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Abstract :

Worked on improving mesh stiffness calculations of cracked gears for the purpose of vibration based pitting analysis. The time varying gear mesh stiffness will contribute to the dynamic response of geared system.Their results agreed with already existing results and in some cases their method indicated more accurate results.Based on the experimental work the following are the conclusions drawn by the authors.The authors suggested three methods of experimentation.

Method 2 shows limited potential applicability compared to FEM.On the other hand,method 1 proved to be a good approach for stiffness evaluation for cracked gears with crack levels less than 30% in their model.Method 3 can be considered as an alternative to method 1 for larger crack sizes.However,FEM is still considered more reliable method for stiffness evaluation for higher crack levels.

Method 1 results in a larger reduction of the gear tooth stiffness for crack depths larger than 30% compared to the FEM simulation.This results in a more optimistic prediction of the possibility of detecting cracks deeper than 30% compared to FEM simulations.The proposed new method (method 3) shows a better agreement with the FEM simulations and will therefore result in optimistic prediction of the detecting cracks deeper than 30%.