

29-5 Overall Chord Bending Effects on Ultimate Capacity of Tubular T-Joints

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The formulation of an accurate empirical capacity equation for T-joints is hindered by effects of chord bending that varies with support conditions in tests. Furthermore, the chord bending effects prevents simplification of the ultimate capacity formula. Kurobane et al(1984) dealt with the effects of both chord overall bending and shell bending by using the parameter L/D , but this parameter does not distinguish between the two effects. If an ultimate capacity formula excluding the overall bending effects can be established, it will be useful for deriving simpler ultimate capacity formulas applicable to various tubular joints.

G.J.van der Vegte(1995)proposed an ultimate capacity equation for T-joints excluding the chord overall bending using FE analysis results, but his equation is complicated and unsuitable to a design formula. One of the causes for complexity is that the mathematical model is built by a ring analysis using the plastic theory incorporating both shear and bending stresses. In this study, a simple equation for overall chord bending effects is proposed. A further simplification of the ultimate capacity formula is the next step left to a future study.

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