

Optimization of Elastic Plastic Plates of Piecewise Constant Thickness

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Abstract

Numerical and analytical methods of analysis and optimization of elastic plastic plates are developed. The cases of linear and non-linear yield surfaces are studied. Necessary optimality conditions are derived with the aid of variational methods. The obtained system of equations is solved numerically. The effectivity of the design established is assessed in the cases of one- and multi-stepped plates made of Tresca or Mises materials.

Keywords: plate; optimization; elastic plastic material; minimum weight.