COURSE ON ALUMINIUM AND EUROCODE 9

Organiser: IES/IStructE Joint Committee
Date: Friday, 8 April 2016
Time: 9.00 am to 5.30 pm
Venue: Cinnamon room, Novotel Singapore Clarke Quay
177A River Valley Road

Fees:
- $450 (IES and/or IStructE Corporate Members)
- $350 (Retired IStructE Members, Unemployed IStructE Members and IStructE Graduate Members)
- $550 (non-members)
- $250 (Full-time students from NUS/NTU/Student Members of IES and/or IStructE)

Fees are inclusive of 7% GST. Participants will receive course notes in PDF format, lunch and light refreshments will be provided.

No. of PDUs: To be advised

Introduction

The course is intended mainly for structural engineers who will be using Eurocode 9 for building or civil engineering structural application, including bridges, buildings and temporary works. The course will also be useful for structural and mechanical engineers using aluminium in other applications.

Eurocode 9 gives rules for the design of aluminium and aluminium alloy structures with many clauses mirroring corresponding clauses in Eurocode 3. Aluminium is a very different metal to steel with many beneficial qualities and considerable flexibility in product form. However, aluminium cannot be designed as if it were a light steel and additional design checks are needed that a steel designer might not expect.

The course will guide participants towards the successful use of aluminium and its alloys.

Course Outline

Eurocode 9 and its relationship to other standards, why aluminium and its alloys are not light steels, alloys and product form, corrosion behaviour, fabrication techniques, design details

Basis of Design. Ultimate limit states: including, resistance of cross sections and buckling resistance. Serviceability Limit States: including deflections and dynamic effects. The design of joints, fatigue, execution rules and specifications. Some practical design exercises are included. All 5 parts of Eurocode 9 will be discussed.

On completion of the course, participants will be able to:

1. Understand the differences between designing in aluminium, its alloys and steel
2. Select the appropriate aluminium alloys for specific applications
3. Consider the advantages and disadvantages of different material forms and jointing methods
4. Apply the skills required to perform limit state calculations in accordance with Eurocode 9
5. Prepare rules for fabrication and erection, (execution)
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
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<tbody>
<tr>
<td>0815 – 0900</td>
<td>Registration @ Cinnamon Room, Novotel Singapore Clarke Quay</td>
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<tr>
<td>0900 – 0905</td>
<td>Welcome Address by Professor Wang Chien Ming, Chairman, IES/IStructE Joint Committee</td>
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<tr>
<td>0905 – 1030</td>
<td>Session 1 – What is the difference between aluminium its alloys and steel? Properties of aluminium, main classes of alloys, fabrication and construction</td>
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<td>1030 – 1045</td>
<td>Morning Tea / Coffee Break</td>
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<tr>
<td>1045 – 1245</td>
<td>Session 2 – Aluminium product form, extruded profiles, stress strain behavior, special properties of aluminium, corrosion, protection and durability.</td>
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<td>1245 – 1345</td>
<td>Lunch</td>
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<td>1345 – 1515</td>
<td>Session 3 – Designing with aluminium, Eurocode 9 Parts 1,2,3,4 and 5. Basis of Design. Ultimate limit states : including, basis, resistance of cross sections and buckling resistance. Serviceability Limit Series : including deflections and dynamic effects.</td>
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<tr>
<td>1515 – 1530</td>
<td>Afternoon Tea / Coffee Break</td>
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<tr>
<td>1530 – 1730</td>
<td>Session 4 – The design of joints, fatigue plus execution rules and specifications. Some practical design exercises are included.</td>
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<tr>
<td>1730 - 1745</td>
<td>Closing Remarks by Professor Wang Chien Ming</td>
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**Biography of Professor John Bull**

Professor John Bull  
Eur Ing, BSc, PhD, DSc, CEng, FICE, FIstructE, FCIHT, FIHE, FIWSc  
Civil Engineering, Brunel University Uxbridge UB8 3PH UK

Professor John W. Bull graduated from Cardiff University with a first class honours degree in Civil and Structural Engineering and was awarded the Page Prize for the student with the highest marks. He gained his PhD for his thesis ‘Analysis of Shell Structures by Finite Elements’ and a DSc entitled ‘Computational Engineering Applied to Engineered Structures’. He has 175 publications which include 17 authored or edited books. Following his PhD, John worked on the design and construction of civil engineering structures; then he moved into an academic career in civil engineering. John has been an Adjunct Professor at a University in Australia and a Visiting Professor at a Japanese University. John is member of the British Standards Institution (BSI) for the ‘Structural use of Aluminium’ representing the Aluminium Federation. He is a member of editorial boards for international journals, conferences and advises publishers on book proposals, referees papers for journals, has given key note lectures at conferences and provided industrial consultancy services. Part of John’s present research is in the design of structural aluminium linked to his work for the BSI committee.
TERMS & CONDITIONS FOR WORKSHOP REGISTRATION

Registration

Any registration, whether by fax or post will be on a first-come-first-served basis and will only be confirmed upon receipt of full payment by IStructE Singapore unless otherwise invoice to company.

All registrations must be submitted with a duly completed registration form.

Closing Date & Payment

The closing date for registering for the course shall be 31 March 2016. Cheques should be crossed and made payable to “IStructE Singapore”, with the Title of The Event clearly written on the back of the cheques and submitted with the duly completed registration forms to:

Engineering Science Programme
Faculty of Engineering
National University of Singapore
Blk EA #06-10, 9 Engineering Drive 1
Singapore 117575
Attn: Ms. Angela Loke

Confirmation of Registration

Confirmation of registration will be given 5 working days prior to the course via email, and you are required to acknowledge it. If you do not receive the said confirmation email, you are required to contact Ms. Angela Loke immediately at +(65) 6516 5408. We reserve the right to allow only confirmed registrants to attend the event.

Refunds and Cancellations

No refunds will be made for withdrawals. Replacement will be allowed only if written notice is received by us at least 3 working days before the workshop. Replacement is allowed but restricted to once only. However, when an IES or IStructE member is replaced by a non-member, the participant has to pay the difference in the relevant fees at least 3 days before the course.

Cancellation/Postponement

Changes in venues, dates, time and speakers for the Events can occur due to unforeseen circumstances. IStructE Singapore reserves the full rights to cancel or postpone the Event under such circumstances without prior reasons. Every effort, however, will be made to inform the participants or contact person of any cancellation or postponement. Fees will be refunded in FULL if the Event is cancelled by IStructE Singapore.

Enquiries

Please contact Ms. Angela Loke for more information at Tel: +(65) 6516 5408, Fax: +(65) 6775 4710 or Email: esplmh@nus.edu.sg
REGISTRATION FORM

COURSE ON ALUMINIUM & EUROCODE 9
Friday, 8 April 2016, Novotel Singapore Clark Quay

I would like to register for the Course on Aluminium & Eurocode 9. My particulars are as follows:

Name: Mr / Ms / Dr / Prof / Er. ________________________________
NRIC: ________________________________ Designation: ________________________________

Company: ____________________________________________________________________________

Address: ______________________________________________________________________________

Tel : __________________ Fax: __________________

Email: ___________________________________________________________________________________

Contact Person: __________________________________________________________________________

Dietary Preference: Chinese / Muslim / Vegetarian (please delete accordingly)

Please tick accordingly:

☐ $450 (IES and/or IStructE Corporate Members) IES/IStructE Membership No. : ___________________
☐ $350 (Retired IStructE Members, Unemployed IStructE Members and IStructE Graduate Members) IStructE Graduate Membership No. : ___________________
☐ $550 (non-members)
☐ $250 (Full-time students from NUS/NTU/Student Members of IES and/or IStructE) Membership No. : ___________________

Sponsored by Company (Please send an invoice to my company)__________________________________________________________________________

PE No : __________________ (if applicable) STU : RE / RTO : __________________ (if applicable)

Payment Mode: Cheque No.: __________________ Amount (S$): __________________

Crossed cheques should be made payable to "IstructE Singapore" with the Title of The Event clearly written on the back of the cheques and submitted with the duly completed registration forms to:

Engineering Science Programme
Faculty of Engineering,
National University of Singapore,
Blk EA #06-10, 9 Engineering Drive 1,
Singapore 117575