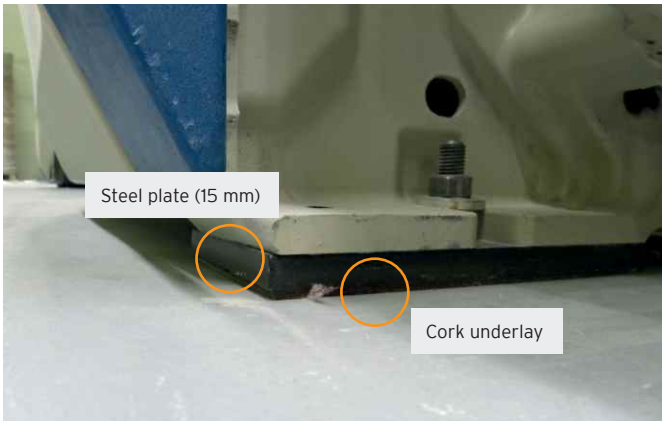
Measurement Report: Bearing for Weaving Machines (Gera)

Effective structure-borne and airborne noise reduction with Sylodamp®

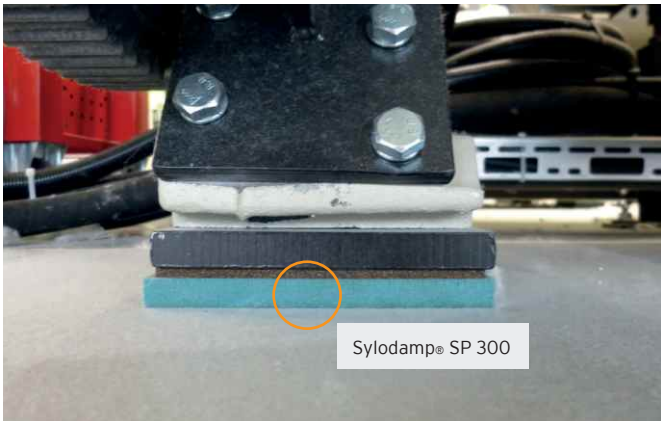
Description of the project

Two production halls in a weaving plant in Gera (Germany) house a total of 112 weaving machines (type: Picanol OMNIplus Summum airjet weaving machines), which were causing disruptive vibrations and noise during operation. The vibration insulation for the machine feet provided by standard cork underlay proved to be inadequate here. Getzner installed a vibration decoupling with Sylodamp® SP 300 under the cork underlay and carried out measurements, showing great improvements.

Production hall with weaving machines



Machine foot with standard cork underlay



Machine foot with additional Sylodamp® bearing

Comparative measurement process

There are 56 weaving machines in production hall 1 mounted on standard cork underlay. In production hall 2, there are a further 56 weaving machines of the same type mounted on Sylodamp® SP 300.

Initial vibration measurements in hall 1 were carried out on all 56 machines. The weaving machines in hall 2 were not in operation at the time. An equivalent measurement was carried out in hall 2. Here, again, the 56 weaving machines were in operation while the machines in hall 1 were switched off.

Four triaxial geophones were placed on the floor between the weaving machines to measure the vibrations. The airborne noise measurements were carried out in the two basement rooms located directly below the production halls. A total of five measurements were carried out in different positions in each room.

Benefits

- Noticeable reduction in noise
- Effective structure-borne noise insulation
- Long service life
- Highly effective damping of impact loads

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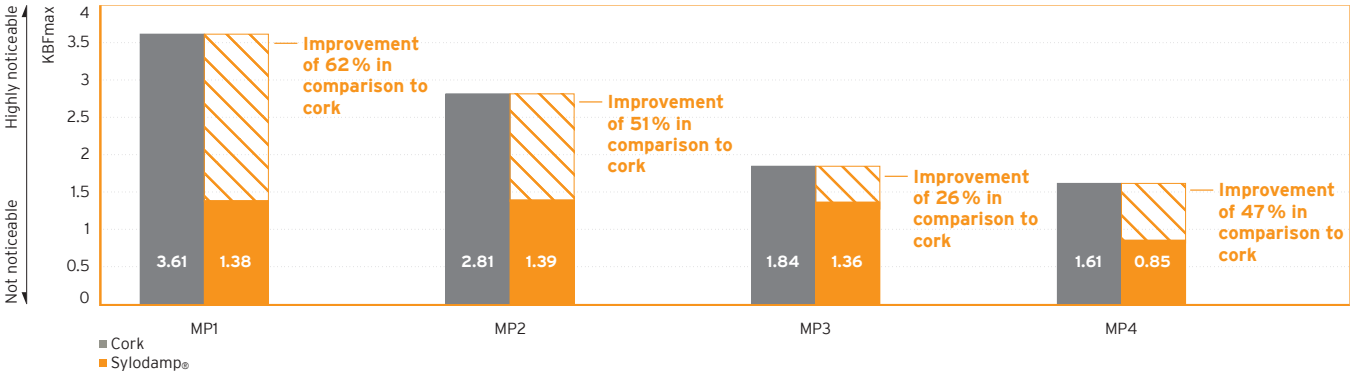
Measurement results for reduction in vibrations

The weighted vibration strength as per DIN 4150-2 was used to demonstrate the effectiveness of the elastic bearing with Sylodamp®. The triaxial geophones recorded the strength of the vibrations at the base of the weaving machines in halls 1 and 2 at four different measuring points.

With the use of Sylodamp® in hall 2, it was possible to reduce the measured vibration strength on the floor by up to 62 %.

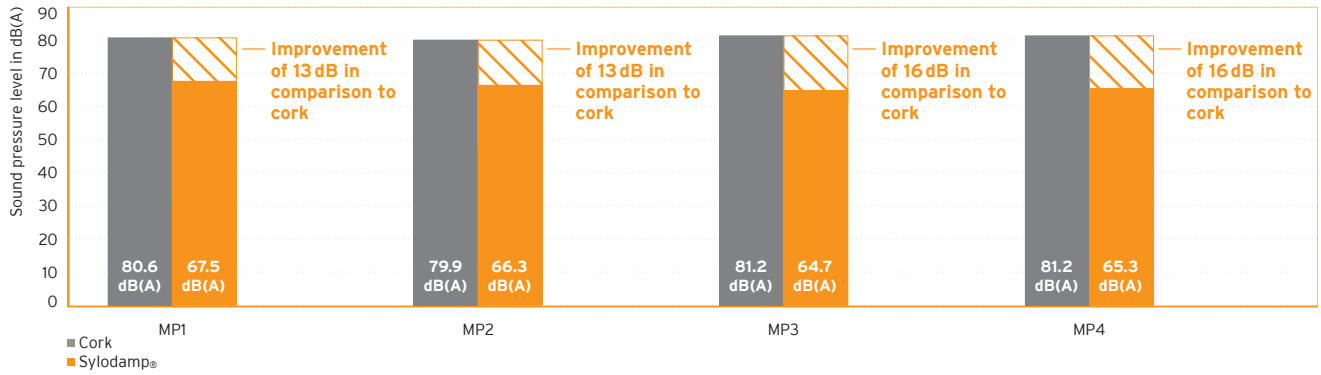
Graph 1: Improvement of the measured vibration strengths as per DIN 4150-2 at the measuring points (MP)



Measurement results for the reduction of airborne noise

The airborne noise level was also recorded in the basement of hall 1 and 2 at four different measuring points. Underneath production hall 2, where the weaving machines were mounted on Sylodamp®, the airborne noise level saw an average reduction of 15 dB(A) in comparison to the basement room underneath production hall 1, where the weaving machines were only standing on cork underlay.

Graph 2: Improvement of the sound pressure level measured at the measuring points (MP)



Detailed measurement report available on request.