



CALL FOR PAPERS

Special Issue of the International Journal of Prognostics and Health Management Nuclear Energy Prognostics and Health Management

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The International Journal of Prognostics and Health Management (IJPHM) is the premier *online open access journal* related to multidisciplinary research on Prognostics, Diagnostics, and System Health Management. This special issue is focused on advances in research in condition monitoring applications to nuclear energy.

The first commercial nuclear power stations began operation in the 1950s. Since that time nuclear energy generating capacity has grown to 430 commercial nuclear power reactors operating in 31 countries, with 372,000 MWe of total capacity. That equates to over 13% of the world's capacity and has proven to be a reliable method for generating base-load capacity. Nuclear Power remains the single largest contributor (more than 70 percent) of non-greenhouse-gas- emitting electric power generation in the United States. As the world's current nuclear fleet lifetimes are extended beyond 60 years, it is vital that they continue to be operated safely and efficiently.

Understanding the failure modes, being able to detect precursors to failure, tracking degradation mechanisms, and predicting the remaining useful life of components and systems is vital to the continued success of nuclear power. With world electricity demand expected to double between 2000 and 2030 and currently demand growing at an annual rate of 2.4%, it is vital to keep our current fleet productive and to invest in new technologies to assure future plants are equally safe and reliable. This CFP solicits papers that discuss the emerging art and science of nuclear power plant PHM. A secondary goal is to document and benchmark the state-of-the-art in nuclear component and system RUL estimation.

Topics of Interest:

- Surveillance, diagnostic and prognostic technologies
- Remaining useful life estimation for passive components
- Concrete health monitoring
- Aging and obsolescence issues with I&C Systems
- Risk-based maintenance practices
- Advanced sensors and measurement technologies
- Small modular reactor (SMR) applications of PHM
- Sensor calibration monitoring theory and technologies
- Condition monitoring of equipment and processes
- Fleet wide monitoring PHM applications.
- Cable ageing monitoring and RUL estimation
- Human performance and reliability issues
- PHM regulatory issues
- Failure and fault analysis of digital I&C systems
- Quantification of PHM uncertainties
- Prognostics and its relation to balance of plant operation

Submission Types:

Full-Length Regular Papers: Regular papers should describe new and carefully confirmed findings. Experimental procedures and results should be given in detail sufficient for others to replicate the work.

Technical Briefs: Technical briefs describe a single result, experiment, or technique of general interest in short manuscripts enough to describe experimental procedures and clearly, and interpret the results in the context of other research.

Industry Case Studies: Case studies are descriptive accounts of PHM applications in a real industrial environments. Techniques and apparatus used, results obtained, and lessons learned can be included to share experience with the community.

Survey Papers: Survey papers are of a tutorial or review nature covering emerging research topics in PHM or describe the best current practice, detailed characteristics and performance. These papers cover areas of general interest.

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Submission Instructions: Please submit your manuscripts directly by going to the society webpage and follow instructions for journal submissions. There you will find an option to select the nuclear special issue.

Invitation to Present: Accepted papers are eligible for podium presentation at Annual Conference of the PHM Society, October 2015, San Diego CA, USA

Deadline for Submission: January 31, 2015