

Toward Innovative Nuclear Safety and Simulation Technology

Joint International Symposium of ISSNP2008/CSEPC2008/ISOFIG2008



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内 容 简 介

This book summarizes proceedings of the invited papers presented at the Joint International Symposium of “The 2nd International Symposium on Symbiotic Nuclear Power Systems for 21st Century (ISSNP2008) Embedded with the 4th International Symposium on Cognitive Systems Engineering for Process Control (CSEPC2008) and the 3rd International Symposium on Future I&C for Nuclear Power Plants (ISOFIG2008)”, held in Harbin, China on September 8 – 10, 2008. The symposium focuses on the newly developed technologies in nuclear safety and simulation research areas, including “Methods of Sensing, Monitoring and Processing for Control and Communication”, “System Simulation Technologies”, “Cognitive Systems Engineering Approach to Process Control”, “Future I&C for Nuclear Power Plants”, and “Symbiosis of Technology with Society and Environment”.

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- 4th International Symposium on Cognitive Systems Engineering Approach to Power Plant Control (CSEPC)
- 3rd International Symposium on Future I&C for Nuclear Power Plants (ISOFIC2008)

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Preface

These days, high demands of energy and environmental protection have promoted the revival and fast development of nuclear power around the world. Only in mainland China, there will be 50 nuclear power plants in construction and the new installed nuclear power capacity is expected to be 60 million kilowatts in the next twenty years. The safe and economical operation of nuclear power and therefore the development of nuclear power in harmony with human and environment can be achieved only through the development of advanced nuclear energy technologies because nuclear safety is the precondition and basis of the existence and development of nuclear power.

The joint international symposiums of "ISSNP2008/CSEPC2008/ISOFTIC2008" are organized to promote academic exchanges on the topics of innovative nuclear power safety and simulation technology from the following five areas: 1) Methods of Sensing, Monitoring and Processing for Control and Communication, 2) System Simulation Technologies, 3) Cognitive Systems Engineering Approach to Process Control, 4) Future I&C for Nuclear Power Plants, and 5) Symbiosis of Technology with Society and Environment. For the final program, 111 technical papers from 11 countries and international organizations, including China, Japan, Korea, U. S. A, France, Norway, Denmark, Canada, Switzerland, IAEA and OECD, were selected and retrieved in the conference proceedings. The authors backgrounds are diversified, including not only the experts being a long time engaged in nuclear power engineering, but also the students pursuing their master's or doctor's degree. Therefore, papers retrieved in this conference proceedings are also pretty diversified, but the level of all papers meet the two objectives of the conference that it would like to promote the academic exchanges between international professionals and the cultivation of young talents for nuclear engineering. I believe that this conference will contribute to the peaceful use of nuclear energy and to the development of nuclear energy in harmony with human society.

The conference is held jointly by China Nuclear Energy Association, Symbol Community Forum, Research Division of Human-Machine System Atomic Energy Society of Japan, Human Factors Division America Nuclear Society, Human Factors Division Korea Nuclear Society, Man-Machine System Division Society of Instrument & Control Engineers, Kyoto University Global COE Program "Energy Science in the Age of Global Warming-Toward CO₂ Zero-emission Energy System", OECD/Halden Reactor Project, "111 Project" on "Nuclear Power Safety and Simulation" and Key Laboratory of Nuclear Safety and Simulation Technology for National Defense. Sincere thanks are given to all the members of the co-organizers, technical committee, international board and the local co-ordinate committee, and also to the Nuclear Power Institute of China, China

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Session A

**Methods of Sensing, Monitoring and Processing
for Control and Communication**

