

WheelDampers

NOISE MITIGATION ON STEEL WHEELS

Wheel dampers reduce railway noise by targeting resonant frequencies, using multi-layer resonators with metal and elastomer layers to dampen rolling and squealing sounds. Designed for consistent noise reduction, they convert vibration energy to dissipation, making passing trains sound more pleasant. Adjustable to specific frequencies, these dampers, including a heat-resistant version for freight, are easily mounted and reusable after wheel wear.

WHEEL DAMPERS

The sound radiation of rail wheels mainly takes place in the area of resonant frequencies. All dampers are constructed as multi-layer resonators. Single metal plates are followed by layers of elastomers. This special construction produces a 3D-effect and clearly proves that dampers can be used to reduce rolling and squealing noise.

The design of wheel damper generates a broadband reduction of structure-borne noise and enables constant damping characteristics up to the wear limit of the wheel. An audible reduction of noise is attained by converting vibration energy into dissipation energy.

The chart shows an impressive reduction of noise level of a passing streetcar after assembling wheel dampers to a resilient tram wheel. Besides the physical and measurable data, an improved physiological impact will be noticed.

The high frequency part of the squealing noise disappears and the sound of a passing train sounds more comfortable to human ears. The well-known curve squealing will be nearly eliminated by the use of wheel dampers. A running noise level comparable to the noise level of straight tracks will be achieved.

The adjustment to the resonance frequencies will be carried out by tuning the damper on the wheel. The change of impedances and hence the effect of the dampers can be determined by using modal analysis.

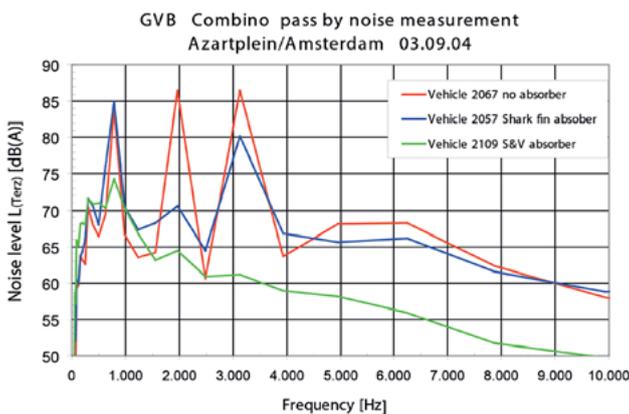


We offer different designs that allow radial and axial fixations on the wheels. Depending on the design the dampers will be mounted on the wheels or on carriers tensed in the wheel.

In connection with a joint research project in Germany named LZarG (Leiser Zug auf realem Gleis = Silent train on real track) a new extreme heat resistant damper for noise mitigation of freight cars was developed based on a wheel of GHH.

A noise reduction of 3 dB(A) was achieved. For this application only patented damper carriers from Schrey & Veit were approved.

All wheel dampers can be mounted easily. After the wear limit dampers can still be used again on the new wheel.



The following sound pressure level reductions can be achieved:

Rolling noise: up to 6 dB(A)
Squealing noise: up to 18 dB(A)