

➔ THIRD UIC/CER WORKSHOP ON RAIL FREIGHT NOISE ABATEMENT IN EUROPE



UIC Noise Workshop dinner in the Railway Museum in Utrecht.

On November 14 and 15, the Railway Museum in Utrecht, Netherlands, hosted the third UIC/CER Workshop on Rail Freight Noise Abatement, in collaboration with ProRail and the Dutch Noise Innovation Programme. During the workshop, wagon owners, transport com-

panies, governments, consultants and infrastructure managers exchanged ideas on how European freight cars could be made quieter.

Three important news items have to be mentioned. In March 2008 the European Commission will make an announcement on the financing possibilities for the conversion of freight cars. The German Government announced a major Innovation Programme in the period 2008 - 2011 to reduce the noise of freight cars. ProRail announced the introduction of a noise-dependent Track Access Charge (TAC) to be implemented in the Netherlands from 2008.

As well as the content information, there was also room for relaxation: the participants were all invited to a joint dinner "between trains", and an excursion to Amsterdam. A competition was also held, where representatives from the Dutch Government and Railion changed cast iron brake blocks on an SGNS wagon for LL-brake blocks.



Representatives from the Dutch Government and Railion changing cast iron brake blocks on an SGNS wagon for LL-brake blocks.

This competition did not take long: the brakes on all 4 wheels were changed within 5 minutes.

A discussion was also held on the financial and technical aspects of the use of K and LL-brake blocks. Homologation of new types of K-blocks is expected to take place shortly, and the release of LL-brake block appears possible for 2008. The UIC therefore proposed to continue endurance tests with LL-brake blocks in 2008. ■

UIC has published this newsletter to inform interested parties about developments in restricting noise emission by freight transport on the railway. The aim of the newsletter is to facilitate the exchange of knowledge about this subject so that quiet techniques will be applied as soon as possible in order to support the growth of freight traffic. UIC invites its readers to send their questions, comments and suggestions for possible articles to the editors (info@fluistertrein.nl).

This publication forms part of the UIC Noise Action Plan. This newsletter is published in English only (starting from this second issue).

**Would you like to receive this newsletter?
If so please send an email to:
info@whisperingtrain.eu.**



Matthias Mather, Deutsche Bahn AG

INTERVIEW MATTHIAS MATHER, DB

In this issue of UIC Freight Noise Focus, we talk to Dr. Matthias Mather, Head of Environmental Protection in the Railway Environment Centre of Deutsche Bahn AG. Within DB, Dr. Mather is responsible for noise abatement management.

What are your tasks in relation to noise abatement?

The Railway Environment Centre is responsible for noise abatement management within the group.

continuing on page 2 ►►

continuing of page 1 >>>

The DB has set itself an ambitious target: We want to halve rail traffic noise by 2020 in comparison with the year 2000. This halving corresponds to a reduction of 10 dB(A) on average. To monitor our progress in reaching this target, we have set up a strategic project.

Three elements are of particular significance: firstly the implementation of a voluntary noise limitation program by the German Government, secondly the conversion of freight cars to quiet brake systems with composite brake blocks, and thirdly the research and development of new, quiet technologies. These are all covered in the innovation project "Quiet Trains on the Right Track" (LZarG - "Leiser Zug auf realem Gleis"). Universities, the railway industry and the DB are working together in this project on the development and trial of new components.

What is the importance of noise for the DB?

No question about it: Freight trains are noisy. On busy lines such as in the Rheintal, the acceptance of rail freight traffic amongst residents is diminishing. Residents are afraid that traffic, and hence noise, will increase. So they object to the expansion of rail freight traffic without simultaneous, effective measures for noise abatement. In other words, the residents will only accept the growth in rail freight traffic if the noise pollution falls at the same time. Naturally we hope that the prognoses come true and in future we will be able to increase traffic load further on the railways. We should not forget that rail freight traffic is very environmentally friendly with regard to the climate.

Are you satisfied with progress to date in quiet freight train technologies?

The development and licensing of new technologies takes a long time. Composite K-brake blocks have been in development for seven years. In contrast, there are no licensed LL-brake blocks yet. Conversion of

freight wagon fleets to K-brake blocks entails substantial costs. This is only possible economically if there is public support. Or to summarise: The technology is available - what is missing is the funding. I am far from satisfied with this situation.

What is the better technology: K-brake blocks or LL-brake blocks?

Both have around the same noise reduction potential. K-brake blocks have operating advantages. Brake jerking does not occur, train dynamic effects can be controlled better. In contrast, the LL-brake block is not as easy to develop: The properties of grey cast iron are simulated in organic material. An attempt to outwit physics. So as well as organic material, sinter materials are also being tested.

New vehicles can be fitted with K-blocks at no extra cost. Conversion of existing vehicles to K-brake blocks on average costs 4500 Euro per wagon. Conversion to LL-brake blocks will probably cost far less because grey cast iron brake blocks can be replaced without converting the braking system.

LL-brake blocks of organic material should be about as expensive as K-brake blocks, i.e. three to five times the price of a new grey cast iron brake block. The sintered brake block is currently around ten times as expensive, but lasts much longer than the grey cast iron. The life cycle costs for use of K-brake blocks in new vehicles appear to be around the same as grey cast iron blocks; for LL-brake blocks, no values are yet available. If we work on the basis of existing operational experience, their use is not economically viable.

From our position today, it is not clear when the LL-brake block will be available. So I think the best solution for residents will be to begin funding for conversion to K-brake blocks as soon as possible. Priority should be given to reducing the nuisance for residents as quickly as possible. In parallel, the development of LL-brake blocks must progress. When it is clear

how the LL-brake blocks perform technically and economically, the situation should be reviewed.

What must be done to accelerate noise abatement in freight traffic?

I am convinced that three steps are necessary: Firstly, the EU should publish recommendations on the unrestricted support for noise-reducing measures for the conversion of freight cars as soon as possible. Secondly manufacturers of brake blocks should play a more active role in development - the UIC has produced the specification. Talks are currently in progress between manufacturers and operators. Thirdly however national funding programmes should be implemented in the EU Member States. A harmonised approach within the EU would be highly desirable.

A start can be made by using quiet vehicles on the corridors through Holland, Germany and Switzerland (including probably Italy). These countries are seeing a huge increase in transit traffic, where a reduction in noise is particularly necessary for acceptance of rail freight traffic.

In recent years, several technological solutions have become available for noise abatement on freight cars, and harmonised rules within the EU are required.

Are the railways finished now?

I don't think so. To get a further improvement in the noise situation for residents, we need far more knowledge of noise effect topics, i.e. the effect of noise on people. The noise volume is not the only measure for noise effect. We know too little about what makes a noise event particularly disruptive, and what not. And we should not forget that the acceptance of noise amongst residents will change over time. So the need for continuous adaptation will also persist for a long time. ■

➔ WORKSHOP ABOUT THE EFFECTS OF TSIS ON THE USE OF COMPOSITE BRAKE BLOCKS

A fair amount has changed recently in the field of the admission of freight cars. New legislation has come into force that applies to new freight cars as from January 28 2007. The old RIV/AVV provisions were replaced on that date by the so-called "TSI Wagons". This TSI describes the new approval framework for freight cars. At the same time there has been a debate in Europe about reduction of noise from freight cars by the use of composite brake blocks.

In order to achieve clarity about the application of these TSIs to the use of composite brake blocks, Lloyd's Register Rail organised a workshop about this subject in the framework of the Netherlands Noise Innovation Programme.

People who attended were brake block suppliers, transporters, freight car owners and infrastructure managers from Europe. After the NoBos from Lloyd's Register present had clarified the

system of the TSIs and had evaluated the TSI specifically for the composite brake blocks, there was an extensive discussion about the interpretation of this new legislation and the consequences for the various parties. It was clear that there were a number of discussion points for which clarification needs to be obtained in the coming period.

The most important discussion point was whether a car had to be judged against the new TSI requirements when composite brake blocks were fitted to existing cars. The general consensus was that when K blocks were fitted the braking system was changed in such a way that new approval is required. According to the new legislation this means judging against the new TSIs. This is another story when LL blocks are fitted. The question is whether the design of a car changes in such a way that new approval is required. This is a discussion point re-

quiring clarification in the coming period. As well as this the increased demands that the TSI makes on the working of the parking brake of a car may also form a problem for the use of composite brake blocks. Because composite brake blocks have a lower coefficient of friction relative to cast iron brake blocks particularly when standing still this forms a threat to the introduction of composite brake blocks.

The conclusion of the workshop was that there were a number of important questions about the application of the new legislation circulating among both the Notified Bodies and the users and producers of freight cars and components. The coming period will show how these are going to be interpreted. Notified Bodies such as Lloyd's Register have regular consultations about these matters, both at national level and at the European level in Brussels. ■

➔ TRACK ACCESS CHARGES OR SUBSIDIES FOR SILENT FREIGHT TRANSPORT?

The UIC has recently published its "Status Report and Background Information on Silent Track Access Charges". This report compiles processes and conditions that must be observed when discussing the introduction of silent track access charges, if these are to be efficiently and effectively composed.

The report provides an overview of the track access charges already introduced in Europe and notes major differences with regard both to their collection and to their level. Track access charges are made everywhere only for whole trains and not for individual vehicles.

Noise-related track access charges have already been introduced in Switzerland in a pragmatic approach; they will be introduced in The Netherlands in 2008 and in Germany in the near future and are also under consideration in Austria. It is not clear to what level a noise 'bonus' must reach in order to prove an attraction for

the conversion of vehicles to silent technology. The report further indicates that a multitude of persons are participating in clearly defined roles in operating the railway traffic system. Liberalisation of rail travel has led to a great many transport undertakings having taken the place of national railways in practically all states.

The "freight train" system is a complex transportation process today with a great many participants. International cooperation is imperative for silent track prices to be introduced. To be effective as an incentive system, a noise related track access charge must be visible to the various owners of individual vehicles and the routes on which they operate: "regular" track access charges apply only to trains. Preparations and installations for efficient, effective use are therefore indispensable for vehicles and infrastructure. The introduction of silent track access charges must be properly prepared and

will take a certain amount of time. The time frame depends on the techniques to be used and the area of introduction. The introductory periods may take from 5 to 8 years. On the other hand, direct subsidies could be introduced more rapidly as an incentive system and are also immediately effective for the owners of rolling stock. The UIC therefore advocates priority introduction of direct funding and expects noise related track access charges to be introduced at a later stage.

A communication is expected from the EC in the spring of 2008, in which strategies for the use of financial incentives to stimulate environmentally friendly transportation will be discussed. It is to be hoped that the rules will be so adjusted that application will be possible without excessive administrative action. ■

➔ PRACTICAL TESTS WITH LL BRAKE BLOCKS IN THE NETHERLANDS

Practical tests will be carried out in the Netherlands with six different types of cars in the framework of the provisional UIC LL blocks approval. Because there is still not sufficient knowledge about the exact behaviour of LL blocks in different types of cars, uncoupling tests are required to check the braking performance. In these uncoupling tests a freight car, after having been statically checked to see whether it is representative (including a check of the brake cylinder pressure and the brake force), is uncoupled from the train at 100 km/h (S and SS freight cars) and at 120 km/h (SS freight-cars). The car then applies maximum braking and the braking distance is measured. This braking distance is a measure

of the braking performance of the car.

The uncoupling tests for the IPG (Innovation Programme Noise) Freight Pilots have been carried out at Minden in Germany by Deutsche Bahn (DB) with the freight car types car transporter (type Laaers) from Cobelfret, the container-carrying wagon (type Sgns) from ACTS and the tank wagon (type Zacs) from VTG. The tests were carried out using the LL blocks from ICER-Becorit (IB116*) and CoFren (Cosid C952).

The uncoupling tests showed that both types of LL blocks gave a somewhat differing braking performance in comparison with the originally fitted cast iron

P10 brake blocks. Depending on the combination of freight car type-brake block type a too high or too low braking performance was obtained in some cases. However, at least one of the two types of LL brake blocks was found to be suitable for each type of freight car tested. Eventually, the following combinations successfully completed the uncoupling tests:

- Cobelfret car transporter (Laaers): Cosid C952
- ACTS container-carrying wagon (Sgns): ICER Becorit IB116*
- VTG tank wagon (Zacs): Cosid C952 and ICER Becorit IB116* ■

➔ JOHANNES GRÄBER, DEDICATED TO QUIET FREIGHT TRAINS

Since 1997, when his contract at DB began, Johannes Gräber has been working on the development of K- and later also LL-brake blocks. Gräber holds a leading position at DB Systemtechnik. Only international solutions will work for freight traffic. Gräber and his colleagues are involved in several working groups at UIC.

Gräber believes that K-brake blocks are the true long-term solution for quieter freight trains in Europe. New freight cars are now mostly fitted with K-brake blocks. This keeps the noise level within the limits of TSI Noise for new cars. K-brake blocks however are still in the early stages of development (compared with 150 years for GG-brake blocks) and offer much more potential. Freight trains will in future be able to be longer and heavier. These objectives can be supported relatively easily with K-brake blocks.

Gräber refers to the development of organic LL-brake blocks as alchemy. In complex production processes,

the brake blocks are prepared from several raw materials. The brake blocks must have a friction behaviour that is unnatural for composite materials (namely that of the GG-brake blocks). In principle, Gräber is optimistic about the development of LL-brake blocks but there have already been many setbacks in the long years of development. We are learning more every day, and will be successful when the entire industry pulls together.

The requirement that LL-brake blocks must be suitable for use across Europe has made the development and licensing process very complicated. "Shuntage", use in winter and in the wet, the behaviour of the brake blocks on brake faults etc. The list of requirements is long, but all criteria relate to safety risks.

The available funds, both public and from members of the UIC and the industry who are involved in the development of LL-brake blocks, are clearly not sufficient for a rapid breakthrough.

Noise protection walls and windows, and other measures on the infrastructure in Germany account for € 100 million every year. The STAIRRS study ordered by the EU from 2000 to 2002 has clearly revealed that noise measures must be taken at source. In 2007 however it was found that there are still no effective instruments for financial support for such measures (e.g. conversion to K-brake blocks).

Development is proceeding slowly, but unfortunately too slowly. But it is working! Gräber hopes that in 2 to 3 years, the LL-brake blocks will be developed to the point that large-scale conversion will be possible.

2010 is however a long way off, and in the meantime doing nothing is not an option. Studies in the UIC Association have shown that substantial noise reduction can be obtained even with a smaller, carefully selected number of cars. We will soon begin fitting these cars with K-brake blocks as a matter of urgency. ■

➤ OPENING OF THE BETUWE LINE



The Betuwe line

The Betuwe line, a dedicated freight line, has been constructed in The Netherlands in order to facilitate the growth of freight traffic by rail. This was opened officially by Queen Beatrix on the afternoon of Saturday, 16 June 2007. The queen gave the virtual starting signal for the first trip of a freight train between the Rotterdam harbour and the German hinterland. Special guest together with Minister Camiel Eurlings (Transport) and the Vice-President of the European Union Jacques Barrot, was Jörg Hennerkens, Minister of State for Traffic of the German federal state of North Rhine Westphalia.

The Betuwe line, just as the HSL-South,

connects to the Trans European Network (TEN) that connects major infrastructure works with each other.

A great deal of attention has been paid to fitting the Betuwe line into the landscape. Thanks to digging five tunnels with a total length of 18 kilometres, and constructing 130 bridges and viaducts and 190 fauna passages there are no level track intersections. This improves safety. In order to combat noise nuisance acoustic barriers have been placed along almost the entire route (160 kilometres).

The positions of the noise barriers were decided though assuming the use of quieter freight trains. If the prognosis in the growth of the traffic actually becomes reality and the trains are not quieter, additional acoustic barriers will have to

be built in order to comply with the noise standards applying in the Netherlands.

Rail manager ProRail works together with the harbour companies of Rotterdam and Amsterdam in KeyRail, the operating company for the Betuwe line. The expectation is that by 2015 about thirty million tons of cross-border freight traffic will have used the line. After 2010, the construction of a connecting third track between the Netherlands border and Oberhausen is planned in order to facilitate the growth of the traffic.



Jacques Barrot Vice-President of the European Commission, in charge of transport

The freight line, that has cost 4.7 billion Euro, is the first route section to make use of the new European standard ERTMS (European Rail Traffic Management assistant System)/ETCS level 2 (European Train Control System) and is therefore exceptionally safe. ■

▶ AGENDA

LAST EVENTS:

- UIC Noise Workshop in Utrecht, The Netherlands, November 14 and 15 2007
- IPG closing event 'Enjoy the Sound of Silence' in Amsterdam, The Netherlands, December 13 2007
- workshop on rail dampers in Utrecht, The Netherlands, December 11 2007
- workshop Silence in Paris, France, January 17 2008
- March 10-13 2008: congres DAGA 2008, Dresden Germany
- March 14 2008: seminar Noise in the City 2008, Amsterdam The Netherlands

EVENTS TO COME:

- June 29-July 4 2008: congres Acoustics'08, Paris France
- October 26-29 2008: congres Internoise 2008, Shanghai China
- April/May 2008: EU Workshop, Brussels Belgium

➤ INTERNOISE IN ISTANBUL

Internoise is one of the most important conferences for noise experts. During the last conference in August this year attention was naturally paid to rail noise as well as to road noise. A number of papers discussed noise reduction by using acoustic barriers. Noise source reduction measures were central in the special session of the Innovation Programme Noise (Innovatieprogramma Geluid) from the Netherlands government. The results of test with quieter freight cars were presented by Lloyd's Register Rail Europe.

Movares described the possibilities of using rail dampers and ProRail described the use of noise monitoring posts. DeltaRail gave a presentation about the squeal-free grinding of rails in bends. This means that most of the specific source measures for reducing noise nuisance in the railway world had all been raised. For all the speakers the primary conclusion was that noise reduction at the source is by far the most effective form of noise reduction as a first step. ■