

SPEAKER

Dr. Marc L. Janssens FSFPE

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[Ref: Performance-based fire protection of
nuclear power plants]

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Schedule

6:45 pm Registration
7:00 pm Introduction
7:05 pm Talk by Dr. Marc L. Janssens

D a t e 29 Aug 2014 (Fri)
T i m e 7:00 – 8:00 pm
V e n u e Room Z211
The Hong Kong Polytechnic University

- Free Admission -



THE HONG KONG
POLYTECHNIC UNIVERSITY

DEPARTMENT OF
BUILDING SERVICES ENGINEERING



C P D L E C T U R E

Performance-Based Fire Protection of Nuclear Power Plants

Organized by

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ABSTRACT

An increasing number of nuclear power plants (NPPs) in the U.S. and elsewhere are transitioning from a prescriptive to a performance-based fire protection program. In fact, the fire protection of these plants is still largely based on compliance with prescriptive requirements, commonly referred to as “deterministic” requirements in the nuclear industry. However, a performance-based engineering analysis is used to justify variations from the deterministic requirements (VFDRs) in specific areas of the plant.

Performance-based fire protection of NPPs involves extensive use of fire modeling tools ranging from relatively simple algebraic equations and correlations to complex computational fluid dynamics codes. It also involves experiments to quantify the contribution to a fire in terms of heat release and smoke production of various combustibles found in NPPs, and to determine the fire response characteristics of structures, systems and components whose function is essential for the safe shutdown of a reactor in case of fire.

The lecture will start with a review of the steps that are involved in the transition of a NPP to a performance-based fire protection program in compliance with NFPA standard 805. The presenter will then share some of his experience with the fire modeling that is typically performed in support of a transition. The lecture will conclude with an overview of a number of pertinent experimental programs in which he has been involved.

Speaker

Marc Janssens holds undergraduate and graduate degrees in mechanical engineering and a Ph.D. in fire protection engineering from Ghent University in Belgium. Dr. Janssens is currently a senior engineer at Southwest Research Institute (SwRI) in San Antonio, Texas, and leads a project to assist the U.S. Nuclear Regulatory Commission with reviews of license amendment requests from nuclear power plants transitioning to a risk-informed performance-based fire protection program in accordance with NFPA 805. Previously Dr. Janssens was the director of the fire technology department, manager and principal engineer at SwRI (1996-2009), worked as a research associate for the North American wood industry at the National Institute of Standards and Technology (1987-1996), and taught at the University of Maryland (2006-present), the University of North Carolina Charlotte (2000-2002) and Ghent University in Belgium (1980-1987). His primary research interests include oxygen consumption calorimetry, computer fire modeling, and fire performance of wood products. Dr. Janssens is author of a book on mathematical fire modeling and nine book chapters, including chapters in the NFPA and SFPE handbooks. He also co-authored more than 140 technical publications, and is associate editor of Fire and Materials and serves on the editorial board of the Journal of Fire Sciences. Dr. Janssens is a fellow of the Society of Fire Protection Engineers, and chairs ASTM Committee E05 on fire standards and the International FORUM of fire research directors.