

Elastic Stress Analysis of Annular Bi-Material Discs with Variable Thickness under Mechanical and Thermomechanical Loads

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Abstract : The closed form study deal with elastic stress analysis of annular bi-material discs with variable thickness subjected to the mechanical and termomechanical loads. Those discs have many applications in the aerospace industry, such as gas turbines and gears. Those discs normally work under thermal and mechanical loads. Their life cycle can increase when stress components are minimized. Each material property is assumed to be isotropic. The results show that material combinations and thickness profiles play an important role in determining the responses of bi-material discs and an optimal design of those structures. Stress distribution is investigated and results are shown as graphs.

Keywords : bi-material discs, elastic stress analysis, mechanical loads, rotating discs

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