MIBA INDUSTRIAL BEARINGS

Bearing Performance Improvement

Eddy Grooves Technology

In high performance turbomachinery, the maximum bearing temperatures can be a crucial parameter. To increase the operational safety and performance, Miba developed the patented eddy grooves technology. Miba eddy grooves bearings develop significantly lower maximum oil film and bearing metal temperatures, especially at medium to high loads and sliding speeds. At high sliding speeds, eddy grooves outperform CuCr base material and thereby push the limits of bearings and applications.

Experimental results, obtained on a Miba journal bearing test rig, show the efficiency of eddy grooves technology:

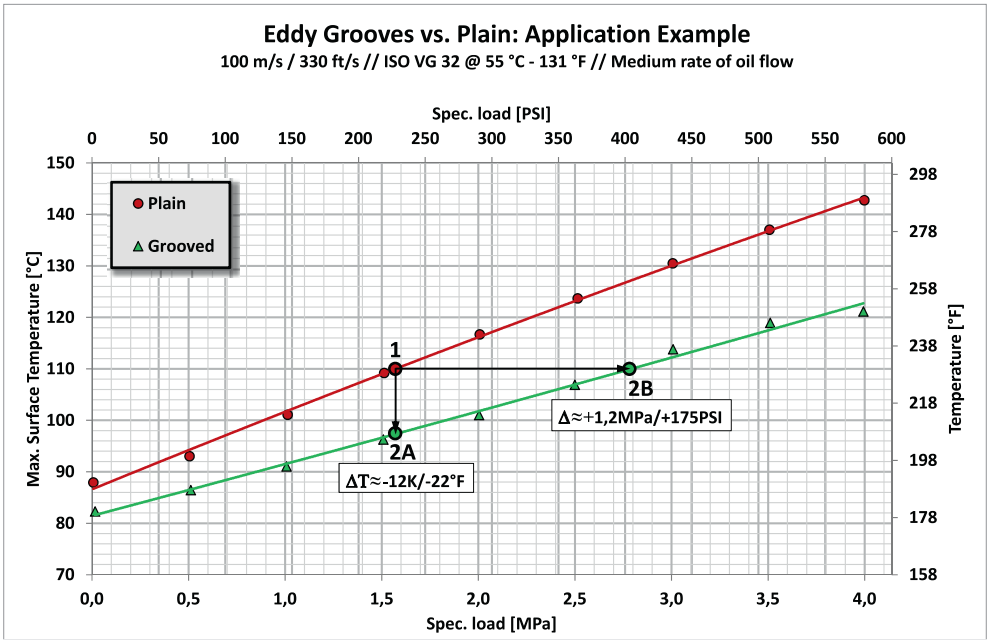

Figure 1: Max. temperature comparison of a Miba 5 tilting pad journal bearing with center pivot

Eddy grooves are robust grooves of a defined shape, arranged in a specific pattern, which are machined into a certain area of the bearing material. The grooves are optimized to disturb the laminar lubricant flow and thus create the temperature effect by mixing cooler oil near the shaft with warmer oil near the bearing surface.

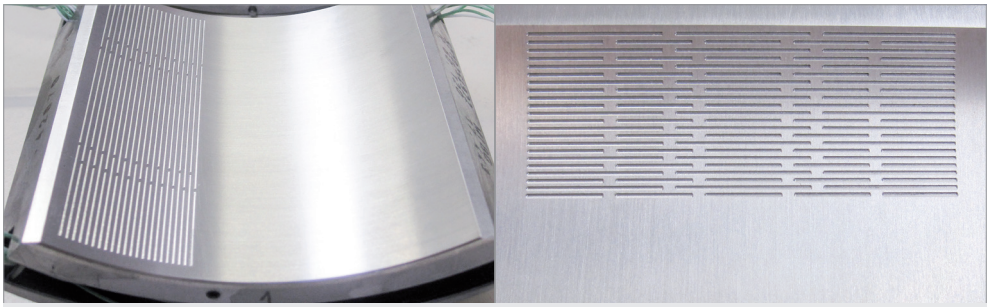

Figure 2: Tilting pads equipped with eddy grooves

Eddy grooves bearings work with the same rate of oil supply and produce the same power loss than standard bearings. The dynamic bearing coefficients are not affected by this technology.

The reduced temperatures of eddy grooves bearings can be utilized to:

- Increase the safety margin of the bearing and slow down the lubricating oil aging
- Operate bearings at higher loads without an increase of maximum temperatures
- Decrease the bearing diameter or the axial length to reduce the power loss and the necessary rate of oil supply without an increase of maximum bearing temperatures

The following chart shows the cooling effect of eddy grooves, as a summary of the experimental investigations:

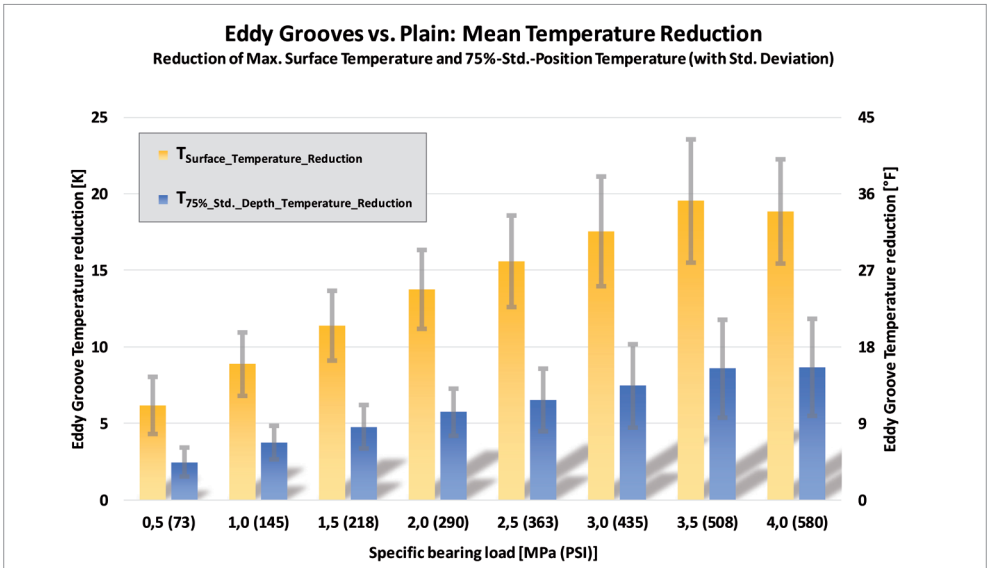

Figure 3: Measured reduction of maximum bearing surface temperature (yellow) and for the standard 75% temperature sensor, 1 mm below the white metal (blue)

CONTACT US
for personal consultation

www.miba.com/en/product-areas/industrial-bearings/

1 | Miba Industrial Bearings Germany Osterode GmbH
Rolandsweg 16-20
37520 Osterode, Germany
mibg_sales@miba.com

2 | Miba Industrial Bearings U.S. LLC
1111 Cedar Creek Rd
Grafton, WI 53024, USA
MIBUSG_Sales@miba.com

3 | Miba Industrial Bearings U.S. LLC
3300 East 8th Street
Columbus, NE 68601, USA
MIBUSG_Sales@miba.com

4 | Service Business / Miba Industrial Bearings U.S. (Houston) LLC
1800 W 13th St
Deer Park, TX 77536, USA
Houston.Sales@miba.com
MIBUSG_Sales@miba.com

5 | Miba Industrial Bearings Brasil
Av. Manoel Inacio Peixoto, 2147
36771-000 Cataguases – MG, Brazil
Vendas.MIBCAT@MIBA.COM