عنوان مقاله:

Crack Branching in Catastrophic Fractures of Metal Structures and Environmental Damages

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خلاصه مقاله:

In this article, fracturing in large-scale metal structures such as main gas pipelines, fuel and oil tanksoperated in Arctic were investigated. It is shown that catastrophic accidents involved in large thinwalledmetal structures in large diameter pipelines, tanks and pressure vessels. The fracturesoccurred not only due to stretch propagation of brittle or viscous fractures, but also followedbranching that leads to fragmented fractures with simultaneous movement of many cracks. Thecharacter of the fracture depends on the level of the fracture strength. At high levels crackspropagated at a high speed by a mechanism of separation; as a result of crack branching fragmentdamage occurred. At low level, cracks propagate at a low speed by a cutting mechanism; that doesnot cause extensive fracturing. The cracks may cause structural and environmental damages.

کلمات کلیدی:

Pipelines, High pressure tank, Fracture, Crack branching