

## IEEE Power and Energy Society Entity Annual Report

2022

**Entity:** Marine Systems Coordinating Committee (MSCC)  
**Website:** <https://ewh.ieee.org/cmt/pes/msc/>  
**Chair:** CDR Dwight Alexander, USN (RET), PE, SMIEE  
**Vice-Chair:** Prof. John Prousalidis  
**Secretary:** Prof. Federico Silvestro  
**Immediate Past Chair:** Paul Bishop

### 1. Significant Accomplishments:

- After the rebooting in October 2020, during 2021 and 2022 we campaigned to both re-connect with former members and recruit new members.
- The most closely related IEEE Technical Conference is the Electric Ship Technology Symposium (ESTS) held on a biannual basis in USA (it is planned to take place in early August 2023 in Washington, DC). Moreover, the new edition of ESARS-ITEC being very close to MSCC is planned to take place in late March 2023, in Venice (Italy). Being in touch with the Organizing Committees of both conferences, a series of special and panel sessions related to MSCC fields of interest are underway. In parallel, a number of tutorial-webinars are under discussion most of them relevant to IEEE 45 standards family (Recommended Practice for Electrical Installations Shipboard) developed and maintained by the IEEE Industrial Applications Society (IAS) Petroleum & Chemical Industry Committee (PCIC). The MSCC members work closely with IAS/PCIC on the IEEE 45 family of recommended practices.
- Activities of WG's on IEEE 45.1 (Design) have made a significant progress, while WG on 45.2 (Controls) has concluded its work and the standard draft is in balloting process.
- Communication with other PES-technical and coordinating committees (and other organizations) has started since MSCC's charter aligns with their interests (see below); e.g., classification societies, International Organizations, other Institutes. Despite the ongoing pandemic and the MSCC members and stakeholders commitments, several meetings of organizational nature have taken place via Tele / WEB-conference tools, which have been efficient in facilitating communication.

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

As a Coordinating Committee, MSCC provides the interdisciplinary expertise of marine electrical power engineering to the maritime industry (especially relevant now as increasing marine platform / vessel electrification is being incorporated to address a myriad of specific technical issues for platform / vessel performance) taking advantage of the work and outcome of other Committees more dedicated to general electrical engineering disciplines (e.g., T&D, ODSP). Certain standards closely coupled to the MSCC (e.g., IEEE-45 Series, IEEE 1662, IEEE 1709, IEEE 1826, and IEC/IEEE 80005) are well recognized by the maritime community as extremely useful, while new challenges are always emerging. Moreover, IEEE-SA having recognized the great interest in the maritime sector in late 2022 has launched an Industry

Connection Activity entitled “Sustainable Maritime” (ICA-013-22) recognized encompassing all topics of MSCC that could be further cultivated in a more innovative manner.

### **3. Benefits to Volunteer Participants from the Committee Work:**

The Volunteer Participants can both raise issues and work to develop solutions to marine electrical power problems. Despite the fact that most members come from the Industry vice academia and have less free time to devote, their participation will prove beneficial due to the easy and efficient collaboration with other industry, academic and government experts around the world who share similar thoughts and face similar challenges in the maritime business.

### **4. Recognition of Outstanding Performance:**

- *Dr. Mohamed Belkhat, Ms. Marie Lawson, Mr. Geoff Lowe for leading amending IEEE 45.2.*
- *Professor Julie Chalfant, Andy Lemmon, John Stevens for organization ESTS 2023.*
- *Dr Norbert Doerry, for his contribution to amending IEEE 45.1.*
- *Mr Moni Islam, for his contribution to keep incentivizing people to get involved within MSCC activities.*

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

As already mentioned, the ‘Coordinating’ role of MSCC seems to be substantial and critical. There is a strong interest to face challenges related to electrical engineering in the marine sector (not necessarily limited to power but also to communication, control, cyber-security, big-data, IoT, blockchain, etc.) that many entities have expressed their interest to either attend via delegates (e.g., classification societies like ABS, LRS, RINA, BV, DNV).

Updating the IEEE Industry Applications Society (IAS) Petroleum and Chemical Industry Committee (PCIC) IEEE 45 Series has had a significant progress. Updating IEEE 45.2 (Control Systems) is, currently in balloting. Regarding IEEE 45.1 (Design), there has been a substantial update in several sections and is about be considered in its entity in early 2023. Moreover, there has been a strong interest in IEEE/IEC 80005, collaboration with IEC committees have been cultivated to some extent. Besides the already established Finally, some MSCC work (e.g., on DC distribution or on electrification of maritime transportation) has been useful in the IEEE European Power Policy Committee in the preparation and/or amendment of policy documents related to challenges emerged due to the decarbonization.

### **6. New Technologies of Interest to the Committee:**

Technologies related to environmental friendly shipping such as:

- Smart grids in ships and ports
- AC and DC ship-to-shore interconnection
- Medium voltage DC distribution in ships
- Frequency converters dedicated to ship-to-shore interconnection
- Renewable energy sources (RES) and energy harvesting techniques deployed at sea

- Efficient submersible interconnections (for islands, or for offshore and near-shore RES plants).

## 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         | Officers from regions 8,9 and 10  | Subcommittee officers from regions 8, 9 and 10 | Subcommittee members from regions 8,9, and 10 |
|---|---|--|---|
| Officially 90 but about 35 active in 2022 | The Vice chairman and the Secretary are from Region 8. In addition 4 representatives come from Region 8 | <i>Subcommittees have not been activated.</i>  | <i>Subcommittees have not been activated.</i> |

## 8. Problems and Concerns:

Continuing relevance and participation in MSCC activities will be driven by convening the committee on a regular basis to discuss relevant topics of interest to the members. To this end the MSCC will formally convene (about twice per year) via tele-/WEB-conference. Decoupling MSCC meetings from specific IEEE sponsored symposiums could ensure the maximum number of participants can attend. The WEBEX account provided officially by IEEE-PES will be fully exploited.

## 9. Significant Plans for the Next Period:

- Continue recruiting new members
- Set the framework of collaboration with other entities
- Continue supporting IEEE 45 Series updates when coordination across IEEE communities.
- Trigger the discussions about new challenges which could result to new standards or updating existing ones. Within this frame, it is planned to organize webinars on related topics.

**Submitted by:**

**Dwight Alexander (IEEE/MSCC Chairman)**  
**John Prousalidis (IEEE/MSCC Vice Chairman)**  
**Federico Silvestro (IEEE/MSCC Secretary)**

**Date: 03 January 2023**