



“Report on Awareness of Eurocode Seminars in Sabah, Sarawak and Peninsular Malaysia, 27 & 29 October 2014. 10 & 13 November 2014 and 2 & 8 December 2014: Structural Eurocodes MS EN Eurocodes 0, 1, 2 and 3”

by Ir. Prof. Dr Jeffrey Chiang

Ir. Prof. Dr Jeffrey Chiang is currently IEM Honorary Treasurer, and he has previously served as IEM Honorary Secretary, Chairman of IEM Civil & Structural Engineering Technical Division, Chairman of IEM-SWO Technical Committee on Wind Loads, as well as Secretary of IEM-SWO Technical Committee on Eurocode 2 Concrete Structures Design.

Background

The Institution of Engineers Malaysia (IEM) has signed a SMART Partnership Agreement with the Department of Standards Malaysia (DSM) or Standards Malaysia, to organise activities such as awareness seminars to promote the use of Malaysian Standards on Eurocode adoption, i.e. MS EN documents for structural codes of practice in the local construction industry. The MS promoted are MS EN1990 (Basis of Structural Design), MS EN1991-1-1 (Actions), MS EN1992-1-1 (Concrete Structures Design), and MS EN1993-1-1 (Steel Structures Design).

On 27 October 2014, IEM kicked off the Awareness Seminar Roadshow, by sending two invited speakers Ir. Professor Dr. Jeffrey Chiang from SEGi University and Ir. Tu Yong Eng, a practicing consulting engineer to the first event held at Promenade Hotel, Kota Kinabalu, Sabah. The seminar was attended by **37** participants. The second back to back seminar was held on 29 October 2014, in Imperial Hotel, Miri, Sarawak, delivered also by the same two speakers, Ir. Prof. Dr. Jeffrey Chiang and Ir. Tu Yong Eng. The Miri Seminar has a smaller audience at **22**.

Both the Awareness Seminars in Kota Kinabalu and Miri were officiated by a DSM representative, En. Ahmad Razif Abd Rahim, the Principal Assistant Director, Strategic Planning Division of Standards Malaysia, Cyberjaya, on behalf of the Director-General, YBhg. Datuk Fadilah Baharin.

In the same vein, two back to back Awareness Seminars were also held in Peninsular Malaysia, first on 10 November 2014 held in Gurney Hotel, Penang – while the second event was held on 13 November 2014 in Mutiara Hotel, Johor Baru. The assigned speakers for the Penang Seminar were Ir. Adjunct Prof. MC Hee (practicing consulting engineer) and Ir. Dr. Ooi Heong Beng (Universiti Tunku Abdul Rahman), while in the Johor Baru Seminar, Ir. Prof. Dr. Jeffrey Chiang joined up with Ir. Dr. Ooi Heong Beng. Both these events in Penang and Johor Baru were attended by **37** and **19** participants respectively. They were chaired by Ir. Mun Kwai Peng and officiated by DSM representative, En. Mahadir Mohamed, the Principal Assistant Director, Strategic Planning Division of Standards Malaysia.

In the month of December 2014, two more Awareness Seminars on Eurocodes were held. The first one was on 2 December 2014, at Armada Hotel, PJ with speakers: Ir Adjunct Prof MC Hee and Ir David Ng (both practising consultants). There was an overwhelming response in which a total of **85** participants signed up for the seminar in Petaling Jaya. Ir Mun KP chaired the session and En Ahmad Razif was the DSM representative to officiate the function.

On 8 December 2014, the last awareness seminar for 2014 was held at Imperial Hotel, Kuching, Sarawak with the same two speakers: Ir Adjunct Prof MC Hee and Ir David Ng. The session was

chaired by Ir Prof Dr Jeffrey Chiang, and En Mahadir Mohamed officiated the function on behalf of DG of DSM. A total of **31** participants attended the event.

Brief details of the seminars conducted to date

The outline of the seminar was as follow:

- Introduction and background to the adoption and implementation of Eurocodes in Malaysia
- Guidance on the use of MS EN1990 Basis of Structural Design
 - Established the principles and requirements for safety and serviceability
 - Presented the basis and general principles for the structural design and verification of buildings and civil engineering structures
 - Gave guidelines for related aspects of structural reliability, durability and quality control, based on the limit state concept and used in conjunction with the partial factor method.
 - Elaborated on the examples of action combinations
- MS EN 1991-1-1 Actions on Structures – Part 1-1 : General Actions – Densities, Self-weight, Imposed Loads for Buildings covers the assessment of actions for use in structural design due to:
 - the density of construction materials and stored materials;
 - the self-weight of structural elements and whole structures, and some fixed non-structural items;
 - imposed loads on floors and roofs of buildings (but excluding snow, which is covered by BS EN 1991-1-3, *Snow loads*).
- MS EN1992-1-1 Design of Concrete Structures – Part 1-1 : General Rules and Rules for Building Structures gives
 - A general basis for the design of structures in plain, reinforced and prestressed concrete made with normal and light weight aggregates together with specific rules for buildings.
 - The focus was on typical structural components, such as design of beams, slabs and columns.
- MS EN1993-1-1 Design of Steel Structures – Part 1-1 : General Rules and Rules for Building Structures assures the steel designer
 - Once they become familiar with the appropriate MS EN1993 documents (a significant task, as this includes the many parts of the Eurocodes, the national annexes and other support information), and familiar with the layout of the clauses within the Standard, the process will be reassuringly similar to design to BS 5950.
 - The focus was on new terminology and equations found in MS EN1993 compared to the provisions in BS 5950.

Questions were raised on implementation of Eurocodes in Malaysia, and one of the speakers, Ir Prof Dr Jeffrey Chiang, concluded in the following manner at the Johor Baru seminar:

Eurocodes are here to stay in Malaysia – and already steps are afoot to implement them nationwide.

The intention is to institute a transition period – which has been proposed at 3 years, after it has been discussed and agreed upon by three parties, i.e. Board of Engineers Malaysia (BEM), The Institution of Engineers Malaysia (IEM) and Association of Consulting Engineers Malaysia (ACEM). During the 3-year transition period, both Eurocode 2 and BS8110 can co-exist and used as submission standards. The Ministry of Housing and Local Government has been notified of this proposal, and a decision was expected. In the latest development, the Ministry is not in favour of instituting a transition period, as recommended by BEM, IEM and ACEM. In their opinion, the transition has commenced from 2008 when the idea or proposal to adopt Eurocodes in place of BS

was discussed among the industry stakeholders, with a view to revise the then Uniform Building By Laws (UBBL). To date, two States, Selangor and Terengganu has gazetted the revised UBBL 2012, hence MS EN standards shall be used in place of BS codes in these two States. The rest had yet to gazette the UBBL 2012, so they shall have their transition up to the time when they gazette the UBBL 2012.

The Institution of Engineers Malaysia, through the Civil & Structural Engineering Technical Division has been actively organizing many seminars and courses since 2009 on Eurocodes especially on Eurocode EC2 (Concrete Design) and Eurocode EC3 (Steel Design). And these activities will be continued intensively during the transition period, in collaboration with Standards Malaysia.

All the measures to enable a smooth transition to Eurocodes have to be implemented so that the practicing structural engineers can work within the required safety and economical needs of built design structures. And this can be done if co-operation and understanding can be sought from all relevant stakeholders in the construction industry.

The following are comments received from speakers in the Petaling Jaya seminar on 2 December 2014:

Speaker, Ir Adjunct Prof MC Hee's comments:

What was the most challenging query raised by participants in your presentation - and how did you responded?

The participants had raised the question on why Malaysia is adopting Eurocodes and is there cost savings compared to BS codes?

Eurocodes are one the most advanced codes of practice (as performance-based codes) in the world. They are state-of-the-art codes which allow the Design Engineers to innovate within the confinement of principle rules which cannot be change and application rules in which Design Engineers are allowed to alter.

Furthermore, UK had adopted fully the Structural Eurocodes (to be followed by Singapore in May 2015). All the BS codes are not going to be maintained, hence it is logical for us to follow our UK counterpart in adopting the Eurocodes.

In research carried out on a personal basis, on the cost comparison for design of office buildings using BS8110 and EC2, it was found that, for all practical purposes, there is not much cost difference between designs using either BS8110 or EC2.

In your opinion, do you think the participants are able to adopt MS EN1992 in place of BS8110 for concrete design in the short term? Why?

The answer is YES. So long as IEM conduct more practical Eurocode courses by practicing consulting Engineers such as ourselves, and not by academicians. However, the honorariums paid by IEM is much too low to attract practicing consultants to deliver good courses. IEM should review its Activity Guidelines on honorariums for speakers in their organized events.

What is your recommendation for the next step forward for the local construction industry for concrete structures design standards in Eurocodes?

IEM have to take the lead by providing practical courses conducted by well-respected practicing consultants to universities. Concerted effort must be put in place by the universities to teach structural Eurocodes in a practical, coordinated and unified approach. At the same time IEM should continue its tradition to conduct practical courses to all engineers practicing in the industry.

Speaker, Ir David Ng had these to say:

What was the most challenging query raised by participants in your presentation - and how did you responded?

It is quite obvious that the participants were not well-versed in the design of steel structures whether in accordance to Eurocode EC3 or the BS 5950. The timeline for adoption of Eurocode EC3

is still doubtful amongst the participants. There is a question on the specifications of materials for the use of the Eurocode EC3 which needs to be addressed.

In your opinion, do you think the participants are able to adopt MS EN1993 in place of BS5950 for steel design in the short term? Why?

There are two answers to this. For those who are not well-versed in the BS 5950 in steel design, the learning curve to adopt Eurocode EC3 in steel design, is not an issue since they have to start from scratch anyway. And for those who are competent in the use of BS 5950 for steel design, the adoption efforts should be minimal since both of these codes bears a lot of similarity in their concepts.

What is your recommendation for the next step forward for the local construction industry for concrete structures design standards in Eurocodes?

Training, training and training.

The Chairman of the session, Ir Mun KP had the following views:

What was the general background of the participants attending the seminar?

The participants were mainly young engineers but there were a few older experienced engineers. All range of construction industry were represented, i.e. consultants, contractors, developers and lecturers. The total number of participants at near to 90 was surprising. Most likely, they were looking for more advanced details on how to use Eurocodes.

How responsive were the participants in the overall seminar to the presenters?

The presenters had given their comments, but I as the chair, actually posted a number of controversial problems to the audience, inviting them to air their opinions.

What could be improved in the way the seminars be presented in the future?

There can be improvement if IEM invite the right presenters. But we cannot refer the event as awareness seminars, because the participants were more interested in getting experts to help solve their work-related problems in design and construction and not on the basic usage of the Eurocodes. For example, some practical problems which intrigued the participants are: (1). Is top steel required in pile-cap?, (2). When a broken pile is encountered in a site, why does the consultant always ask for two replacement piles instead of one? (3). Top down construction can also be used in construction of building. (4). Examples of possible failure in structures?

Some photoshots of the Awareness Seminars held to date in 2014:

1. At Promenade Hotel, Kota Kinabalu, Sabah (27 October 2014)



2. At Imperial Hotel, Miri, Sarawak (29 October 2014)



3. At Mutiara Hotel, Johor Baru, Johor (13 Nov 2014)



4. At Armada Hotel, Petaling Jaya, Selangor (2 December 2014)



5. At Imperial Hotel, Kuching, Sarawak (8 December 2014)

