

The 9th International Conference on Nuclear Plant Instrumentation, Control & Human–Machine Interface Technologies (NPIC & HMIT 2015), sponsored by the Human Factors, Instrumentation and Controls Division (HFICD) of the American Nuclear Society (ANS), was successfully held at The Westin Charlotte Hotel in Charlotte, North Carolina (USA), from February 23–26, 2015. This topical meeting of ANS is the premier forum for nuclear instrumentation and control (I&C) and human factors engineering professionals to meet with leaders within the industry and academia, gauge the state of the technology, exchange information, and discuss future directions. This article is intended to reach out to a larger audience who may have not had the chance to attend the conference.

Overseen by General Chair Dr. H.M. Hashemian, President and CEO of Analysis and Measurement Services Corporation (AMS), this year's NPIC & HMIT conference had a spectacular turnout with over 440 participants from 26 different countries and more than 350 papers submitted. The HFICD division of ANS focuses on the information processing, control, and human system interaction aspects of nuclear systems. In keeping with the HFICD's mission goals to promote HFICD–related activities in the nuclear power industry, the NPIC & HMIT 2015 Conference proved to be a successful event with informative and stimulating plenary and technical sessions.

The conference kicked off on Sunday evening, February 22, with a lively opening reception in the Exhibit Hall. Conference attendees mingled with exhibitors and colleagues in a fun-filled atmosphere with live music and dinner.

Plenary sessions were held on the first three mornings of the conference and featured excellent speakers from high-level government officials, executives of nuclear utilities, and vendor organizations. The first morning plenary session opened with an introduction from the General Chairman Dr. Hashemian and ANS President Dr. Mikey Brady Raap. Plenary topics focused on a range of I&C and HMI issues, from nuclear cyber security to modernization of nuclear plant I&C and improved nuclear safety. Speakers of particular note included U.S. NRC Commissioner William Ostendorff, who discussed how cyber security issues will be a continual challenge, even with the NRC making significant progress in this area. This progress has been accomplished by conforming to the principles of good regulation; incorporating inter-agency cooperation; following the NRC cyber security requirements, such as the Cyber Security Rule 10 CFR 73.54;

and maintaining NRC oversight with planned inspections and through cyber security reporting. The topic of cyber security was prevalent throughout the conference and this discussion was of high interest to many of the attendees.

Mr. Ken Canavan, Director of Plant Technology at EPRI, gave an in-depth discussion on how advancing risk technology is shaping the future of nuclear power. His presentation touched on focused research into the causes of accidents such as Fukushima, and the global response to these accidents which led to a discussion of I&C and how risk analysis identifies areas for improvement and I&C potential solutions. Some of the potential instrumentation improvements he mentioned were robust instruments able to withstand severe conditions, low power requirements such as batteries, older technologies such as pneumatics, and remote measurements. Mr. Preston Gillespie, Senior Vice President of Nuclear Operations at Duke Energy, gave an engaging presentation on digital applications in a nuclear environment. He spoke about the challenges inherent in implementing digital upgrades, such as maintaining a dedicated design team, and the temptation to customize controls and regulatory challenges, such as the evolving understanding of cyber security rules and concerns with quality/rigor of 10 CFR 50.59 screens and evaluations, and how these challenges can be dealt with.

Other plenary speakers included: Dr. Thom Mason, Director of Oak Ridge National Laboratory; Mr. Jeffrey Gasser, Executive Vice President and CNO of Southern Nuclear Operating Company; Mr. David Howell, Senior Vice President–Operating Plants Business of Westinghouse; Mr. Gary Mignogna, President and CEO of Areva Inc. North America; Mr. Amir Shahkarami, President and CEO of CAsE Global Partners; Mr. Jeffrey Merrifield of Pillsbury, Winthrop, Shaw, Pittman; Mr. Sal Golub, Associate Deputy Assistant Secretary for Nuclear Reactor Technologies for the U.S. Department of Energy (DOE); Mr. David Czufin, Senior Vice President–NPG Engineering and Technical Services of TVA; and Mr. John Tappert, Director for Division of Engineering, Office of New Reactors of the U.S. NRC.

More than 60 technical sessions included scientific and technical papers presented by numerous participants from utilities, academia, government, and suppliers across the world. Technical sessions covered a wide range of issues, from day-to-day operational challenges and regulatory issues to advanced technology topics, contributing to a well-rounded view of the past, present, and future of I&C and HMI technologies. The I&C area included six parallel sessions while the HMI area had three parallel sessions. Sessions on such topics as online monitoring, diagnostics and prognostics, and cyber security had the largest number of presentations and attendees.

The NPIC & HMIT 2015 Conference was co-sponsored by a number of national and international organizations, industry suppliers, national and international laboratories, academic institutions, and media partners. In addition, considerable support for the conference was received from the international I&C and HMI community, as well as a number of conference funding sponsors. Major donors included Schneider Electric, Rolls-Royce, and Westinghouse. In addition, more than 30 exhibitors took part in the conference, showcasing their latest technologies, products, and services. Overall, the conference was an enormous success, and one of the most lively and relevant topical meetings by ANS in recent years.

A memorable feature of the conference was the banquet on Tuesday evening, February 24, at the NASCAR Hall of Fame in uptown Charlotte. The evening included an awards ceremony recognizing the conference's major sponsors and HFICD 2014 Don Miller Award winners Dr. Hidekazu Yoshikawa and Dr. Douglas Chapin. The evening was rounded out with live music, cocktails, and an elegant sit-down dinner. Conference attendees experienced full access to the 40,000 square-foot exhibit space and enjoyed interactive exhibits that showcased the history and heritage of NASCAR. It was an extraordinary evening applauded by all and culminated as one of the best ANS topical meetings in recent years.