Press release:
For a strong rail freight industry:
TIS presents its findings on basic innovations to InnoTrans 2014

At this year's InnoTrans in Berlin, the Technical Innovation Circle for Rail Freight Transport (TIS) will present the outcome of the last two years' work and its current activities. Under its "5L" Future Initiatiave, TIS has been analysing basic innovations for rail freight wagons to advance the functional factors **L**ow-noise, **L**ightweight, **L**ong-running, **L**ogistics-enabled and **L**ifeCycleCost-oriented. In the last two years, the members have devoted particular attention to three focal key of innovation: "Innovative Bogies", "Telematics and Sensor Technology" and an "Earnings-Adjusted/Basic LCC Model". TIS recently set up another task force to examine "Innovative Coupling Systems". The work undertaken by TIS is founded on the White Paper it published in 2012 called "Innovative Rail Freight Wagon 2030: The '5L' future initiative as a basis for growth in rail freight transportation".

In recent decades, the rail freight industry in Europe has not been effective enough in developing technical innovations for freight cars or maturing them for the market. TIS consequently identified the need for a new sector-wide approach to freight car innovation. Working together in TIS serves to strengthen the innovative power of the rail freight transport sector, and especially the potential for innovative freight wagons, in order to tap into growth opportunities for rail freight transportation as a whole. Devising migration strategies for basic innovations is an essential part of the TIS project. It is clear to all TIS participants that the only key to success is a joint sectoral approach that brings together shippers, wagon keepers, railway undertakings and wagon manufacturers.

Requirements for innovative bogies

The TIS requirements for innovative bogies were summarised in a report and subsequently discussed at a joint meeting and in bilateral talks with bogie manufacturers. The principal TIS requirements for innovative bogies are:

- a reduction in (whole wagon) noise emissions by -2 dB(A) for existing stock and -4 B(A) for newbuilds
- integration of axle-mounted brake discs and straight webs
- integration of radially adjustable wheelsets
- greater or at least equivalent profitability (compared with the Y25 bogie) thanks to greater mileage and lower maintenance
- lower procurement costs for axle-mounted brake discs as a result of optimisation and economies of scale, so they can also be used profitably in freight wagons with lower mileage.

Furthermore, TIS has developed a methodology for cost analysis using an earnings-adjusted model and a simple LCC model for basic systems. The LCC model was first applied to bogies. The TIS LCC model sets out the increased costs wagon keepers can expect from equipping their freight fleet with composite brake pads. The life cycle costs of a bogie with composite brake pads, for example, would be approx. 9 % higher than for a bogie with cast iron brake pads, assuming an annual distance covered of 100,000 km. The LCC model also shows that bogies with axle-mounted disc brakes incur substantially lower maintenance costs over their total life cycle. However, the acquisition costs for axle-mounted disc brakes are currently so high that payback is not achieved up to an annual distance of between 80,000 km and 90,000 km.

Insights into telematics and sensor technology

Turning to telematics and sensor technology for rail freight cars, TIS highlighted the following overriding applications:

- Monitoring and tracking of transportation routes incl. mileage
- Monitoring of freight carried (e.g. weight, condition, …)
- Optimisation of operating processes (e.g. automatic registration of wagon sequence, …)
- Maintenance support (e.g. monitoring technical conditions,…)
- Integration into logistical and transport chains (e.g. automated billing,…)

Telematic solutions were identified for altogether 24 practical applications, the technical and economic requirements were defined, and cost/benefit calculations were performed.

The essential aim is for the industry to take up these requirements for a standardisation of telematics and sensor technology and to implement them in their development activities. This is the only way to ensure that applications from different manufacturers can function in harmony, and it presents an opportunity to deploy telematics and sensor applications throughout the rail freight sector in future. TIS will therefore initiate dialogue with the manufacturers, setting out the requirements of wagon keepers and exploring feasibility.

About us

The following companies are currently participating in TIS in the form of a practice group: AAE Ahaus Altstätter Eisenbahn AG, BASF SE, DB Schenker Rail AG, GATX Rail Germany GmbH, Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, SBB Cargo AG, VTG AG, Waggonbau Graaf GmbH, Waggonbau Niesky GmbH. TIS has the support of a scientific advisory panel consisting of Prof. Dr. Hecht (TU Berlin) and Herrn Prof. Dr. König (TU Dresden) and a technical advisory panel.

TIS has set itself the aim of promoting basic innovations towards an innovative freight wagon for 2030. This is an integrated approach with a focus on the business case for basic innovations in rail freight wagons. The wagon keepers in TIS have consequently been joined by railway undertakings, shippers and companies from the wagon construction industry and its suppliers. The wagon keepers in TIS are willing on principle to make use of basic innovations for newbuilds and existing fleets. TIS defines the technical, operational and economic profile for basic innovations and engages in dialogue with the industry. TIS also coordinates its activities with initiatives such as Shift²Rail.

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