



The Hong Kong Institution of Engineers
Joint Structural Division



香港
鋼結構學會

Hong Kong Institute of
Steel Construction



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

Organized by
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:	12 July 2013 (Friday)
Time:	8:45 am (registration) for 9:00 am to 5:00 pm
Venue:	Room PQ303, The Hong Kong Polytechnic University, Hungghom, Kowloon, HK

Introduction

EN 1994 (Eurocode 4) is the new standard for the design of steel-concrete composite structures. It covers many forms of composite structural design and includes the most comprehensive up to date set of design guidance currently available. This course aims to provide civil and structural engineers an insight to the Eurocode provisions for the design of steel-concrete composite building structures. The course will cover behaviour and design of composite beams, columns, slabs, shear connectors, joints and frames as used in modern building construction. Cross references will be made between CE4 and 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. Understand the basic principles for the design of steel-concrete composite structures. In particular, they will develop an understanding of the procedures required for the design of composite beams, slabs, columns and connectors.
2. Design steel-concrete composite structures and their components to satisfy ultimate and serviceability limit states.
3. Navigate around Eurocode 4 and other Eurocode parts necessary for the design of building structures;
4. Develop economical design using the advantages of steel and concrete materials to achieve service integration with long-span floor construction.

Official Language

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

Programme

- Overview of Eurocodes; Key design principles in EC 4; Basis of design; Load combinations; Composite construction
- Simply supported composite beams; Moment and shear resistance; Examples.
- Shear connectors; partial composite design; Transverse reinforcement in slab; Examples.
- Serviceability design based on transformed section; Deflection and vibration checks; Prop and unpropped construction.
- Continuous composite beams; Hogging moment resistance; crack and uncrack analysis; Lateral torsional buckling check; Example.
- Types of metal decking; Composite floor construction; Construction and composite stage design; Shear bond tests.
- Efficient beam layout; Long span floor systems and options
- Composite columns; Design methodologies; Column Buckling; Members subject to axial force and moments; Method of analysis and column imperfection effect; Force transfer at beam to column joints; Examples.
- Lateral load resisting systems; Outrigger and belt truss system; Joints types and detailing; Case studies

Speaker's profile

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

Richard Liew is a Professor and the Program Director of Hazard, Risk and Mitigation 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 5 books and generated more than 300 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.

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 course are devised below:-

Programme	HKISC member	HKIA/HKIE/HKIS member	Others
One-day Course	HK\$ 900	HK\$ 1,000	HK\$ 1,200

Should you have further query, please do not hesitate to contact Mr. Sam CHAN at samchan@hkisc.org.



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REGISTRATION FORM (To be received on or before 8 July 2013)

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 8 July 2013

To: **Mr Sam CHAN**

Fax: 852- 2334 6389

Personal Details:

Title	Name in full (Block Letter)	Name of Company	Tel.	Fax	E-mail address	Institution/ Membership No.
1.						
2.						
3.						
4.						
5.						

Item	Total no. of registration	Sub-total
1. Special registration (HKISC Member's price)	_____ person(s)	= HK\$ _____
2. Special registration (HKIA/HKIE/HKIS Member's price)	_____ person(s)	= HK\$ _____
3. Regular registration (Other's price)	_____ person(s)	= HK\$ _____

Postal Address
(for official receipt):

I enclose a crossed cheque (no. _____) with a sum of HK\$ _____ for the registration fee of the captioned Workshop / Technical Visit.

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).



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Programme

Time	Topics
0900-1000	Overview of Eurocodes; Key design principles in EC 4; Basis of design; Load combinations; Composite construction
1000-1100	Simply supported composite beams; Moment and shear resistance; Examples
1100-1130	Tea Break
1130-1230	Shear connectors; partial composite design; Transverse reinforcement in slab; Examples. Serviceability design based on transformed section; Deflection and vibration checks; Prop and unproped construction.
1230-1330	Lunch
1330-1430	Continuous composite beams; Hogging moment resistance; crack and uncrack analysis; Lateral torsional buckling check; Example
1430-1500	Types of metal decking; Composite floor construction; Construction and composite stage design; Shear bond tests. Efficient beam layout; Long span floor systems and option
1500-1530	Coffee Break
1530-1700	Composite columns; Design methodologies; Column Buckling; Members subject to axial force and moments; Method of analysis and column imperfection effect; Force transfer at beam to column joints; Examples. Lateral load resisting systems; Outrigger and belt truss system; Joints types and detailing; Case studies