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M. Zeinoddini, M. Ezzati, J. Fakheri

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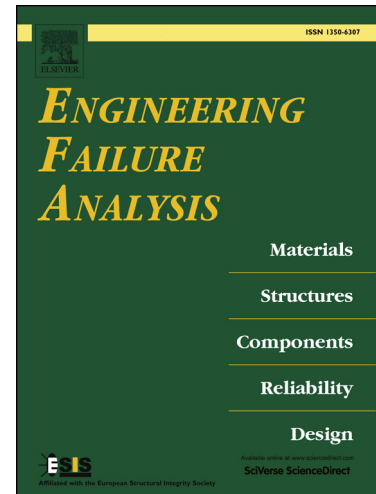
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Uniaxial Strain Ratcheting Behavior of Dented Steel Tubular: An experimental study

M. Zeinoddini¹, M. Ezzati^{2,*}, J. Fakhri³

1-Department of Civil and Environmental Engineering, K.N.Toosi University of Technology, Tehran, Iran (Zeinoddini@kntu.ac.ir)

2-Department of Civil and Environmental Engineering, K.N.Toosi University of Technology, Tehran, Iran (Mezzati@sina.kntu.ac.ir)

3-Department of Civil and Environmental Engineering, Tehran University, Tehran, Iran (Jfakhri@ut.ac.ir)

Abstract

Changes in the internal pressure and the temperature in a steel pipeline generates cycles of high axial compression/relaxing in the line. This makes the line vulnerable to cyclic creep and progressive plastic straining (ratcheting). On the other hand, offshore pipelines are usually laid unburied, so they might become disposed to heavy accidental transverse loads, such as those caused by impacts from trawl gears, anchors or other dropped objects. This paper deals with the ratcheting behavior of dented steel offshore pipelines under uniaxial cyclic loading. The experimental study were conducted on small scale specimens from X80 steel pipes with an outer diameter of $D=44$ mm and D/t of 22. Effects of some key parameters such as the initial pre-strain, the cyclic stress amplitude and the dent depth magnitude were investigated. It was found that while the initial pre-strain and the cyclic stress amplitude had strong effects on the ratcheting

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