

Finite Element Analysis of Strand Burner

Authors

[Authors and affiliations](#)

M. Hafizi, M. M. Noor , R. Mamat, A. Aziz, A. T. Termizi

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Abstract

The burning rate is a crucial element in the performance of a solid propellant rocket. Strand burner is a device used to measure the propellant burning rate at elevated pressure. Solidworks Simulation is one of the software that is capable of performing finite element analysis that widely used to estimate the mechanical behavior of materials and structures in engineering applications. The objective of this paper is to analyze stresses in developing safe strand burner by using Solidworks Simulation. The strand burner is designed and analyzed using Solidworks 2016 software. Solid standard mesh meshing element is selected for purpose. The withstand loads and stresses on strand burner physically structure is measured by both simulation analysis and hand calculation. The result show the safety factor on developing strand burner is obtained by both method is 2.31. Based on safety factor generated, the strand burner can be test until 60.61 bars (6.061 MPa). In conclusion, the burning test inside the strand burner chamber can be test up to 126 bars. The design is safe for operating conditions.

Keywords

Strand burner Solid propellant Finite element analysis