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Zuheir Barsoum

Khalifa University, UAE

Advanced design of welded structures: Introduction to new design methods and IIW recommendations

The most frequently joining process of metallic materials and structures is welding. In order to guarantee the strength of welded structures different design codes have been developed during the last 30 years and have been applicable within the manufacturing industry with low accuracy and precision. However, nowadays high strength steels are utilized in load carrying structural applications in order to produce more lightweight welded structures which need more accurate design methods in order to assure the structural integrity. As the finite element analysis is nowadays a widely used tool new developed design codes are applicable with better accuracy and precision. In this workshop, methods for fatigue analysis of welded structures using FEM and fracture mechanics are covered. The workshop also includes several case studies where different approaches are used for fatigue life assessment.

Topics like introduction to fatigue design of welded structures, Notches, weld defects and welding residual stresses, Fatigue assessment methods, nominal, hot spot, effective notch, LEFM, Improvement techniques, spectrum loading, residual stress relaxation, Weld quality systems, FEM, Case studies and Exercises will be covered.

Biography

Zuheir Barsoum is an Associate Professor at KTH Royal Institute of Technology where he is directing a research group on steel structures. He is Chairman within the International Institute of Welding (IIW). He has published more than 90 papers in reputed journals and international conferences and received awards for his research. He has been involved in developing international vocational training program in welding and design beside university curriculum. He is a frequently engaged consultant within the industry as an expert in structural integrity. He is currently a visiting Associate Professor at Khalifa University in Abu Dhabi.

zuheir.barsoum@kustar.ac.ae

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