Photo: Stadler

BONA*SILENCE*® | product specification

BONA*SILENCE*® is a family of dynamic noise absorbing systems developed and being diversified by GHH-BONATRANS. It is a vibration and noise absorber which was developed and first applied in Stadler vehicles operated in the Berlin Underground. The absorber consists of load-bearing metal parts and absorption elements (metallic and non-metallic composite materials). Driving and standard wheelsets are equipped with multi-segmented dampers mounted on the wheels, being able to reduce the wheel rolling noise by up to 10dB in comparison with standard wheels. The dampers significantly reduce squealing noises too. Expected lifespan of the damper is 15 years. Analogical dampers can be designed to fit any wheel diameter.

Key features

- High absorption effect – up to 10 dB(A) rolling noise, up to 30 dB(A) squealing noise,
- Applicable in all types of rail vehicles
- Service life is not limited by the service life of the wheels
- Low weight and easy maintenance
- Fullfils fire protection requirements R9 for the hazard level HL2
- Specific design tailored to the customer's needs
- Protected by patent

GHH-BONATRANS
Pioneers of wheelset solutions

Industry-wide noise issue

BONA*SILENCE*® reacts to the challenges of noise reduction in railway transport mainly in densely populated areas or at high speed. Europe and other regions with developed railway networks and urban public transport systems pay big attention to the problem of noise.

Highly effective solution

A substantial noise-absorbing effect is achieved through application of special noise absorbers mounted in the transition area between the web and the rim of the wheel. The system consists of several layers of various materials (steel, polymers) that are designed and 'tuned' for the greatest possible reduction of vibrations.

Resistant to extreme weather and easily maintained

BONA*SILENCE*® is resistant to all weather conditions and UV radiation and O_3. Water, snow, ice and dirt have no impact on the efficiency and reliability of the absorber. During the service life of the wheel, maintenance is not required under standard operating conditions and the absorber disassembly is done only if the absorber is applied to a new wheel during wheelset maintenance.

Product application worldwide

Our noise absorbing solutions are in operation in metro, high-speed and other passenger vehicles, in Europe, USA as well as in Asia. The absorbers are used in combination with monoblock wheels as well as in combination with rubber-sprung resilient wheels.

Technical specifications

BONA*SILENCE*® can be modified to fit any wheel diameter from 700 to 1,250 mm, and optimized for each wheel design, using calculations and experimental laboratory measurements. Its weight depends on the wheel diameter and composition of absorber elements, ranging from 10 to 30 kg.

Precise production guaranteeing minimal weight variations enables compliance with the required imbalance of the final completed wheel, i.e. 125, 75 and 50 gm, or the customer´s requirements up to 25 gm for high-speed applications. The absorption elements comply with class R9 fire resistance requirements for the for the hazard level HL2.

The minimum service life of the respective absorber components is:
- 10 years – absorption elements,
- 15 years – anticorrosion protected metallic parts of absorber,
- 25 years – corrosion resistant (stainless) metallic parts of absorber.