

DESIGN AND ANALYSIS OF COMPOSITE DRIVE SHAFT

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Abstract

Almost all automobiles have transmission shafts. There is a direct proportionality between the weight of a vehicle and its fuel consumption, particularly in city driving. The weight reduction of the drive shaft can have a certain role in the general weight reduction of the vehicle and is a highly desirable goal, if it can be achieved without increase in cost and decrease in quality and reliability. Composite shaft eliminates all the assembly, connecting the two piece steel shafts and thus minimizes the overall weight, vibrations and the total cost. Due to the weight reduction, fuel consumption will be reduced. Also they have high damping capacity hence produce less vibration and noise. In this work a traditional drive shaft is replaced with the composite (E-Glass/Epoxy, HS Carbon/Epoxy and HM Carbon/Epoxy) drive shafts to reduce the weight of the shaft in great extent. The parameters of composite drive shafts optimized by Genetic- Algorithm are taken for static, modal and buckling analysis. All are found within allowable limits.

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