

MODELING OF GAS PIPE THICKNESS MADE OF NICKEL ALLOY USING CAESAR II AND ANSYS

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Abstract

Piping system failure can be caused by several factors, one of which is the pipe load. Pipe loads cause stress to the pipe. The thickness of the pipe in the piping system affects the value of the stress. The research uses the computational method of pipe stress analysis by comparing the value of stress in the variation of schedule pipe thickness 10S 4mm; schedule 80 13mm; and the XXS 22mm schedule between manual calculations and the results of a simulation of pipe stress analysis. The purpose of this research is to find out the value of stress to temperature of 500o F and pressure of 689 KPa from the results of manual calculations with the calculation results of pipe stress analysis to compare with the value of the allowable stress limit on N08825 nickel alloy material of 241.31 MPa. Pipe stress analysis is needed to calculate the amount of stress caused by the load on the pipe. Loading is carried out at a temperature of 500o F and a pressure of 689 KPa. Research on variations in pipe thickness produces a value of 18.86 MPa for each manual calculation, 30.6 MPa for CAESAR II and 41.75 MPa for ANSYS calculations

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