Measurement report: Elastic elements for industrial heat pumps

WIMUF.AT

Successful vibration decoupling of an air-cooled heat pump with scroll compressor

Description of the project

In order to identify the optimum solution for elastically decoupling an industrial heat pump, a series of comparative measurements were conducted by an external testing institute.

The heat pump was entirely decoupled firstly with an anti-vibration pad from REFCO and secondly with Isotop® DSD and Isotop® DZE from Getzner.

Bearing variants investigated


Existing rubber mat (from Trane)

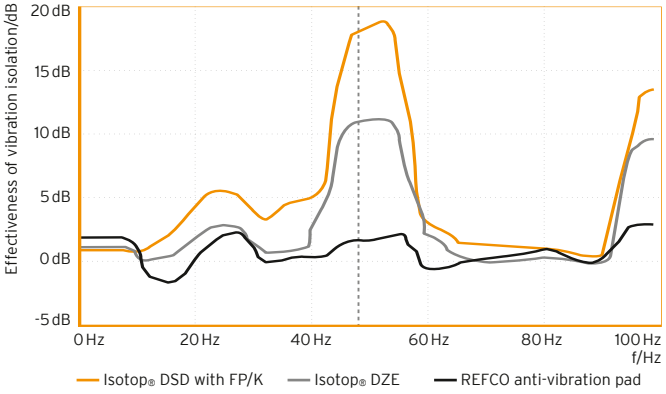

REFCO anti-vibration pad


Isotop® DSD with FP/K footplate

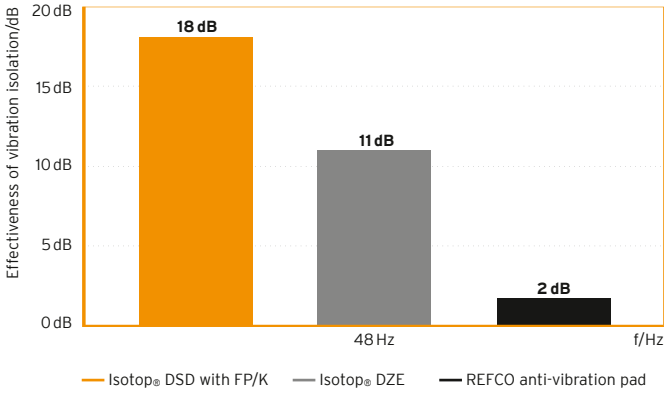

Isotop® DZE

Measurement results

Graph 1: Vibration acceleration on site



Graph 2: Improvement at 48 Hz over existing rubber mat



The main excitation of the heat pump is at 48 Hz (Graph 1). At this frequency, the Getzner product solutions exhibit an improvement over the existing rubber mat of between 11 dB with Isotop® DZE and 18 dB with Isotop® DSD including FP/K (Graph 2). The figure for the anti-vibration pad from REFCO is just under 2 dB.

The detailed measurement report also reveals that Isotop® DSD together with the additional damped FP/K footplate provides a successful decoupling effect in the high frequency range around 300 Hz – disturbing frequency of the centrifugal pump with 6 rotor blades.

As the amount of structure-borne noise transmitted into buildings can be minimised by reducing vibrations, these improvements could be decisive in critical installation locations (e.g. hospital roofs, densely populated communities, etc.).

Benefits

- Noticeable reduction in noise
- Effective structure-borne noise insulation
- Suitable for critical locations
- Effective even during the colder months
- Long service life – the bearings do not become brittle

More information: Detailed measurement report available on request