LOAD SHARING ANALYSIS OF BENDING STRENGTH IN ALTERED TOOTH-SUM GEARS OPERATING BETWEEN A STANDARD CENTER DISTANCE AND MODULE

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ABSTRACT

Power transmission between shafts that need positive drive is well assured by gears. The size and shape of the gear tooth is a critical consideration if specific drive requirements are imposed. Thus, design of gears calls for a detailed study of the tooth geometry that defines the performances like load carrying capacity, wear characteristics, efficiency and noise. Among them load carrying capacity is one of the fundamental requirements which depends on bending strength that can be computed using well known Lewis equation. Most often, tooth geometry is modified using S-gearing to influence the performance that may be either S_o or $S_\pm$ type. Tooth geometry can also be modified by way of altering the tooth-sum of meshing gears for a standard center distance and module. Such modifications have some inherent benefits that are unique. Hence, this study is focused on analysis of bending stress as well as contact ratio in altered tooth-sum gears using load sharing diagram. The diagram clearly shows the loading pattern and contact length for both standard and altered tooth-sum gears at different points of contact. The load sharing analysis is carried out for altered tooth-sum spur gears having tooth-sum 100, 2 mm module, face width 10 mm and 20° pressure angle with a tangential load of 9.81N/mm of face width.

Keywords: Altered tooth-sum, Bending strength, Load sharing, Profile shift, Spur gears.