

IEEE Power and Energy Society Entity Annual Report 2023

Entity: Energy Development and Power Generation Committee
Website: <https://site.ieee.org/pes-edpgcom/>
Chair: K. STRUNZ
Vice-Chair: M. NEGNEVITSKY
Secretary: R. MORENO
Immediate Past Chair: R. THORNTON-JONES

1. Significant Accomplishments:

- 1.1. IEEE Std. 1010 has been published under the leadership of John Yale, Chelan County Public Utility District, USA. This guide for control of hydroelectric power plants was revised with particular attention to improving figures and updating tables. Its sister guide, Std. 1020, was also revised and published this year under the leadership of Derek Brown, Sr. Life Member.
- 1.2. The WG “High Renewable Energy Penetration in Isolated and Remote Power Systems” under the leadership of Michael Negnevitsky organized the IPS (Isolated Power Systems) Connect 2023 workshop in Noumea, New Caledonia, 6-8 November 2023. The IPS Connect is an established international technology forum aimed at remote power system operators and owners. The first workshop in this series took place on King Island, Australia in 2015. It was followed by the IPS Connect 2016 (Flinders Island, Australia), 2017 (Rottneest Island, Australia), 2018 (Maui, Hawaii), 2019 (Hobart, Australia) and 2021 (Cordova, Alaska). In 2020 and 2021, the series was interrupted by COVID. The IPS Connect 2023 featured presentations and panel discussions on remote power system successes, challenges and future opportunities and included showcase tours of New Caledonia solar and wind farms.
- 1.3. The Subcommittee “International Practices” under the leadership of Michael Negnevitsky contributed to the organization of the 2023 IEEE International Conference on Energy Technologies for Future Grids (Wollongong, Australia, 3-6 December 2023). The Conference received 572 submissions, 408 papers were accepted and presented. The program included 12 Keynote Speakers, 4 Panel Sessions, 2 Short Courses, 2 Workshops, 2 Social Programs, and 2 Special Events.
- 1.4. The Wind and Solar Plant Interconnection Working Group (Wind and Solar Design and Interconnect Subcommittee) under the leadership of Jens C. Boemer contributed to the development of the IEEE Std. 2760-2020 “IEEE Guide for Wind Power Plant Grounding System Design for Personnel Safety”. The main contribution of the Working Group was related to collector system grounding for wind power plants (WPPs). The Task Force on Wind and Solar Plant Grounding Activities under the leadership of Rob Schaerer completed the IEEE 2760 Guide on wind plant grounding and the IEEE 2778 Guide on solar plant grounding and design.

1.5. The Award Committee (chaired by Caisheng Wang) recommended the following paper for the PES prize paper award. The recommended paper successfully won the 2023 PES prize paper award. Yue Xia, Ying Chen, Yankan Song, and Kai Strunz, “Multi-Scale Modeling and Simulation of DFIG-Based Wind Energy Conversion System,” IEEE Transactions on Energy Conversion, vol. 35, no. 1, pp. 560 – 572, March 2020.

In 2023, the Award Committee also recommended IEEE Std. 2760, Guide for Wind Power Plant Grounding System Design for Personnel Safety, for the IEEE PES level award.

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

The Energy Development and Power Generation (EDPG) Committee informs industry and PES members through panel sessions on new developments in the field, activities of Working Groups and Task Forces. Our panels regularly attract a high number of attendees from industry and academia. The large number of panels organized by the Committee testifies to that. Members of the Committee regularly contribute to the development of new IEEE standards (in 2023, the EDPG Committee contributed to 19 IEEE standards) and whitepapers. ESCSC held a panel Power System Stabilization Via Excitation Control on Sunday 16 July 2023.

3. Benefits to Volunteer Participants from the Committee Work:

Volunteers are presented with opportunities to propose new panel sessions, discuss issues related to cutting edge applications in power system operation and control as well as planning with leaders and experts in specific fields. Chairs of the panels have an opportunity to invite industry leaders as speakers. Volunteers also benefit from technical paper reviews and presentations.

4. Recognition of Outstanding Performance:

John Yale, Chelan County Public Utility District, USA for the completion and publishing of the revision of IEEE 1010.

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

Many members of the EDPG Committee contribute to the activities of CIGRE via national and international CIGRE Panels.

In 2023, members of the Subcommittee “Technologies for GHG Mitigation and Adaptation” continued their collaboration with the Global Energy Interconnection Development and Cooperation Organization to promote global energy interconnection under the framework of United Nation’s sustainable development goals. The Subcommittee invited experts and scholars from the Chinese mainland, Hong Kong, and Singapore to discuss the progress of Technologies for GHG Mitigation & Adaptation in Asia.

The Hydroelectric Power Subcommittee continued to maintain a working relationship with IEC TC4-WG14 via member, James Volk and through the ongoing work on P2793.

ESCSC is revising recommended practice 421.5 in conjunction with IEC with the goal of its next revision in 2024 being a dual-logo standard. Other 421 series standards are planned to follow.

The Renewable Technologies Subcommittee maintained their collaboration and working relationship with IEEE PES Workforce Initiative to accelerate the workforce development in renewable and clean energy areas.

6. New Technologies of Interest to the Committee:

Smart grid, smart cities, and IoT applications; power systems with very high renewable energy penetration, including 100% renewable systems; variable speed hydro and variable speed pumped storage in particular; P2H technologies in reducing carbon emission.

7. Global Involvement & YP 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.

Please also provide information on the number of young professionals that are involved in your committee.

Total Number of committee members	Number of Young Professionals (under 35 years of age) – Including committee & subcommittee	Officers from regions 8,9 and 10	Subcommittee officers from regions 8, 9 and 10	Subcommittee members from regions 8,9, and 10
50+	Max 10%	1	2	20-25%

8. Problems and Concerns:

None.

9. Significant Plans for the Next Period:

Organize panels – the EDPG Committee has always been active in organizing successful and well attended panel sessions, and we intend to continue this tradition in 2024.

The EDPG Committee specific plans include the following:

- Organize the IPS Connect 2024 in Australia (WG “High Renewable Energy Penetration in Isolated and Remote Power Systems”).



- Online seminar series (tutorial) on topics of Solar Design and Installation Training (Subcommittee “Renewable Technologies”). This is a joint activity with IEEE PES Workforce Initiative.
- The Hydroelectric Power Subcommittee and several of its working groups will meet February 12 & 13, 2024 in Denver, Colorado, USA. The summer meeting will be held at the Clean Currents hydro industry conference, October 7 – 10, in Portland, Oregon, USA.
- The Hydroelectric Power Subcommittee will be continuing their work on IEEE 1827, the three governor standards, and on turbine-generator mechanical assembly standards 1095 and 810.

Submitted by: Professor Michael Negnevitsky

Date: 01/22/2024