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Theoretical and Experimental Bending Properties of Composite Pipes

Authors : Maja Stefanovska, Svetlana Risteska, Blagoja Samakoski, Gari Maneski, Biljana Kostadinoska

Abstract : Aim of this work is to determine the theoretical and experimental properties of filament wound glass fiber/epoxy resin composite pipes with different winding design subjected under bending. For determination of bending strength of composite samples three point bending tests were conducted according to ASTM D790 standard. Good correlation between theoretical and experimental results has been obtained, where sample No4 has shown the highest value of bending strength. All samples have demonstrated matrix cracking and fiber failure followed by layers delamination during testing. Also, it was found that smaller winding angles lead to an increase in bending stress. From presented results good merger between glass fibers and epoxy resin was confirmed by SEM analysis.

Keywords : bending properties, composite pipe, winding design, SEM
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