COHESIVE ZONE ANALYSIS OF TUBULAR ADHESIVELY-BONDED JOINTS

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ABSTRACT

Bonded joints are also widely used to join tubular components in the pipeline industry, in vehicle frames and in space structures. This work performs an experimental and numerical study of axially-loaded tubular joints between aluminium adherends and bonded with three different adhesives. The effect of the overlap length between inner and outer tubes (L_O) was addressed in the experiments and numerical study. A Finite Element Method (FEM) analysis was undertaken to analyse peel (σ) and shear stresses (τ) in the adhesive layer. Cohesive zone models (CZM) were employed to predict the joint strength. The CZM technique was positively validated for the strength analysis of tubular joints.

KEYWORDS: adhesive joint, tubular joint, cohesive zone modelling, finite element method, geometry optimization.

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