

DESIGN AND ANALYSIS OF A HELICAL COIL SPRING SUSPENSION SYSTEM

ABSTRACT

Basically, the spring is a flexible component of suspension system. In Modern transport vehicles usually use light coil springs. In this paper, the implementation of various materials in helical coil suspension system is demonstrated. Previously we were using the conventional steel for helical coil. For required stiffness, the design of such springs is very bulky and costly. Then another implementation is done on the different material such as steel alloy, copper, magnesium. It was successful in decreasing the weight, increasing the stiffness of the system. For this reason, present paper used the analytical methods and finite element analysis for the selection of helical compression spring with number of turns. Using Finite Element Analysis completed the modelling, meshing and post processing of front suspension spring. This work also determined the structural strength of coil spring using the finite element analysis. Study was made to check the stiffness of material with various loading conditions varying from 500 N to 4000 N (with an increment of 500 N) for all the three materials to know the deflections. Based on theoretical and software result comparison the optimum turns which meet all requirements was suggested.

Keywords: coil spring, modelling, static analysis, ANSYS, turns