Wagon Noise: Current situation

DB Schenker Rail Deutschland

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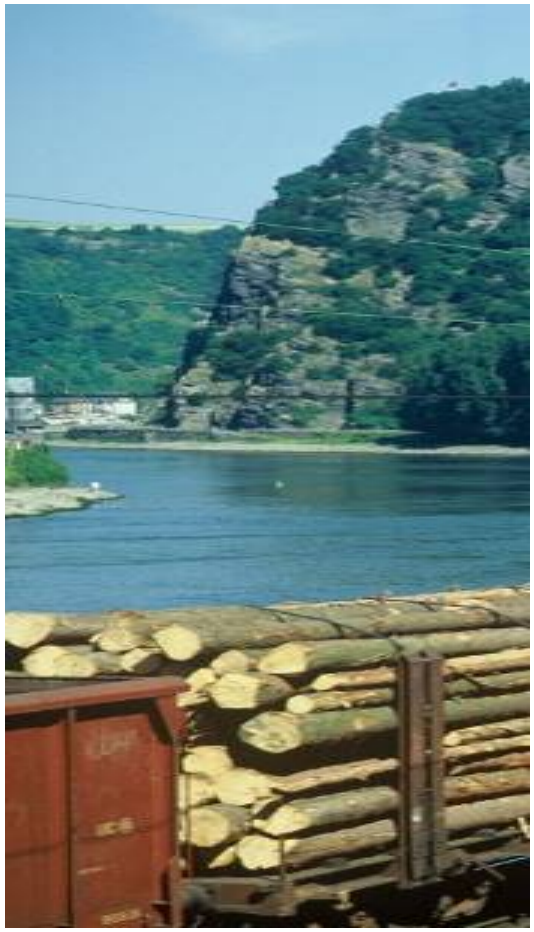
Deufrako Workshop

München, 27. October 2010

DB Schenker Rail runs for people and environment



- DB Schenker Rail is logistics company of Deutsche Bahn
- DB Schenker Rail runs through Europe
- Now, we have about 100 000 existing freight wagons
- We have purchased new vehicles only with k- blocks
- since 2003 we have provided about 6100 wagons with this low noise brakes.
- For future time we have a schedule for much more new wagons with k- brakes. By the end of the year 2012 we will have about 9000 low noise freight wagons.

Strategie for noise abatement-
people will be accept more transport without increase of noise

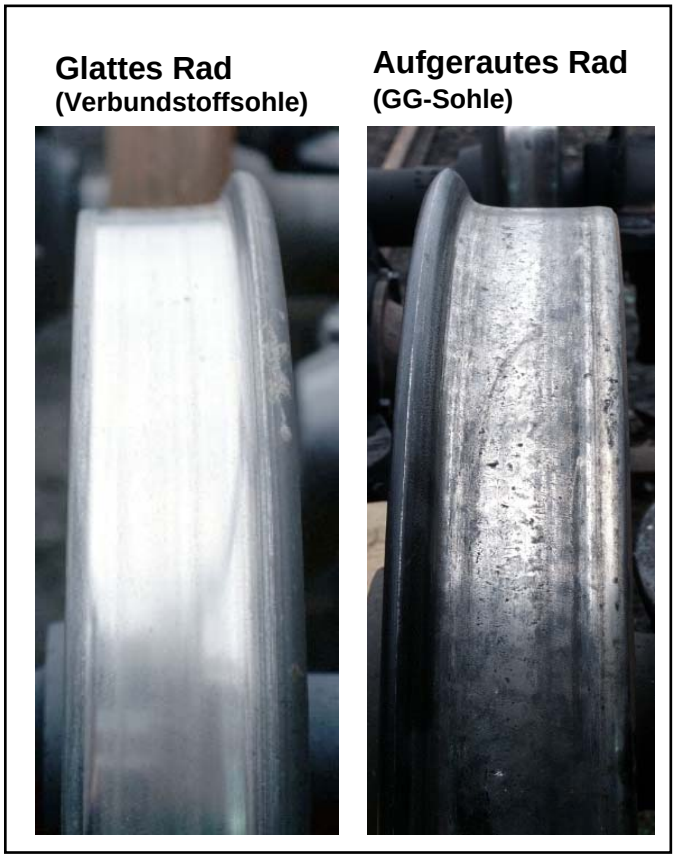
Halve rail noise by 2020 in spite of increasing traffic performance

(- 10 dB (A))

This target can only be achieved with combination of measures:

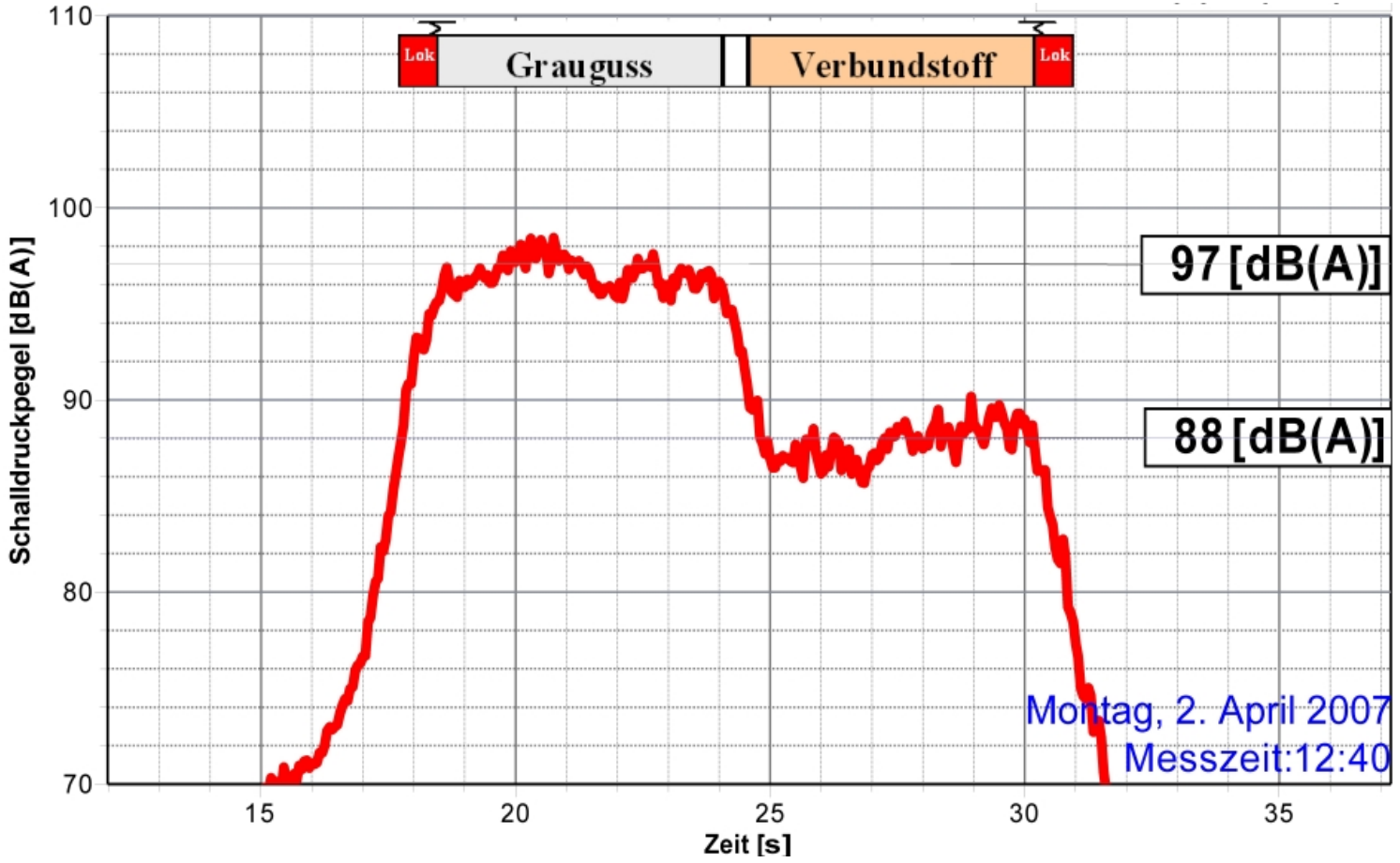
- **Continuation the voluntary Noise Abatement Program of German Government (from 1999 an ; 100 Mio €/a)**
- **Complete retrofitting of the freight wagon fleet with composite brake blocks (K – LL- blocks); first step: Inovation and pilot projekt „quite Rhein“**
- **Research project L ZarG (Silent train on real track)**
- **Test and implementation project for measures at the tracks of German government; Test of noise abatement measures on the track to evaluate the noise reduction potential; Aim: Homologation of the measures (Rail dampers,…)**

Most dominant sources of noise- Noise of rolling wheels



- Wagons with cast-iron brakes
- This type of brake leads to a rough wheel surface which in turn causes high level of vibration of rails and wheels.
- Target: paned/ waveless running surface of wheel
- The technology of composite- blocks allows a significant reduction of rail freight noise emissions at the source
- this low-noise brakes can reduce the perceived rolling noise by up to 50 percent (minus 10 dB(A)).

Die Schallpegelmessung zeigt, dass die Verbundstoffbremssohle den empfundenen Lärm halbiert

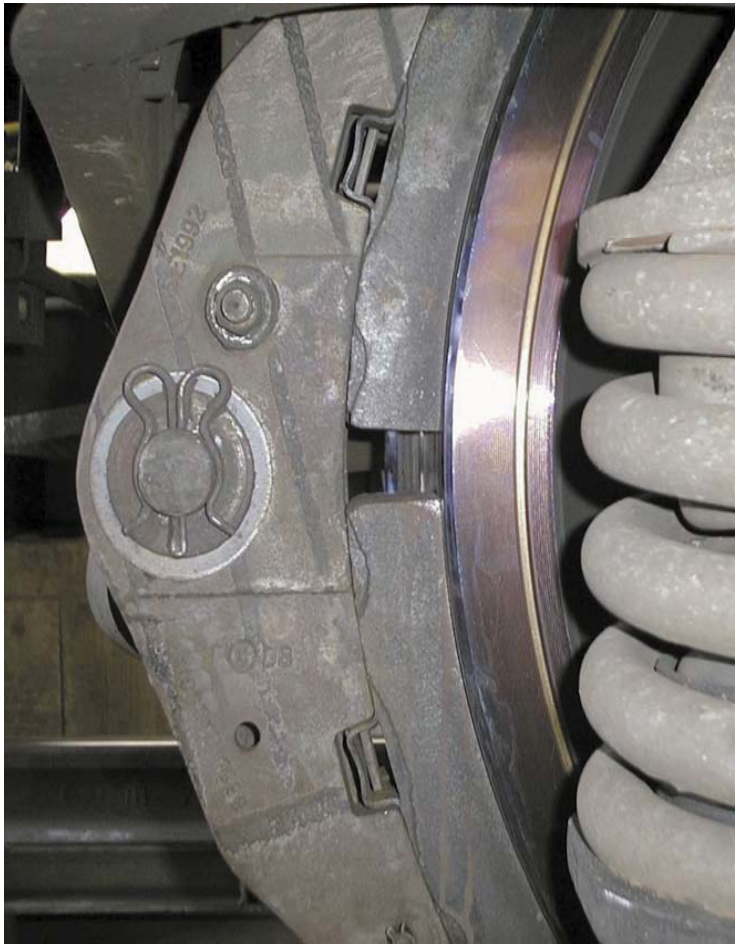


v = 90 km/h

Unter www.db.de/umwelt ist eine Audio-Datei zum Download eingestellt, so dass die Lärmminderung durch die Verbundstoffbremssohle am eigenen Rechner nachgehört werden kann.

two kinds of composite brake blocks

- K - blocks and
- LL -blocks
- K-blocks received definite UIC homologation in early 2008 and its use -is already mandatory for new wagons.
- However, this kind of brake is not well suited for retrofitting old wagons as it requires costly adjustments to the braking system.
- To solve this problem so called LL –block was developed, requiring only minor adjustments to the braking system making retrofitting less expensive or even cost-neutral. As yet, only three types have received a provisional homologation by the UIC.



Using composite blocks is necessary and efficient

- **Main principle: „PLANED WHEEL ON PLANED RAIL“ with composite blocks**
- **The technology of composite blocks (K- blocks) is available**
- **Optimized noise reduction: Measures on the vehicle (freight wagon) are more efficient than measures on the line**
- **Cost –Benefit- Analyses Study results: Noise abatement on vehicles saves 40 % money for infrastructure**
- **The retrofitting of freight wagons is only economical for the owners if a 100 % subsidy is provide by public funds.**

Using K- blocks by DB Schenker Rail

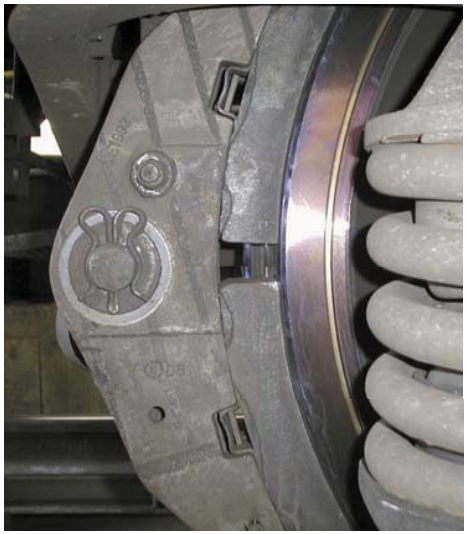
- **Now we have about 6100 wagons with K – blocks.**

We have used licensed blocks from blend of

- Cosid 810
- Becorit 929-1
- Jurid 816 M (will be licensed in next time)

The blend of Becorit 929-1 had many damages, we have stopped using

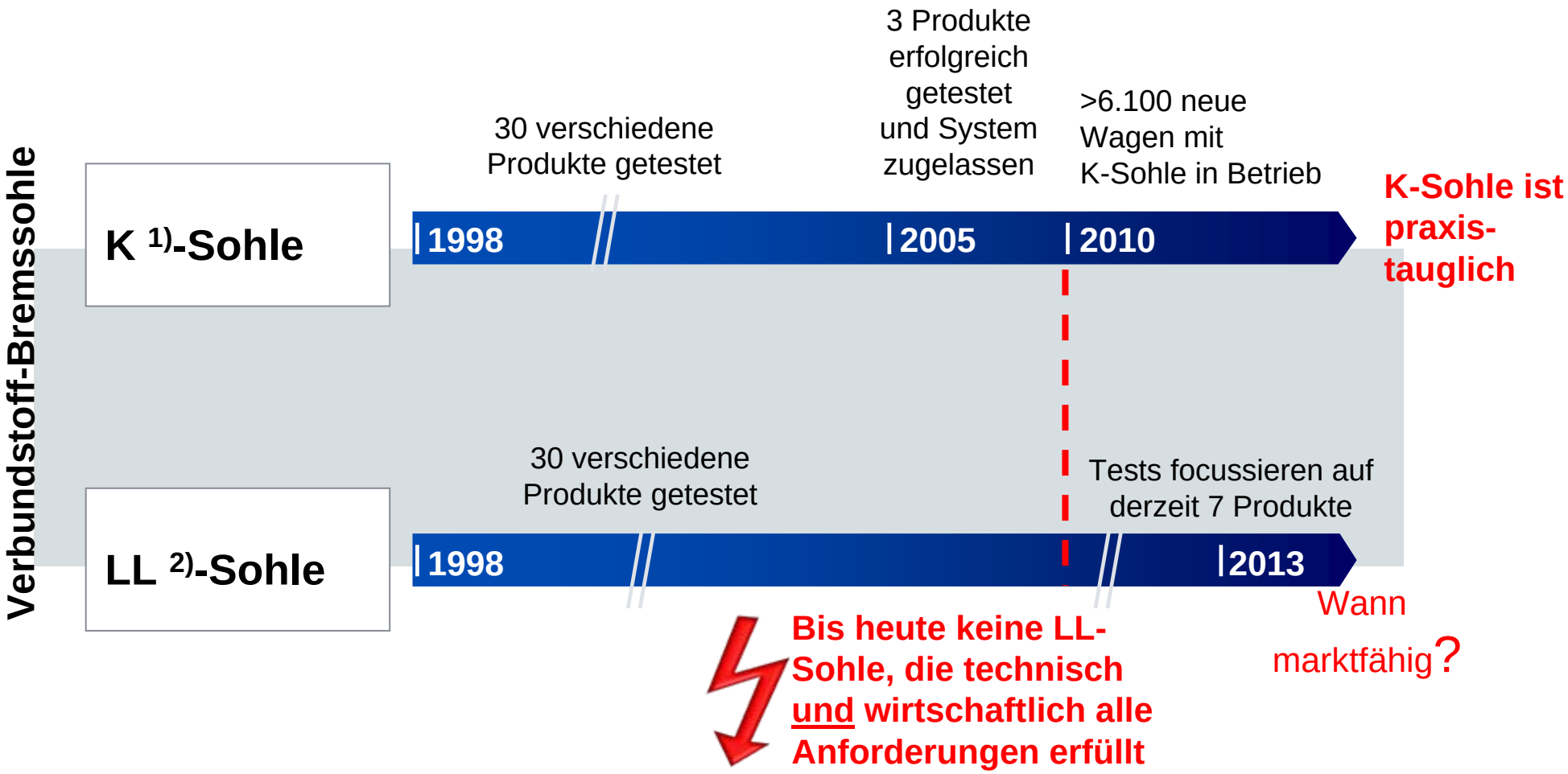
Type Cosid 810 will be favour



Retrofitting of existing freight wagon fleet with composite blocks

- As noted for retrofitting cast iron blocks there are two kinds of composite brake blocks :
- K - blocks and LL -blocks
- The technology of K- blocks is available, but yery expensive
- The technology of LL -blocks has been testing since a lot of years; the costs are cheeper than K- blocks

There is no homologation for LL - blocks



1) K= Komposit
2) LL = Low LCW: niedrige Bremsreibung und niedrige Umrüstkosten

Quelle: DB AG

The cost of retrofitting can not be borne by the RUs without lowering the competitiveness of rail freight

Long-lived wagons require retrofitting

- 80.000 freight wagons of DB Schenker
- An additional 55.000 wagons of other German wagon owners
- Duration: ~ 7 - 8 years
- Moreover on average approx. 30.000 foreign wagons operated in Germany
- Effective an comprehensive noise abatement requires a retrofitting level of 85%

Retrofitting costs very high

- **Approx**.
  - K- Blocks: 4.500 Euro per wagon
  - LL Blocks: 1000 Euro per wagon
- Almost 600 mill. Euro for German freight wagons
- 100% funding intensity mandatory in order to avoid modal shift from rail to road

Noise reduction strategy by DB Schenker Rail Deutschland

- In Germany the political authority think about incentives for retrofitting existing fleet.
- DB Schenker Rail is ready to start the retrofitting process with composite brake blocks and takes part at the Project „Silent Rhine“
- For DB Schenker Rail it is necessary to have a total funding
- Retrofitting investment costs about 4500 € per wagon, we have defined quantity of freight wagons for retrofit witch amount of 80 000 wagons
- We are looking hopeful forward for testing and homologation of marketable, cost effective LL-blocks

Thank you for your attention!

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