

Abstract

Mohamed N. El-Shaib

Seeded Fault Detection on Spur Gears with Acoustic Emission

A gear system is a power and motion transmission device that is applied most extensively in various kinds of industrial equipment. Great damage to the whole production is always a risk caused by faults and failures of gears. Therefore, the diagnosis of gear faults is of significant importance. Acoustic Emission (AE) is one of the best technologies for health monitoring and diagnosis of rotating machineries, such as gearboxes. The aim of this work is to detect defects on seeded spur gears at an early stage. The typical AE signals have been analyzed in time (i.e. absolute energy and root mean square "r.m.s") and frequency domains for different speed and load conditions. It is concluded that the seeded defect can be detected using AE. A numerical relationship between speed, load and AE is also presented.