International J. of Engg. Research & Indu. Appls. (IJERIA).
ISSN 0974-1518, Vol.4, No. I (February 2011), pp 183-196

DYNAMIC CONTACT BETWEEN ROTATING SPUR GEARS BY FINITE ELEMENT TECHNIQUE

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Abstract

It is widely agreed that the theoretical analysis (FEM by using ANSYS) of spur gears can be performed using 2D approach (point to point). This paper investigates the characteristics of an Involutes gear system including contact stresses between pair of the gears (surface to surface).Contact stress using (Hertz's Equation), which were originally derived for contact between two cylinders (Hertz's equation). To enable the investigation of contact problems with Finite Element Method (FEM), the stiffness relationship between the two contacts areas is usually established through a spring placed between the two contacting areas. A computer program was built up using (MATLAB). The results of the two dimensional FEM analyses from ANSYS (surface to surface) are presented. These stresses are compared with the theoretical values (Hertz's equations). Both results agree very well. This indicates that the (FEM) model (surface to surface) is accurate more than (point to point) and (Hertz's equations) results because it is very near to the facts.

Keyworks : Contact Stress, Finite Element Method, Spur Gear, Hertz.