

“What is Resilience?”

Resilience for Nuclear Power Plant, for Industries, for Society”

Conference Scope

More than three years have passed since Fukushima Daiichi Nuclear Power Plant accident in March 2011. Since then, the term “resilience”, which was originally used as the recovery capacity of an ecosystem in face of environmental challenges, is attracting interest for engineers as the concept that can develop existing frameworks of systems safety, reliability and risk engineering.

Resilience is defined, e.g. by United States National Research Council, as the ability to prepare and plan for, absorb, recover from, or more successfully adapt to actual or potential adverse events. In this sense, resilience is the concept which is related to the context of emergencies such as natural disasters.

Moreover, resilience is also viewed as the concept that is related to safety and reliability of technological and social systems during normal times. Resilience is not restricted to system’s response to crisis, but also includes adaptation to slow and long term changes. In other words, resilience can be defined also as the capacity of a system to maintain, through maintenance, functions that deteriorate over time, the capacity of a system to evolve by remaking itself in order to adapt to existing and future environmental challenges, the capacity of a system to become more robust by learning from past failures.

During ICMST-Kobe 2014 conference, the application of the resilience concept to nuclear safety, maintenance science and technology is discussed from these standpoints. The discussion also includes the application of the lessons learned from what happened at nuclear power plants in Japan during the Tohoku Earthquake and tsunami in 2011.

Keywords of Technical Areas

	Areas	Example of Keywords
1	<p>Safety and Reliability</p> <p>Papers on science and technology applicable for improvement of safety and reliability of nuclear plants or facilities are solicited.</p>	System safety, Resilience, Risk Assessment, Defense in Depth, Reliability Evaluation, Deterministic Approach, Stochastic Approach, Safety Regulation, Risk-informed Maintenance, and others
2	<p>New Technology in Nuclear Power Plants</p> <p>Papers on new technology in any stages from R&D to standardization in nuclear power plants are solicited.</p>	Inspection and Monitoring Technologies, Repair/ Replacement/Mitigation Technologies, Remote Control, Automatic Welding, Non-destructive Evaluation, and others
3	<p>Decommissioning of Fukushima Plant</p> <p>Papers on technologies and field experiences applicable to not only Fukushima site but also other plants in decommission are solicited.</p>	Dismantling Technologies, Robot Technology, Contaminated Water Treatment, Field Experiences of Decommissioning, and others
4	<p>Safety Enhancement Program in the Post-Fukushima Period</p> <p>Papers on safety standards, strategy for emergency, emergency preparedness, etc. are solicited.</p>	Measures against Severe Accident, Diverse and Flexible Coping Measures against Severe Accident (ex. NEI FLEX Strategies), Strategies to Enhance Safety, Portable Equipment for Emergency, External Events, Fire Protection, Operational Experiences, and others
5	<p>Maintenance Technology for Aging Nuclear Plants</p> <p>Papers on any topics in maintenance technology for aging nuclear power plants such as mechanism of aging phenomena, degradation evaluation, aging management and so on are solicited.</p>	Ageing Management, Technologies for Aging Degradation Evaluation, IGSCC, IASCC, PWSCC, Fatigue, Environmental Fatigue, FAC, LDI, Cable Insulation Degradation, Concrete Degradation, Irradiation Embrittlement, Thermal Ageing, Water Chemistry, and others
6	<p>Advanced Maintenance Technology in Sustainable Society</p> <p>Papers on this area in nuclear and non-nuclear industries are solicited.</p>	Maintenance Optimization, Big Data Analysis for Maintenance, Condition Monitoring, Visualization of Maintenance Information, Risk-informed ISI, CBM, Vibration Analysis, Oil Analysis, Thermography, AE, Motor Analysis, MOV Analysis, Engine Analysis, and others
7	<p>Education and Training for Maintenance</p> <p>Papers on this area in nuclear and non-nuclear industries are solicited.</p>	E&T for Maintenance, E&T for Severe Accident, E&T for Decommissioning, Human Resource Development, Maintenance Literacy, and others
8	<p>Maintenance Related Issues</p> <p>Papers on this area issues in nuclear and non-nuclear industries are solicited.</p>	Maintenance Cost, Cost Reduction, Availability, Regulations, Global Standards for Maintenance, O&M Codes, NDI, Public Communication, Safety Culture, Risk Communication, Information Technologies, and others