

Lubrication oil plays a decisive role to maintain a reliable and efficient operation of gear transmissions. Many offline methods have been developed to monitor the quality of lubricating oils. This work focus on developing a novel online method to diagnose oil degradation based on the measurements from power supply system to the gearbox. Experimental studies based on an 10kW industrial gearbox fed by a sensorless variable speed drive (VSD) shows that measurable changes in both static power and dynamic behaviour are different with lube oils tested. Therefore, it is feasible to use the static power feature to indicate viscosity changes at low and moderate operating speeds. In the meantime, the dynamic feature can separate viscosity changes for all different tested cases.