

Local Buckling of Web-Core and Foam-Core Sandwich Panels

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Abstract : Sandwich construction is widely accepted as a method of construction especially in the aircraft industry. It is a type of stressed skin construction formed by bonding two thin faces to a thick core, the faces resist all of the applied edge loads and provide all or nearly all of the required rigidities, the core spaces the faces to increase cross section moment of inertia about common neutral axis and transmit shear between them provides a perfect bond between core and faces is made. Material for face sheets can be of metal or reinforced plastics laminates, core material can be metallic cores of thin sheets forming corrugation or honeycomb, or non-metallic core of Balsa wood, plastic foams, or honeycomb made of reinforced plastics. For in plane axial loading web core and web-foam core Sandwich panels can fail by local buckling of plates forming the cross section with buckling wave length of the order of length of spacing between webs. In this study local buckling of web core and web-foam core Sandwich panels is carried out for given materials of facing and core, and given panel overall dimension for different combinations of cross section geometries. The Finite Strip Method is used for the analysis, and Fortran based computer program is developed and used.

Keywords : local buckling, finite strip, sandwich panels, web and foam core

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