Retrofitting of wagon with K/LL blocks

Planning the retrofitting of the European wagon fleet with composite (K/LL) brake blocks

**Funding:** International  
**Duration:** Jan 2003 - Dec 2006  
**Status:** Complete with results

**Background & policy context:**

The EU supports railways, because they are the most sustainable means of transportation. This, however, requires the railways to reduce noise, their most important environmental issue. Noise concern in the EU has led to the Environmental Noise Directive (END), which requires noise maps and actions plans for major railways as well as inside agglomerations. Railway noise emissions of new and upgraded vehicles have recently been limited by EU legislation.

Basically rolling noise in railways is created by rough wheels and tracks. If both can be kept smooth, noise can be reduced significantly. Smooth wheels can be achieved by replacing cast-iron brake-blocks with composite brake blocks.

Currently two types of composite brake blocks are being discussed: K and LL blocks. K blocks probably have a higher noise reduction than LL blocks, but require adapting the braking system while wagons can be retrofitted with LL blocks without adapting braking system.

Several economic studies show that railway noise reduction in retrofitting the freight wagon fleet with composite brake blocks has the highest cost-effectiveness. Also, if composite brake blocks are combined with other measures the overall cost-effectiveness is increased.

Life cycle costs are currently being investigated. It is expected that retrofitting with LL blocks will be cost neutral in certain circumstances. With K-blocks costs for adapting the braking system must be added.

Due to the harsh competitive transport market, retrofitting is not possible without outside financial support for railway operators. Currently EU funding is only likely for pilot or demonstrator projects; investigations into additional sources of funding are therefore needed.

**Objectives:**

The UIC Action Programme for freight noise reduction aims to equip new freight wagons with composite brake blocks and to achieve the retrofitting of the existing fleet.

**Parent Programmes:**  
UIC - International Union of Railways (various projects)

**Institute type:** Non-profit organisation  
**Institute name:** UIC - Union Internationale des Chemins de fer  
**Funding type:** Industry

**Partners:**

International Union of Railways (UIC)

**Key Results:**

Rail Freight Noise Abatement - A report on the state of the art (attached).

**Policy implications**
The possibility of retrofitting freight vehicles with composite brake blocks should be envisaged in the action plans of the implementation Environmental Noise Directive including funding modalities.

**Policy objectives**

Retrofitting saves money: Noise abatement solutions using freight wagons with composite brake blocks are cost-effective and save considerable amounts of money (billions of Euros in many European countries) in comparison to solutions including only noise barriers.

**Readiness**

Action Programme is working on implementation: The UIC has put a project into place to support implementation of retrofitting freight wagons with composite brake blocks.

Outside financial support necessary for railway operators: Due to the harsh competitive transportation market the railways are currently not in a position to finance retrofitting.

Documents:

- Report on noise (Final report)

**STRIA Roadmaps:** Other specified

**Transport mode:** Rail transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Environmental/Emissions aspects

**Geo-spatial type:** Network corridors