**Abstract:**

Substituting composite structures for conventional metallic structures has many advantages because of higher specific stiffness and strength of composite materials. This work deals with the replacement of conventional two-piece steel drive shafts with a single-piece e-glass/ epoxy, high strength carbon/epoxy and high modulus carbon/epoxy composite drive shaft for an automotive application. The design parameters were optimized with the objective of minimizing the weight of composite drive shaft. The CAD model is designed in SOLLID WORKS PREMIUM 2014 SOFTWARE. To obtain the stress and deformation values solid works simulation software was used. By comparing the results proper material for drive shaft can be selected.