



Prof. Pingsha Dong presents:

“Design for joint strength, fatigue and fracture resistances in welded connections.”

Join us for this exclusive full day seminar with world renowned expert University of Michigan Prof. Pingsha Dong as he speaks on welded connections.

Prof. Dong is the inventor of an advanced Master S-N Curve Fatigue Assessment Method adopted by the 2007 ASME Div 2 and API 579/ASME FFS-1 Codes and Standards which is mandated by over 50 countries worldwide. And, over the past 10 years, has taught courses in fatigue design, fracture control, residual stress/distortion control around the globe.

Overview

Proper design and cost-effective construction of welded connections require considerations of some of the unique issues associated with welding, in addition to specific loading environment.

These are weld in-situ strength, residual stresses, and geometric discontinuities, each of which plays a different role in contributing resultant joint strength, and fatigue/fracture resistances under different loading conditions, particularly seismic loading.

Delivered in two core parts

Part one will start with some of the recent developments in supporting national and international codes and standards relevant to design and construction of civil steel structures. These topics include fitness-for-service based quantitative weld defect acceptance criteria; fillet weld sizing criteria, weld residual stress consideration in fracture control, and fatigue (both high-cycle and low-cycle fatigue) evaluation procedures, e.g., the one stipulated by ASME Div 2 since 2007.

Part two will discuss how new developments can be taken advantage of for supporting the use and making an appropriate interpretation of existing design and analysis methods given by various codes and standards for achieving joint strengths, and fatigue/fracture resistances required of civil steel structures through a series of case studies. These include assessment of load capacity of full penetration butt welds versus partial penetration and fillet welds; low cycle fatigue and unstable fracture evaluation for seismic loading conditions; recommended weld repair procedures and rationales.

The sessions covering New Zealand steel product conformity and fabrication quality aspects will be presented by HERA General Manager Welding Centre Michail Karpenko.

Auckland: Tuesday 10 July 2018

Wellington: Wednesday 11 July 2018

Christchurch: Thursday 12 July 2018

With support from:



Register today!

Who should attend?

Designers, structural engineers, consultancy engineers, mechanical engineers, maintenance and quality control engineers. The seminar will be especially relevant to all professionals in steel construction, design, fabrication and maintenance

Program

- 9.00am **Welcome and introduction**
- 9.15am **Part 1** - Recent developments for improved treatment in design of welded joints in codes and standards. Covering defect acceptance criteria; basis of fillet weld sizing; & stress concentration determination
- 10.30am Morning tea
- 10.45am **Part 1 continued** - Residual stress considerations in FFS; case studies including brittle fracture assessment of MRC, SCC in a storage tank, fatigue life improvement of a high speed train motor frame, etc; comments on related parts of AWS D1.1, BS7608, BS 7910, ASME Div 2 and API 579 Stress concentration determination
- 12.15pm Lunch
- 1.00pm **Part 2** - Applications in using existing codes and standards. Covering qualitatively assessing load capacity of full penetration butt welds and fillet welds; in-situ weld strength determination method; low cycle fatigue evaluation of welded connections for seismic loading
- 2.30pm Afternoon tea
- 2.45pm **Part 2 continued**
- 3.30pm **NZ and Australian welding requirements** - AS/NZS 5131, 1554 & 3992; AS 4458, AS/NZS ISO 3834 & 9606.1 presented by Dr Michail Karpenko
- 4.15pm **Fatigue evaluation of steel bridge details using AASHTO beyond specified weld categories**
- 5.00pm Q&A and end of seminar

Registration

Complete the details below and return to HERA via fax on +64 9 262 2856 or scan and email to admin@hera.org.nz.

Venue - please tick

- Auckland, 10 July 2018
- Wellington, 11 July 2018
- Christchurch, 12 July 2018

Last name: _____

First name: _____

Organisation: _____

Address: _____

Phone: _____ **Fax:** _____

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Payment details - please tick

- Invoice (members only) Member #:
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Got questions?

Contact: Raewyn Porter
Phone: +64 9 262 2885
Email: admin@hera.org.nz
Website: www.hera.org.nz

Our Ordinary members: \$375 (35% discount)

Our Associate members: \$490 (15% discount)

Non-members: \$575

Fees include tea, coffee, lunch & seminar notes