

Stress Analysis of Spider Gear Using Structural Steel on ANSYS

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Abstract : Differential is an integral part of four wheeled vehicle, and its main function is to transmit power from drive shaft to wheels. Differential assembly allows both rear wheels to turn at different speed along curved paths. It consists of four gears which are assembled together namely pinion, ring, spider and bevel gears. This research focused on the spider gear and its static structural analysis using ANSYS. The main aim was to evaluate the distribution of stresses on the teeth of the spider gear. This study also analyzed total deformation that may occur during its working along with bevel gear that is meshed with spider gear. Structural steel was chosen for spider gear in this research. Modeling and assembling were done on SolidWorks for both spider and bevel gear. They were assembled exactly same as in a differential assembly. This assembly was then imported to ANSYS. After observing results that maximum amount of stress and deformation was produced in the spider gear, it was concluded that structural steel material for spider gear possesses greater amount of strength to bear maximum stress.

Keywords : ANSYS, differential, spider gear, structural steel

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