SUCCESS STORY

LEC EvoLET
LEC Evolutionary Large Engines Technology for Sustainable Energy and Transport Systems

Programme: COMET – Competence Centers for Excellent Technologies

Programme line: COMET-Centre K1

Type of project: multi-firm / strategic
Duration: 2015 – 2018
Title: Advanced Bearing Technology and Friction Reduction

MIBA bearings (© MIBA)

SMART BEARING TECHNOLOGY FOR THE DIGITAL ENGINE FUTURE

FOR THE FIRST TIME EVER, THE PERMANENT MONITORING OF SLIDING BEARINGS IN MOVING ENGINE COMPONENTS IS POSSIBLE THANKS TO THE RESEARCH COOPERATION BETWEEN THE LEC AND MIBA BEARING GROUP. SMART MIBA SLIDING BEARINGS AND THE WIRELESS SMART LEC TELEMETRY SYSTEM PROVIDE A CLEAR TECHNOLOGICAL ADVANTAGE, THEREBY STRENGTHENING THE INTERNATIONAL COMPETITIVENESS OF AUSTRIAN COMPANIES.

Lifespan Prediction with an Intelligent Sliding Bearing Monitoring System

Greater power output and efficiency, fewer pollutant emissions: for decades, internal combustion engines have been becoming cleaner and more energy efficient, yet at the same time these engines and their components are expected to work perfectly as long as possible. In this context, digital technologies play an increasingly important role. Together with the Upper Austrian MIBA Bearing Group, world market leader in sliding bearings, the LEC has developed an intelligent sliding bearing monitoring system for the digital engine of the future. Important bearing parameters are captured and processed intelligently by thin film sensors directly integrated into the bearing and wireless data transfer.

Until now, measurements on connecting rod bearings were only possible under very limited conditions and for brief time intervals. In addition to an appropriate sensor technology that can be integrated into the standard sliding bearing process, the LEC has developed a robust system that transfers

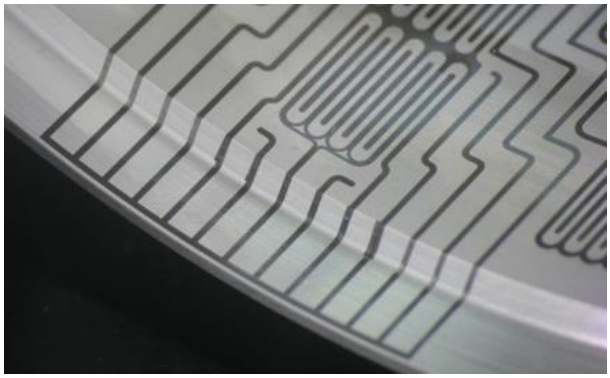
measurement data of moving components as part of its strategic research.

The LEC Smart Telemetry System as a Key Innovation

The data transfer system uses Bluetooth technology and permits signal processing directly on the moving component as well as reliable operation even under extreme conditions in the engine for long-term use. The viability and reliability of the telemetry unit under the harsh conditions in the engine has been established successfully at the test bed. The number of measurement channels as well as the sampling rate and transmission frequency were adapted to the specific application. With its innovative telemetry system, the LEC is among the finalists for the Fast Forward Award 2019.

Intelligent Sensor Technology

In connection with this technology, the newly developed thin film sensors make it possible to measure and transfer different physical parameters (temperature, pressure) from critical moving engine components. With this approach, project partner MIBA can subsequently evaluate the condition of sliding bearings and therefore significantly contribute to the reliability of engines. The availability of an excellent measurement database will also be of great importance for the further development of sliding bearings.



Embedded thin film sensor in a sliding bearing (© LEC GmbH)

CBM - Condition-based monitoring system (© LEC GmbH)

Importance of Austria as a Business Location

On the whole, the intelligent sensor technology strengthens MIBA's market position as a global technology leader in this area. Beside the use in connection with engine bearings, the LEC's smart telemetry system opens up a wide range of other fields of application.

Project coordination (Story)
Ao.-Univ.-Prof. Dr. Andreas Wimmer
CEO and Head of Scientific Research
LEC GmbH

T +43 (0) 316 873 30100
andreas.wimmer@lec.tugraz.at

K1 COMET Centre LEC EvoLET
LEC GmbH
Inffeldgasse 19/2
8010 Graz
T +43 (0) 316 873 30101
office@lec.tugraz.at
www.lec.at

Project partner

- MIBA Gleitlager Austria GmbH, Austria
- Infineum UK Limited, UK Country

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