



New technology of lining application for hydrodynamic bearings by laser cladding and new testing and research facility for hydrodynamic bearings.

*Marek Urban, Jiří Halmí*¹*

¹GTW BEARINGS s.r.o

Keywords:

Hydrodynamic bearing, bearings lining, laser, laser cladding, adhesion, tin, bearing test, test facility, load, oil flow, bearing temperature, vibration

Abstract:

The laser cladding technology of alloy basis of tin, copper and antimony is an alternative technology for common methods of application bearings lining (centrifugal and gravity casting). For these common methods of casting the adhesion of lining is based on the diffusion of tin into steel substrate. On the other hand for new technology of laser cladding a mechanical bond is created by welding the base material of the bearing and the applied lining. In the develop of the laser cladding technology there were look for the suitable parameters of process from the point of adhesion the applied layer to the substrate but also optimization of process parameters, so that this technology was economically comparable to conventional lining technologies.

The reason for building the sliding bearing test facility was to increase the accuracy of calculations. Each product is tested (material and bearing behavior in operation) before it is put on the market. For this purpose, laboratories in the CZ and abroad (e.g. at TU Clausstahl, GER) are used. However, all these facilities have limits that prevented the bearings from being tested in the entire load spectrum. The newly built facility at GTW is unique, fully comparable to testing laboratories abroad, and moreover capable of carrying maximum load which can be considered extreme. The stand can measure losses, bearing and oil temperature (inlet and outlet), oil flow, position of the shaft centre, vibrations, thrust and radial loads.