ABSTRACT

The Roadway vehicles like cars, buses, trucks and land movers having many mechanical parts in common like Engine parts, Propeller shafts, Gearbox, Brakes, Clutches, Wheels, etc., to make the vehicle fuel efficient which in result make the transportation economical, the weight of that vehicle should be reduced. Since the composite materials are light weight with more strength & stiffness, inclusion of composite materials to conventional steel materials used in auto parts will reduce the weight and improve the mechanical properties of those components. The main objective of the drive shaft is reduction of weight of roadways vehicles. Drive shaft is one of the most important parts of the vehicle which transfers the motion from gear box to the rear wheel of the vehicle. The drive shaft is connected by transmission shaft with the help of a universal joint. The drive shaft rotates about its own axis, the conventional shaft is made up of a steel-SM45C, Therefore the steel propeller shaft is made in two sections connected by a support structure, bearings and U-joints and because of this over all weight of composite materials. Composite materials (Glass Epoxy etc.,) were used for designing and analyzing. In this project the use of Aluminium alloy, composite material are studied and analyzed. The analysis done on drive shaft of normal car with different materials like aluminium and composite material, it is consisting of three types of analysis such as static, buckling and modal are carried out on the component to understand its behaviour under defined loading conditions. These analysis is done using ANSYS software.

Keywords: Drive Shaft, Composite Materials, Torsional Strength and Buckling strength.