**IEEE / PES ELECTRIC MACHINERY COMMITTEE (EMC) MEETING**

**PES General Meeting in Chicago - July 2017**

Date: Thursday, July 20, 2017

Time: 8:00 – 12:00 AM

Location: S-Ontario

Meeting Agenda

1. Introduction of Attendees
2. Committee Approvals
   1. 2016 Minutes
   2. 2017 Agenda
3. Chairman’s Report Kiruba Haran
4. Tech Council Meeting Report Mike Sedlak
5. Standards Coordinator Innocent Kamwa
6. EMC Leadership Elections Kiruba Haran
7. Reports
   1. Sub-committees
      1. Generators Gayland BLOETHE
      2. Motors Masahide OSHIMA
      3. Materials Nancy FROST
      4. Renewable energy machines and systems Istvan ERLICH
   2. Liaisons
      1. Industrial Application Society (IAS) D. Ionel
      2. Power System Relaying N. Nilsson
      3. IEMDC Steering Committee O. Mohammed
   3. Working groups
      1. WG1 Awards / Recognitions \* Nils Nilsson
      2. Fellows Coordinator Nils Nilsson
   4. Other
      1. Long Range Planning Kiruba Haran
8. Other business
   1. Planned sessions and panels for 2018 PES-GM
   2. Sub-committee websites
   3. AIAA collaboration, liaison

1. New Business

\* 5 minutes allocation for the winners of the prize paper awards to present a brief synopsis of their paper

# Introduction of Attendees

The meeting began with a general introduction of all attending the meeting.

A total of 26 people attended this year’s meeting, and are listed in Attachment B.

Kiruba thanked the attendees for managing to make the meeting, in spite of some unavoidable scheduling conflicts. Attendees introduced themselves.

# Committee Approvals

## 2016 minutes

Nils Nilsson moved to accept the amended minutes. Osama Mohammed seconded the motion, and it was passed by unanimous agreement.

## 2017 Agenda

Bob Nelson moved to accept the agenda. Nils Nilsson seconded the motion, and it was passed by unanimous agreement.

The minutes below are written in the sequence of the original agenda.

# Chairman’s report – Kiruba Haran

Kiruba H reviewed his written report, found in Attachment M. He recommended that we consider 1-2 hour sessions for next year, and to avail ourselves of Combo sessions, to help ease scheduling conflicts. Kiruba also highlighted a best practice to use half of the subcommittee meeting to review the status of the working groups.

He also explained that Thomas Wu (Motor SC) is reaching out to those in AIS for help with standards in need of immediate action. We need to make sure each session has a clear name, and that the Transaction paper session should not conflict with the EMC meeting (as it does this year).

Kay Chen provided some additional comments. She highlighted that the on-line program should include detail on the meeting / session description. Kay C also recommended that WG’s should publish updates on their work, to attract wider attention. There were 14 papers from the EMC for 2017. She prompted the members to support the paper review process.

Kiruba highlighted the key role of Standards coordinator, and noted that Innocent was looking for someone to shadow him, as he transitions out of the role over the next several years.

# Tech Council Meeting Report – Mike Sedlak

Mike Sedlak attended the 2017 meeting, and provided some background on the Tech Council, and highlighted its role on coordination. He described consideration of the IEEE1547 standard update on integration of renewables at the Tech Council meeting. This included NERC’s increased involvement with the IEEE on this topic. Mike S noted that the Tech Council expects EMC attendance, regardless of scheduling conflicts.

Mike S explained that the EMC needs to ensure the attendance list has been forwarded to the Tech Council. Also, Mike reminded the group regarding development of a brochure regarding the EMC.

Given the extensive discussion regarding IEEE 1547, Bob Nelson interjected with some background. He highlighted that the key complication was that the latest version of 1547 removes the 10MVA limit, and that it does not provide clear definition of distribution vs. transmission. The developing committee anticipated it would apply for applications below 35kV. However, recent NERC actions define transmission as that which is above 100kV, and distribution is anything below. This leaves generators connected at 69kV potentially covered by C50.13 and IEEE 1547. He recommended that in the future, the standard should be within the PES purview.

The group had a protracted discussion on the need to review the IEEE 1547 with the Tech council. Kay suggested drafting a note to Tech Council regarding higher level coordination.

Jim Lau asked how Mike S has operated as the Tech Council representative. Kiruba and Mike explained that the chair has appointed Mike to cover. Mike recommended that ideally two folks would attend.

Finally, Mike noted the Tech Council reinforced the importance of outreach. He also pointed out consideration for a second joint technical session. Jim Lau recommended that might be useful for Insulation Subcommittee. Mike asked if the EMC has a liaison on emerging technologies, as one should be available.

# Standards Coordinator Report (Innocent Kamwa)

Innocent briefly summarized the status of EMC standards. He highlighted that IEEE 115 and IEEE 1110 are the most urgent. His data is attached (see Attachment K).

Innocent also looked for feedback on updates to the ViewSPEC CD compilation.

# EMC Leadership Elections

Kiruba explained the progression of EMC leadership positions. Nominations were taken for the position of EMC secretary, which becomes open at year end. Mike Sedlak nominated Jim Lau. Gayland Bloethe seconded. Nils N moved the election, and Jim was elected by unanimous vote.

# Reports

**(a) Subcommittee Reports**

## Generator Subcommittee – Gayland Bloethe

The Generator Subcommittee report can be found in Attachment D. A brief synopsis was presented at the EMC meeting by Gayland.

He highlighted the extensive work on IEEE 115 and IEEE 1110. The PAR for IEEE 1110 is expected to need an extension to complete revisions requested by NERC.

Also, WG8 is actively modifying the new draft to address (a) previous ballot feedback, (b) Grid Task force recommendations, and other points. The Grid Task force held a panel session on the task force recommendations – with a completed report expected in October-2017.

Edson Bortoni is going to chair a new working group (WG) on IEEE 1665. Gayland highlighted the possibility of merging C50.12 into C50.13. Finally, he noted a new Task Force to help with IEEE 1547 ballot resolution.

At this moment, the generator subcommittee (GSC) anticipates two panel sessions.

## Motors Subcommittee – Masahide OSHIMA

The MSC proposed 4 panel sessions for the 2017 General Meeting, but only got 10 papers, so merged to 2. This is attributed to the large attendance at IEMDC.

The committee is planning for 4 panels for the 2018 General Meeting.

The WG on revision to the PM Machine testing will continue. He highlighted that IEEE 112 is in need of immediate action. Nick Stranges is leading. Revisions of IEEE 252, 620, 1415 is also required, and the subcommittee is identifying conveners.

## Materials Subcommittee (MSC) – Jim Lau

Jim Lau provided the report. He noted that the group met at the DIS.

A total of 19 standards were reviewed. Jim highlighted IEEE 1719 on evaluation of stator cores. He also noted a request to consider a new standard on partial discharge (PD) with pulsed (vs sinusoidal) input. Finally, Jim updated on the high voltage winding dissection guide. Finally, there is a new guide, entitled “advanced diagnostics on DC testing”.

Next meeting is 7-Dec-2017, by BC Hydro.

## Renewable energy machines and systems – Istvan Erlich

Istvan reviewed the minutes of the subcommittee meeting held 19-July-2017.

The subcommittee has no standards so far – Focus on machines.

The S/C Meeting was held on Monday. There were 15 attendees.

The subcommittee contributions are focused on grid codes, rather than new IEEE standards.

Three panels were held this year, with ~60 attendees for each.

Six panels are planned for next year, including at least one joint panel session. Kiruba recommended 2 hour sessions.

The subcommittee is recommending the following tutorials for the 2018 General Meeting:

* Adjustable speed pumped storage
* Specification of Synchronous Condensers

There was a proposal for the subcommittee to sponsor a new standard regarding wind turbine monitoring via a SCADA system. A follow-on teleconference will be held in approximately 1 month.

The subcommittee proposed a task force at the EMC level to resolve ballot comments regarding IEEE 1547. Participants were identified, along with potential chairs.

Swajtie will be secretary, and others advance.

**(b) Liaisons**

## IAS (Industry Applications Society)

Andy Knight reported that members of the society are involved in the machine standards within the PES (ex: IEEE 1812). They’ve discussed a joint session on special issues with converters & drives.

## Power System Relaying – N. Nilsson

* The PSRC holds three meetings a year away from the PES Annual Meeting (January 9-12, 2017 in New Orleans, May in Albuquerque & September in Phoenix)
* The PSRC Chair is Mike MacDonald. Vice-Chair is Pratap Mysore. Secretary is Russ Patterson. Rotating Machinery Protection Subcommittee (RMPS) is chaired by M. Reichard.
* PSRC is now reorganizing to comply with the PES reorganization plan. There has been a lot of cooperation with the new Power Systems Communications and Cybersecurity Committee. Very soon the PSRC will be renamed the Power System Relaying and Control Committee (PSRCC).
* The PSRC is in liaison with NERC, EPRI, CIGRE and IAS.

Nils Nilsson had previously sent his report which is given in Attachment C.

## IEC / ISO Liaison –

There was no IEC/ISO liaison report.

## IEMDC – O. Mohammed

Mohammed highlighted the IEMDC in Miami, May 2017. His report is found in Attachment N. The session was well attended, with 500+, compared to typical attendance of 350. There were 400+ papers presented. The 2019 IEMDC will be in San Diego.

**(c) Working Groups**

## Awards - Recognitions – N. Nilsson

Nils presented the awards for 2017.

## Fellows Coordinator – N. Nilsson

This year 2 members of the EMC were appointed as IEEE Fellows:

* Juri Jatskevich (EMC)
* Sang Bin Lee (AIS)

Nils highlighted that subcommittee chairs are responsible to identify 2 potential candidates from their teams. Based on a recent IEEE training session, he highlighted that recommendations need to highlight the candidate’s impact on the industry. Do not list a paper count. Finally, a strong endorsement (from an existing fellow) is critical.

Kiruba then described that at the Tech Council meeting, the PES is underrepresented regarding Fellows in the IEEE. He also noted that a strong endorsement is important early in the process. Also, consider those whom are practitioners.

## The Distinguished Service Award

The Distinguished Service award was presented to Rob Thornton-Jones, for his work on the Grid Code Task force.

## The EMC is recognizing three (3) outstanding technical papers in 2017. They are as follows:

1. X. Chen, J. Wang, V. Patel & P. Lazari, “A Nine-Phase, 18-slot, 14-pole Interior Permanent Magnet Machine with Low Space Harmonics for Electric Vehicle Applications,” in Transactions on Energy Conversion, Vol 31, No. 3, September 2016, pp. 860-781.

This was selected as the EMC Best Paper.

1. J. Bayless, N. Kurihara, H. Sugimoto and A. Chiba, “Acoustic Noise Reduction of Switched Reluctance Motors with Reduced RMS Current and Enhanced Efficiency,” in Transactions on Energy Conversion, Vol 31, No. 32 June 2016, pp. 627-636.
2. R. Wang, S. Pekarek, M. Bash, A. Larson & R. Van Maaren, “Incorporating Dynamics in Mesh-based Magnetic Equivalent Circuit Model of Synchronous Machines,” in Transactions on Energy Conversion, Vol. 30, No. 3, September 2015, pp. 821-832.

A 5-minute presentation was delivered by the authors.

# (d) Other

## Long Range Planning – Kiruba Haran

The Long Range Planning meeting will be held on the Thursday afternoon 20 July 2017. Minutes will be available on the EMC website.

# Other business

Planned sessions and panels for 2018 PES-GM

Innocent K submitted panel proposals via e-mail:

* Upgrading IEEE Std 115 to reflect new testing approaches and emerging sensing technologies – Chair I. Kamwa, Co-Chair H. Karmaker
* Harmonizing IEEE Standards and NERC requirements related to synchronous generator and excitation systems for power system dynamic modelling - Chair Leo Lima, Co-Chair I. Kamwa

The minutes above document other anticipated Panels. Please confirm panel session requests to Kay Chen prior to November. As of these minutes, there are 12 panel sessions envisioned within the EMC.

After discussion, the committee agreed to do a call for papers.

## Sub-committee: Websites

Dionysis Aliprantis continues to perform an excellent job on the website maintenance.

Kiruba H noted that the motors subcommittee website needs update to reflect the current leadership.

## AIAA collaboration, liaison

Kiruba noted that the AIAA is looking for help on much larger machine sizes required for hybrid propulsion for aircraft. This is a continuation of recent cooperation. With increased voltage, contributions on cabling will also be needed. There is another workshop

# New Business

* The group discussed the possibility of combining C50.12 into C50.13. Bob Nelson also commented that the C50.13 revision should address synchronous condenser applications. The EMC committee asked the two conveners to discuss. The discussion included extending the C50.13 to more fully address synchronous condensers.
* Nils Nilsson proposed to adjourn the meeting and Gayland Bloethe seconded to end the meeting. Everyone is in favour to end the meeting.

The EMC website is located here: <http://www.ewh.ieee.org/soc/pes/emc/>

**ATTACHMENTS TO THE MINUTES**

A EMC Organization Chart

B Updated membership list and attendance Sheet

C Power System Relay Committee Liaison Report

D Generator Subcommittee Report

E Motor Subcommittee Report

F Materials Subcommittee Report

G Renewables Subcommittee Report

H ISO Liaison Report

K Standards Coordinator Report

L Awards & Fellow’s Coordinator Report

M Chair’s Report

**ATTACHMENT A: PES-EMC ORGANIZATIONAL CHART - 2017**

**Officers**

**Chairman**

Chair: Kay CHEN

Past Chair: Kiruba HARAN

**Vice Chairman**

John YAGIELSKI

**Secretary**

Jim LAU

**Representatives and Coordinators**

**Rep. to TCPC**

Mike SEDLAK

**STDs Coordinator**

Innocent KAMWA

**Fellows Coordinator**

Nils NILSSON

**Webmaster**

Oleg Wasynczuk

**Webmaster**

Dionysios ALIPRANTIS

**Awards & Recognition**

Nils NILSSON

**Liaisons**

**Excitation EDPG**

Robert THORNTON-JONES

**PSRC**

Nils NILSSON

**IAS**

Dan IONEL

**Emerging Technologies**

TBD

**Subcommittees** (Subcommittee name / Chair / Vice Chair / Secretary)

**Materials**

- *Nancy FROST*

*- Aleksandra JEREMIC*

*- Paul GABERSON*

**Motors**

- Masahide OSHIMA

- Yao DUAN

-Burlent SARLIOGLU

**Generators**

Gayland BLOETHE

Raul RICO

Andreas Kappel

**Renewable Energy Machines & Systems**

- Istvan ERLICH

- Ed MULJADI

- TBC

**Attachment B: EMC Rosters of Voting & Corresponding Members**

(note 2016 attendance is including in Voting Member List)



**Attachment C: Power Systems Relay Committee Liaison Report**



**Attachment D: Generator Subcommittee Report**



**Attachment E: Motor Subcommittee Report/ Minutes**

****

**Attachment F: Materials Subcommittee Report/Minutes**

****

**Attachment G: Renewables Subcommittee Report/Minutes**

Not available - These minutes record verbal report based on separate minutes from the last Subcommittee meeting

**Attachment J: ISO Liaison Report**

NONE FOR 2017

**Attachment K: Standards Coordinator Report**



**Attachment L: Awards & Fellows Coordinator Report**



**Attachment M: Chair’s Report**



**Attachment N: IEMDC Chair’s Report**

