DESIGN AND ANALYSIS OF WINCH DRUM WITH DIFFERENT MATERIALS

ABSTRACT

Winch is driving equipment for lifting and descending the heavy objects and widely used in the field of engineering mechanisms. It is designed as pulling devices, consisting of rope winding around a horizontal drum turned typically by motor. It is classified into seven major types depending on drive system, such as electrical winch, mechanical drum-style winch, mechanical capstan-style winch, hydraulic winch, mechanical hand-operated winch, mechanical portable winch and hybrid winch. A winch is made up of many components like drum, shaft, rope, winch gearbox and drive system etc. It is extensively used for pulling heavy load and can be found in mines and marine application. Winches are the fundamental element, for example, in crane and mooring systems for activating cable cars, lifts and as a matter of fact, whenever dynamic pull is required from a flexible rope. It is necessary to improve the conventional design of winches to achieve the strong pull and precise control during winching operation. This review is conducted to study the areas of improvement in the design of winch system to develop the high performance winch for different field of engineering applications. For that in our project we have changed the material of the winch which is compact and easy to handle most probably composite materials are used in this cases. The 3d model of the design is created using SOLIDWORKS 2016. And the structural characteristics of the component is analyzed using ANSYS WORKBENCH R 16.
3D MODEL OF THE WINCH CREATED USING SOLIDWORKS