

A Finite Element Method Simulation for Rocket Motor Material Selection

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Abstract : This article aims to study the effect of pressure on rocket motor case by Finite Element Method simulation to select optimal material in rocket motor manufacturing process. In this study, cylindrical tubes with outside diameter of 122 mm and thickness of 3 mm are used for simulation. Defined rocket motor case materials are AISI4130, AISI1026, AISI1045, AL2024 and AL7075. Internal pressure used for the simulation is 22 MPa. The result from Finite Element Method shows that at a pressure of 22 MPa rocket motor case produced by AISI4130, AISI1045 and AL7075 can be used. A comparison of the result between AISI4130, AISI1045 and AL7075 shows that AISI4130 has minimum principal stress and confirm the results of Finite Element Method by the used of calculation method found that, the results from Finite Element Method has good reliability.

Keywords : rocket motor case, finite element method, principal stress, simulation

Conference Title : ICIE 2014 : International Conference on Industrial Engineering

Conference Location : Singapore, Singapore

Conference Dates : September 11-12, 2014