



## Noise-reducing lubricating greases

Chemie-Technik GmbH in Vöhringen, Baden-Württemberg, encounters the trend towards noise requirements of ball bearings with the development of noise-reducing special greases. Ball bearings, which are used in fans, electric motors or tool spindles for example, increasingly have to have a low noise level as well as a long service life because running noises are perceived by consumers to be disruptive, and this has an effect on the market: according to a large bearing manufacturer, approx. 2/3 of its bearings already have to fulfil specific requirements regarding noise level. Know-how in the production of quiet bearings pays off for manufacturers.

Dr. Frank Schulz, Head of Research/Development at Chemie-Technik GmbH, is responsible for the development of the ELKALUB high performance lubricants. To his knowledge, there are a multitude of parameters which can be used to influence the noise level of a bearing. As well as the cage material, the bearing size, the material and the finishing, the lubricant used also makes a significant contribution.

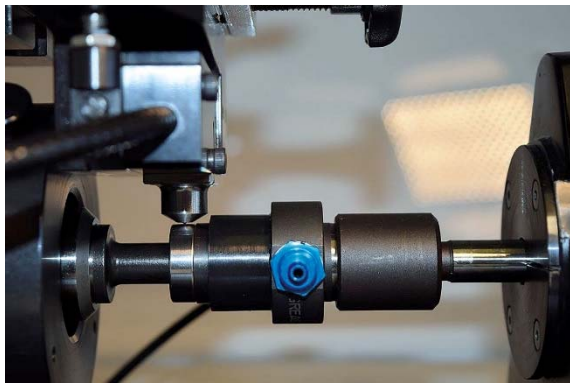
**Dr. Frank Schulz: “With the development of noise-reducing bearing greases in our laboratory, we are able to provide a significant advantage to bearing manufacturers compared to their competitors.”**



Noise tester BeQuiet+

In order to improve the ability to develop noise-reducing lubricating greases, Chemie-Technik GmbH has equipped its laboratory with a testing device which allows the objective and reproducible measurement of bearing noise. The measuring principle is based on the outer ring of the test bearing

being held in place with a defined force, which is applied through a cylinder, and the inner ring rotating at a defined speed. The occurring vibrations are recorded by a sensor that is placed on the outer ring and converted into an electronic value. The measuring device thus directly records the noise and vibrations for a complete ball bearing. In the evaluation, one differentiates between three frequency bands (low, medium, high frequency) which cover a range from 50-10,000 Hz. Noise events in the respective frequency bands can be allocated to the various properties and components of the bearing (roundness, rolling elements, track). In the



Measurement setup of BeQuiet+

measurements which are performed with a BeQuiet+ device and evaluated with the MoreQuiet software, the noise behaviour of five preserved bearings is first measured in a non-lubricated state. In the second step, these bearings are filled with the grease to be evaluated and then

measured again. Afterwards the software calculates the noise class for the grease from the two measurements. Depending on the noise level, the grease is classified into a noise class of between I/1 (very low-noise) and >IV (loud). In applications such as those described at the beginning, greases in the noise classes I/1 or II/1 (low-noise) are preferably used.

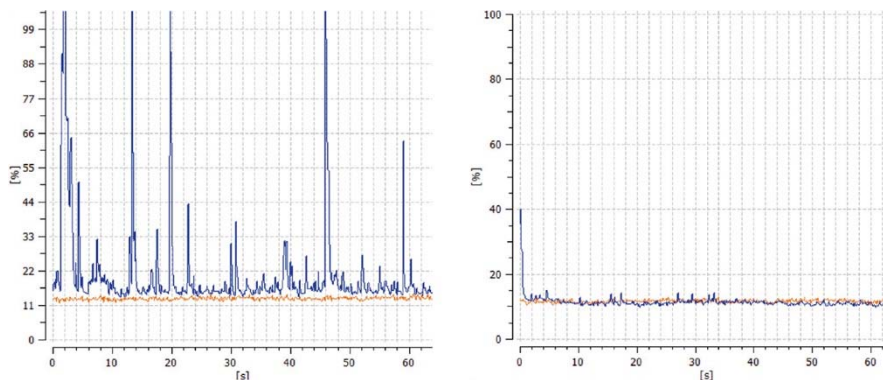


Diagram for noise class >IV (left) or I/1 (right)

***“With the acquisition of the noise testing device, we have expanded our testing options to include an extremely important and sensitive test bench. As a result, we are able to shorten the time to approval for a low-noise grease, develop new low-noise greases, and thus better meet the increased customer requirements,”*** says Dr. Frank Schulz.

Bearing manufacturers whose customers make smooth running a particular requirement in their machines are therefore well-advised to use low-noise ELKALUB lubricants as initial lubrication. It is possible that a suitable product can already be found in the existing portfolio of ELKALUB special lubricants. Equipped with its own measuring device, Chemie-Technik GmbH is also in an even better position to develop low-noise greases for specific applications. Above all, this includes applications in the food processing, beverage and packaging industry, because the ELKALUB range also includes a wide range of H1-certified high performance lubricants.