

FIRST ANNOUNCEMENT

**ONE-DAY WORKSHOP ON
DESIGN OF COMPOSITE STEEL & CONCRETE STRUCTURES USING EUROCODE 4**

Organized by

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

Supported by

Joint Structural Division, The Hong Kong Institution of Engineers

Date: 1st April 2016, Friday
Venue: Room Z504, The Hong Kong Polytechnic University, Hunghom, Kowloon
Time: 8:45 am (registration) for 9:00 am to 5:00 pm

Introduction

SS EN 1994 (Eurocode 4) is the new standard for design of steel-concrete composite structures. It covers many forms of composite structural design and provides the most comprehensive and up to date set of design guidance currently available. This course aims to provide civil and structural engineers an introduction to the Eurocode provisions for the design of steel-concrete composite building structures. The course will cover primary design issues and design procedures for composite beams and slabs as used in fast track and high productivity construction. It also covers shear connections, long span floor systems, composite columns, high-rise composite buildings. Cross references will be made to the other Eurocode parts which are needed to develop design solutions. Practical examples with direct reference to the code clauses will be used to illustrate the application of the code requirements.

Objectives

After attending the course, participants will be able to:

1. Apply design procedures and standards in accordance with Eurocodes and Singapore national annexes in the design of steel-concrete composite structures;
2. Design steel-concrete composite structures and their components to Eurocode 4;
3. Navigate effectively around Eurocodes 2, 3 and 4 and other parts necessary for the design of building structures;
4. Develop economical, buildable and fast track design and construction using the advantages of steel and concrete materials to achieve long span and column free construction.

Speaker's Profile



Prof. RICHARD LIEW *PhD, CEng, PE, ACPE, FSEng, FHKISC, FSSSS, StEr*

Richard Liew is a Professor in the Department of Civil & Environmental Engineering at the National University of Singapore. He is a Chartered Engineer in UK, a Professional Engineer in Singapore, and a Chartered Professional Engineer of the Association of Southeast Asian Nations. He is a Fellow of the Academy of Engineering Singapore, an Honorary Fellow and the Past President of Singapore Structural Steel Society and Honorary Fellow of Hong Kong Institute of Steel Construction. He has been involved in research and practice in steel concrete composite structures covering a wide spectrum of interests, including light-weight and high strength materials and advanced analysis of structures subject to extreme loads, for applications in offshore, marine, defence and civil infrastructural works. Arising from this work, he has co-authored 7 books and design guides and generated more than 400 technical publications. He serves on the editorial boards of 10 international journals. He interacts closely with the industry in the Asia Pacific region serving as an expert and technical advisor and has been involved in numerous iconic steel projects. He chairs numerous international and national committees related to standards and specifications of steel and composite structures. He is a key person responsible for the development of Singapore's national annexes for the design and steel and composite structures using Eurocodes 3 and 4.

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Official Language

English will be the official language.

Fees & Registration

The registration fee includes a copy of lecture note

Regular Registration: **HK\$ 1,200** each for HKISC/ HKIE Members; **HK\$ 1,500** each for non HKISC/ HKIE Members.

Group Registration: **HK\$ 1,200** each for group registration of at least 5 people

CPD Certificates

This workshop is recommended for **ONE** CPD day. An attendance certificate will be issued.

Please send the completed registration form with registration fee to **Ms. Carol Deng**, The Hong Kong Institute of Steel Construction, HKISC c/o ZS972, Department of Civil and Environmental Engineering, *The Hong Kong Polytechnic University, Hung Hom, Kowloon* by **28th March 2016** (Email: carol.deng@hkisc.org, Fax No.: 852-2334 6389). You can download this form on HKISC web (<http://www.hkisc.org>). For further information, please contact **Ms. Carol Deng** above.6

| Time | Topics |
|-----------|--|
| 0900-1000 | Composite Construction: Overview of Eurocodes EC0, EC1, EC 2 and EC3; Key design principles in accordance with EC 4; Basis of design and loading; Composite construction |
| 1000-1100 | Simply supported composite beams: Effective width; composite action; section analysis using plastic stress block; flexural and shear resistance; design methodology; Examples |
| 1100-1130 | Tea Break |
| 1130-1230 | Shear connectors: welding and inspection of shear studs; detailing requirement; push-out tests; ductility requirement; design rules; partial composite design; example Serviceability design: modular ratio and transformed section; propped and upropped construction; composite stiffness; deflection and vibration |
| 1230-1330 | Lunch |
| 1330-1430 | Continuous composite beams: Section classification; hogging moment resistance; cracked and uncracked analyses; simplified analysis method; shear connectors at hogging moment region; deflection; examples |
| 1430-1500 | Steel profile decking and composite slab: types of metal decking; construction and composite stages design; typical modes of failure; moment and shear resistances; punching resistance; shear bond resistance, m-k test method; design Long span floor systems and options: cellular beam; hunched beam; stub girder; parallel beam; composite truss; slim floor. |
| 1500-1530 | Coffee Break |
| 1530-1700 | Composite columns: concrete filled and concrete encased columns; cross section resistance; column buckling curve; consider long term creep effect; design procedure; examples Composite members in compression and bi-axial bending. Plastic axial-moment interaction curves for composite sections; second-order analysis and moment amplification factor; second-order moment associated with member imperfection; axial and moment interaction curve; load introduction; connector design. Composite frames and high-rise buildings: Applications and Case studies Q&A |

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REGISTRATION FORM

(To be replied on or before 28 March 2016)

Please follow the 2 steps registration procedure:

1. Fax the completed registration form to Ms. Carol Deng, HKISC (Fax: 852-2334 6389) for preliminary registration.
2. Post the completed registration form together with a crossed cheque payable to **Hong Kong Institute of Steel Construction Limited** to Ms. Carol Deng, The Hong Kong Institute of Steel Construction or HKISC, c/o Room ZS972, Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, Hungghom, Kowloon, Hong Kong.

on or before 28th March 2016.

To: Ms. Carols Deng, HKISC

Fax: 852- 2334 6389

A. Personal Details:

| Title | Name in full (Block Letter) | Name of Company | Tel. (or Fax) | E-mail address |
|-------|-----------------------------|-----------------|---------------|----------------|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |

Postal Address

(for official receipt): _____

B. Registration Details:

| Item | Registration Fee | Total no. of registration | Sub-total |
|--|-------------------|---------------------------|--------------|
| 1. Regular registration (Member*price) | HK\$ 1,200 each x | _____ person(s) | = HK\$ _____ |
| 2. Regular registration (Non-member*price) | HK\$ 1,500 each x | _____ person(s) | = HK\$ _____ |
| 3. Group registration (at least 5 people) | HK\$ 1,200 each x | _____ person(s) | = HK\$ _____ |
| Total amount: | | | HK\$ |

Note: The registration fee includes a copy of proceedings, a copy of CPD certificate and 2 tea refreshments.

**HKIE or HKISC member*

I enclosed a crossed cheque (cheque no. _____) with the sum of HK\$ _____ for the registration fee of the captioned workshop.

Signature: _____ Date: _____

CPD Certificates 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).