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Engineering assessment of cracked structures subjected to dynamic loads using fracture mechanics assessment

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Author(s): Kuntiyawichai K, Burdekin FM

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Abstract: This paper presents practical guidance on the assessment of cracked structures subjected to dynamic loading. General reviews of fracture behaviour of structures subjected to dynamic loading are presented. A series of finite element (FE) analyses have been carried out to study the effects of dynamic loading on both fracture toughness specimens under rapid loads and cracked connections in steel framed structures under earthquake loads. FE results of submodel analyses of cracked connections are compared with the results from a simplified method. The simplified method can reduce the analysis time enormously and allows design engineers to assess the possibility of connection fractures, or determine approximate values of toughness and defect size requirements for given peak stress and strain level. (C) 2003 Elsevier Ltd. All rights reserved.

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Reprint Address: Burdekin, FM (reprint author), Manchester Ctr Civil & Construct Engn, POB 88, Manchester M60 1QD, Lancs England

Addresses:

1. Manchester Ctr Civil & Construct Engn, Manchester M60 1QD, Lancs England
2. Ubonratchathani Univ, Dept Civil Engn, Ubon Ratchathani 34190, Thailand

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