relations between team yards and «external» switch yards. Another way of organising the network economically is to not serve very weak connections between switch yards directly but via a third switch yard. One big disadvantage of the hub system are the great diversions that may arise when serving two service points that are close together but assigned to different switch yard areas. Thus, the distance between Weil am Rhein and Friedrichshafen in Germany by a direct rail route is only 185 km (the distance by road is 191[1] km) – but a wagon in wagonload freight travels via Mannheim switch yard and Kornwestheim (near Stuttgart)[2], so that the distance effectively travelled is 574 km, or 3.1 times further. However, the rail

«One big disadvantage of the hub system are the great diversions that may arise.»

transport company can only charge the distance effectively travelled for competition reasons – so that it is hard to show transports on such relations economically.

Future developments

The great diversion factors on certain relations in today's wagonload freight pose a big problem since the actual distances travelled may be many times longer than a direct rail transport or road transport. A greater flexibility of the production system is therefore needed in wagonload freight. One solution, at least for yards that lie on a switch yard-

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switch yard link, is to add additional stops to couple and uncouple wagons. DB SchenkerRail is currently taking a first step in this direction within the

«The great diversion factors on certain relations in today's wagonload freight pose a big problem.»

scope of the network railways project, where an integrated production of all products is being planned to enable a more flexible creation of networks. Nevertheless, vehicle innovations such as an automatic brake test would be

«Nevertheless, innovations would be needed to optimise the operating procedures.»

needed to continue this optimisation of operating procedures. On the other hand, the freight traffic infrastructure also has to be adapted to this mode of operation since a number of transit yards no longer have the corresponding sidings.

Conclusions

The problem of diversions in wagonload freight also poses a big problem in the competition with road transports. This is because the advantage of a fundamentally lower environmental impact

«There is an urgent need for action from railways here.»

per kilometre travelled of rail traffic compared to road traffic can be lost through the diversions that sometimes have to be travelled. There is an urgent need for action from railways here. ■

[1] Route calculated with maps.google.de – avoiding the Swiss sections.
[2] According to www.gueterfahrplan.hacon.de – last revised 2011.
[3] Map and wagonload freight traffic route: www.gueterfahrplan.hacon.de called up on 12.09.2011.

Personal details

Dirk Bruckmann ...

- ... studied civil engineering between 1992 and 1999, specialising in traffic engineering, at the University of Duisburg-Essen.
- ... worked from 1999–2006 as a research assistant at the Institute of Road Construction and Transport Engineering of the University of Duisburg-Essen.
- ... was then responsible for the strategic infrastructure needs of SBB Cargo AG from 2006–2011.
- ... has been employed as a senior scientist at the Institute for Transport Planning and Systems of ETH Zurich since June 2011 and is in charge of the topic freight traffic and railway operations.

FC Basel – the most successful Swiss football team of recent years takes to the rails

A spontaneous idea turns into a veritable jewel: an FCB tank wagon! At the end of a successful season the wagon was dedicated by Adrian Knup.

Even if it's not as fast as a racing car, the twin-axle freight wagon is at least just as good looking. And: it travels around Switzerland, thus carrying the colours of FC Basel throughout the entire country. The WASCOSA wagon was dedicated in Rheinfelden, where it had been customised, right on time to mark the end of the season for FC Basel, which was crowned by the 16th Swiss championship, the fourth in succession. This took place in the presence of the FCB Vice President Adrian Knup (former international: numerous international matches, numerous goals for Vfb Stuttgart and Karlsruher SC) and FC Basel's Marketing Manager Numa Frossard.

Adrian Knup, Vice President of FC Basel and Numa Frossard, FC Basel's Marketing Manager, set the FCB tank wagon rolling.

Philipp Müller, initiator of the project, has this to say: «There are a lot of similarities between us and FC Basel – we have both developed successfully on the international front over the past 10 years and, like the FCB, are gradually climbing up the European rankings with a strong team.»

The wagon was dedicated in Rheinfelden, on the premises of the firm of Josef Meyer Rail AG in Rheinfelden, an important maintenance workshop for freight wagons. The company customised the wagon perfectly and also made a generous contribution to the project. José Del Rio, the Managing Director, said: «A large number of our firm's employees identify with FC Basel, one reason why we were delighted to be part of this unusual project.» ■

FC Basel 1893

The FC Basel ...

- ... was founded in 1893 and this year celebrates its 120th anniversary.
- ... is the 16-times Swiss football champion.
- ... is the 11-times Swiss cup winner.
- ... was ⅛-finalist in the Champions League in 2012.
- ... was semi-finalist in the Champions League in 2013.
- ... is also playing in the Champions League this season.

The FC Basel is the most successful Swiss football club of recent years. It has won 14 of its 27 titles in the past 11 years. FC Basel holds 27th place in the UEFA ranking. FC Basel plays its home games in St. Jakob-Park (capacity 38,500 spectators), which hosted 6 matches of the European Championship (UEFA Euro 08, including the opening match) in 2008.

New at WASCOSA

Daniel Schmid, Head of Operations / Member of the Management Committee, T +41 41 727 67 32, daniel.schmid@wascosa.ch

Daniel Schmid has been Head of Operations and Member of the Management Committee at WASCOSA since 1 April. Following his basic training as dipl. Bauingenieur ETH, he spent several years as a project manager in structural and civil engineering before working as a division manager and partner in a management consultant company in the field of strategy counselling as well as process and quality assurance. Daniel Schmid and his team at Holcim Ltd realised European projects in the field of sales and logistics. He hereby gained widespread experience in process optimisation and quality assurance. Daniel Schmid has also constantly gained further qualifications: he completed a postgraduate course in business administration, is EFQM-Coach, has the Six Sigma Green Belt and speaks fluent English and Spanish.

His many years of managerial experience in corporate groups and his negotiating skills benefit both the employees and customers of WASCOSA. He questions procedures, looking for constructive solutions to optimise processes, and regards problems as a challenge he is happy to tackle. What he likes about WASCOSA is the good working atmosphere, the competent team, the flat hierarchy and that every day is different. «And I find relaxation with my family and by taking part in triathlons – it's where I can recharge my batteries for my exciting work at WASCOSA.» ■

Doris Luther, Safety Management Employee
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Doris Luther has been part of the safety management team since the end of May. After studying civil engineering she spent five years working for consulting engineers in Berlin, in charge of building supervision, project management, planning, tendering and the settlement of track construction services for public clients. She also completed a course of studies in traffic engineering and worked for several years as a research assistant at the Institute for Land and Maritime Transport at the TU Berlin in the field of the freight wagon safety and the transport of hazardous substances, telematics and brake technology. Mrs Luther completed her doctorate at the TU Berlin with a thesis on «Automated brake tests in rail-freight traffic».

This theoretical basis and her practical experience in vehicle engineering, infrastructure and the operation of rail vehicles meant that she considers topical questions in an integral way and adopts a systematic approach to her search for solutions. «At WASCOSA I have the chance to play an active part in shaping the safety of rail-freight traffic. My work is very diversified and I really appreciate the dedicated and open-minded team.» The qualified engineer is the contact person at WASCOSA if customers have any questions on ECM; they profit from the expert handling of all safety-relevant topics and the innovative approaches that Doris Luther loves to pursue. ■

Hendrik Stiller, Admin. Spare Parts and Wheelset Management
T +41 41 727 67 44, hendrik.stiller@wascosa.ch

Hendrik Stiller has been working in the Spare Parts and Wheelset Management department of WASCOSA since 1 November 2012. This native German completed his training as a construction technician at Franz Kaminski Waggonbau GmbH in Hameln, Lower Saxony, where he spent a further three years as a locksmith after his training. The young professional then spent some time in the south: he worked for two years in Tarragona, Spain as a steel erector. He later worked as a motor mechanic and also gained a sound insight into office work.

Hendrik Stiller does not regret moving to Switzerland and WASCOSA one year ago for a single second: «I was made to feel very welcome here and I am very happy in the OPS division.» What he really appreciates about the work at WASCOSA is that the entire team is exceptionally helpful. ■

«I was made to feel very welcome here and I am very happy in the OPS division.»

Substance classes, tank codes, special provisions – what's it all about?

Use of tanks

General regulations

Tanks

- must be protected against damage to the tank body through toppling over, impacts etc.
- may not contain any substances that could promote a polymerisation, conversion or chemical decomposition of the substances being transported.
- The tank, its fittings and seals must be compatible with the substances being transported. The type approval also provides information on this, but only for specially approved tanks (so-called dedicated tanks). A reservation should be included in the type approval if the compatibility could not be conclusively tested. However, the tanks are usually approved for complete substance groups, not just certain substances, on account of their construction and test pressure, in accordance with the assigned tank code and the special conditions that are satisfied.
- have to be insulated so that the outer surface of the tank body cannot heat up to temperatures above 70 °C .
- Uncleaned empty tanks have to comply with the same regulations as if they are full.
- The regulations on the level of filling also have to be observed.

Additional regulations for individual classes

Various special provisions that also have to be satisfied may also be listed in column 13 for both class 2 substances as well as class 3-9 substances alongside the tank instruction in column 12. The special provisions are specifically assigned to each UN substance number.

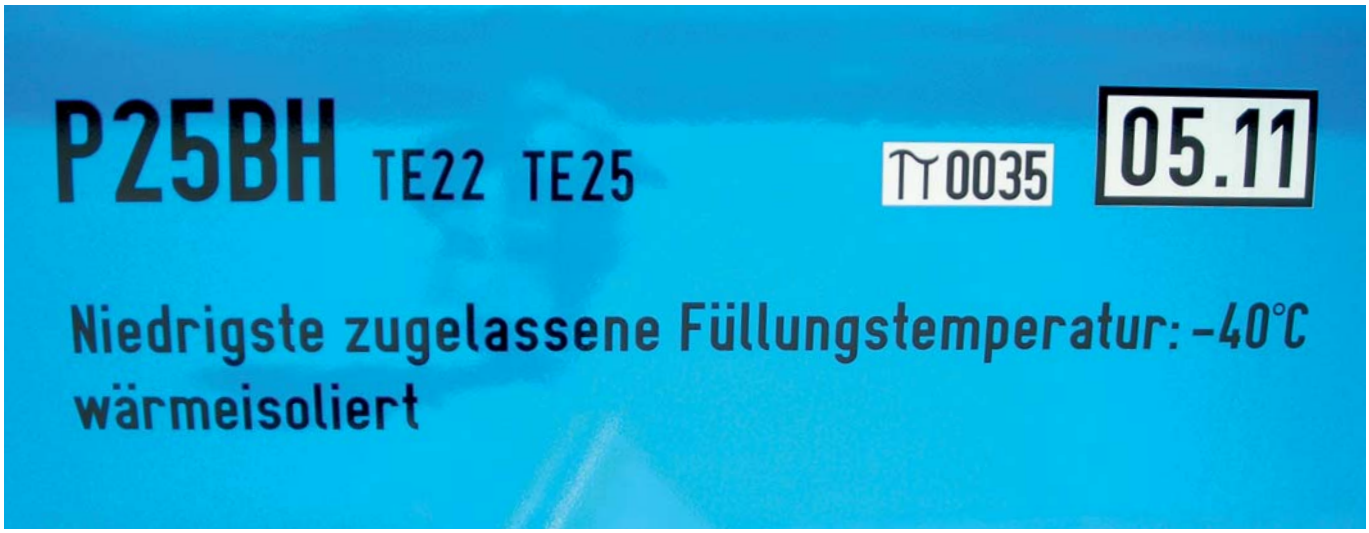
Regulations for all classes

Substances may only be transported in tanks if there is a tank instruction in the column of table 3.2 RID. The regulations described in Chap. 6.8 as well as the special provisions listed in Tab A Chapter 3.2 Column 13 apply for the design, construction, equipment, identification and testing.

This tank instruction is therefore the minimum requirement on a certain substance for transportation in a tank, but at the same time the tank code is the description of a real tank.

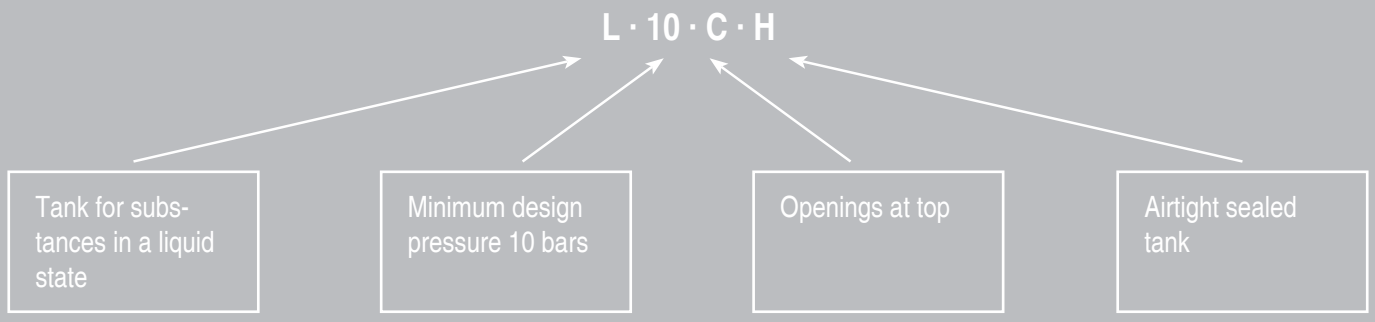
A substance that is approved for transportation in a tank may always be transported in not only a tank with the corresponding tank code but also in a tank with a higher safety level in the tank hierarchy (unless the tank hierarchy may not be applied with so-called «+» tanks).

The tank's level of filling differs depending on the substance class and can be calculated with an equation in accordance with RID Chap. 4.3.2.2. This essentially depends on the cubic coefficient of expansion and the filling temperature.



Example of a pressurized gas tank wagon

Example of a tank code



Tank code

General

The tank code has three basic meanings:

1. It shows whether a certain substance can be transported in tanks.
2. It specifies the minimum requirement of a substance for transportation in a tank.
3. It describes a real tank. The main features are defined by the elements of the tank code

The tank code in accordance with column 12 (consisting of letters and numbers) has four parts, whereby the individual parts have the following meaning irrespective of the type of tank and hazardous substance:

Part 1: Type of tank
Part 2: Design pressure
Part 3: Openings/emptying system
Part 4: Safety/pressure relief equipment

The tank codes as well as the code hierarchies for the individual classes will be explained in the following sub-chapters.

Tank hierarchy

Tanks with tank codes other than those named in this table or in Chapter 3.2, table A may also be used provided each element (number or letter) of parts 1 to 4 of the other tank code corresponds to a safety level that is equal to or higher than the corresponding element of the tank code specified in Chapter 3.2, table A in the following ascending order:

Part 1: Type of tank
S → L
Part 2: Design pressure
G → 1.5 → 2.65 → 4 → 10 → 15 → 21 bars
Part 3: Openings
A → B → C → D
Part 4: Safety valve/equipment
V → F → N → H

Example

A tank with the tank code L10CN is approved for transporting a substance that has been assigned the tank code L4BN.

A tank with the tank code L4BN is approved for transporting a substance that has been assigned the tank code SGAN.

Special provisions for the use of tanks

If column 13 of Tab. A, Chap. 3.2 of RID is ticked, special provisions apply. These special provisions can be instructions that the filler has to observe («TU» or «TM» regulations), e.g. compliance with the approved level of filling or marking regulations. Column 13 may also contain special provisions on the construction of the tank («TC regulations»), the equipment needed («TE regulations») or its approval

«These special provisions can be instructions that the filler has to observe.»

(«TA regulations»). The specific regulations have to be observed too.

Whereas the design and equipment-specific details are, strictly speaking, properties of the tank, these TE and TC properties are included in the tank certificates. These special properties also have to be specified for tank wagons whose tank code is noted on the tank itself. The TU and TM regulations, however, are for the operator/filler and have to be observed when using the tank with specific substances:

The following applies in general:
TU x: U = using
TC x: C = construction
TE x: E = equipment
TA x: Type approval (A = approval)
TP x: P = proofing
TM x: M = marking
x = one or two-digit number ■

Example

A sender wishes to dispatch methanesulfonyl chloride, UN number 3246 in a tank wagon with the tank code L10DH. According to column 12 of table 3.2, the substance needs a tank with the tank code L10CH. Within the scope of the rationalised approach and tank hierarchy of paragraph 4.3.4.1.2 RID, an L10DH tank would thus be approved. However, at the end of the aforementioned paragraph on tank hierarchy we find the note: «Note: the special provisions that may apply for the individual entries (see sections 4.3.5 and 6.8.4) are not taken into account in this hierarchic list». And these special provisions are precisely those entries in column 13; thus, in the example named here, TU 14, TU 15, TU 38, TE 21 and TE 22.

Further information:
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Member of the RID Committee of Experts
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Latest news

CEFIC adopts parts of the WASCOSA safe tank car® design

The European Chemical Industry Council, CEFIC, published a new version of its recommendations for the construction of tank wagons to transport chemical products and liquid gases on 30.08.2013. Apart from other measures to improve safety, such as equipping wagons with crash buffers, the CEFIC now also recommends the wagon undercarriage with 2 brake platforms developed by WASCOSA. This concept, which was first presented in 2010 with the WASCOSA safe tank car®, offers the operating personnel a safe place to work at both ends of the wagon. Today there are already more than 700 WASCOSA safe tank car® wagons being delivered or in use in both the chemicals and petrochemicals industry.

Through the adoption of this safety-optimised wagon design in the CEFIC guidelines, the WASCOSA safe tank car® is definitively confirmed as the new safety standard in the industry.

Through the adoption of this safety-optimised wagon design in the CEFIC guidelines, the WASCOSA safe tank car® is definitively confirmed as the new safety standard in the industry.

The new version of the CEFIC guidelines is available online at http://www.cefic.org/Industry-support/Transport--logistics/Best-Practice-Guidelines1/General-Guidelines-/. ■

jura cement

jura cement ...

- ... comprises two production plants (Wildegg and Cornaux) and employs around 160 people at these two sites.
- ... is the second biggest cement producer in Switzerland with a production capacity of more than 1 m tons of cement.
- ... transports 45 % of this cement in an environment friendly way by rail, thus saving 4,900 tons of CO_2 each year.

Logistics by rail - environment friendly and reliable

jura cement

ECM fleet management – made by WASCOSA

WASCOSA has been managing the wagon fleet of jura cement, the second biggest producer of cement in Switzerland, since the beginning of the year.

René Weber, Head of Office Sales

Mr Weber, how was the contact established to WASCOSA?

A third party recommended WASCOSA to us as a powerful and efficient service provider. This got the ball rolling.

What were the decisive points that induced you to commission WASCOSA with the management of your fleet of wagons?

The decades of experience in management, the competent and courteous manner of the persons in charge and, of course, the optimum value-for-money persuaded us to place the order with WASCOSA.

What do you appreciate most about the cooperation?

The fast response times and the high availability of our rolling stock. We can thus concentrate on our core business thanks to the competent services provided by WASCOSA. You can positively feel that the employees at WASCOSA have a passion for freight wagons and for their customers.

Have you decided on other services from WASCOSA in the meantime?

Yes, on the basis of our positive experience we have now decided on WASCOSA in other fields too and have leased additional freight wagons from WASCOSA. ■

The two cement works of jura cement produce high-performance cements for various fields of application at the two sites in Wildegg (shown here) and Cornaux whilst sparing a maximum of natural resources.

Calendar

2014

14.01.2014 Hamburg (DE)	4th VPI Symposium	Info: VPI Association of Private Freight Car Interested Parties mail@vpihamburg.de / www.vpihamburg.de
13.05.2014 Zurich (CH)	VAP Forum Freight Traffic Spring Conference	Info: VAP Switzerland vap@bluewin.ch www.cargorail.ch
26.06.2014 Hannover (DE)	13th Technical Information Event of the VPI	Info: VPI Association of Private Freight Car Interested Parties mail@vpihamburg.de / www.vpihamburg.de
27.06.2014 Hannover (DE)	VPI Members Meeting	Info: VPI Association of Private Freight Car Interested Parties mail@vpihamburg.de / www.vpihamburg.de
11./12.09.2014 **Alternative date: 16./17.10.2014** **Lucerne (CH)**	**WASCOSA Railway-Freight Traffic Conference** **Anniversary event commemorating** **50 years of WASCOSA AG**	Info: WASCOSA AG marketing@wascosa.ch www.wascosa.ch
23.–26.09.2014 Berlin (DE)	InnoTrans 2014	Info: Messe Berlin innotrans@messe-berlin.de www.innotrans.de
04.–08.10.2014 Vienna (AT)	EPCA Annual Meeting	Info: EPCA The European Petrochemical Association communications@epca.eu / www.epca.eu
13.11.2014 Zurich (CH)	VAP Forum Freight Traffic Autumn Conference	Info: VAP Switzerland vap@bluewin.ch www.cargorail.ch

Save the date!

2015

05.–08.05.2015 Munich (DE)	transport logistic	Info: Munich exhibition centre info@transportlogistic.de www.transportlogistic.de

Credits

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Max Sandmeier-Novarese, the founder of WASCOSA AG 1927–2013

On 14 October 2013, the founder of WASCOSA AG, Max Sandmeier-Novarese, passed away aged 86 in Oberägeri in the canton Zug. As a pioneer and man of action, he shaped the establishment and development of WASCOSA for 30 years.

Max Sandmeier, the founder of WASCOSA AG

Max Sandmeier was born on 27 January 1927 and founded WASCOSA AG in 1964 together with Pietro Scotti

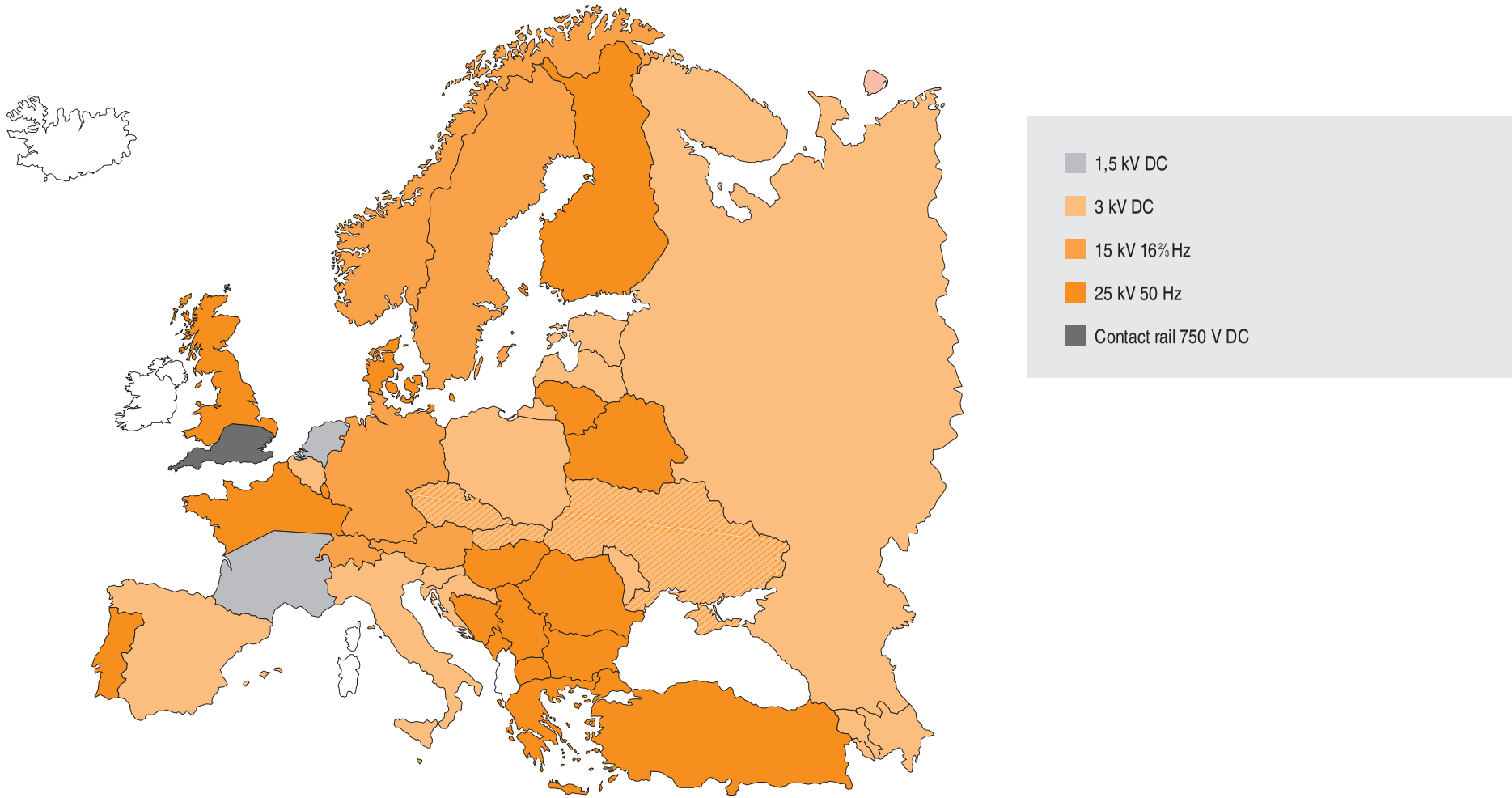
«Max Sandmeier was one of the pioneers amongst post-war wagon hirers.»

and Peter Waelty. Max Sandmeier was one of the pioneers amongst post-war wagon hirers. During his active career he was regarded as an entrepreneur who always looked ahead and acted accordingly. He always succeeded in determining new trends and customer needs promptly and in implementing these successfully. Ultimately, under the 30 years of Max Sandmeier's management, WASCOSA AG has developed into an important medium-sized hiring company. Following his retirement from active management at the end of 1993 he continued to accompany the fortunes of the company for many years as a member of the advisory board before he finally retired from this too in 2009. He was particularly concerned about the progress of WASCOSA and the well-being of its employees right up to the end. ■

«Ultimately, under the 30 years of Max Sandmeier's management, WASCOSA AG has developed into an important medium-sized hiring company.»

Overview of electricity systems in European railways

Figure 3: Different electricity systems in European railways



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