

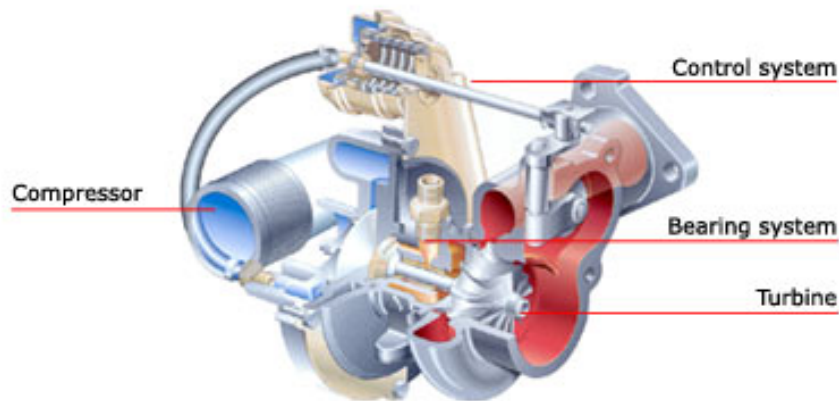
Master's Thesis: Tribological properties of oil-lubricated bronze

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Background

A master's thesis on the subject of tribology is available in the Laboratory for Surface Science and Technology. The project is part of a collaboration between the Empa and BorgWarner Turbo Systems and involves the investigation of the lubrication of bronze parts for turbochargers.

New EU regulations mean that new lead-free bronze materials are required in the turbocharger. New materials are being evaluated in order to find a suitable alternative to the current bronzes, but in addition, the possibility of improving the tribological properties through improved design of the parts is being investigated.



The part of interest is in the axial bearing system and is oil-lubricated.

Goal

The friction and wear of the bronze materials that are used in the turbocharger will be investigated under reciprocating sliding. Of particular interest are the influence of roughness on the wear behavior and the change in friction and wear as the lubricant ages.

Methods

High-frequency reciprocating sliding will be used to assess the bronzes, as it has already been demonstrated that this technique correlates well with performance in the turbocharger. The roughness and wear will be determined by means of optical and contact profilometry. Scanning electron microscopy will be used to determine the type of wear that occurs at the bronze surface.

The project will be carried out at the Empa in Dübendorf.

Contact

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