

IEEE Power and Energy Society Entity Annual Report

2022

Entity: Nuclear Power Engineering Committee

Website: <https://site.ieee.org/pes-npec>

Chair: John White

Vice-Chair: Mark Bowman

Secretary: Robert Konnik

Immediate Past Chair: Daryl Harmon

1. Significant Accomplishments:

IEEE 1819, *IEEE Standard for Risk-Informed Categorization of Treatment of Electrical and Electronic Equipment at Nuclear Power Generating Stations and Other Nuclear Facilities*, is being considered for adoption within a regulatory guide by the NRC. NEI and both the PWR and BWR owner groups were opposed to the IEEE standard being endorsed by the NRC, and sent letters to the NRC stating this position. A meeting was conducted between the IEEE, NRC and the industry groups. During that meeting it was identified that the opposition was not based on technical content, and it was also noted that the NEI document currently in use parts of the industry does not conflict with IEEE 1819, but does provide additional information on how to handle electrical equipment. With the support of WG 3.1 the NPEC chair and WG members were able to present convincing arguments to the NRC on why IEEE 1819 should be endorsed. It was also noted that the need for IEEE 1819 came from gaps that were identified within the NEI document, specifically for electrical equipment, when attempting implementation of 10CFR 50.69.

The NPEC's IEEE Conformity Assessment Program (ICAP) Steering Committee made significant strides to IEEE's goal of having products that are certified to IEEE nuclear standards. ICAP recognized its first group of laboratories and manufacturers. These organizations are the first to commit to supporting products seeking to be certified by the IEEE. Equally important to the IEEE is that this is now a new source of revenue that can be used to support our non-profit activities.

A detailed description of the IEEE NPEC Conformity Assessment Program (ICAP) is provided in Section 2, *Benefits to Industry and PES Members from the Committee Work*.

The following Nuclear Power Engineering Committee (NPEC) standards were approved for balloting during 2022:

IEEE Std 1682, *IEEE Standard for Qualifying Fiber Optic Cables, Connections, and Optical Fiber Splices for Use in Safety Systems in Nuclear Power Generating Stations*

IEEE Std 334, *Standard for Qualifying Continuous Duty Class IE Motors for Nuclear Power Generating Stations*



The following NPEC PARs were approved by NPEC ADCOM during 2022:

PARs were approved for IEEE 1819 and IEC/IEEE 60780-323

2. Benefits to Industry and PES Members from the Committee Work:

In September of 2014 the Nuclear Power Engineering Committee (NPEC) Conformity assessment Steering Committee was formed. That committee working with IEEE Conformity Assessment Program (ICAP) began working together to develop a conformity assessment program for IEEE 323, *IEEE Standard for Qualifying Class 1E equipment for Nuclear Power Generating Stations*.

The Steering Committee was formed from a diverse group of members representing Manufacturers, Test Laboratories, Industry consultants, Reactor Designers, and Utilities. The committee members, in addition to their diverse technical experience, represented countries from Asia, Europe and North America. The first goal of the steering committee was focused on providing a high level of assurance that IEEE qualification standards are being complied with, during the qualification of components intended for use in nuclear power plants. This process is based on the recognition of laboratories and manufacturers. Manufacturers would have their products tested at recognized laboratories. After meeting these requirements manufacturers then have the ability to submit products for IEEE Certification. An IEEE Certified product will be easily recognizable and traceable to specific test reports.

The certification process that has been developed is identified as the IEEE EQ Navigator. The IEEE EQ Navigator process is intended to help improve quality control, standardize the format for the development of test reports, reduce the use of counterfeit parts and provide 3rd party verification that the testing of equipment met the requirements of IEEE standards. An IEEE Certification will provide nuclear power plant designers and owners with a level of confidence in Nuclear Qualified equipment that has never been available in the past.

In 2022 the first laboratories and manufactures completed the recognition process. The industry is being led by Kinetics Inc , NTS and TE Connectivity. The recognition process and the certification of components will continue and expand in 2023. The EQ Navigator process is intended to reduce cost, improve quality and help bring the world into standard based compliance.

<https://www.youtube.com/watch?v=Rvdhgxyobxl>

NPEC is responsible for developing and maintaining nuclear power plant standards in the electrical and electronic area within PES. These standards are used by the nuclear industry around the world to design and maintain nuclear power plants and other nuclear facilities. The US Nuclear Regulatory Commission in Regulatory Guides endorses many NPEC standards.

NPEC has continued to be proactive in developing joint logo standards with IEC, which will benefit the nuclear industry by providing a common set of standards that will be used around the world.

3. Benefits to Volunteer Participants from the Committee Work:

The committee is comprised of an international group of technical experts from nuclear utilities and plant owners, vendors, architecture engineers, and regulators representing a wide cross-section of the nuclear industry. The committee currently has 42 active members. NPEC, subcommittee and working group meetings provide the opportunity for this diverse set of volunteers to work together and learn from each other’s perspectives regarding standards development.

NPEC and its subcommittees held two meetings during 2022. The January meeting was held in Orlando FL. and the July meeting was held in Chattanooga TN. NPEC is no longer supporting any virtual meetings.

4. Recognition of Outstanding Performance:

Awards in 2022 were limited to awards for service to NPEC.

5. Coordination with Other Entities (PES Committees, CIGRE, standards, etc.):

NPEC maintains liaison between IEEE and ANSI, ASME, ANS, ASTM and ISA, as well international organizations IEC and IAEA regarding all nuclear power plant matters.

6. New Technologies of Interest to the Committee:

Assuring that NPEC standards are applicable to reactor types other than light water reactors and applicable to advanced reactor development.

7. Global Involvement

PES is looking to increase involvement with members from Regions 8, 9 and 10 (Africa, Europe, Middle East, Latin America, Asia and Pacific). Please provide the following information.

Total Number of committee members 42	Officers from regions 8,9 and 10 0	Subcommittee officers from regions 8, 9 and 10 0	Subcommittee members from regions 8,9, and 10 5
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8. Problems and Concerns:

NPEC continued to make progress towards the IEEE financial expectation that NPEC would have sufficient funds to cover two failed meetings. By completion of the 22-02 meeting in July of 2022 NPEC had achieved this goal.

There are no other problems or concerns.



9. Significant Plans for the Next Period:

NPEC will continue its standards development activities through its subcommittees and working groups. NPEC meetings will be held in person starting in January 2023.

Submitted by: John White

Date: 1/30/23