Comparison of Meshing Stiffness of Altered Tooth Sum Spur Gear Tooth with Different Pressure Angles

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Abstract : The estimation of gear tooth stiffness is important for finding the load distribution between the gear teeth when two consecutive sets of teeth are in contact. Based on dynamic model a C-program has been developed to compute mesh stiffness. By using this program position dependent mesh stiffness of spur gear tooth for various profile shifts have been computed for a fixed center distance and altering tooth-sum gearing (100 by ± 4%). It is found that the C-program using dynamic model is one of the rapid soft computing technique which helps in design of gears. The mesh tooth stiffness along the path of contact is studied for both 20° and 25° pressure angle gears at various profile shifts. Better tooth stiffness is noticed in case of negative alteration tooth-sum gears compared to standard and positive alteration tooth-sum gears. Also, in case of negative alteration tooth-sum gearing better mesh stiffness is noticed in 20° pressure angle when compared to 25°.