

Technical seminar on application of electro osmosis technology for repelling ground water from concrete structures

By Ir LAM Chi Sing

On 16 May 2008, the MT and BD Divisions co-organised a technical seminar on the application of electro osmosis technology by means of multiple pulse sequencing (MPS) for repelling ground water from concrete structures. The speaker, Dr Ian McFeat-Smith, technical consultant of Hydrotech Asia Ltd, introduced the problem of water seepage through concrete structure with high maintenance costs required for repair.

Traditional waterproof materials such as membranes could not sustain groundwater for long due to a high frequency of damages caused by poor workmanship and aging factors, sometimes only for 20 - 30 years, which was significantly less than

the assumed design life of most structures. Water seepage penetrates all concrete structures irrespective of waterproofing systems and causes pre-mature corrosion of the steel rebar, as well as odors, humidity, mold, air-borne bacteria, high lifecycle costs and defacement of surface finishes. The presentation included recent test results from 10,000 air samples from the relatively new Shenzhen Metro that indicated a serious health threat from air-born bacteria.

Groundwater penetrates concrete fabric about four to eight weeks after construction by capillary forces that increase rapidly as the size of the capillaries decrease. This means that these forces are the strongest in good quality concrete and concrete with waterproofing admixtures. The relatively low cost, innovative MPS system works by placing a low voltage pulsating charge between negative and positive electrodes within the structure hence the water within capillaries becomes ionised. This causes the water to travel towards the negative cathode locates outside the structure in the water table and permanently prevents water from intruding back into the structure for the life of structure.

Details of 20 years old self regulating



Member asking question

MPS installations in Europe and eight to ten years old installations in Hong Kong and the PRC were provided including applications in MTRC's subway for Central Station, IFC One, City Plaza 4, the Hang Seng Bank, etc. Dr McFeat-Smith considered that the MPS has huge benefits for insurance purposes as insurers found that 50% of claims for new projects were water related and the MPS system could revolutionise an apparently conservative and Neanderthal sector of the construction industry.

The seminar was well received by the participants. On behalf of the MT, BD Divisions and the participants, we would like to thank Dr McFeat-Smith for giving us this valuable talk.



Group photo (L to R): Ir S W Poon, Ir Christopher Stanley, Ir Stan Cheesman, Dr McFeat-Smith, the speaker, Ir C S Lam, Ir W K Fung and Ir Penny Liu

Technical seminar on ITEM QT: a new generation of risk assessment suite

By Ir Dr Vincent HO

The captioned seminar jointly organised by the MC Division, SSC and HKARMS, was held at the Hong Kong Polytechnic University on 22 May 2008 with 120 participants attended. The seminar was presented by Dr Zhu Dongfeng, director of research and development of ITEM Software. Dr Zhu is an expert in the areas of probabilistic risk assessment, risk analysis, software reliability, human

reliability and financial risk.

In the seminar, Dr Zhu discussed the key concepts used in quantitative risk assessment (QRA) and introduced the new version of the ITEM Software called ITEM QT which provides a customisable, cross-

Ir Louis Lock (L), Vice Chairman of the SSC and Ir Dr Vincent Ho (R), representing the MC Division and HKARMS, presenting a certificate from the Community Chest to the speaker, Dr Zhu Dongfeng (middle)

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