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Abstract

Modern linepipes can have highly anisotropic strength properties as a consequence of their manufacturing processes aimed at improving strength, toughness, weldability, and other relevant mechanical properties. The anisotropy can have significant effect on the pipe integrity, including its buckling and collapse resistance. To better understand this effect, more representative material models rather than the isotropic model are required to simulate pipe behavior. In this paper, some well-established anisotropic and kinematic models are implemented to simulate the materials anisotropy and investigate the buckling behavior under bending.

Keywords

Linepipe steels, UOE, Anisotropic hardening, Kinematic hardening, Buckling resistance