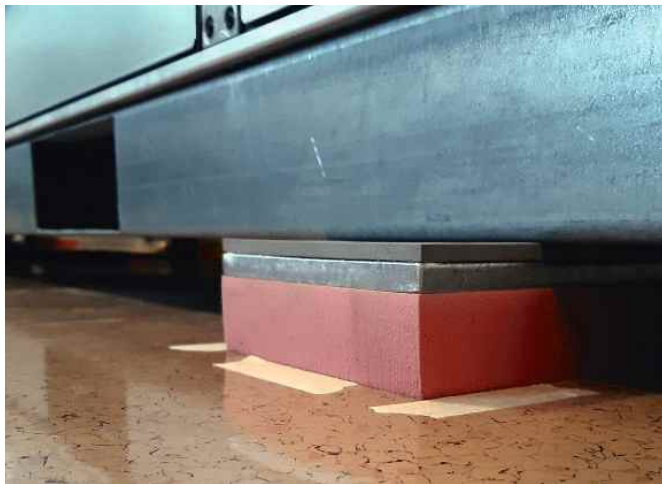
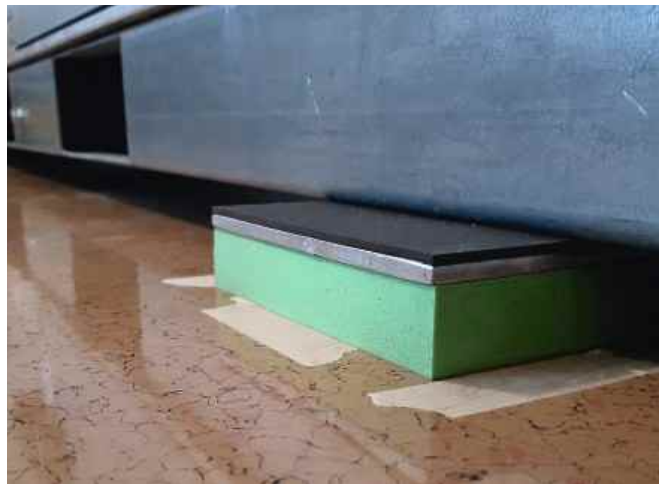


Measurement report: Elastic bearing for air conditioning and refrigeration systems

Effective vibration isolation with Isotop SE pro and Isotop SE light



Getzner Isotop SE pro



Getzner Isotop SE light

Set-up

Vibration measurements were carried out with Isotop SE pro, Isotop SE light and a conventional rubber bearing to verify the structure-borne noise insulation effect of elastic equipment bearings in air conditioning and refrigeration systems.

For the purpose of the vibration excitation, the coolant compressor was operated at rotational frequencies of 30 Hz, 50 Hz and 70 Hz. The fan ran at a capacity of 30% to maintain the cooling system.

Three geophones, installed on the floor next to the enclosure, served to measure the vibration velocity. This also allows conclusions to be drawn regarding how the different types of bearing affect the secondary airborne noise.



Mafund® rubber bearing

Benefits

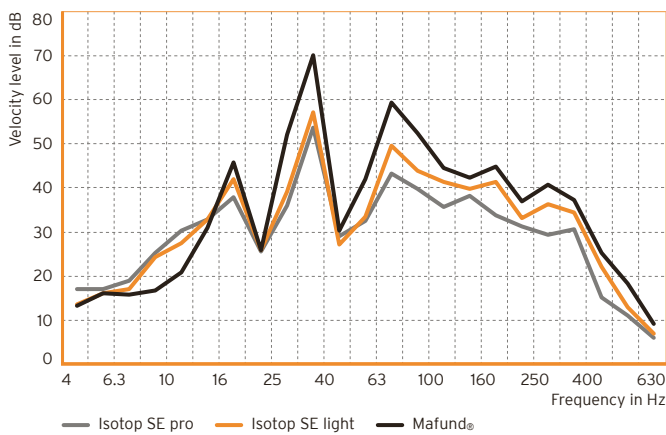
- Quieter equipment thanks to vibration isolation
- Reduced secondary airborne noise even in critical installation locations (e.g. roof-top installation, mezzanine floors, etc.)
- Saves time and costs during installation and procurement
- Reduced maintenance costs

Measurement results

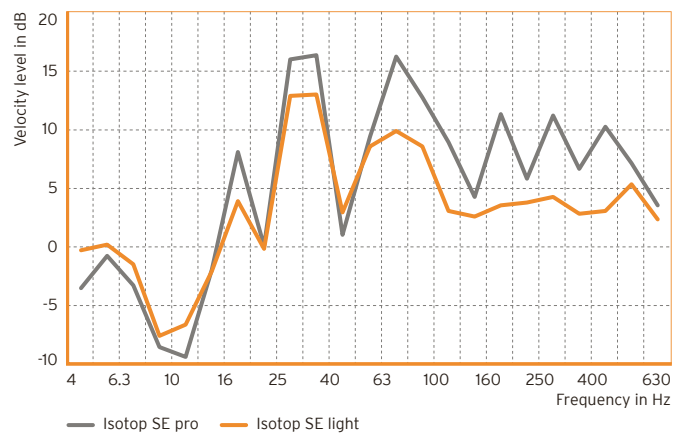
With the excitation frequency of the compressor set at 30 Hz, there were clear improvements over a wide frequency range compared to a standard Mafund® rubber bearing.

The strongest floor vibrations occurred in the 31.5 Hz third-octave band. In comparison to the rubber bearing, the Isotop SE pro machine bearing achieved a reduction in vibrations of around 16 dB here, while the Isotop SE light delivered a reduction of roughly 13 dB.

Velocity level in dB on the floor with a compressor operating frequency of 30 Hz



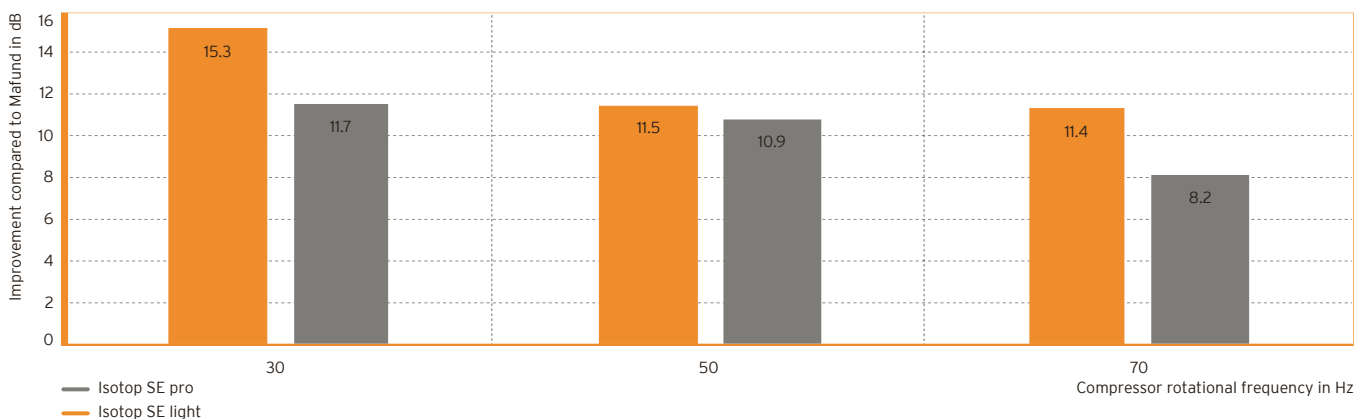
Difference in velocity level on the floor compared to rubber bearing



Improvement of the insulating effect compared to the Mafund® rubber bearing

The cumulative level was applied in order to evaluate the insulating effect over the entire frequency range. At the compressor operating frequencies of 30 Hz, 50 Hz and

70 Hz, Isotop SE pro and Isotop SE light achieved an improvement of up to 15.3 dB or 11.7 dB respectively, in comparison to the Mafund® rubber bearing.



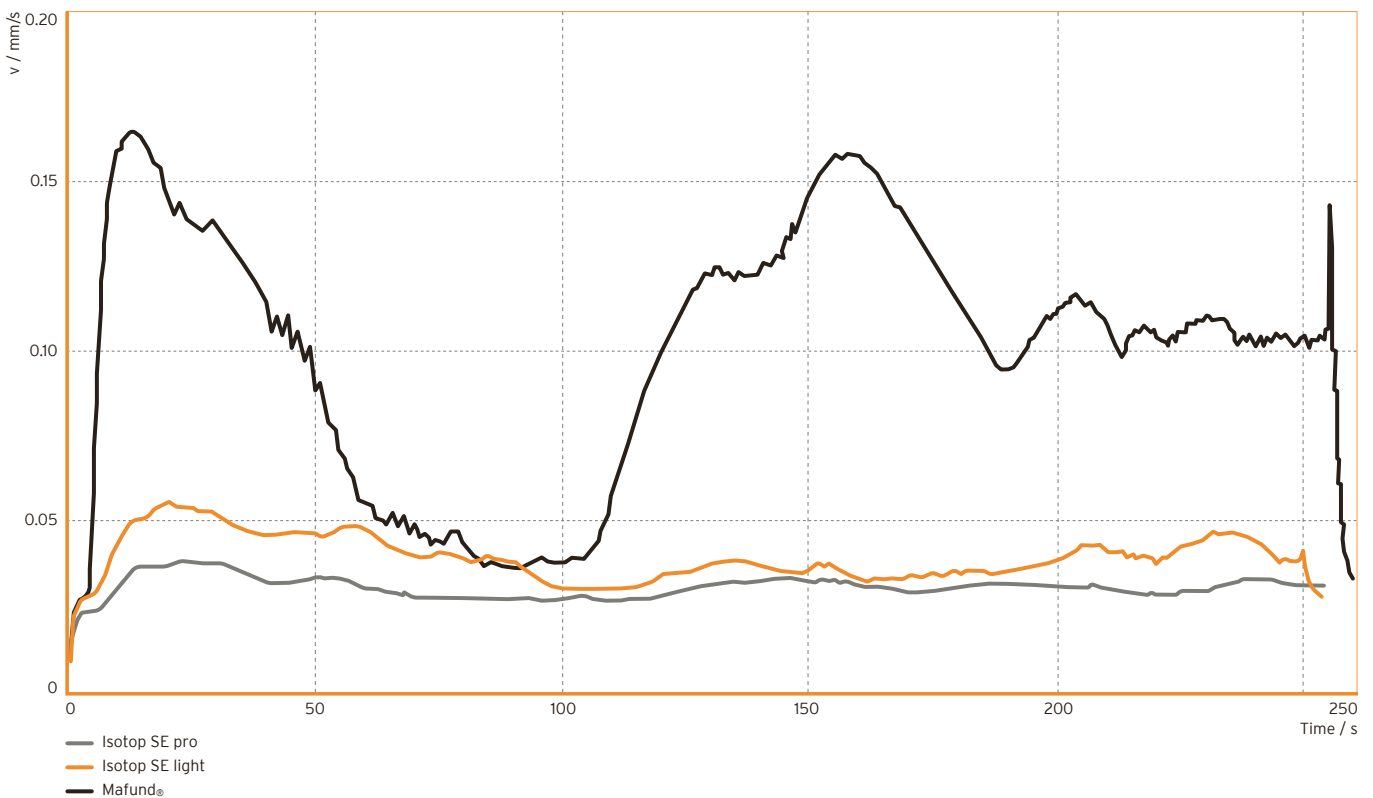
Uniform progression of the vibration amplitudes

In order to determine the formation of the vibration amplitudes on the floor depending on the compressor rotational frequency, the compressor was continuously ramped up from 30Hz to its maximum level of 70Hz. One ramp-up cycle took 240 seconds.

around the 33Hz and 55Hz range. Overall, the two Isotop bearings from Getzner Werkstoffe demonstrated a significantly more uniform progression of the vibration amplitude, with the Isotop SE pro machine bearing consistently exhibiting the best isolating effect.

In the case of the rubber bearing, pronounced excessive vibrations arose with compressor rotational frequencies

Floating effective value of the vibration velocity on the floor



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