ONE-DAY SEMINAR ON

Design of Bolted and Welded Joints to Eurocode 3: Part 1-8

Organized by
Hong Kong Institute of Steel Construction
Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University

Supported by
Joint Structural Divisions, The Hong Kong Institution of Engineers

Sponsored by
Wo Lee Steel Co. Ltd.

Date: 16 October 2017
Time: 8:45 am (registration) for 9:00 am to 5:00 pm
Venue: Fiona Cheung Sum Yu Lecture Theatre (SHR-G30), PolyU Student Halls of Residence, 1 Hung Lai Road, Hunghom, Kowloon, Hong Kong Polytechnic University, Hunghom, Kowloon

Introduction
This course is for engineers and technicians wanting to learn practical knowledge to design steel for frame construction. The course covers the design of nominally pinned connections, in accordance with BS EN 1993-1-8, considering shear and axial force effects. The Eurocode approach to the design of moment resisting connections will also be discussed with the aids of sketches and practical case studies. Bracing connections, column bases, splices, welded joints and non-standard connections will all be covered. The Eurocode rules for ordinary and pre-loaded bolt groups will be discussed. Design checks and rules of thumb will be used for preliminary connection sizing. The course will be taught with examples of connections which could be designed as reliable as well as economical to achieve productivity in steel construction.

The objectives of this course are:
- to equip designers with the knowledge to design steel connections with confidence;
- to explain the key principles and behaviour to detail practical connections;
- to understand the design resistance and stiffness of frame connections;
- to explain the background information on bolted and welded joints.

After attending the course, participants will be able to:
- Design bolted and welded connections for strength and stiffness;
- Apply methods learnt from the course to achieve economy in design, fabrication and erection of steel structures;
- Avoid common mistakes with lessons learned from case studies and collapse investigations.

Official Language

English will be the official language in the presentation. The notes of the seminar will be printed in English.
Programme

- **Overview of Eurocodes**
  Characterisation and classification of joints

- **General information and detailing for bolted connection**

- **Design of Non-preloaded bolts**
  - Requirements for non-preloaded bolts; Shear resistance
  - Bearing resistance; Effect of steel packing; Effect of long joints
  - Bolts in tension; Bolts in shear and tension; Bolts in direct shear and torsion
  - Block shear tearing

- **Design of Preloaded bolts**
  - Methods for tensioning friction-grip bolts; Slip resistant at ultimate
  - Slip resistant at serviceability; Torque on HSFG bolts

- **Simple Connections**
  - Simple beam-to-column connection; Typical beam-to-beam connection
  - Base connection resisting shear force; Base connection resisting compression and moment
  - Column splice

- **Moment Connections**
  - Rigid beam-to-column connection;
  - Column splice; Various details to achieve rigid and full strength joints

- **Material Weldability and common weld defects**
  - Chemical compositions and Carbon equivalent value
  - Welding consumable; Heat affected zone defects
  - Hydrogen induced cracking; Welding of special steel

- **Design of welded connections**
  - Detailing requirement; Design of fillet welds using simplified method and directional method; Partial strength and full strength butt welds;
  - Welding of hollow sections

- **Examples and Lessons Learnt**

**Speaker's profile**

PROF RICHARD LIEW - BEng (Hons), MEng, PhD, FSEng, CEng, PEng, ACPE, StEr
Professor of the National University of Singapore, Department of Civil and Environmental Engineering.

Prof Richard Liew is a Chartered Engineer and Professional Engineer. He joined NUS in 1986 where he lectured, conducted research and provided short courses and consultancy services to the industry especially in the field of steel and composite structural engineering. He has been awarded with multiple teaching excellence awards by the Faculty of Engineering over the years. He is world-renowned as an expert of advanced analysis and the application of theory of stability and plasticity in structural and offshore engineering with emphasis on robustness and hazard assessments including the effects due to fire, blast and impact loads. He has authored and co-authored five books and published over 300 technical papers. He is a member of the Institution of Structural Engineers (UK) and the Institution of Engineers, Singapore, and the Honorary Fellow of Hong Kong Institute of Steel Construction and Singapore Structural Steel Society. He has served in numerous international and local technical committees relating to material and building standards. He is currently a member of SPRING, Singapore’s Technical Committee on Building Structure and wherein he also serves as a Convenor on the adoption of Eurocode 3 and Eurocode 4 in Singapore and chairing several workgroups for Eurocodes 3 and 4.
ONE-DAY SEMINAR ON
DESIGN OF BOLTED AND WELDED JOINTS TO EUROCODE 3: PART 1-8
REGISTRATION FORM
(To be received on or before 14th October 2017)

Registration fees
Please make your reservation as soon as possible. The registration includes lecture notes, CPD certificate and tea refreshment. Lunch is not included. The fees of the seminar are devised below:-

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<th>HKISC member</th>
<th>HKIA/HKIE/HKIS member</th>
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<td>One-day Seminar</td>
<td>HK$ 900</td>
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Should you have further query, please do not hesitate to contact Mr. Tommy Li at man@hkisc.org.

Please follow the 2-step registration procedure:
1. Fax the completed registration form to Mr Sam CHAN (Fax: 852-2334 6389) for preliminary registration.
2. Post the completed registration form within 7 days together with a crossed cheque payable to Hong Kong Institute of Steel Construction Limited to Mr Sam CHAN, at:

The Hong Kong Institute of Steel Construction
c/o Room ZS945, Department of Civil and Environmental Engineering,
The Hong Kong Polytechnic University, Hunghom, Kowloon, Hong Kong
on or before 12th October 2017

To: Mr Sam CHAN                         Fax: 852- 2334 6389

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Postal Address
(for official receipt):

I enclose a crossed cheque (no. ______ ) with a sum of HK$ ______ for the registration fee of the captioned Seminar.

Signature: ______________________________ Date: ______________________________

**CPD Certificate of Attendance** Please tick the appropriate box to indicate your choice:

- [ ] Yes, I/ we would like to have CPD certificate(s).
- [ ] Not request for certificate(s).

Venue location of Fiona Cheung Sum Yu Lecture Theatre (SHR-G30), PolyU Student Halls of Residence, 1 Hung Lai Road, Hunghom, Kowloon, Hong Kong The Hong Kong Polytechnic University, Hunghom, Kowloon.