
Case Studies in Defect Assessment Using FEA and Fracture Mechanics

Quest Integrity Group**Abstract for 2010 IPEIA Conference, Banff, AB****Presented by Devon Brendecke****Title:** Case Studies in Defect Assessment Using FEA and Fracture Mechanics**Abstract:**

Defect assessment and failure analysis have come a long way in recent years thanks to constant advances in finite element analysis and fracture mechanics methodologies. Improved inspection techniques, coupled with advanced analysis can often extend the life of a damaged piece of equipment. Defects such as cracks, bulges, corrosion and hydrogen blisters can be precisely identified using various inspection methods. Once the defect has been quantified, specialized tools and techniques are used to build finite element models including the details of the damaged regions. The models provide stress and strain information that can be used in fracture mechanics analyses for life assessment. These methods are illustrated using three examples from the refining, syngas and petrochemical industries.