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REGISTRATION FEE

Grade	Normal (Offline)	Online
IEM Student Member	RM70	RM50
IEM Graduate Member	RM100	RM70
IEM Corporate Member	RM200	RM150
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Important Notes:

- For **ONLINE REGISTRATIONS**, only **ONLINE PAYMENT** is applicable [vizRHB and Maybank2u - Personal Saving & Personal Current ; **Credit Card** – Visa/Master ; **MEPS FPX** - Bank Islam personal account, CIMB Clicks personal account & CIMB Biz Channel business account, Hong Leong Bank Personal Account, Maybank2u Personal Account & Maybank2e Business Account, Public Bank Personal Account and RHB Bank Personal Account]
- Payment via **CASH / CHEQUE / BANK-IN TRANSMISSION / BANK DRAFT / MONEY ORDER / POSTAL ORDER / LO / WALK -IN** will be considered as **NORMAL REGISTRATION**
- FULL PAYMENT must be settled before commencement of the event**, otherwise participants will not be allowed to enter the hall. If a place is reserved and the intended participant fails to attend the course, the fee is to be settled in full. If the participant failed to attend the course, the fee paid is non-refundable. Registration fee includes lecture notes, refreshments and lunch. IEM reserve the right to reject any L/O not in accordance with these instructions. The Organizing Committee reserves the right to cancel, alter, or change the program due to unforeseen circumstances. Every effort will be made to inform the registered participants of any changes. In view of the limited places available, intending participants are advised to send their registrations as early as possible so as to avoid disappointment.



HALF-DAY SEMINAR ON

STEEL FIBRE REINFORCED CONCRETE

Technology, design and application in concrete slabs

by

Dr.-Ing. Ralf Winterberg

2 July 2013 (Tuesday)
9.00 am – 1.00 pm

Auditorium Tan Sri Ir. Prof. Chin Fung Kee
3rd Floor, Wisma IEM
No. 21 Jalan Selangor, 46150 Kuala Lumpur

BEM Approved CPD/PDP hours: 3.5
Ref. No.: IEM13/HQ/133/S

Important Notes:

- Closing Date : 30 June 2013**
- Online registration will **NOT** be allowed after the closing date.
- Please refer to the **Important Notes** on the last page.

Organised by:

CIVIL & STRUCTURAL ENGINEERING TECHNICAL DIVISION, IEM

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Synopsis

Concrete slabs on grade are one of the main application fields for steel fibres. Reinforcing ground supported concrete slabs with steel fibres has been commercially developed since the early 80's. Avoiding handling and placing of conventional reinforcement saves time and labour and can lead to substantial cost savings. This seminar shall give a profound overview on the technology, the design and the application of steel fibre reinforced concrete in slabs on ground and slabs on piles.

1. Technology

The technology of SFRC is more than the equation *Concrete + Steel Fibres = SFRC*. Generally, there are no special measures required; a well designed standard concrete can be used. But fully understanding the composite material will yield a higher performance and hence, a higher efficiency of the materials used. This section shall introduce to the technology of SFRC.

2. Design

Steel fibres are able to replace traditional mesh reinforcement, providing an equal load bearing capacity, which has to be verified by an appropriate method of analysis. The traditional and most common way of designing slabs on grade are elastic design methods, which provide with safe but conservative results, because they significantly underestimate the real load bearing capacity of concrete slabs on grade. On the other hand side they don't allow the utilization of the beneficial performance of steel fibres in the post cracked stage of concrete, working like conventional reinforcement. Hence new methods have been developed in order to design more closely to the real load bearing behaviour of slabs on grade, based on the Yield Line Theory, for example. This method allows to take benefit of the advantageous post cracking performance of SFRC, resulting in a more realistic estimation of the load bearing capacity, and finally, in a more economic design.

On the scientific way to find the most realistic design approach and to take utmost advantage of the constituent's and the composite's performance potentials, non-linear fracture mechanics (NLFM) analysis was found to be the most efficient method. This design methodology was developed by Mess. Maccaferri and the University of Brescia.

In this section the different design models for SFRC slabs on ground are introduced. Further, a design approach for SFRC slabs on piles will be presented.

3. Application

The application of SFRC is as critical as for normal concrete. Starting from the mix design, mixing procedure, transportation and eventually placing, finishing and curing are critical stages that decide on the quality of the final product. In this section the influence of making and handling SFRC shall be discussed. Fibre dosage systems will be introduced that facilitate the addition of fibres to concrete. Further, the solutions for jointless ground slabs are presented.

ABOUT THE SPEAKER

Ralf Winterberg – Dr.-Ing. (MSc PhD Civil Engineering)

Ralf Winterberg is specialized in fibre reinforcement for concrete and its application development. He studied Civil Engineering at the University of Bochum, Germany, and received his Ph.D. on the cracking behaviour of steel fibre reinforced concrete there in 1998.

After two employments as Technical Director in German companies he started his own Engineering Company for the development of fibre reinforced concrete solutions and applications in 2004. Since 2005 he has been working also as a consultant to the Fibre Division of Officine Maccaferri S.p.A., headquartered in Italy, supporting their worldwide subsidiaries in the technical market development of the Fibre Division. In February 2010 he joined Maccaferri Asia Headquarters in Malaysia, as Technical Director of the Fibre Division Asia/Oceania.

Ralf co-authored the Guide to good Practice "Steel Fibre Reinforced Concrete" by the German Concrete Association and contributed to RILEM TC162-TDF "Test and Design Methods for SFRC" as well as to CEN TC104 WG11 "Fibres for Concrete" for the harmonized European Standard EN 14889. He was chairing the Fibres' Technical Committee of EFNARC and is member of ITA-AITES WG12 "Shotcrete use" and ITAtech AG "Support".

Ralf has published numerous papers and articles on the performance of fibre reinforced concrete with a focus on the structural and the durability improvements by fibres.

For further details please contact:

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