

SAMT 2020 Intelligent Bogies for a Resource Saving Railway Technology 2020

Railway transportation nowadays belongs to the most efficient systems for mobility with respect to an ecological and economical point of view, especially when considering the total costs of the different traffic systems.

Under the aspect of the worldwide trend of urbanization in megacities and depopulation of rural areas, rail traffic offers a high potential to guarantee the mobility of people in inner cities as well as in the countryside. Local trains and subways contribute to relieve inner cities from individual transportation and therefore avoid traffic chaos. Connecting sparsely populated areas to the cities by a well-functioning, reliable and efficient railway system, an isolation of the rural population from the city life can be avoided.

The core parts of any railway vehicle are the bogies. They represent the connection between rail as track guiding and the railcar body. The bogie has an immediate influence on the vehicle dynamics, its safety but also on the emission of vibrations and noise. It is well-known that permanent noise especially from freight trains or trams can lead to severe health problems of the inhabitants in the neighborhood. Furthermore it is also necessary to develop new drive and break concepts. With this respect, bogies offer a high potential

for future development and improvements in different engineering fields.

Therefore, the concept of SAMT 2020 is based on four fundamental pillars to guarantee a sustainable, safe, environmental friendly and cost-efficient future mobility. These include the protection and the reduction of noise and vibration emissions (1), the development of new drive concepts (2), increasing the safety and reliability through structural health monitoring methods (3) as well as the testing and integration of new lightweight designs and material fatigue (4).

The concept combines interdisciplinary research and development between universities, industrial partners and communities, but also the education of future experts in the interesting field of railway technology. The goal of the first phase of the project SAMT 2020 is a feasibility study for the development, design and installation of the necessary test infrastructure including the measurement equipment. A roller rig test bench simulates the ride of a real bogie on the track in 1:1 scale with an infinite rail wheel. With this opportunity it is possible to investigate the issues mentioned in Figure 2. The project is funded by the North Rhine-Westphalian Ministry of Innovation, Science and Research under grant no. 312 – 8.03-120-118595.



Figure 1: The Bogie as a link between superstructure of the train and the rail

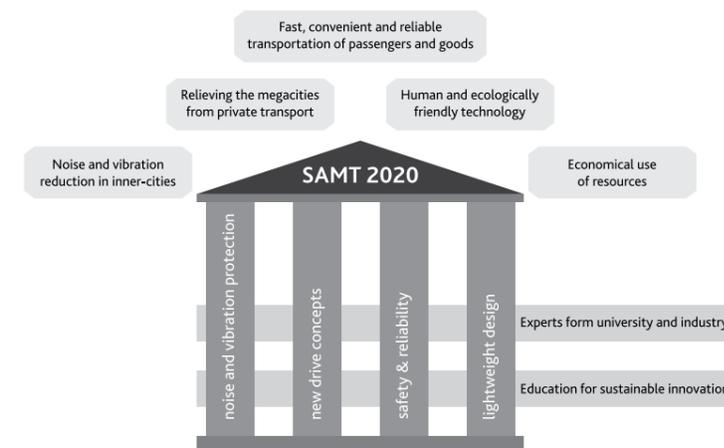


Figure 2: The SAMT2020 concept

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