

Technical Seminar On

An Innovative System for Predicting the Remaining Useful Life of Critical Machines Used for Routine Operation and Maintenance with Real Industry Case Study on Slurry Pumps 用于重要機器的創新式剩余寿命预测系统及其在泥浆泵的實用證明

Date : February 25, 2016, Thursday

Venue : LT-14, 4th floor, Academic Building 1, City University of Hong Kong, Kowloon Tong, Hong Kong (can seat up to 100 people)

Time : 6:00 pm to 8:00 pm (Registration and tea reception will be served at 6:00 pm. Seminar will be started at 6:30 pm)

Seminar Coordinator: Ir Dr. Peter TSE: mepwtse@cityu.edu.hk

HOST ORGANIZERS:



Building Services Operation and Maintenance Executives Society
屋宇設備運行及維修行政人員學會



- **Manufacturing and Industrial Division, the Hong Kong Institution of Engineers (HKIE),** www.hkie.org.hk or <http://mi.hkie.org.hk>
- **Building Services Operation and Maintenance Executives Society (BSOMES),** www.bsomes.org.hk
- **Department of Systems Engineering and Engineering Management (SEEM), City University of Hong Kong** www.cityu.edu.hk/seem
- **Smart Engineering Asset Management laboratory (SEAM), Department of Systems Engineering and Engineering Management (SEEM), City University of Hong Kong** www6.cityu.edu.hk/seam

SUPPORTING ORGANIZATIONS:



- Asian Institute of Intelligent Buildings (AIIB)
- Asian Centre for Sustainable Development (ACSD)
- ASHRAE Hong Kong Chapter
- CityU Eminence Society
- CityU Engineering Doctorate Society
- Greater China Institute of Property Management (GCIPM)
- Hong Kong Institution of Engineers - Control, Automation and Instrumentation Division (HKIE-CAI)
- Hong Kong Institution of Engineers - Environmental Division (HKIE-ED)
- Hong Kong Institute of Facility Management (HKIFM)
- International Institute of Utility Specialists (IIUS)
- Society of Operations Engineers, Hong Kong Region (SOE)
- The Council of Hong Kong Professional Associations - COPA
- The Hong Kong Chapter of International Facility Management Association (IFMA)
- The Hong Kong Institute of Utility Specialists (HKIUS)
- The Royal Institution of Chartered Surveyors Hong Kong (RICS)
- The Institute of Measurement and Control, Hong Kong Section (InstMC)

PROGRAMME HIGHLIGHTS

Critical and heavy-duty machines are expensive to replace and breakdown may lead to tremendous costs and environmental loss, especially in public utility services. A proper health management system for machines must have sophisticated fault diagnosis and prognosis systems. Fault diagnosis must be performed before the application of fault prognosis to a machine. First, knowledge of the current health status of the machine, i.e., whether it is normal or defective, must be known. Second, the degree of damage and the growing fault trend can then be estimated and, finally, the Remaining Useful Life (RUL) of the deteriorating machine can be predicted accurately. To date, most of the reported methods of RUL prediction are workable only for relatively linear fault trends. Few reports can be found dealing with the prediction of RUL generated from machines that exhibit a high fluctuation in their monitored sensor signals during operation. In this presentation, a novel, innovative and intelligent fault diagnosis and prognosis system for critical machines will be reported. The system has been designed via sophisticated artificial intelligent algorithms and implemented thru virtual instruments. The system has been well tested in slurry pumps that are widely used in oil exploration and mining industry. The state-of-the-art system can be modified and applied to other types of pumps and machines such as reciprocating machines, engines, chillers etc., that also experience drastic changes in monitored signals during their operating. The expected results are the minimization of production downtime, a dramatic decrease in maintenance costs and the avoidance of human casualties.

Biography of Speaker

Ir Dr. Peter W. Tse is a Fellow of the American Society of Mechanical Engineers (美国机械工程学会院士), a Foundation Fellow of the International Society of Engineering Asset Management, a Fellow of BSOMES, a Founder Fellow of IIUS and a member of HKIE. He is currently the Deputy Director of the Centre for Systems Informatics Engineering, the Director of Croucher Optical Nondestructive Testing Laboratory and the Smart Engineering Asset Management Laboratory at CityU. He is also the O-Committee Member of several ISO's Technical Committees. He has been working for the world largest oil sands exploration and production company for many years to develop the aforementioned system. As of today, he has published more than 300 articles in various journals and proceedings, technical reports and his work has been reported in many newspapers and TV news. Currently, his research outcomes have been applied to over 30 local and international companies.

Fee

Free of Charge

Media

English supplemented with Cantonese

Request of CPD Certification

A 2-hour CPD certificate will be provided for qualified attendants.

Registration & Enquiries

This seminar is free of charge with a maximum capacity of 100 and is based on first-come-first served. For registration, please enroll at "[Click here for Event Online Signup](#)" or at <http://mi.hkie.org.hk>. The deadline for application is 6 Feb. 2016 or when the registration is full. Name of successful applicants will be informed by receiving a confirmation e-mail on or before 19 Feb. 2016 (Friday). A copy of the confirmed email is required to be presented at the registry of the venue entrance for verification. If the applicants have not received the confirmation e-mail on or before 19 Feb. 2016, their applications will be regarded as not successful. A 2-hour CPDC type of attendance certificates will be issued after attending this seminar. Please collect it at the table located outside LT-14.

If typhoon signal no. 8 or black rainstorm signal is in force and still hoisted after 1:00 pm of 24 Feb. 2016, the talk would be cancelled without further arrangement or notification.

For enquiry, please contact Ir Dr. Peter Tse at 3442 8431, email: mepwtse@cityu.edu.hk or Mr. Ferris Wang, email: gcwang2@cityu.edu.hk or call at 3442 2580, 34422651.

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- We shall encourage MIE engineers to contribute their expertise to the societies and to undertake activities in the local and regional communities that will enhance the development of knowledge applicable to the discipline. We shall at all times promote our mission both in Hong Kong and worldwide.
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| 09/01/2016 | Course | Mobile Apps (Android) Development Workshops for Engineers (1st session) (FULL) |
| 16/01/2016 | Visit | Technical Visit to Zung Fu Company Ltd - Aberdeen Service Centre |

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