

Measurement report: Elastic bearing of an anvil

Problem

A pneumatics laboratory has been set up underneath the forge at a vocational college in Bludenz. The sound of workpieces being shaped by heavy hammers in the workshop is a significant disruption to the lessons being taught in the laboratory.



Image 1: Forge

To solve this problem, the anvils have been decoupled from the floor with elastic bearing technology from Getzner. Measurements of the floor vibrations in the forge and sound levels in the laboratory prove the effectiveness of the Getzner solution.



Image 2: Pneumatics laboratory

Implementation of test

The effectiveness of the elastic bearing was tested both in terms of secondary airborne noise in the pneumatics laboratory and the reduction in floor vibrations in the forge.

An acceleration pick-up was therefore attached to the floor next to the anvil. Two further pick-ups were attached to the metal base of the sand trough on which the anvil was placed (Image 3).

In the pneumatics lab, the maximum airborne noise (time constant of 125 ms) was measured using a sound level meter.

Structure-borne noise and airborne noise were generated by a single hammer strike from a defined height.

After the baseline values had been determined, the measurements were taken with the anvil trough placed directly on the floor (no elastic bearing). The trough was then placed on elastic bearings of various thicknesses comprising Sylomer® SR28.



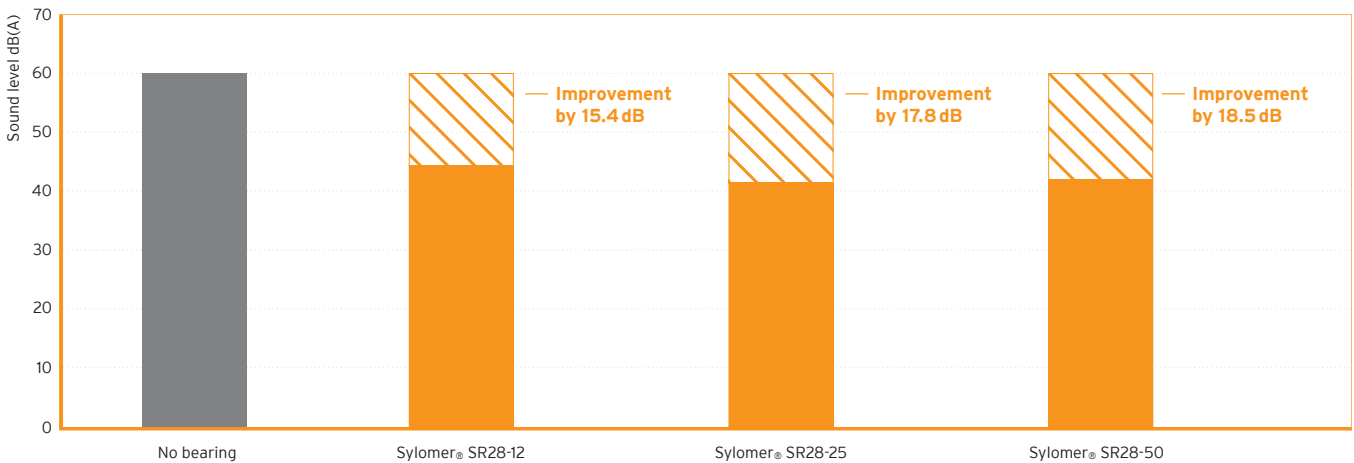
Image 3: Location of acceleration pick-ups in the forge

Results of reduction in sound level

Diagram 1 shows the maximum sound level measured in the pneumatics lab (mean value from 3 measurements) with different thicknesses of Sylomer® SR 28. Even with a bearing just 12.5 mm thick, a significant reduction of

15.4 dB was recorded in comparison to a rigid bearing. Bearing thicknesses of 25 mm and 50 mm brought further reductions of 2.4 dB and 3.1 dB respectively.

Diagram 1: Sound level in laboratory



Result of reduction in floor vibrations

A comparison of the floor vibrations recorded when using an elastic bearing as opposed to placing the anvil directly on the floor also shows a significant reduction. Using Sylomer® SR28 can reduce vibration velocity on the floor by up to 80%!

The bearing solution from Getzner Werkstoffe results in a significant improvement in the structure-borne and airborne noise situation in the affected rooms.

Diagram 2: Reduction in floor vibrations [in dB] in comparison to no bearing (mean value from 3 measurements)

