Measurement Report for Heat Pump Bearing

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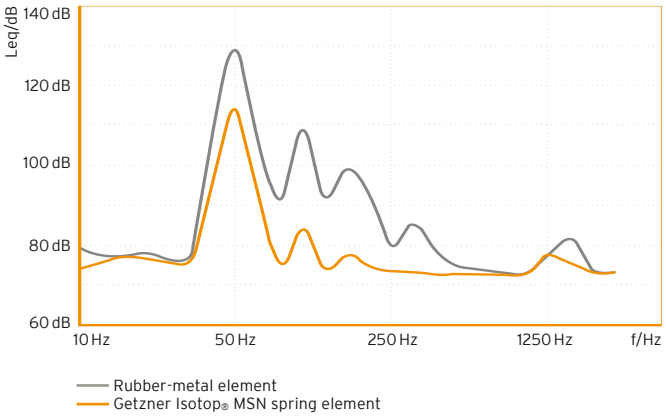
Successful vibration decoupling of an air-water heat pump

Description of the project

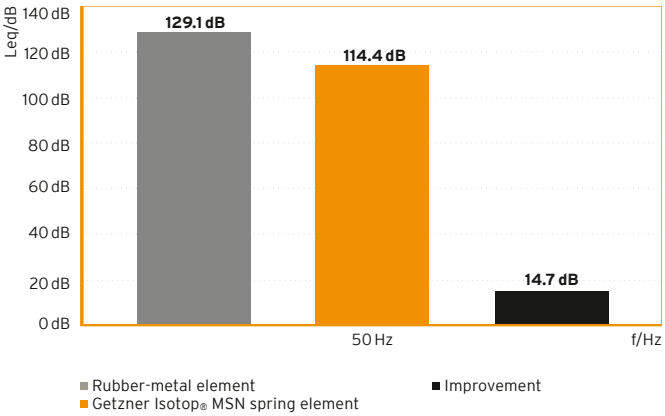
An Alpha Innotec air-water heat pump (type LWD 70A) was mounted on a concrete pedestal on the garage roof of a private home. During operation, this generated a disruptive noise throughout the entire building. Despite decoupling the pipework, vibration isolation of the heat pump using rubber-metal elements turned out to be insufficient. Getzner installed a vibration decoupling solution with Isotop® MSN spring elements between the base frame and concrete pedestal, and then performed a measurement that proved the solution to be a success.

Measurement results

Graph 1: Vibration accelerations on site



Graph 2: Improvement at 50 Hz



The main excitation of the air heat pump is approx. 50 Hz. At 50 Hz, this vibration isolation measure shows an improvement of 14.7 dB (see graph 2). This equates to an improvement of 80 % (logarithmic) at the measuring point between the device and the garage ceiling compared to the rubber-metal elements. In contrast to rubber products, which stiffen in cold temperatures, the solution with Isotop® MSN spring elements provides the required insulation even during the colder months.

Isotop® products can also be installed on storey ceilings and are highly effective at isolating vibrations in wall mountings. Generally, the base for securing the heat pump should be as stiff and rigid as possible. Additional rubber granulate mats only offer a low level of effectiveness.

Benefits

- Noticeable reduction in noise
- Low natural frequencies with Isotop® MSN spring elements
- Effective even during the colder months
- Long service life – the bearings do not become brittle