Centre for Risk and Reliability Engineering Seminar

2.00pm Thursday 3rd July 2014,
Room B13 – Engineering and Science Learning Centre,
All welcome

Approaches of Risk Measures Minimization and Application

Speaker: Professor Robertas Alzbutas
Affiliation: Lithuanian Energy Institute and Kaunas University of Technology

Abstract

During recent years, both the nuclear industry and nuclear regulatory bodies have recognized that probabilistic risk analysis has evolved to the point that it can be used increasingly as a tool in decision making and risk minimization. In this paper there are considered Integrated Risk-Informed approach and risk measures, which are complementary to the defence-in-depth philosophy and is proposed to be used in safety-related decision making, e.g. for optimizing activities related to NPP operation, in service inspection, testing, and maintenance.

The following topics are discussed in this paper:

- The integration of deterministic and probabilistic approaches in order to define risk-informed measures and a framework for risk-informed decisions when deterministic and probabilistic methods and tolls integration are used;
- Probabilistic modelling and estimation of degradation phenomena and scenarios. The differences in components and the procedure of considered system failures detection are used for further risk comparison and decision making;
- Decision making and risk management in order to minimize risk, using proper inspection and maintenance procedures, as well as seek other benefits additional to safety improvements and risk reduction.

In addition, this paper presents a case study, which partly integrates reliability and risk assessment applying physical-based and statistical-based methods for Development of Risk-Informed In-service Inspection Program. The methods application and the case study include results obtained through the author's participation in a number of related research projects.

Speaker's profile

Mr. Robertas Alzbutas (Prof., Dr. in Technology Sciences, Lithuanian Energy Institute and Kaunas University of Technology) senior research associate working from 1999; received his master degree of Science in Mathematics in 1999 and finished his Ph.D. thesis on Risk Minimization and Reliability Control of Systems Considering Data and Modelling Uncertainty in 2003. He participated in more than 30 international training courses and workshops. His main research interests are connected with risk minimization and reliability control, probabilistic safety assessment, dynamic reliability techniques, external event analysis, structural reliability, uncertainty and sensitivity analysis, power networks reliability, simulation and statistical software developing, maintenance optimization. He was involved in more than 20 projects related to reliability and risk assessment. In Kaunas University of Technology he is giving lectures on Theory of Reliability, Risk and Uncertainty Analysis. He has published more than 50 reports and publications in journals and conference proceedings.