



OPENING LECTURE

Assessing the Scalability and Privacy of Energy Communities by Using a Large-Scale Distributed and Parallel Real-Time Optimization

The poster for the opening lecture features a circular portrait of Pierluigi Siano on the left, with the word "SPEAKER" curved above it and "ONLINE EVENT" curved below it. To the right, the text reads: "OPENING LECTURE" in large black letters, "PIERLUIGI SIANO" in large black letters, and "UNIVERSITY OF SALERNO" in smaller black letters. Below this, the title of the lecture is displayed in black text: "ASSESSING THE SCALABILITY AND PRIVACY OF ENERGY COMMUNITIES BY USING A LARGE-SCALE DISTRIBUTED AND PARALLEL REAL-TIME OPTIMIZATION". A black box at the bottom contains the date and time: "NOV 12th, 10:30-12:00 (GMT-3)". At the very bottom, the SEPOC 2022 logo is shown, featuring a stylized brain and the text "SEPOC 2022 INTELLIGENCE AND CONNECTIVITY".

In the context of the energy transition, energy communities are gaining increasing attention all over the world, in recent years. By participating in an energy community, prosumers may take a leading role in the energy transition

and improve the self-consumption of renewable energy produced inside the community. Prosumers can carry out energy exchanges inside the energy community and provide ancillary services to the system operators, thus contributing to improve the efficiency and stability of the grid. A novel scalable, privacy-preserving, and real-time distributed parallel optimization is proposed to manage a large-scale energy community, considering energy exchanges inside the community according to the model of virtual self-consumption and the provision of ancillary services. The proposed method preserves the privacy of prosumers and allows the assessment of the impact of energy exchanges on the ancillary services provided by an energy community. Simulation results confirmed that the proposed method is superior in terms of privacy if compared with the equivalent centralized optimization and that it has a convergence rate higher than that of the splitting conic solver (SCS).

PLENARY SESSION + PANEL DISCUSSION

AI, IoT and Advanced Control Applied to Power Electronics and Microgrids

PLENARY SESSION
+ PANEL DISCUSSION

   

MAURÍCIO DE CAMPOS **RAJ TADEPALLI** **GILNEY DAMM** **MARCELO GODOY SIMÕES**

**"AI, IOT AND ADVANCED CONTROL APPLIED
TO POWER ELECTRONICS AND SMART GRIDS"**

NOV 13th, 9:00am - 12:30am (GMT-3)

 **SEPOC 2022**
INTELLIGENCE AND CONNECTIVITY

PLENARY SESSION + PANEL DISCUSSION

Research and Future Perspectives on Power Electronics

**PLENARY SESSION
+ PANEL DISCUSSION**

DENIZAR CRUZ MARTINS **HUMBERTO PINHEIRO** **JOSÉ RENES PINHEIRO**

**"RESEARCH AND FUTURE PERSPECTIVES ON
POWER ELECTRONICS"**

NOV 14th, 1:30pm - 5pm (GMT-3)

 **SEPOC 2022**
INTELLIGENCE AND CONNECTIVITY

PLENARY SESSION + PANEL DISCUSSION

Optimization Applied to Power Electronics and Power Systems

PLENARY SESSION
+ PANEL DISCUSSION



LUIZ VILLA JULIO ELIAS
NORMEY-RICO MARCELO LOBO
HELDWEIN VLADIMIRO MIRANDA

**"OPTIMIZATION APPLIED TO POWER
ELECTRONICS AND POWER SYSTEMS"**

NOV 15th, 9:00am - 12:30am (GMT-3)



SEPOC 2022
INTELLIGENCE AND CONNECTIVITY

**LIVE LABORATORY DEMO: " AUSTRIAN
INSTITUTE OF TECHNOLOGY - AIT"**

Presenters: Zoran Miletic, Werner Tremmel, Anja Banjac

LABORATORY LIVE DEMO
AUSTRIAN INSTITUTE OF TECHNOLOGY (AIT)

 **ANJA BANJAC**  **ZORAN MILETIC**  **WERNER TREMMEL**

NOV 14th, 10:00 am - 11:00 am (GMT-3)

 **SEPOC 2022**
INTELLIGENCE AND CONNECTIVITY

**WORKSHOP: "OWNTECH - AN OPEN-SOURCE
FAST PROTOTYPING POWER ELECTRONICS
TECHNOLOGY: DEMO AND COMMUNITY
ECOSYSTEM PRESENTATION"**

Presenters: Luiz Villa



SPEAKER

**OWNTECH
WORKSHOP**

LUIZ VILLA
UNIVERSITY OF TOULOUSE, FRANCE

**"AN OPEN-SOURCE FAST PROTOTYPING
POWER ELECTRONICS TECHNOLOGY:
DEMO AND COMMUNITY ECOSYSTEM PRESENTATION"**

NOV 15th, 8:00_{am} - 9:00_{am} (GMT-3)

 **SEPOC 2022**
INTELLIGENCE AND CONNECTIVITY

Abstract: Power electronics is a key technology for the energy transition. However, it remains a fragmented market, with expensive equipment and a long timer to market. To accelerate the energy transition and render power electronics accessible, OwnTech proposes an open-source fast prototyping tool. This tool comprises an open-hardware, open-software and open-dataware that can be used together to comprehensively create DC-DC and DC-AC applications. This presentation will present the technology, make a demonstration of its reprogrammability and explain the community ecosystem which everyone can join and participate.