

IEEE Foothill Section

SEPTEMBER 2024 MONTHLY NEWSLETTER

What's Inside

IEEE Foothill September ExCom/
OpCom Monthly Hybrid Meeting

page 1-2

Students Branch Update

page 2

PES Event Report

page 3

Upcoming Events

page 4

IEEE Foothill Section September ExCom/OpCom Monthly Hybrid Meeting

Prepared by: Max Cherubin | Proofread by: Prof. Gerald Herder

The IEEE Foothill Section held its monthly ExCom/OpCom hybrid meeting at the DeVry University Ontario campus. The meeting officially started at 07:12 pm, and the chair reviewed the meeting minutes last month. A few corrections need to be made.

Before the chair went through the agenda for their meeting, he had a proposal to the section to approve having a Constant Contact account for the email blast since some members are still not receiving any eNotices from the section. The chair is still waiting for the last year's approved minutes from the secretary. The TAE Tour is now set and there will be some IEEE goodies to be given away that day. The luggage tags that our vice-chair, Osman Ceylan, proposed are now ready to be distributed. You can contact the executive committee if you want to order. We also want to remind the section that Election 2025 is just around the corner. So, we encouraged the section to be more active.

Membership Development

Kim Mosley reported that we had a monthly addition of 16 members. 10 from student/undergraduate and 6 member grade putting to a total of 930 members. No senior elevation for this month.

Social Media and Website

Osman Ceylan, the vice chair, cannot provide a report due to his work schedule. However, the luggage tags/keychains are now ready to be distributed. Any section member can get one.. You can contact the section at sec.foothill@ieee.org.

Technical Committees

MTT, Scott Wedge, is not available. However, CLASTECH 2024 will be on Nov. 1st at Eravant, Torrance, CA.

Bo Chen reported on creating a TIG (Technical Interest Group) for Photonics. He also mentioned that they will find a speaker/researcher to have a talk about Photonics.

Dr. Tamer Omar of ComSoc said they plan to look for a host for events with communication topics. He's working with the CPP-ComSoc Student Branch and is also requesting funding. They are planning to work with IEEE Clubs in the organization for an IoT/Design Competition that relates to microcontrollers by the end of the semester. Michael Nelson, the CPP student chair, wants to do it twice a year. They are planning to set it by the end of November.

This newsletter is brought to
you by:



CS Bassem Maurice will have an upcoming event on Sept. 19, 2024, regarding the Tactical & AI Enabled Systems Initiative. He is also asking the section for a fund as he would likely attend the IEEE USA - Packaging CHIPS with CHIPS on October 17, 2024, in Scottsdale, Arizona.

PES, Dr. Koji Yamashita had their talk last September 04, Advanced Measurements: The Key to Understanding Dynamics in an Evolving Grid. There were 28 who registered, but only 18 showed up. More on this on the next page. They also have upcoming talks in November, but the dates are tentative.

Affinity Groups

WiE, Kimberly Mosley will have a joint event with the Oregon Section about "What would you do to secure your place in Industry 5.0?" on October 17, 2024.

YP, Pankaj Bhowmik confirmed the TAE Tour on September 27, 2024. They also had a joint event with the Hawaii YP Section last September 13, about Using Predictive Engineering for Multiple Optimization.

CN, Cash Sutton is not available. However, they had their September meeting last September 04, 2024.

Student Branch Update

CSUSB, Melissa Castro, reported that their dual/shared opener for the clubs went extremely well as they had full classroom of students. They presented workshops they had planned for their clubs like the veteran student association and the cyber security clubs joined them in support. IN the end, they had a small crafts session where students could make slime and theyb loved it.



CBU, Trent James Kaipo reported that they two club fair events that introduced students to the CBU IEEE Club. 25 students were interest in total. They also had their first IEEE meeting where they had multiple new members who were ready and interested in working on projects.

PES: Overview of Demonstration Projects Aimed at Harnessing Renewable Energy on Remote Islands

Reported by: Dr. Koji Yamashita

The IEEE PES Foothill Seminar, titled “Overview of Demonstration Projects Aimed at Harnessing Renewable Energy on Remote Islands,” was held online on Aug. 6, 2024. Prof. Petros Aristidou from the Cyprus Technological University showcased a demonstration project in a small isolated island grid in Cyprus, highlighting the current technical challenges and their mitigations.

Dr. Arisiduo started with informative technical challenges caused by the decrease in grid inertia by augmenting inverter-based resources (IBRs). He then delved into small grid-specific technical problems, i.e., frequency response capability, such as (inertia-based) fast frequency response.

A total of 17 participants attended this webinar. During the discussion segment, speakers and the audience elaborated on the strength of the forthcoming technologies, grid-forming converter technologies, contrasting the frequency response capabilities that grid-forming converters have but grid-following converters do not have. Slides are available thanks to Dr. Aristidou’s kind treatment. Interested individuals can contact Dr. Koji Yamashita kyamashita@ucr.edu to acquire the PDF format file.

The next topic is a dynamic stability study with grid-forming converters in Spain. The speaker, Jesus Castro, an assistant professor at the University of Carlos III de Madrid will demonstrate a state-of-the-art academic researches highlighting forthcoming grid-forming converter technologies in October.



Enhancing System Security in Cyprus:
Addressing Low-Inertia Challenges and Frequency Stability

Petros Aristidou
Department of Electrical Engineering, Computer Engineering & Informatics
Cyprus University of Technology

IEEE
Online, 7th August 2024

S P S
Sustainable Power Systems Lab

EUT
EUROPEAN UNIVERSITY OF TECHNOLOGY

Cyprus system description

- Islanded system @ 50 Hz
- 132 kV transmission system
- 1465 MW installed capacity (conventional units) at three locations
- Peak load ~ 1250 MW
- Significant PV penetration (currently ~700 MW installed)
- Heavily depends on UFLS to maintain frequency security (first stage at 49 Hz)

Power Station	Generation Unit	Number of Units	Capacity (MW)
Vasilikos	Steam Turbine	3	130MW
	Combined Cycle Gas Turbines	2	220MW
Eleftheria	Steam Turbine	1	32.5MW
	Gas Turbine	6	40MW
Marousi	Internal Combustion Engines	6	17MW
	Gas Turbines	4	25MW

Data-driven FFR sizing approach

Iteration	No. of Scenarios	FFR (MW)	Scale (Hz)			
	Total	Filtered	Min	Max	Min	Max
1	500	485	0	0	47.69	49.27
2	485	416	4.9	3.9	49.04	49.17
3	416	29	3.9	26.5	49.01	49.12
4	29	0	4.9	18.2	49.1	49.12
Total	500	-	0	33	49.04	49.27

Iteration	No. of Scenarios	FFR	Scale			
	Total	Filtered	Min	Max	Min	Max
1	500	115	0	0	48.53	49.27
2	115	0	10	10	48.95	48.98
Total	500	0	0	18.25	48.95	49.27

Summary

Conclusion

- The penetration of power-electronic-interface resources is converting traditional power systems into low-inertia power systems. This comes with many opportunities and challenges
- The impact is more prominent now in small, islanded, systems (like Cyprus) but will gradually become an issue in bigger countries
- For the first time, small countries are forced to be pioneers in this area, developing and implementing practical solutions that are widely untested

Future steps

- Moving to grid-forming technologies is a necessity for Cyprus. However, there is a lack of standardization and industrial requirements for these technologies
- Need to be proactive rather than reactive

Current and future challenges in Cyprus

Low Loading Conditions

- Frequency response (mainly Nadir problems) → next slide
- Reduced system strength (blue: current, orange: predicted 2028)

Medium and High Loading Conditions

- Network congestion (limited RES hosting capacity)
- Increased ramp rate requirements for generators

TAE Technologies Tour 2024

Here are some snippets of our TAE Tour last September 27, 2024. On behalf of the IEEE Foothill Section and TAE Technologies Inc., we would like to thank everyone who attended the tour, over 80 people, including 20 TAE employees. We highly appreciate your time and effort in participating in this wonderful experience.



Upcoming Event

IEEE Foothill October ExCom/
OpCom Monthly Hybrid Meeting

October 8, 2024

IEEE Foothill Consultants
Network Meeting

October 2, 2024

Social Media



*We're
looking for
Volunteers*

We are looking for volunteers. If you're interested, you can email us at sec.foothill@ieee.org.

