Abstract :

In this paper the authors have worked on pitting detection in home gear boxes with vibration analysis. Detection of home gear defects with vibration analysis is a challenging job. The work of the authors applies to various vibration analysis techniques to find the initiation and formation of pitting in gear boxes. Based on the experimental work the following conclusions are drawn by the authors.

Various vibration signal analysis tools were employed in this study.All techniques were able to present features which indicated pitting damage on one gear box(Gearbox A).The presence of a defective gear was confirmed by visual inspection.All techniques applied for diagnosis were sensitive to the direction of measurement with measurements taken horizontally and parallel to wheel shaft axis (z-direction) proving most sensitive.The FM4 was deemed, effective for the detection of pitting presence and the advantage of such a technique is its simplicity in implementation.SK and envelop analysis were valuable for the identification of both bearing and gears defects frequencies.Though the SK analysis was less susceptible to the direction of measurement,making this technique relatively more robust was considered.In conclusion, the conditions of three worm gearboxes were assessed.