The Effect of Face Sheet Wrinkle Defects on the Strength of FRP Sandwich Structures

Wrinkle defects may reduce the compressive strength of a face laminate for in-plane loading applied perpendicularly to the line of the wrinkle. To be able to decide whether a repair is needed, it is necessary to know the magnitude of the strength reduction for a given wrinkle geometry. In the studies reported here, the influence of wrinkle defects on the in-plane compressive strength of quasi-isotropic carbon fiber reinforced plastic (CFRP) laminates used in PVC foam-cored sandwich panels has been investigated by three approaches: testing of sandwich beam specimens in four-point bending, testing of sandwich panels with in-plane compression, and finite element simulation. Wrinkles involving different numbers of plies have been considered. Two different sandwich lay-ups typical of deck and hull bottom panels in naval ships have been included.

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