

Thermo-Elastic Deformation Analysis of Functionally Graded Ceramic–Metal Structures

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Abstract

The bending of graded sandwich plates is looked at using a new theory that uses four variables. This theory is different from theories that use five variables to figure out how the plates bend. The new theory is good because it does not need special correction factors and it shows how the stress is distributed across the plate.

The plates are made up of two kinds of materials and the properties of these materials change as you go through the plate. The way these properties change is based on a power law that has to do with the amount of each material in the plate.

The new theory is checked by comparing it to theories that are already known. The results show how things like the shape of the plate and the materials it is made of affect how the plate bends. The theory is a way to understand how functionally graded sandwich plates bend when they are heated.

The numbers from the theory match up with the numbers from theories and this shows that the new theory is a good tool, for understanding the bending of functionally graded sandwich plates. The theory can be used to figure out how the plates will bend and how stress they will have when they are heated.

Index Terms

Functionally Graded Material, Thermo-Elastic, Modelling, Bending