

Title: Deep online analysis of dielectric parameters for lubricants with an innovative oil sensor system: Identification of critical operation conditions of industrial gearboxes for reduction of failure rates and live time enhancement

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The requirements in the energy sector for large industrial gearboxes as installed in wind turbines or in gas/diesel engines rise. Ever more flexibility at a maximum operational reliability and a long life time are required of them at the same time, so the requirements for the oil and the oil condition monitoring grow correspondingly. This presentation provides information about a novel online oil condition monitoring system to give a solution to the mentioned priorities for the energy sector. The focus is set to industrial gearboxes but the possibilities in monitoring of related applications are also addressed.
The online oil sensor system is based on the measurement of the components of the complex impedance of oil, in particular, the components conductivity kappa, the relative permittivity epsilon r and the temperature T, which are acquired independently from each other. Based on a very sensitive measurement method with high accuracy even small changes in the conductivity and dielectric constant of the oil composition can be detected reliably. The new sensor system effectively controls the proper operation conditions of industrial gearboxes and in test rigs for electrical vehicles, where lubrication and isolation of the oil has a double function.
24/7 online monitoring of the asset during operation enables specific preventive and condition based maintenance independent of rigid inspection intervals. Corrective procedures and / or maintenance can be carried out before actual damage occurs.

Biography

Prof. Dr.-Ing. Manfred Mauntz received his diploma in Engineering from the University of Kaiserslautern in 1982, earned a doctorate with honors in Engineering from the University of Siegen and is a Professor at the Szent Istvan University (Faculty of Mechanical Engineering) in Hungary. He has worked extensively in the analytical and process instrumentation industry. At AEG AG, Germany he was Head of the Department protection and control. He is the founder, CEO and Head of Development and Research of cmc Instruments GmbH which develops and manufactures analytical and measurement systems.

Dr. rer. nat. Jörn Peuser received his diploma in Physics in 2003 and earned his doctorate in 2008 from the University of Darmstadt. During his post-doctorate in Switzerland at the University of Fribourg and up to his current position at cmc Instruments GmbH he has worked extensively in the scientific and industrial sector in the research and development of different kind of complex sensor systems and their applications.

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