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Bending Stress Analysis of Spur Gear by Analytical Methods

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Abstract: *The main factors that cause the failure of gears are the bending stress and contact stress of the gear tooth. Stress analysis has been an important area in engineering to minimize failure and optimize the design. This project work gives details of bending stress and contact stress analysis of a spur gear tooth by analytical and numerical method. The investigation involves the involute profile of a spur gear. The geometrical parameters, such as the face width and module, are considered important for the variation of stresses in the design of gears. Specifically, the face width is important for spur gears. Using modeling software, 3-D models for different modules in spur gears are generated, and the simulation was performed using ANSYS to estimate the bending and contact stresses. The Lewis formula and Hertezian equation were used to calculate the bending stress and contact stress, respectively. The results of the theoretical stress values are compared with the stress values from the finite element analysis.*

Keywords: Bending Stress, Contact Stress, Module, etc.

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