

Measurement Report: Bearing for Weaving Machines (Nüziders)

Effective structure-borne noise reduction using Isotop® DMSN block elements and Sylodamp®

Description of the project

Austrian fabric manufacturer TFE - Textiles for Europe commissioned an external engineering firm to take vibration measurements on weaving machines (Picanol's OMNIplus Summum). The measurements show a significant improvement in the vibration-isolating effect of elastic loom bearings from Getzner Werkstoffe compared to the conventional cork bearings. Getzner offers both strip and point bearings made of Sylodamp® as well as compact Isotop® steel spring assemblies with integrated damping for the elastic bearing of looms.



TFE weaving plant in Nüziders (Austria)



Elastic bearing made of Sylodamp®



Isotop® DMSN-BL block element

Comparative measurement process

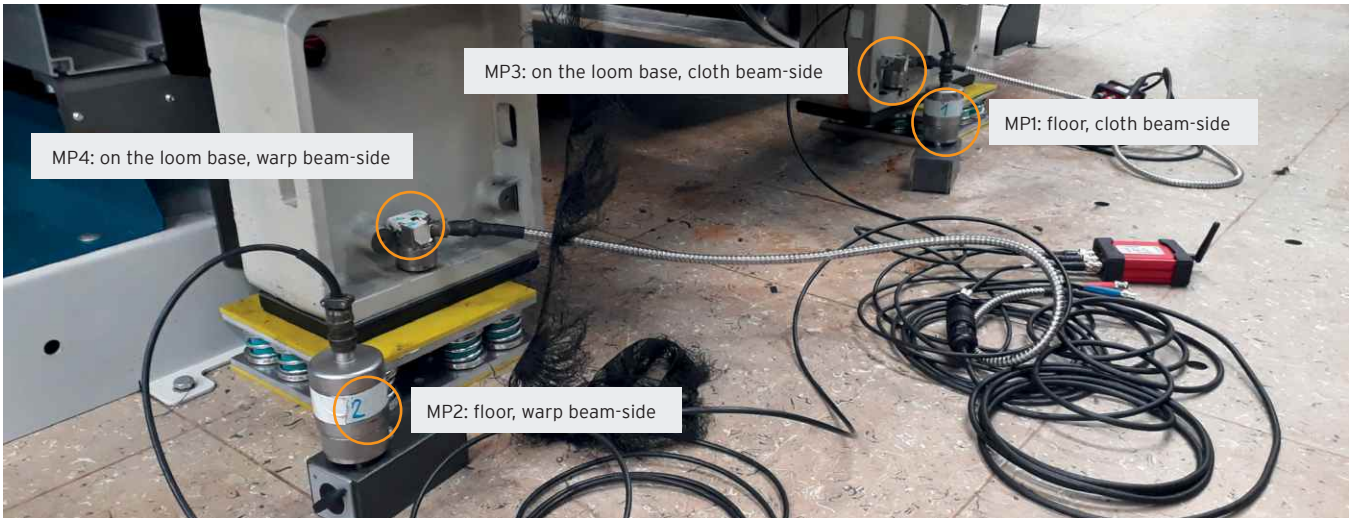
The bearings were dimensioned in advance in line with the technical data of the looms and the acoustic requirements.

In order to quantify the effect of the elastic bearings, a total of four acceleration sensors were attached to a loom (see photo of measurement set-up). First of all, the acceleration signals were measured with cork underlay while the loom was in operation (between 1000 rpm and 1050 rpm).

The cork underlay was then replaced with Sylodamp® and the measurement was repeated, again with the loom in operation. A comparative measurement was taken on Isotop® DMSN-BL under the same conditions. The insertion loss was used to assess the acoustic effect.

Benefits

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



Measurement set-up: arrangement of the measurement points (MP) with acceleration sensors

Evaluation of the results

Replacing the cork bearing with Sylodamp® resulted in a reduction of the vibrations by 24% on average based on the floor measurements. By contrast, the floor vibration was reduced by a further 69% after the Sylodamp® bearings had been replaced with Isotop® DMSN-BL.

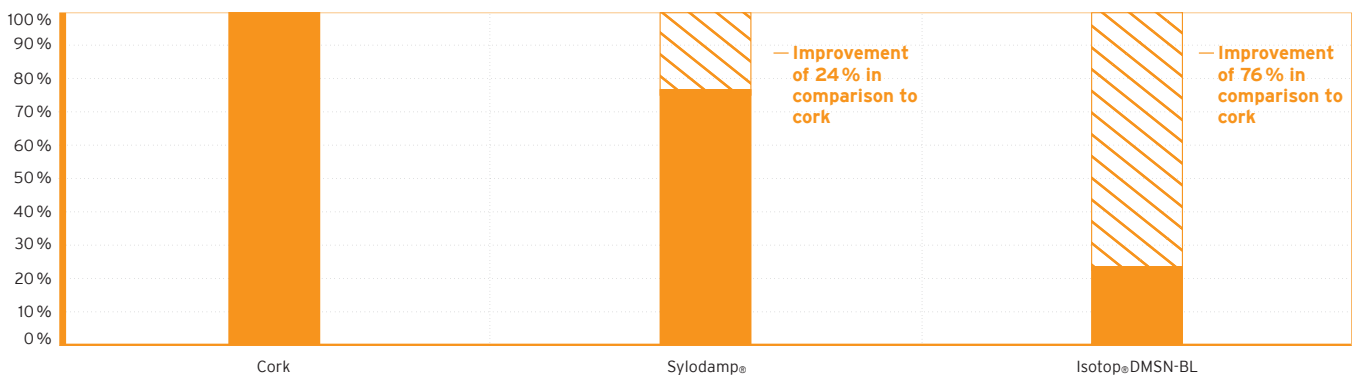
In comparison with a conventional loom bearing made of cork, the use of Isotop® DMSN-BL resulted in an overall reduction of the vibrations on the plant floor by 76%.

An insulation rate of 99.5% was determined at the Isotop® DMSN-BL bearings, which accounts for the

reduction of vibrations on the floor compared to those on the loom base. However, it should be noted that this value does not enable a direct conclusion to be drawn on the effect of an elastic bearing.

It is important to take into account that the use of highly elastic loom bearings can also cause the movements on the loom to increase, especially if the natural frequencies are reached during operation. In this experiment, there were no negative impacts as a result of this. However, this should always be checked in each individual case.

Graph 1: Reduction in the effective vibration velocity on the plant floor compared with cork



Detailed measurement report available on request