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Effect of core thickness on load carrying capacity of sandwich panel behavior beyond yield limit
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Abstract
Sandwich Panel has attracted designer's interest due to its light weight, excellent corrosion characteristics and rapid installation capabilities. It has been implemented in many industrial application such as aerospace, marine, architectural and transportation industry. Its structure consists of two face sheets and core. The core is usually made of material softer than the face sheets. The current investigation unveils the effect of core thickness on the behavior of Sandwich Panel beyond the yield limit of core material. The core thickness is investigated by utilizing univariate search optimization technique. The load is applied in quasi-static manner (in steps) till face sheets reach the yield limit. Simply supported panel from all sides is modeled using a finite element analysis package. The model is validated against numerical and experimental cases that are available in the literature. In addition, experimental investigation has been carried out to validate the finite element model and to verify some selected cases. The finite element results show very good agreement with the previous work and the experimental investigation. The study presents that the load carrying capacity of the panel increases as the core material goes beyond the yield point. Also, increasing core thickness to a certain limit delays the occurrence of core yielding and gives opportunity to face sheets to yield first. © 2012, IGI Global.

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