



Call for papers

Maintenance Work in Safety-critical Organizations - Understanding and Managing the Human Factor

Organized by the IEA Process Control Technical Committee

Teemu Reiman (VTT)
Kenneth Pettersen (University of Stavanger)

Background

Maintenance is a critical part of system safety in high-hazard industries and the maintenance status of an organization has an effect on the overall safety and reliability of the socio-technical system. Accident investigations have uncovered inadequate or faulty maintenance as one of the main contributors to unanticipated events in various safety-critical domains, including the railway, offshore oil drilling, chemical, petrochemical, aviation and nuclear industries. Thus, maintenance activities can be considered as having a highly significant positive or negative impact on the effectiveness of the entire socio-technical system, including safety. Maintenance activities have been under various organizational changes and restructuring initiatives, aiming at, e.g. reduced costs, increased availability of the machines, better knowledge sharing and increased flexibility. This development has been going on for years in various safety-critical domains. For example, in the aviation domain, the US Federal Aviation Administration has identified a need for better efficiency in aviation maintenance to cope with the ever-growing workloads caused by the increase in the number of passenger miles flown by the airlines. The rise in traffic has not been accompanied by a similar increase in resources, e.g. the number of maintenance technicians. Price-based competition has reduced revenues and forced the companies to take various cost-cutting measures, including outsourcing maintenance, leasing instead of buying aircraft and layoffs. In the nuclear industry for example, ageing plants and equipment, the ongoing generation turnover and the deregulation of the electricity market have been the main drivers in the recent organizational changes.

This workshop will address the challenge of understanding maintenance work in safety-critical organizations and its characteristic sources of performance variability. Although maintenance studies have been an integrated part of safety research and developments, we argue that these developments are often constrained by industry barriers and believe that more emphasis on understanding maintenance work and its requirements cross high-hazards industries would contribute to further progress.

Aim

The aim of the seminar is to bring together practitioners and researchers from various safety-critical domains to share experiences and discuss cutting edge research on the human factor in maintenance.





Topics to be addressed

Research and development on maintenance has had a dual focus on maintenance as a source of latent and active failures in the system as well as maintenance as a necessary and critical function in the organization. One of the challenges is how to deal with the fact that maintenance is in fact both, simultaneously. Subsequent relevant questions to be asked are:

- How to reduce the potential of maintenance to contribute to system failure and at the same time enhance its contribution to system safety and reliability?
- Can we separate the success factors of maintenance organizations from the failure factors, or pathogens, of the same organizations?
- How to apply different concepts of human factors and safety, such as Resilience Engineering, in the maintenance domain and what are their benefits?
- How to develop system safety in maintenance?
- Do we need new approaches for designing and managing reliable and resilient maintenance organizations?
- What is the role of maintenance in the context of the overall socio-technical system? For example, how is maintenance affected by management strategies or cost pressures? How well is the role of maintenance understood in the wider organization?
- What is the relation of new forms of organizing work (outsourcing, integrated operations etc) on safety in maintenance?
- What can we learn about safety from looking cross high-risk domains and how to work to achieve this? What are the constraints for learning cross industrial domains?

Practical aspects

Registration:	The workshop is free but attendance is limited to 30 persons.
Workshop dates:	October 19–21, 2011
Location:	University of Stavanger, Norway
Audience:	Looking for a mix of academics, policy makers, regulators as well as industry people; Seniors as well as younger researchers or professionals
Output:	Journal Issue or a book for a selection of the best papers
Abstracts:	received end of May 2011, 1-2 A4 pages in length
Paper selection:	Mid June 2011
Papers received:	End of September 2011
Program issued:	End of September 2011
Format:	Papers circulated in advance

Contacts (Abstracts, papers and registration): teemu.reiman@vtt.fi and Kenneth.a.pettersen@uis.no

Workshop webpages: www.uis.no/hfm

