APPLICATION OF 3D CAD MODELING FOR AEROSPACE MECHANISMS

PRIYANKA MATHAD[1], SANTOSH D. DALVI[2] AND CHANDRA BAHU[3]

[1] Assistant Professor, Mechanical Engg. Department, L.T.C.O.E., Maharashtra, India
[2] Assistant Professor, Production Engg. Department, F.C.R.C.E., Maharashtra, India
[3] Associate Professor, Mechanical Engg. Department, L.T.C.O.E., Maharashtra, India

Abstract

This report is based on 3D modeling of the components and their assemblies and functional simulation of assemblies of SADM and RDM of aerospace mechanisms. Computer Aided Design systems is the key to developing and maintaining product design information electronically. According to the parts, fixtures and assemblies represented in the drawings, 3-D models of these parts and assemblies were created. For creation of 3-D models various software's like Unigraphics, Pro-E, Solid works are available. 3-D solid modeling which enhances visualization and communication of the design intent. Pro-E Solid works with the evolution toward product or assembly modeling provides a more useful mechanism to represent how parts are put together to form assemblies. The research started with collection of real shop-floor data i.e. Part drawings, assembly drawings, logbooks which are use to make CAD models and their assemblies by using Pro/E wildfire 5. Then steps required building a simulation model and subsequent functions using Pro/E wildfire 5 to understand the simulation& assembly procedures of above Aerospace Mechanisms. Part drawings of components are studied to understand part geometry, tolerances, machining sequences & tolerances. Research papers based on Computer Aided Process Planning and detailed assembly sequence procedures for different assemblies which are given in logbooks were studied.

Keywords : 3D modeling, Assemblies, Aerospace mechanisms, Solar array deployment mechanism (SADM), Reflector deployment mechanism (RDM)