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Abstract :

The authors made investigations on the influence of oil film thickness on helical gear detection including pitting failure using acoustic emission. They used a back to back gear box test rig with oil box lubrication. Their results demonstrated a relationship between acoustic emission activity, operation temperature and specific film thickness. Further the AE identified the presence of pitting on the surface of the gear tooth. The following are the conclusions made by the authors.

The ability to identify gear defects under different lubricating regimes has been explored. It has been demonstrated that under lubricating conditions that completely separate the gear surface asperities, the generation of AE due to the presence of a defect may not be detectable over typical background noise levels. In application of the AE technology to identifying defects in gearboxes it would be prudent to estimate the specific film thickness in order to ascertain the potential effectiveness of applying the technology.