ELECTRIMACS 2026 Palermo

Consiglio Nazionale delle Ricerche

IMACS

INM ISTITUTO DI INGEGNERIA DEL MARE
INSTITUTE OF MARINE ENGINEERING

16th International Conference of the IMACS TC ELECTRIMACS

May 18-21, 2026
PALERMO, Italy

PROGRAM

www.electrimacs2026.org

ELECTRIMACS 2026 Palermo

CONTENTS

PROGRAM AT A GLANCE

MONDAY - 18 MAY

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16:00 - 17:00 **Tutorial 1**
Dr. M. Pucci

17:00 - 18:00 **Tutorial 2**
Dr. F. Carastro

19:00 - 20:30 **Welcome Cocktail**
at Palazzo Leone

TUESDAY - 19 MAY

08:00 **REGISTRATION**

08:30 **Opening Session**

09:00 **TT1.1** ROOM: Enrico + Federico | **TT2.1** ROOM: Ruggero | **TT3.1** ROOM: Guglielmo | **TT4.1** ROOM: Quasimodo

10:30 **Coffee Break**

11:00 **Keynote Speech 1**
Prof. P. Mattavelli

12:00 **Industry Talk**
Dr. S. Attia (Mathworks)

13:00 **Lunch**

14:30 **TT1.2** ROOM: Enrico + Federico | **SS1.1** ROOM: Ruggero | **SS8.1** ROOM: Guglielmo | **SS6.1** ROOM: Quasimodo

16:00 **Coffee Break**

16:30 - 18:00 **TT1.3** ROOM: Enrico + Federico | **SS1.2** ROOM: Ruggero | **SS2.1** ROOM: Guglielmo | **SS6.2** ROOM: Quasimodo

18:30 - 20:00 **Guided City Tour**

PROGRAM AT A GLANCE

WEDNESDAY - 20 MAY

08:00 **REGISTRATION**

08:30 **SS1.3** ROOM: Enrico + Federico | **TT2.2** ROOM: Ruggero | **TT3.2** ROOM: Guglielmo | **SS3.1** ROOM: Quasimodo

10:30 **Coffee Break**

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Prof. C. Gerada

12:00 **TT1.4** ROOM: Enrico + Federico | **SS12.1** ROOM: Ruggero | **SS11.1** ROOM: Guglielmo | **SS6.3** ROOM: Quasimodo

13:00 **Lunch**

14:30 **TT1.5** ROOM: Enrico + Federico | **TT4.2** ROOM: Ruggero | **SS4.1** ROOM: Guglielmo | **SS9.1** ROOM: Quasimodo | **TC meeting** ROOM: Pirandello

16:30 **Coffee Break**

17:00 - 18:30 **SS1.4** ROOM: Enrico + Federico | **SS2.2** ROOM: Ruggero | **SS13.1** ROOM: Guglielmo | **SS8.2** ROOM: Quasimodo

20:00 - 23:30 **Social Dinner**
at Stand Florio

THURSDAY - 21 MAY

08:00 **REGISTRATION**

08:30 **TT1.6** ROOM: Enrico + Federico | **SS10.1** ROOM: Ruggero | **TT3.3** ROOM: Guglielmo | **SS6.4** ROOM: Quasimodo

10:00 **IEEE IES Italy Chapter presentation**

10:30 **Coffee Break**

11:00 **Keynote Speech 3**
Prof. A. Sannino

12:00 **SS10.2** ROOM: Enrico + Federico | **SS12.2** ROOM: Ruggero | **SS11.2** ROOM: Guglielmo | **SS6.5** ROOM: Quasimodo

13:00 **Closing Session**

13:30 **Lunch**

15:00 - 19:00 **Optional Activity**

WELCOME MESSAGE
FROM THE GENERAL CHAIRS

Dear Conference Participants,

As General Chairs, we are delighted to welcome you to **ELECTRIMACS 2026**, the 16th International Conference of the **IMACS TC ELECTRIMACS**.

Over the years, **ELECTRIMACS** has established itself as a leading international forum for researchers, academics, and industry professionals working in electrical engineering and related disciplines. This edition continues that tradition by fostering scientific and professional exchange in areas such as modeling, simulation, design optimization, control implementation, and numerical methods, with particular emphasis on the growing impact of Artificial Intelligence and Machine Learning. These developments are increasingly important in addressing global challenges related to climate change, energy transition, and sustainable development.

The conference program features keynote lectures and tutorials by distinguished experts from academia and industry, together with technical tracks and special sessions designed to stimulate innovation, interdisciplinary dialogue, and new scientific collaborations. We hope that the breadth and quality of the program will provide all participants with valuable opportunities for discussion, inspiration, and knowledge sharing.

We are especially pleased to host this edition in **Palermo**, a **UNESCO** World Heritage Site celebrated for its remarkable historical and cultural heritage. Its unique blend of Arab-Norman architecture, Baroque landmarks, vibrant Mediterranean atmosphere, and renowned cuisine offers an inspiring setting for both scientific exchange and personal interaction.

We sincerely hope that the **ELECTRIMACS** community will continue to grow as a vibrant and inclusive network, advancing in both participation and scientific excellence while strengthening the spirit of collaboration that has long characterized this conference series.

We wish you a productive and rewarding conference and a memorable stay in Palermo!

With best regards,

Massimiliano Luna
National Research Council, Italy

Maria Carmela Di Piazza
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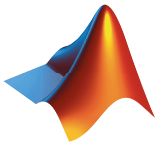
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The Conference Organizing Committee will confer two paper awards: a Best Paper Award and a Best Student Paper Award. Each award consists of an honorarium of 230 CHF and a Certificate. Awards are kindly supported by MDPI.

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ITALY JOINT CHAPTER C&S

THE ELECTRIMACS CONFERENCE

ELECTRIMACS is the official conference of the Technical Committee **ELECTRIMACS** of the **International Association for Mathematics and Computers in Simulation (IMACS)**. The conference aims to foster scientific and professional exchange to advance research in modeling, simulation, design optimization, control implementation, numerical methods, and machine learning applied to the electrical domain. Key application areas include power electronics systems and components, electrical machines and electromagnetic devices, energy management in electrical systems, transportation systems (including space, airborne, and waterborne applications), microgrids and smart grids, electric and hybrid vehicles, wireless power transfer, renewable energy systems, and energy storage technologies, including batteries, supercapacitors, and fuel cells.

Following the success of previous editions held since 1984, the 16th edition of the conference, **ELECTRIMACS 2026**, takes place from 18 to 21 May 2026 in the vibrant city of Palermo, Italy. The event is organized by the Institute of Marine Engineering (INM) of the National Research Council of Italy (CNR). All papers presented at the conference will be published either as book chapters in a Springer volume within the Lecture Notes in Electrical Engineering (LNEE) series or as journal articles in a special issue of Mathematics and Computers in Simulation (MATCOM), the official IMACS Transactions journal published by Elsevier.

For more details, please visit **www.electrimacs2026.org**

THE ORGANIZING INSTITUTION

The **National Research Council (CNR)** is Italy's first and largest public research institution, established in 1923. It operates under the Ministry of University and Research, conducting multidisciplinary scientific and technological research, promoting innovation, and fostering collaboration between academia, industry, and government. CNR has over 8000 employees, of which more than half are researchers and technologists. It encompasses numerous Institutes, organized into seven Departments, covering a wide range of scientific fields.

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The Institute of Marine Engineering (INM) is a public Research Institute within the "Engineering, ICT and Technologies for Energy and Transportation" Department (DIITET) of CNR. The INM Headquarters is in Rome, and three branches are located in Genova, Palermo, and Rome Tor Vergata. INM has a staff of 180+ people, including research scientists and engineers, technicians, postdocs, students, and administrative personnel. INM mission is pursued within the following research areas:

- Models, technologies and innovative design systems for marine/maritime sector (marine vehicles, robotics, and renewable energy)
- Energy conversion and management onboard marine vehicles and in port/coastal areas
- Environmental acoustics, underwater acoustics, and geo-acoustics
- Development and application of instrumentation (sensors, actuators, transducers)
- Logistics and transport in maritime environment

INM ISTITUTO DI INGEGNERIA DEL MARE
INSTITUTE OF MARINE ENGINEERING

THE CITY OF PALERMO

Palermo has been declared a **UNESCO World Heritage Site** since 2015, and its artistic beauty and rich cuisine will surely win you over! Palermo boasts a rich tapestry of attractions including Arab-Norman buildings, opulent chapels, palaces, and Baroque churches.

- **Palermo Cathedral:** A stunning example of Norman architecture (UNESCO World Heritage Site)
- **Palazzo dei Normanni:** Home to the beautiful Cappella Palatina (UNESCO World Heritage Site)
- **Monreale Cathedral:** Renowned for its exquisite mosaics (UNESCO World Heritage Site)
- **Teatro Massimo:** Italy's largest opera house
- **Quattro Canti:** A historic baroque square
- **Ballarò, Capo, and Vucciria Markets:** Vibrant street markets offering local food and crafts
- **Catacombe dei Cappuccini:** Historical underground burial site
- **Zisa and Cuba Palaces:** Examples of Islamic architecture in Sicily
- **Mondello Beach:** A popular spot for sun and sea

CONFERENCE VENUE

NH HOTEL PALERMO

Among the top venues in Palermo that are suited for conferences with 150+ attendees, **NH Hotel Palermo** offers the greatest guarantee of reliability, suitability of technical rooms and staff, and overall technical quality of the sessions.

It is a renowned 4-star hotel located in the prettiest part of the city, between the botanical gardens and the pier, and it looks out on the Gulf of Palermo.

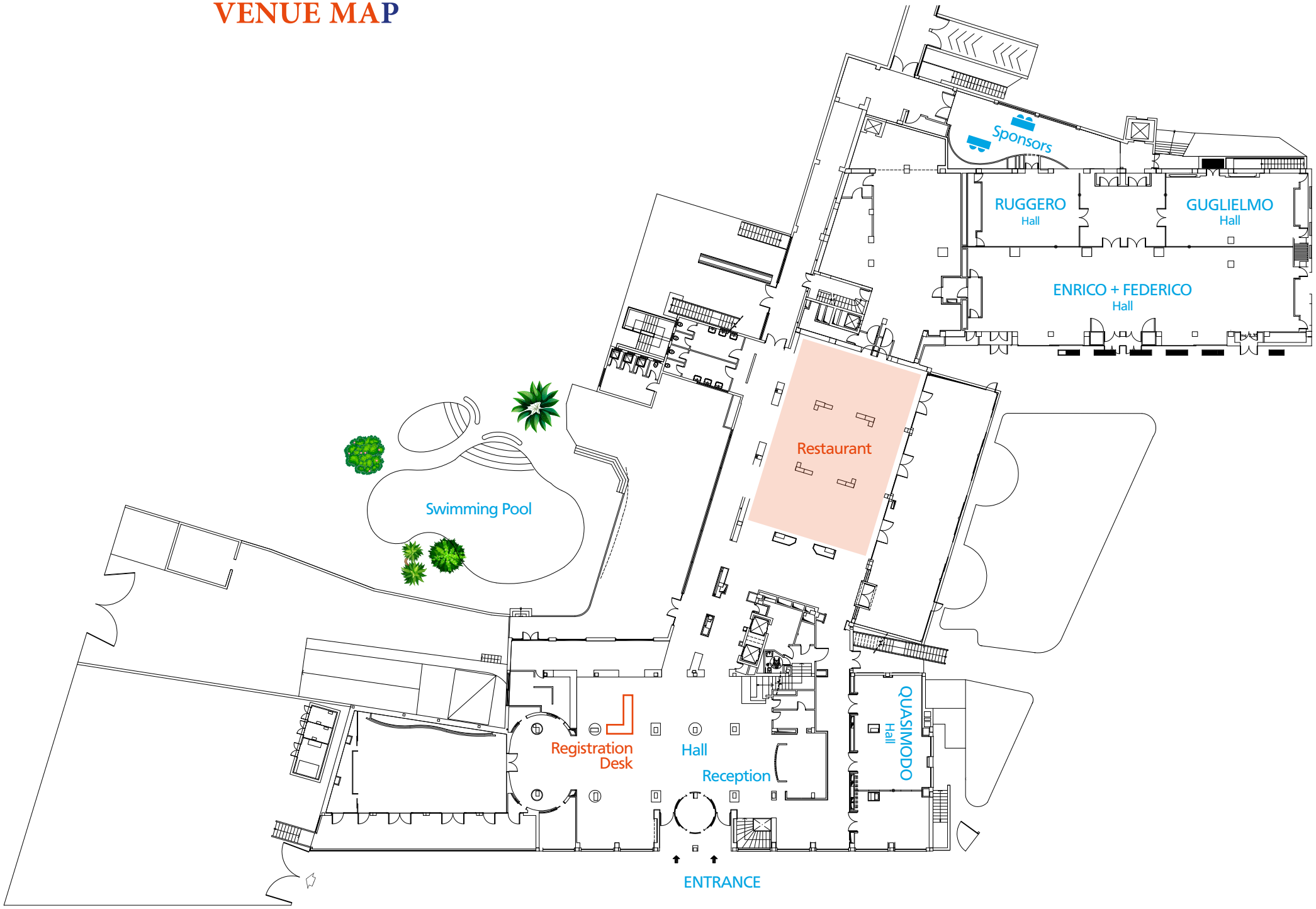
It can be reached very easily:

- 15 min. walking distance from the city center
- 15 min. walking distance from the train/metro station
- 10 min. by car/taxi from Palermo's port
- 40 min. by car/taxi from Palermo's airport
- 12 min. by car/taxi from A19 highway

Main features:

- 226 rooms for guests (some will be available at a reduced fee for ELECTRIMACS 2026 attendees)
- 13 modular function rooms with up to 450 seats, about 800 m2 total surface

VENUE MAP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PLENARY SESSIONS

KEYNOTE SPEECH 1

PROF. PAOLO MATTAVELLI

TIME: Tuesday, May 19 | 11.00 - 12.00
ROOM: Enrico+Federico

TITLE

Recent Trends for Intelligent and Flexible Control of Power Electronic Converters in Renewable-Dominated Power Grids

DESCRIPTION

The talk will present recent advances in control-oriented research for power electronic converters operating in future electrical grids with a high penetration of renewable energy sources. The focus will be on emerging challenges in the design, modeling, and control of power converters, with particular emphasis on system stability and dynamic interactions in applications such as renewable energy systems, electric mobility, and modern power grids.

The presentation first discusses small-signal stability analysis based on impedance methods, including topics such as impedance specification, stability monitoring, self-tuning strategies, and the role of high-performance oversampled current and voltage control. Approaches for impedance passivation and converter interaction mitigation will also be addressed, including the use of unterminated converter models.

The seminar further explores the potential of artificial intelligence techniques to enhance modeling accuracy and improve control performance. Moreover, the role of digital twins and Hardware-in-the-Loop (HIL) platforms for system validation and testing will be highlighted. Some illustrative examples will be reported covering several application scenarios, ranging from laboratory-scale microgrids to multi-port converters, soft-open-point distribution systems, and offshore wind power plants.

SHORT BIO

Paolo Mattavelli received the MS degree and the Ph. D. degree in electrical engineering from the University of Padova (Italy) in 1992 and in 1995, respectively. From 1995 to 2001, he was a researcher at the University of Padova. From 2001 to 2005 he was an associate professor at the University of Udine, where he led the Power Electronics Laboratory. In 2005 he joined the University of Padova in Vicenza with the same duties. From 2010 to 2012 he was with the Center for Power Electronics Systems (CPES) at Virginia Tech. He is currently a professor at the University of Padova.
His major field of interest includes analysis, modeling and analog and digital control of power converters, grid-connected converters for renewable energy systems and micro-grids, high-temperature, and high-power density power electronics. In these research fields, he has been leading several industrial and government projects. His current google scholar h-index is 92. He is an IEEE Fellow.

PLENARY SESSIONS

KEYNOTE SPEECH 2

PROF. CHRIS GERADA

TIME: Wednesday, May 20 | 11.00 - 12.00
ROOM: Enrico+Federico

TITLE

From Innovation to Industrialisation: Electrical Machine Drives for the Energy Transition

DESCRIPTION

Electrification is a defining enabler of the energy and mobility transition, with electrical machines at the heart of efficient conversion between electrical and mechanical energy across transport and energy systems. This presentation reviews the evolving role of electrical machine drives in modern electrified applications, focusing on the main performance drivers shaping research and development: higher efficiency, greater power density, improved reliability, and tighter system integration.

Particular attention is given to the complementary influence of aerospace and automotive. Aerospace is pushing machines towards extreme performance, where demanding targets for power density and efficiency are driving innovation in architectures, cooling, materials, and cryogenic concepts for next-generation propulsion. In parallel, automotive is accelerating the industrialisation of advanced machine technologies, with strong emphasis on manufacturability, cost, and scalability.

The talk will highlight emerging directions in machine topologies, integrated designs, thermal management, materials, and manufacturing. It will also discuss how closer alignment between low-TRL research, high-TRL validation, and industry collaboration is helping accelerate deployment of next-generation electrical machine technologies.

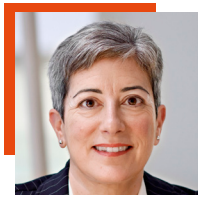
SHORT BIO

Chris Gerada is a professor of electrical machines and leads the University of Nottingham's Zero Carbon Cluster of research. He currently also leads on a number of MW-class aerospace electric propulsion development projects including high voltage and cryogenically cooled systems and has also led the development of extensive open-access test and validation facilities.

Chris Gerada has over 20 years' experience in high performance machines and drives, securing >£100 million funding through major industrial, European, and UK grants. He has published c.700 papers with 10 best paper awards, 2 book chapters, and 6 patents. Core research interests include design, modelling and manufacture of high-performance electric drives/machines including those for cryogenic propulsion.

PLENARY SESSIONS

KEYNOTE SPEECH 3



DR. AMBRA SANNINO

TIME: Thursday, May 21 | 11.00 - 12.00
ROOM: Enrico+Federico

TITLE

Engineering the Future Energy System: A System Perspective on Electrification

DESCRIPTION

The rapid electrification of society is transforming the electric power system from a relatively predictable infrastructure into a highly dynamic, interconnected, and complex system. This evolution challenges traditional boundaries between power electronics, electrical machines, system operation, and digital technologies, and is fundamentally changing how power systems are designed, operated, and governed.

This keynote adopts a system-level perspective on this transformation, exploring how interactions across assets, networks, control layers, and markets increasingly define overall system performance, stability, and resilience. Drawing on examples from real-world power system applications and applied research, the presentation highlights key challenges related to integration, coordination, and system behavior in future electricity systems, with particular emphasis on the Northern Europe situation.

Digitalization and data-driven methods, including artificial intelligence, are discussed as supporting tools that help engineers manage growing complexity, improve observability, and enhance decision-making, always in combination with physical understanding and engineering judgement. The talk concludes with reflections on implications for power system engineering, research, and education in the context of energy transition.

SHORT BIO

Ambra Sannino is Vice President of Research & Development at Vattenfall since August 2023. Previously, she was holding management positions within R&D, Technology and Business Development with other global companies such as ABB (2004-2019) and DNV (2019-2023).

Ambra has a Ph.D. in Power Engineering from the University of Palermo in Italy and is a Doctor of Science (Docent) from Chalmers University of Technology in Gothenburg, Sweden. Prior to joining the industry, she was for a few years an Associate Professor in Power Systems at Chalmers University. She holds ca. 10 patents and has authored and co-authored more than 50 papers on power electronics in power systems and distributed generation.

Ambra is a Cigré member, a Senior Member of IEEE, and a member of the Royal Swedish Academy of Engineering Science (IVA).

PLENARY SESSIONS

TUTORIAL 1

DR. MARCELLO PUCCI

TIME: Monday, May 18 | 16.00 - 17.00
ROOM: Enrico+Federico

TITLE

Advanced Dynamic Modelling of Electrical Machines for Nonlinear Control of Variable Speed Drives

DESCRIPTION

The tutorial describes and analyses some advanced dynamic models of electrical machines conceived to be the backbone of high-performance nonlinear control techniques. The underlying idea is to have at disposal advanced controllers embedding a better knowledge of the machine behavior in a wider range of operating conditions, to improve the drive dynamic performance in the same operating range.

The first part addresses the simplifying assumptions and choice of the model state variables for classical dynamic models of rotating induction motors (RIMs), linear induction motors (LIMs), and Synchronous Reluctance Motors (SynRMs) and the related effects on the control performance. Starting from this analysis, some of the simplifying assumptions are dropped, some specific machine effects are properly modelled (e.g., Magnetic Saturation Effects for RIMs, Dynamic End-Effects and Iron Losses for LIMs, Self- and Cross-Saturation for SynRM), and the related dynamic models are derived and expressed in space state form in different scenarios.

The second part is devoted to the description of an advanced nonlinear control technique exploiting the previously described dynamic models. In particular, the input-output feedback linearization control (FLC) has been chosen since its dynamic performance is deeply related to the underlying model and related parameter. Thus, examples of FLC controllers and their experimental validation are presented for different scenarios including RIM, LIM, and SynRM.

SHORT BIO

Marcello Pucci received the MSc degree and the Ph.D. degree in electrical engineering from the University of Palermo (Italy) in 1997 and in 2002, respectively. From 2001 to 2007 he has been a researcher, and from 2008 to 2019 he has been a senior researcher at the Section of Palermo of the Institute on Intelligent Systems for the Automation (ISSIA), National Research Council of Italy (CNR) Italy. Since 2020 he has been a Director of Research of the Institute of Marine Engineering (INM), CNR, Italy. He has held several courses at the University of Palermo, Italy, University of Belfort Montbeliard (France), University of South Pacific (Fiji), and University of Rome Tor Vergata (Italy). He has coordinated several scientific projects in the field of electrical engineering. He currently serves as Responsible for INM-CNR, branch of Palermo.

His major research interests are electrical machines, control, diagnosis, and identification techniques of electrical drives, intelligent control and power converters, wind and photovoltaic generation, micro-grid control and management. He is a senior member of the IEEE. His current Google scholar h-index is 42.

PLENARY SESSIONS
TUTORIAL 2

DR.FABIO CARASTRO

TIME: Monday, May 18 | 17.00 - 18.00
ROOM: Enrico+Federico

TITLE

Powering the Future with SiC: Advanced Packaging and Integrated Converter Solutions

DESCRIPTION

The reduction of CO_2 emissions and the efficient utilization of electrical energy are critical drivers in the evolution of sustainable power electronics. Silicon carbide (SiC) technology has emerged as a key enabler, offering superior material properties such as wide bandgap, high thermal conductivity and high critical electric field strength. These characteristics allow for the design of power converters with higher voltage blocking capabilities, faster switching speeds and improved thermal performance.

Recent advancements in SiC power module packaging by Semikron Danfoss have led to the development of compact, high-performance modules optimized for automotive and industrial applications. These modules support high switching frequencies operations, reducing the size and weight of passive components such as inductors and capacitors. Additionally, the improved thermal management and low parasitic inductance of the packaging contribute to enhanced system reliability and efficiency. These innovations collectively contribute to reduced energy losses, lower system cost, and minimized use of raw materials, supporting the broader goals of electrification and sustainability.

This presentation will provide an overview of the latest SiC packaging technologies from Semikron Danfoss and their integration into high power converters. It will also highlight critical aspects of module operation such as current sensing, parallel configuration and protection mechanisms- key to achieving high efficiency, reliability and sustainability in next-generation power electronics.

SHORT BIO

Dr. Fabio Carastro is Head of Stacks Technology and Research – Power Electronics. With over 20 years of experience in business-driven R&D, he leads innovation in high-power electronics for automotive and industrial applications. He earned his M.Sc. in Electrical Engineering in 2003 and completed his Ph.D. at the University of Nottingham, UK, in 2007. From 2007 to 2010, he worked as a Research Fellow at the University of Nottingham, contributing to advanced research in power electronics. In 2010, he joined General Electric's High Power Electronics R&D department in Germany, where he held key roles in developing cutting-edge converter technologies. Since 2018, he has been with Semikron Danfoss, where he heads the Stacks Technology and Research division. His expertise spans high-power silicon (Si) and silicon carbide (SiC) devices, power module design, megawatt-scale converter architectures, system topologies, power quality, and reliability.

PLENARY SESSIONS
INDUSTRY TALK

DR. SID ATTIA (Mathworks)

TIME: Tuesday, May 19 | 12.00 - 13.00
ROOM: Enrico+Federico

TITLE

AI in Energy Systems and Energy Systems for AI: Applications, Verification, and Grid Impact

DESCRIPTION

Artificial intelligence is starting to affect energy systems in two directions. On one side, it is becoming a practical engineering tool for the sector, supporting applications such as forecasting, condition monitoring and predictive maintenance, and reduced-order modelling and virtual sensing for electrical systems. These applications span both discriminative and generative AI. The distinction matters. Discriminative methods are already useful for estimation, prediction, and classification tasks. Generative AI is different: it can help with engineering productivity and workflow automation, but only if it is used inside a verified model-based workflow, where outputs are grounded in source material, checked against physical and operational constraints, and, when needed, tested through executable models and simulation.

On the other side, AI is also driving new electricity demand through data centers and other compute-intensive infrastructures. These are not ordinary loads. They are large, concentrated, and operationally specific, with electrical behavior shaped not only by compute demand but also by cooling systems, backup architectures, onsite resources, flexibility constraints, and power-quality requirements. Their growth raises concrete engineering questions around grid connection, stability assessment, harmonic performance, capacity planning, and the design of local electrical infrastructure. It also forces a more serious look at how such loads are represented in planning studies and how they interact with the surrounding network.

This plenary looks at both sides together. It will discuss a small set of AI applications in energy systems, including the role and limits of generative AI, and then connect them to the electrical implications of AI-driven load growth. The main point is straightforward: AI is not only a useful set of methods for energy engineering; it is also creating a new class of large electrical loads that changes how systems need to be studied, designed, and connected.

SHORT BIO

Dr. Sid Attia is Global Principal Engineer and Industry Manager for Energy & Utilities at MathWorks, working on power-system modelling, simulation, control, and analysis for grid modernization, renewable integration, hybrid energy systems, and advanced electrical-system design. He works across utilities, T&D, and research organizations on technical approaches for system studies, stability, control, and engineering decision support.

He holds a Master's degree and a PhD from Institut National Polytechnique de Grenoble in France and previously served as a research associate and lecturer at Technische Universität Berlin. He later moved into engineering and consulting roles in industry, building experience across complex industrial and energy-sector applications. His work combines electrical engineering, control, optimization, and system-level thinking developed over more than 20 years across academia and industry.

PLENARY SESSIONS

IEEE IES Italy Chapter Presentation

PROF. RENATO RIZZO (Chapter Chair)

PROF. MATTIA RICCO (Chapter Vice Chair)

TIME: Thursday, May 21 | 10.00 - 10.30
ROOM: Enrico+Federico

TITLE

Shaping the Future: the IEEE Italy Industrial Electronics Chapter in Action

DESCRIPTION

This session introduces the IEEE Italy Industrial Electronics (IE) Chapter and highlights past and upcoming activities, including technical events, distinguished lectures, and PhD awards, aimed at fostering engagement and growth. It is especially tailored for young researchers and students interested in becoming active members of the IEEE IE community.

SHORT BIO

Renato Rizzo is a Full Professor of Power Electronics, Electrical Machines and Drives at the University of Naples Federico II and holds an Honorary Professorship (Honoris Causa) from the Technical University of Cluj-Napoca. He serves in several leadership roles, including Chair of the IEEE Industrial Electronics Society (Italy Section Chapter) and President of the Italian National Scientific Habilitation Commission for Electrical Power Engineering. He is also the Founder and General Chair of the IEEE International Conference on Clean Electrical Power (ICCEP). At the University of Naples Federico II, he is the Coordinator of the Mechatronics Engineering degree programs and the Scientific Director of the Small Electric Motors Laboratory. His research focuses on the design and control of electrical machines, electric drives, power electronics, and renewable energy generation. Furthermore, he specializes in distributed generation systems, particularly the integration of renewable sources and storage systems into smart grids. Professor Rizzo has authored approximately 200 papers indexed in Scopus and Web of Science.

Mattia Ricco received the Ph.D. double degree in electrical and electronic engineering from the University of Cergy-Pontoise, France, and in information engineering from the University of Salerno in 2015. From 2015 to 2018, he was a Postdoctoral Research Fellow with the Department of Energy Technology, Aalborg University, Denmark. From 2018 to 2021, he was a Senior Assistant Professor (Tenure Track) and since 2021 Associate Professor with the Department of Electrical, Electronic, and Information Engineering, Alma Mater Studiorum - University of Bologna, Italy. He is currently the Coordinator of the Power Electronic Circuits and Photovoltaic research group and the responsible of the SolarTronic laboratory. His research interests include power electronics, transportation electrification, electric vehicle chargers, modular multilevel converters, battery management system, field-programmable gate array-based controllers, reliability and circularity for power electronics, and photovoltaic systems. Prof. Ricco is an Editor for IET Power Electronics and an Associate Editor for the IEEE Transactions on Industrial Electronics. Since 2026, he is the Vice-Chair of the IEEE Industrial Electronics Society Italy Section Chapter.

TECHNICAL TRACKS

TT1: MODELLING, SIMULATION AND IDENTIFICATION

TRACK CHAIRS:

Giovanni Spagnuolo, *University of Salerno, Italy*
Carlos Meza, *Hochschule Anhalt, University of Applied Sciences, Germany*
Juan David Bastidas-Rodriguez, *Universidad Nacional de Colombia, Colombia*
Ana Karina Cabrera-Tobar, *Escuela Politécnica Nacional, Equador*

TT2: SYSTEM DESIGN AND OPTIMIZATION

TRACK CHAIRS:

Enrique Romero Cadaval, *University of Extremadura, Spain*
Bruno Sareni, *Institut National Polytechnique de Toulouse/LAPLACE, France*
Patrizio Manganiello, *Hasselt University, Belgium*
Manel Jebali Ben Ghorbal, *Université de Tunis El Manar - Ecole Nationale d'Ingénieurs de Tunis, Tunisia*

TT3: CONTROL AND POWER MANAGEMENT

TRACK CHAIRS:

Joao P. F. Trovao, *Université de Sherbrooke, Canada*
Angelo Accetta, *National Research Council, Italy*
Seiichiro Katsura, *Keio University, Japan*
Emilio José Bueno Peña, *University of Alcalá, Spain*

TT4: NUMERICAL AND DATA-DRIVEN METHODS, MACHINE LEARNING

TRACK CHAIRS:

Joao Martins, *Nova University, Portugal*
Giuseppe La Tona, *National Research Council, Italy*
Sejir Khojet El Khil, *Université de Tunis El Manar, Tunisia*
Salvy Bourguet, *Nantes University/IREENA, France*

SPECIAL SESSIONS

SS1: ENERGY STORAGE SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL, AND DIAGNOSTICS

CO-CHAIRS:

- **Walter Zamboni,** *Dipartimento di Ingegneria dell'Informazione ed Elettrica e Matematica Applicata (DIEM), Università degli Studi di Salerno (UNISA), Italy*
- **Andrea Trovò,** *Dipartimento di Ingegneria Industriale (DII), Università degli Studi di Padova (UNIPD), Italy*
- **Emilio Pérez Soler,** *Departament d'Enginyeria de Sistemes Industrials i Disseny (ESID), Universitat Jaume I (UJI), Spain*
- **Brian Ospina Agudelo,** *École Supérieure d'Ingénieurs en Électrotechnique et Électronique (ESIEE), Université Gustave EiTel (UGE), France*

SS2: PERFORMANCE, AGEING, AND DIAGNOSTICS OF HYDROGEN SYSTEMS

CO-CHAIRS:

- **Antony Plait,** *Toulouse INP, LAPLACE, UT, CNRS, France*
- **Damien Guilbert,** *Université Le Havre Normandie, GREAH, CNRS, France*
- **Frédéric Dubas,** *Université Marie et Louis Pasteur, UTBM, CNRS, Institut FEMTO-ST, France*

SS3: AI-DRIVEN METHODS AND SOLUTIONS FOR INTELLIGENT ENERGY SYSTEMS

CO-CHAIRS:

- **Joao Soares,** *GECAD, Polytechnic of Porto, Portugal*
- **Bruno Francois,** *L2EP, Centrale Lille, France*
- **Dhaker Abbes,** *L2EP, JUNIA, France*
- **Zita Vale,** *GECAD, Polytechnic of Porto, Portugal*

SS4: DESIGN, CONTROL, AND FAULT DETECTION OF POWER CONVERTERS FOR ENERGY STORAGE AND EV CHARGING SYSTEMS

CO-CHAIRS:

- **Hadi Kanaan,** *Saint-Joseph University of Beirut, Lebanon*
- **Jean Sawma,** *Saint-Joseph University of Beirut, Lebanon*
- **Kamal Al-Haddad,** *Ecole de Technologie Supérieure, Canada*

SS6: PHOTOVOLTAIC ENERGY SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL AND OPTIMIZATION, DIAGNOSTICS

CO-CHAIRS:

- **Carlos Andres Ramos Paja,** *Universidad Nacional de Colombia, Colombia*
- **Carlos Pavon-Vargas,** *Dipartimento di Ingegneria dell'Informazione ed Elettrica e Matematica Applicata (DIEM), Università degli Studi di Salerno, Italy*
- **Yann E. Bouvier Rescalvo,** *Departamento de Matemática Aplicada, Ciencia e Ingeniería de los Materiales y Tecnología Electrónica, Universidad Rey Juan Carlos, Spain*
- **Luis E. Garcia Marrero,** *Information and Energy Technology Systems and Applications, University of Cergy, France*

SS8: ADVANCES ON HIGH-PERFORMANCES POWER CONVERTERS: SIMULATION AND MODELLING OF NEW ARCHITECTURES, MATERIALS, DEVICES AND CONTROLS

CO-CHAIRS:

- **Vittorio Bertolini,** *Department of Engineering, University of Perugia, Italy*
- **Davide Milillo,** *Department of Industrial, Electronic and Mechanical Engineering, University of Rome 3, Italy*
- **Hans Tiismus,** *Department of Electrical Power Engineering and Mechatronic, Tallin University of Technology, Estonia*

SS9: ADVANCED ELECTRICAL SYSTEMS FOR ENERGY-EFFICIENT SHIPS

CO-CHAIRS:

- **Onur Yuksel,** *Liverpool John Moores University, UK*
- **Juan Ignacio Ahuir Torres,** *Liverpool John Moores University, UK*
- **G Viknash Shagar,** *Liverpool John Moores University, UK*
- **Eddie Blanco-Davis,** *Liverpool John Moores University, UK*

SPECIAL SESSIONS

SS10: CONTROL, FAULT DIAGNOSIS, AND FAULT TOLERANCE OF POWER CONVERTERS FOR RENEWABLE POWER SYSTEMS

CO-CHAIRS:

- **Chiara Boccaletti,** *Dept. of Electrical and Energy Engineering, Sapienza University of Rome, Italy*
- **Sejir Khojet El Khil,** *National Engineering School of Tunis, University of Tunis El Manar, Tunisia*

SS11: INTEGRATION, FLEXIBILITY, AND RESILIENCE IN SMART MULTIVECTOR MICROGRIDS: DEMONSTRATIVE PROJECTS AND REAL-WORLD APPLICATIONS

CO-CHAIRS:

- **Francesco Sergi,** *CNR Consiglio Nazionale delle Ricerche - Istituto di Tecnologie Avanzate per l'Energia "Nicola Giordano", Italy*
- **Maria Valenti,** *ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy*
- **Chiara Gandolfi,** *Ricerca sul Sistema Energetico – RSE s.p.a., Italy*

SS12: MODELLING AND PREDICTIVE MULTI-ENERGY MANAGEMENT FOR FLEXIBLE AND RESILIENT MICROGRIDS INTEGRATING ELECTRICITY, HEAT, AND GAS

CO-CHAIRS:

- **Allal El Moubarek Bouzid,** *Icam Toulouse and LAAS-CNRS, France*
- **Abdelali El Aroudi,** *Dept. of Electronics, Electrical Engineering and Automatic Control Universitat Rovira i Virgili, Spain*
- **Corinne Alonso,** *LAAS-CNRS, Université de Toulouse, CNRS, UPS, France*

SS13: RENEWABLE ENERGY SOURCES, LOAD POWER AND EV SHORT-TERM FORECAST FOR THE GRID MANAGEMENT

CO-CHAIRS:

- **Sonia Leva,** *Politecnico di Milano, Italy*
- **Marco Mussetta,** *Politecnico di Milano, Italy*
- **Emanuele Giovanni Carlo Ogliari,** *Politecnico di Milano, Italy*

TECHNICAL PROGRAM
TUESDAY - 19 MAY

8:30 **Opening Session**

TT 1.1: MODELLING, SIMULATION AND IDENTIFICATION
CHAIRS: J. D. Bastidas-Rodriguez *(Colombia)*, F. Lucchini *(Italy)*
ROOM: Enrico + Federico **TIME:** 9:00 - 10:30

9:00 Optimizing Linear-Mode Current-Source Gate Driver Profiles Through Inverse SPICE Modeling of SiC MOSFETs
ID: 39 | Leijnen, L., Yu, J., Richardeau, F., Cousineau, M., Rouger, N.

9:20 A Heat-Flux Sensor–Based Method for Direct Measurement of Heat Generation in Cylindrical Li-ion Cells
ID: 43 | Kozma, J., El Kadri Benkara, K., Dib, R., Forgez, C., Moubayed, N., Friedrich, G.

9:40 Multiobjective Topology Optimization of Nonlinear Ferrite Plate for a Wireless Power Transfer Device
ID: 83 | Lucchini, F., Poggiana, G., Torchio, R., Dughiero, F., Cirimele, V.

TT 2.1: SYSTEM DESIGN AND OPTIMIZATION
CHAIRS: G. Petrone *(Italy)*, P. Manganiello *(Belgium)*
ROOM: Ruggero **TIME:** 9:00 - 10:30

9:00 Green Hydrogen Integration in Renewable Energy Communities for Participation in Flexibility Market
ID: 24 | Sciumè, G., Riva Sanseverino, E., Zizzo, G., Di Silvestre, M.

9:20 A KPI- and MLF-Calibrated Framework for SOP Placement in the CIGRE MVDC Benchmark
ID: 157 | Youssef, J., Francois, B., Bourguet, S., Saudemont, C.

9:40 A Genetic Algorithm Based Framework for Fair Comparison of DC–DC Power Converter Topologies: Single-Topology Demonstration
ID: 56 | Silat, B., Gaillard, A., Allali, N., Hissel, D.

10:00 A new weather data reduction method for robust optimal design of the autonomous microgrid
ID: 68 | Minne, A., Chenouard, R., Béthoux, O., Hilairet, M.

TECHNICAL PROGRAM
TUESDAY - 19 MAY

TT 3.1: CONTROL AND POWER MANAGEMENT
CHAIRS: J. P. Trovao *(Canada)*, A. Sferlazza *(Italy)*
ROOM: Guglielmo **TIME:** 9:00 - 10:30

9:00 Assessment of the fault apparent impedance for distance protection of transmission lines supplied by power converters
ID: 138 | Belenguer, E., Vidal-Albalate, R., Magraner, F., Ndiaye, A.

9:20 Multivariate Forecasting of a Microgrid Using Long-Short Term Memory: A Real Case Study in Canada
ID: 65 | Esparza Aponte, A., Trovao, J., Blondin, M.

9:40 Hybrid Control of DC–DC Boost Converters with Nonlinear Saturating Inductors Using Adaptive Switching Frequency Rescheduling
ID: 222 | Di Girolamo, S., Sferlazza, A., Garraffa, G., Scire', D.

10:00 Two-Stage Energy Management for Resilient Operation of PV–Battery Powered Telecommunication Microgrids under Planned Grid Outages
ID: 132 | Cabrera Tobar, A., Chávez, D., Grimaccia, F., Leva, S.

TT 4.1: NUMERICAL AND DATA-DRIVEN METHODS, MACHINE LEARNING
CHAIRS: G. La Tona *(Italy)*, S. Bourguet *(France)*
ROOM: Quasimodo **TIME:** 9:00 - 10:30

9:00 Regime-Routed Fourier Transformer with LSTM for Economics-Aware Short-Term PV Power Forecasting
ID: 10 | Dhingra, S., Gruosso, G., Storti Gajani, G.

9:20 Computationally Efficient State of Charge Estimation for Lithium-Ion Batteries Using a Single-Layer Feedforward Neural Network
ID: 6 | Mawassi, H., Hermann, G., Ould Abdeslam, D., Idoumghar, L., Al-Mohamad, A.

9:40 Simple vs Complex: Evaluating Deep Learning Architectures for Decomposition-Based Electrical Load Time Series Forecasting
ID: 191 | Fazzini, P., La Tona, G., Montuori, M., Diez, M., Di Piazza, M.

10:00 Hybrid deep learning approach for railway substation electrical consumption forecast
ID: 40 | Ducrocq, A., Almaksour, K., Lyousfi, Y., Shmaysani, M., Gosselin, F., Saudemont, C.

10:30 Coffee break

11:00 KEYNOTE SPEECH 1: Prof. Paolo Mattavelli

12:00 INDUSTRY TALK: Dr. Sid Attia

13:00 Lunch

TT 1.2: MODELLING, SIMULATION AND IDENTIFICATION

CHAIRS: . K. Cabrera-Tobar *(Equador)*, M. Rafiei *(Italy)*
ROOM: Enrico + Federico **TIME:** 14:30 - 16:00

14:30 Time domain and Harmonic State Space Models of 3L-NPC Converter Considering DC-link midpoint Connection scheme
ID: 49 | Nadjai, Y., Quéval, L., Binot, F., Francois, B., Dai, J.

14:50 Modeling the non-linearities of the solid phase diffusion process in lithium-ion cells
ID: 58 | Bakaraki, G., Forgez, C., El Kadri Benkara, K., Damay, N., Rabab, H., Audichon, T., Boudau, S.

15:10 SARA - A MATLAB/Simulink AC/DC Admittance Measurement Tool: Bridging Time-Domain Simulations and Frequency-Domain Validation
ID: 45 | Cartiel Arasa, O., Sainz Sapera, L., Monjo Mur, L., Mesas García, J., Pedra Durán, J.

15:30 An Electric Motor Emulator Based on a 13-Level Power Converter
ID: 90 | Ruggeri, G., Foti, S., De Caro, S., Baia, G., Caselli, M., Campagna, D., Rizzoli, G.

TECHNICAL PROGRAM
TUESDAY - 19 MAY

SS 1.1: ENERGY STORAGE SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL, AND DIAGNOSTICS

CHAIRS: W. Zamboni *(Italy)*, A. Trovò *(Italy)*
ROOM: Ruggero **TIME:** 14:30 - 16:00

14:30 Investigating Reversible and Non-Reversible Temperature Effects During Lithium-Ion Battery Capacity Characterization
ID: 80 | Barcellona, S., Codecasa, L., Cristaldi, L., D'Amore, D., Laurano, C., Toscani, S.

14:50 Experimental Analysis of Thermal Behavior Evolution and Aging in Li-Po Batteries under Calendar Life
ID: 105 | Beltran, H., Bou, N., Segarrat-Tamarit, J., Pérez Soler, E.

15:10 Lithium-ion batteries Doyle-Fuller-Newman model stoichiometric and diffusion coefficients identification from experimental data
ID: 12 | Ospina Agudelo, B., Halouani, A.

15:30 Energy and Loss Based Sensitivity Analysis of a P2D Lithium-ion Battery Model
ID: 102 | Guo, B., Halouani, A., Candusso, D., Franger, S.

SS 8.1: ADVANCES ON HIGH-PERFORMANCES POWER CONVERTERS: SIMULATION AND MODELLING OF NEW ARCHITECTURES, MATERIALS, DEVICES AND CONTROLS

CHAIRS: M. Ricco *(Italy)*, V. Bertolini *(Italy)*, D. Milillo *(Italy)*
ROOM: Guglielmo **TIME:** 14:30 - 16:00

14:30 SpiceAgent, AI-AGENT for Design of Power Electronics Converters
ID: 32 | Milillo, D., Sabino, L., Riganti Fulginei, F., Quercio, M., Lazaroiu, G.

14:50 Power Flow Controller for LVDC Meshed Grids Considering Line Current Constraints
ID: 89 | Cafran, L., Simon, T., Gauthier, J., Trégouët, J., Lin-Shi, X., Le Goff Latimier, R., Jodin, G., Ben Ahmed, H.

15:10 Design of a PI-Based Control Strategy for a Transformerless Single-Phase UPQC
ID: 97 | López Castillo, E., Vazquez, E., Niculescu, S., Bouvier Rescalvo, Y., Méndez Azúa, H., Carbajal Gutiérrez, E., Méndez-Barrios, C.

15:30 Feedforward Neural Network Control of a Quasi-Z-Source Inverter
ID: 72 | Becchi, L., Bindi, M., Intravaia, M., Corti, F., Lozito, G., Laudani, A.

SS 6.1: PHOTOVOLTAIC ENERGY SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL AND OPTIMIZATION, DIAGNOSTICS

CHAIRS: . C. A. Ramos-Paja *(Colombia)*, E. Batzelis *(UK)*
ROOM: Quasimodo **TIME:** 14:30 - 16:30

14:30 Sensitivity analysis of voltage–window size for short–circuit current estimation from photovoltaic current–voltage curves
ID: 145 | Piliougine, M., Lappalainen, K., Garcia Marrero, L.

14:50 Impedance Spectroscopy of a Photovoltaic Module by Using a Boost Converter and Processor-in-the-Loop
ID: 148 | Herrera-Jaramillo, D., Bastidas Rodriguez, J., Ramos-Paja, C., Serna-Garces, S., Revelo-Fuelagán, J.

15:10 Online impedance spectroscopy for detection and quantification of interconnection defects in laminated TOPCon solar cells
ID: 158 | Leghissa, E., Pavon-Vargas, C.

15:30 Correlation between Nyquist Plots and I–V Characteristics in Solar Cells and Modules
ID: 186 | Matacena, I., Pavon-Vargas, C., Petrone, G., Guerriero, P., Saggese, G.

16:00 **Coffee break**

TT 1.3: MODELLING, SIMULATION AND IDENTIFICATION

CHAIRS: D. Bastidas Rodriguez *(Colombia)*, P. Zanchetta *(Italy)*
ROOM: Enrico + Federico **TIME:** 16:30 - 18:00

16:30 Verification of Stability Boundaries of Grid Following and Grid Forming Inverters through Real-Time Simulations
ID: 133 | Pavan Kumar, Y., Luo, X., Batzelis, E., Kumar Singh, A., Saridaki, G., Kotsampopoulos, P., Hatziargyriou, N.

16:50 Stability Analysis of a two-stage AC/DC Solid-State Transformer for Data Center Applications
ID: 225 | Mukhametdinova, A., Tresca, G., Zanchetta, P.

17:10 Techno-Economic Assessment of an Alpine Renewable Energy Community: An Italian Case Study
ID: 112 | Dolci, E., Longo, M., Blasuttigh, N., Negri, S., Massi Pavan, A.

17:30 Analysis and Validation of an Open-Source Power Flow Tool Applied to IEEE Benchmark Grids, a Case Study
ID: 182 | Messina, B., Vasile, A., Zizzo, G.

TECHNICAL PROGRAM
TUESDAY - 19 MAY

SS 1.2: ENERGY STORAGE SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL, AND DIAGNOSTICS

CHAIRS: A. Trovò *(Italy)*, B. Ospina Agudelo *(France)*
ROOM: Ruggero **TIME:** 16:30 - 18:00

16:30 Physics-Informed Electrochemical Impedance Spectroscopy for Online Battery SoX Estimation
ID: 33 | Obrador Rey, S., Canals Casals, L., Trilla, L.

16:50 Pseudo-random binary sequence for onboard battery impedance spectroscopy
ID: 197 | Mattia, L., Zamboni, W.

17:10 Ultra-low-cost impedance measuring system for lead-acid battery
ID: 203 | Nicodemo, N., Di Rienzo, R., Crivellaro, A., Santacà, M., Pascariello, F., Cristofoli, G., Roncella, R., Saletti, R.

17:30 Multi-step Least Squares Method for Online Estimation of Battery Impedance Parameters
ID: 126 | Diers, J., Beiranvand, H., Andersen, H., Votava, M., Liserre, M.

SS 2.1: PERFORMANCE, AGEING, AND DIAGNOSTICS OF HYDROGEN SYSTEMS

CHAIRS: A. Plait *(France)*, D. Guilbert *(France)*, F. Dubas *(France)*
ROOM: Guglielmo **TIME:** 16:30 - 18:00

16:30 Impact of Stack Aging on PEMFC – Battery Hybrid Systems for Long-Haul Trucks application: Polarization Modeling, Energy Management and Simulation
ID: 60 | Aubry, P., Vaudrey, A., Chiche, A., Jemei, S., Steiner, N., Locussol, F.

16:50 Preliminary results on the modelling of PEM electrolyzer ageing under accelerated ageing context
ID: 129 | Quere, D., Plait, A., Parache, F., Hissel, D., Turpin, C.

17:10 Magnetic field concentrator optimization to fuel cell diagnosis through magneto-tomography
ID: 115 | Plait, A., Dubas, F., Turpin, C.

17:30 Uncertainty Estimation and Sensitivity Analysis of the Degradation ratio of a PEM Water electrolyzer Using a Monte Carlo Approach
ID: 173 | Marefat, H., Auger, F., Olivier, J.

TECHNICAL PROGRAM

TUESDAY - 19 MAY

SS 6.2: PHOTOVOLTAIC ENERGY SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL AND OPTIMIZATION, DIAGNOSTICS

CHAIRS: Y. E. Bouvier Rescalvo *(Spain)*, C. Pavon Vargas *(Italy)*
ROOM: Quasimodo **TIME:** 16:30 - 18:30

16:30 Frequency-Domain Characterization of Photovoltaic Panels Using Selective Harmonic Injection
ID: 73 | Pavon-Vargas, C., Garcia-Marrero, L., Petrone, G.

16:50 Parametric identification procedures for online condition monitoring of photovoltaic modules
ID: 176 | Lappalainen, K., Piliougine, M., Kalliojärvi, H., Spagnuolo, G.

17:10 Combining Maximum Power Production and Bypass Diodes Reliability in Photovoltaic Systems
ID: 20 | De Vivo, D., Spagnuolo, G., Del Giudice, D., Bizzarri, F.

17:30 Optimized Filter Design for Online PV Panel Impedance Spectroscopy using an Interleaved Converter
ID: 140 | Bouvier Rescalvo, Y., Pavón-Vargas, C., Petrone, G.

18:30 - 20:00 **Guided city tour**

TECHNICAL PROGRAM

WEDNESDAY - 20 MAY

SS 1.3: ENERGY STORAGE SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL, AND DIAGNOSTICS

CHAIRS: H. Beltrán *(Spain)*, E. Pérez Soler *(Spain)*
ROOM: Enrico + Federico **TIME:** 8:30 - 10:30

8:30 MILP-based techno-economic optimization of a hybrid multi-energy microgrid with hydrogen integration
ID: 111 | Rodriguez, R., D'Angelo, P., Celik, B., Locment, F., Sechilariu, M., Zamboni, W.

8:50 Techno-Economic Optimization of a Second-Life Hybrid BESS for Fast-Charing Stations
ID: 161 | Montes, T., Canals Casals, L., Eichman, J.

9:10 Extending Supercapacitor Energy Extraction through Reactive Power Coordination with Synchronous Generators
ID: 110 | Döhlen, V., Naouar, M., Bertilsson, K.

9:30 Controller Parameter Tuning for Grid Forming Compliance of Battery Energy Storage Systems
ID: 166 | Martínez-Turégano, J., Navarro-Martínez, G., Bernal-Perez, S., Blasco-Gimenez, R.

9:50 Integrated modelling and experimental analysis of water transport effects in Vanadium Flow Batteries
ID: 201 | Trovò, A., Marini, G., Mognaschi, M., Dughiero, F., Di Barba, P.

10:10 Predictive Control for Power Tracking and Supercapacitor Voltage Balancing in an Energy Storage System Based on a Cascaded H-Bridge Multilevel Inverter
ID: 160 | Naouar, M., Döhlen, V., Bertilsson, K., Monmasson, E.

TT 2.2: SYSTEM DESIGN AND OPTIMIZATION

CHAIRS: E. Monmasson *(France)*, P. Manganiello *(Belgium)*, F. Dubas *(France)*
ROOM: Ruggero **TIME:** 8:30 - 10:30

8:30 Redesign of a Medium Voltage Switched Reluctance Motor to Nine-Phase Configuration with Low Torque Ripple
ID: 79 | Pham, L., Aksenov, A., Kazemirova, Y., Dergachev, P., Demidova, G., Chen, H., Anuchin, A.

8:50 Solid-state Transformer DC/DC converter topology for medium voltage DC grids interfacing
ID: 114 | Alouani, A., Frey, D., Gaubert, J., Lembeye, Y.

9:10 **Multidisciplinary Design Optimization of a Hybrid Aircraft: A Global Approach Integrating Technologies and Electric Component Sizing**
ID: 125 | Brousset-Matheu, D., Sareni, B., Roboam, X., Nguyen Van, E., Defoort, S.

9:30 **Transactive Energy Market Framework utilizing Peer-to-Peer Trading Strategies with Multi-Objective Optimization for Residential Community**
ID: 44 | Zeyad, M., Celik, B., M. Hansen, T., Locment, F., Sechilariu, M.

9:50 **Microgrid Codesign Challenges in Modeling Through Linear Programming Approaches**
ID: 64 | Bergougnoux, C., Suarez, S., Roboam, X., Sareni, B., Besnard, K.

10:10 **A Parallelized Constrained Multi-Objective Optimization Framework for the Integrated Electrical and Thermal Design of Immersion-Cooled Battery Modules**
ID: 128 | Pereira, A., Chenouard, R., Berseneff, B.

TT 3.2: CONTROL AND POWER MANAGEMENT

CHAIRS: **J. P. Trovao** *(Canada)*, **A. Accetta** *(Italy)*
ROOM: **Guglielmo** **TIME:** **8:30 – 10:30**

8:30 **Port-Hamiltonian Approach for Large-signal Stability of IDA-PBC Grid-forming Inverters under Current Constraints**
ID: 118 | Akrami, M., Bahrami, M., Pierfederici, S.

8:50 **Passivity-based Droop control for Grid-forming inverters with equal active and reactive sharing guarantee**
ID: 137 | El Fedlaoui, C., Akrami, M., Bahrami, M., Baghli, L., Jamshidpour, E., Pierfederici, S.

9:10 **Virtual impedance-based power oscillation mitigation for seamless transition of grid forming-following inverter**
ID: 144 | Nong, V., Vo-Duy, T., Tran, L., Trovao, J., Nguyen, B.

9:30 **The optimal accelerator parameter for the Successive Over Relaxation method applied to power flow analysis: OAP SOR method**
ID: 88 | Buccella, C., Cimoroni, M., Ghasemian Sahebi, A., Mohamadian, S., Cecati, C.

9:50 **Experimental Comparison of Direct Power Control methods for a Three-Phase Active Filter Enhancing Power Quality at the Renewable Energy Point of Common Coupling**
ID: 119 | Adamou Salifou, N., Gaubert, J., Maamri, N.

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SS 3.1: AI-DRIVEN METHODS AND SOLUTIONS FOR INTELLIGENT ENERGY SYSTEMS

CHAIRS: **J. Soares** *(Portugal)*, **B. Francois** *(France)*
ROOM: **Quasimodo** **TIME:** **8:30 - 10:30**

8:30 **Machine Learning for Distributed Secondary Power Reserve Control: A review from Federated Learning to Distributed Reinforcement Learning**
ID: 29 | Jedrezak, A., Binot, F., Francois, B.

8:50 **A Spatio-Temporal Deep Learning Framework for Short-Term Electricity Consumption Forecasting Using 2D-CNN, BiGRU, and BiLSTM**
ID: 50 | Ait Yakoub, Z., Bechouche, A., Badji, A., Canaan, B., Ould Abdeslam, D.

9:10 **Comparative Study of State-of-the-Art Feedforward Neural Network Training Algorithms for High-Performance IPMSM Current Control**
ID: 100 | Hamza, M., Dalboni, M., Soldati, A., Concari, C.

9:30 **Estimation of Electrical Quantities in Distribution Networks Using GNN and Cascaded ANN: A Performance Comparison**
ID: 121 | El Ialli, M., Razi, R., Bruyere, A., Francois, B., Soares, J., Vale, Z.

9:50 **Priority-Aware Rule-Based Energy Management System for Fair EV Charging Under Grid-Import Caps in Community Microgrids**
ID: 78 | Pazini Pereira, M., Kraiem, Y., Soares, J., Vale, Z., Abbes, D., Davigny, A.

10:10 **A Surrogate-Assisted Multi-objective Design Optimization Workflow for a Liquid-Cooled Pin-Fin Heatsink for Power Converters**
ID: 212 | Solimene, L., Stella, F., Lepre, F., Musumeci, S.

10:30 **Coffee break**

11:00 **KEYNOTE SPEECH 2: Prof. Chris Gerada**

TT 1.4: MODELLING, SIMULATION AND IDENTIFICATION

CHAIRS: K. Lappalainen *(Finland)*, A. K. Cabrera-Tobar *(Equador)*
ROOM: Enrico + Federico **TIME:** 12:00 - 13:00

12:00 Reduced Order Models for the Blocked-Diffusion Warburg Impedance with Frequency Dispersion
ID: 85 | Di Girolamo, S., D'Ippolito, F., Fortuna, L., Garraffa, G.

12:20 Fixed-Topology Data-Driven Admittance Estimation for Fast Simulation of a Nonlinear Battery Model
ID: 103 | Auzeral, E., Legry, M., Paitrault, F., Colas, F., Kestelyn, X.

12:40 Real-time HiL Model of Variable Flux Synchronous Motor Drive
ID: 221 | Chen, C., Pescetto, P., Pellegrino, G.

SS 12.1: MODELLING AND PREDICTIVE MULTI-ENERGY MANAGEMENT FOR FLEXIBLE AND RESILIENT MICROGRIDS INTEGRATING ELECTRICITY, HEAT, AND GAS

CHAIRS: E. Monmasson *(France)*, A. Bouzid *(France)*
ROOM: Ruggero **TIME:** 12:00 - 13:00

12:00 An Optimization Toolchain for electrical supply-side sizing for islanded industrial microgrid
ID: 91 | Bissieres, L., Bouzid, A., Zhuang, F., Alonso, C.

12:20 Multiparametric Optimization for Residential EMS with an Energy Router and Aging-Aware BESS Considering Variable Ranges for Prediction Accuracy
ID: 55 | Sidi Lekhel, C., Mbayed, R., Husev, O., Velihorskyi, O., Monmasson, E.

12:40 Augmented Lagrangian-Based Online Power Dispatch for Islanded Microgrids: Practical Enhancements and Performance Trade-Offs
ID: 84 | Bouzid, A., Beral, G., Estibals, B., Alonso, C.

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SS 11.1: INTEGRATION, FLEXIBILITY, AND RESILIENCE IN SMART MULTIVECTOR MICROGRIDS: DEMONSTRATIVE PROJECTS AND REAL-WORLD APPLICATIONS

CHAIRS: F. Sergi *(Italy)*, M. Valenti *(Italy)*
ROOM: Guglielmo **TIME:** 12:00 - 13:00

12:00 Open, Scalable Synthesis of Hourly Building Energy Profiles for National Building Stocks: Method for Italian case study
ID: 211 | Fabozzi, S., Buonanno, A., Valenti, M.

12:20 Optimal dispatch methodology for demand response provision in microgrid environment
ID: 228 | Brunaccini, G., Aloisio, D., Luna, M., Sergi, F.

12:40 Multi-vector microgrids control and communication approaches: a case study in MISSION INNOVATION project
ID: 230 | Aloisio, D., Brunaccini, G., La Tona, G., Marsala, G., Sergi, F.

SS 6.3: PHOTOVOLTAIC ENERGY SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL AND OPTIMIZATION, DIAGNOSTICS

CHAIRS: G. Petrone *(Italy)*, E. Batzelis *(UK)*
ROOM: Quasimodo **TIME:** 12:00 - 13:00

12:00 Practical deployment and Performance evaluation of D-SDM PV parameter identification in an Edge Platform
ID: 21 | Garcia Marrero, L., Pavon-Vargas, C., Petrone, G., Monmasson, E.

12:20 Cost of Violations in Ramp Rate Control in Photovoltaic (PV) Systems
ID: 123 | Nikolopoulos, A., Chaudhary, S., Batzelis, E., Lewin, P.

12:40 Hybrid Buck/boost-Boost converter for distributed maximum power point tracking with reduced losses
ID: 7 | Ramos-Paja, C., Serna-Garces, S., Henao-Bravo, E.

13:00 **Lunch**

TT 1.5: MODELLING, SIMULATION AND IDENTIFICATION

CHAIRS: D. Hissel *(France)*, K. Lappalainen *(Finland)*
ROOM: Enrico + Federico **TIME:** 14:30 - 16:30

14:30 Holistic Modeling Approach of Dual Three-Phase PMSMs with In-Phase Windings: From FEA to Control-Oriented Model
ID: 94 | Alili, R., Le Goff, G., Fadel, M., Tientcheu Yamdeu, M., Prieto, D.

14:50 Analytical Airgap Permeance Modeling of Doubly-Slotted Axial-Flux Machines Using a Subdomain Scalar Potential Formulation
ID: 152 | Belmahi, I., Asfirane, S., Chabour, F., Barakat, G.

15:10 Analysis of Electromagnetic Fields Propagation in Dynamic Power Submarine Cables for Floating Offshore Wind Using FEMM
ID: 156 | Palà-Giralt, C., Domínguez-García, J., Canals, M.

15:30 Evaluation of EMT-Type Simulation Accuracy with Large Time-Steps
ID: 92 | Jafari Matehkolaei, M., Mahseredjian, J., Bruned, B.

15:50 Conducted emissions measurements in power electronic converters for renewables-based green hydrogen production. Metrics and case study analyses
ID: 117 | Ditta, V., Artale, G., Cataliotti, A., Cosentino, V., Di Cara, D., Tinè, G., Panzavecchia, N.

16:10 Integration of Production Forecasts in Simulated Energy Communities
ID: 61 | Nistor, A., Lazaroiu, G., Balaban, G., Milillo, D., Sabino, L.

TT 4.2: NUMERICAL AND DATA-DRIVEN METHODS, MACHINE LEARNING

CHAIRS: G. La Tona *(Italy)*, D. Ould Abdeslam *(France)*
ROOM: Ruggero **TIME:** 14:30 - 16:30

14:30 AI-based estimation of momentum in power systems: application to the network of the island of Sardinia
ID: 9 | Linaro, D., Del Giudice, D., Grillo, S., Coletta, G., Giannuzzi, G., Pisani, C., Brambilla, A., Bizzarri, F.

14:50 Physics-Guided Differentiable Single-Diode PV Modeling for Soiling and Performance Assessment
ID: 11 | Dhingra, S., Gruosso, G., Storti Gajani, G.

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15:10 Quantile Regression Bidirectional LSTM Encoder-Decoder for Solar Irradiance Probabilistic Forecasting
ID: 231 | La Tona, G., Fazzini, P., Luna, M., Di Piazza, M.

15:30 A Multi-Device IoT Intrusion Detection System Using an Optimized Random Forest Model
ID: 25 | Mawassi, H., Canaan, B., Ould Abdeslam, D., Hermann, G.

15:50 Data-Driven Regression Models for Power Consumption Forecasting for Buildings in Multi-Cities Scenarios
ID: 223 | Licciardi, S., Francomano, E., La Villetta, M., Caronna, E., Piacentino, A.

SS 4.1: DESIGN, CONTROL, AND FAULT DETECTION OF POWER CONVERTERS FOR ENERGY STORAGE AND EV CHARGING SYSTEMS

CHAIRS: M. Cacciato *(Italy)*, M. Ricco *(Italy)*
ROOM: Guglielmo **TIME:** 14:30 - 16:30

14:30 Dual-Mode PWM-Controlled LLC Converter for Wide Output-Voltage Range Applications
ID: 8 | Askari, S., Rąbkowski, J.

14:50 Design and Analysis of a CCD Transmitter Structure for Dynamic Wireless Power Transfer in Electric Vehicles
ID: 62 | Demidova, G., Dong, Y., Wang, B., Yang, Y., Wang, S., Anuchin, A.

15:10 Operating-Zone-Based Comparison of Three-Port Isolated DC/DC Converters for EV Charging in Trolleybus Networks
ID: 127 | Gentile, G., Pittala, L., Mandrioli, R., Cirimele, V., Pellitteri, F., Ricco, M.

15:30 Design Considerations of a Simple and Cost-Effective Methodology for Condition Monitoring of Inverter DC-Link Film Capacitors based on Capacitance Variation
ID: 213 | Aleyasin, S., Stella, F., Bojoi, R., Vico, E., Liu, C.

15:50 Identification of Reliable Lifetime Indicators for 650-V GaN HEMTs Through DC Power Cycling Tests
ID: 216 | Aleyasin, S., Zhang, K., Stella, F., Bojoi, R., Zhao, S., Wang, H., Liu, C., Novak, M., Iannuzzo, F.

SS 9.1: ADVANCED ELECTRICAL SYSTEMS FOR ENERGY-EFFICIENT SHIPS"
CHAIRS: E. Blanco-Davis *(UK)*, G. V. Shagar *(UK)*
ROOM: Quasimodo **TIME:** 14:30 - 16:30

14:30 Dynamic Modeling and Control of a PTO/PTI-Integrated Marine Propulsion System for Fuel Consumption Optimization
ID: 124 | Accetta, A., Di Piazza, M., Prousalidis, J., Yuksel, O., Pucci, M., Kotsampopoulos, P.

14:50 Onboard Hydrogen Production via Methanol Steam Reforming for Solid Oxide Fuel Cell-Based Hybrid Ship Power Systems
ID: 93 | Yuksel, O., Blanco-Davis, E., Ahuir Torres, J., Shagar, G., Hitchmough, D., Di Piazza, M., Pucci, M., Tsoulakos, N., Wang, J.

15:10 Shore Power Short Circuit Protection: A Bulk Carrier Case Study
ID: 67 | Daniel, H., Trovao, J., Boulon, L., Kotsampopoulos, P.

15:30 A Fleet-Scale Framework for Shore-Power Tariff Design Based on Auxiliary Diesel Generator Efficiency
ID: 143 | Daniel, H., Trovao, J., Boulon, L., Prousalidis, J.

15:50 Environmental and Economic Feasibility of Onshore Power Supply Systems for Ferries Used in Urban Transportation at Izmir Gulf
ID: 198 | Konur, O., Korkmaz, S., Yılmaz, S.

16:10 Power Flexibility Optimization of Modular Multiport Power Converters for Transportation Applications
ID: 104 | Vuillemin, E., Martin, J., Machmoum, M., Weber, M., Pierfederici, S., Meibody-Tabar, F.

16:30 **Coffee break**

SS 1.4: ENERGY STORAGE SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL, AND DIAGNOSTICS
CHAIRS: W. Zamboni *(Italy)*, B. Ospina Agudelo *(France)*
ROOM: Enrico + Federico **TIME:** 17:00 - 18:30

17:00 Feature-Augmented LSTM SOC Estimation for Grid-Scale BESS in Primary Frequency Regulation
ID: 204 | Soler, J., Pepiciello, A., Trilla, L.

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17:20 A deep learning framework based on Kolmogorov-Arnold networks for battery state of health estimation from impedance data
ID: 199 | Avella, A., Dolara, A., Leva, S., Ogliari, E., Zamboni, W.

17:40 Design of experiments, postprocessing and evaluation of a machine learning model for Li-ion batteries
ID: 122 | Pérez Soler, E., Beltran, H., Aparicio, N.

18:00 Monotonically constrained data-driven OCP identification for lithium-ion cells in physics-based battery models
ID: 141 | Bernabeu-Santisteban, A., Belce, Y., Obrador Rey, S., Clemente, A., Díaz-González, F., Trilla, L.

18:20 Knowledge Distillation for Model Compression in Embedded Li-Ion Battery SOC Estimation
ID: 183 | Eleftheriadis, P., Kyrgios, F., Sohal, H., Ogliari, E., Leva, S.

SS 2.2: PERFORMANCE, AGEING, AND DIAGNOSTICS OF HYDROGEN SYSTEMS
CHAIRS: A. Plait *(France)*, D. Guilbert *(France)*
ROOM: Ruggero **TIME:** 17:00 - 18:30

17:00 Development of a 2-D analytical model for the noninvasive health diagnosis of cylindrical electrolyzers
ID: 87 | Dubas, F., Plait, A.

17:20 Fast Nonlinear Predictive Control for Polymer Exchange Membrane Electrolyzers via Physics-Informed Neural Network
ID: 130 | Zerrougui, I., Hissel, D., Li, Z.

17:40 Dynamic Modeling and Parameter Identification of a PEM Electrolyzer Using the Levenberg–Marquardt Method
ID: 142 | Menaa, M., Ouali, Y., Oubara, W., Guilbert, D.

18:00 Electrolyzer durability study through polarization curve evolution and gas cross-over correlation
ID: 116 | Dijoux, E., Plait, A., Parache, F., Sawadogo, B., Rallières, O., Pahon, E., Turpin, C., Hissel, D.

SS 13.1: RENEWABLE ENERGY SOURCES, LOAD POWER AND EV SHORT-TERM FORECAST FOR THE GRID MANAGEMENT

CHAIRS: E. Ogliari *(Italy)*, A. Dolara *(Italy)*
ROOM: Guglielmo **TIME:** 17:00 - 18:30

17:00 A Stacked Ensemble Approach for Probabilistic PV Forecasting: Combining Physical Hybrid Neural Networks with Natural Gradient Boosting
ID: 187 | Saleptsis, M., Mussetta, M., Leva, S.

17:20 Baseline-Aware LSTM Forecasting: Improving Day-Ahead Industrial Load Prediction Through Residual Modeling
ID: 192 | Han, J., Ogliari, E., Leva, S., Bacci, N.

17:40 Towards a Peer-Based Probabilistic Framework for Photovoltaic Performance Monitoring with Aggregated Data
ID: 188 | Ramaschi, R., Saleptsis, M., Ogliari, E., Leva, S.

18:00 Recurrent Deep Learning Architectures for Solar Photovoltaics Forecasting
ID: 237 | Shirazi, E.

18:20 Quantum-Inspired Simulated Annealing for EV Charging Scheduling with Valley Filling QUBO Formulation
ID: 136 | Zare, A., Miraftabzadeh, S., Longo, M., Zaninelli, D.

SS 8.2: ADVANCES ON HIGH-PERFORMANCES POWER CONVERTERS: SIMULATION AND MODELLING OF NEW ARCHITECTURES, MATERIALS, DEVICES AND CONTROLS

CHAIRS: M. Cacciato *(Italy)*, V. Bertolini *(Italy)*, D. Milillo *(Italy)*
ROOM: Quasimodo **TIME:** 17:00 - 18:30

17:00 A Current-Source Gate Driver for Power MOSFETs with Reduced Switching Losses
ID: 131 | Scalia, M., Lullo, G., Vitale, G., Scirè, D.

17:20 General Review of Open-End Winding Machine Topology
ID: 164 | De Simone, D., Ozturk, S., Piegari, L.

17:40 Robust Closed-Loop Regulation of Dual Active Bridge Converter using a Proportional-Integral Controller
ID: 95 | Bertolini, V., Stella, M., Scorretti, R., Faba, A.

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18:00 Characterization and Prediction of Magnetization Processes in 3D-Printed Magnetic Materials Excited by a Full-Bridge Inverter
ID: 170 | Bertolini, V., Chouaibi, S., Viola, F., Lo Giudice, M., Stella, M., Sargeni, F., Salvini, A., Ala, G., Romano, P., Faba, A.

18:20 PLECS Model-Based Design vs. Manual Embedded C: A Performance Comparison for STM32-Based Motor Control
ID: 214 | Pinzan, N., Stella, F., Pescetto, P., Pellegrino, G.

20:00 - 23:30 **Social Dinner**

TT 1.6: MODELLING, SIMULATION AND IDENTIFICATION

CHAIRS: J. D. Bastidas-Rodriguez *(Colombia)*, A. K. Cabrera-Tobar *(Equador)*
ROOM: Enrico + Federico **TIME:** 8:30 - 10:00

8:30 Real-Time Simulation and HIL Validation of a Laboratory-Scale Tidal Turbine PTO System
ID: 227 | Rafiei, M., Shayeghan, M., Di Benedetto, M., Lidozzi, A., Solero, L., Salvatore, F.

8:50 Disturbances from AC Electric Vehicle Charging and Effects on PLC Communications
ID: 155 | Caruso, D., Artale, G., Cataliotti, A., Cosentino, V., Costanzo, D., Delle Femine, A., Di Cara, D., Ditta, V., Gallo, D., Guaiana, S., Luiso, M., Panzavecchia, N., Tinè, G.

9:10 Advanced Fractional-Order Control of a Ćuk DC–DC Converter
ID: 234 | Stanchev, P., Kabakchieva, M. Luna, R., Hinov, N.

SS 10.1: CONTROL, FAULT DIAGNOSIS, AND FAULT TOLERANCE OF POWER CONVERTERS FOR RENEWABLE POWER SYSTEMS

CHAIRS: P. Manganiello *(Belgium)*, N. Blasuttigh *(Italy)*
ROOM: Ruggero **TIME:** 8:30 - 10:00

8:30 Comparison of Transient Stability Assessment Methods for Virtual Synchronous Generators
ID: 134 | Zhang, J., Kumar Singh, A., Batzelis, E.

8:50 Open-Circuit Switch Fault Diagnosis and Fault-Tolerant Operation of a Two-phase Three-level DC-DC Boost Converter for Heavy-duty Fuel Cell Vehicles
ID: 96 | Limon, M., Gaillard, A., Poure, P.

9:10 Power flow control of a DC meshed microgrid – soft start-up process for smart-nodes
ID: 106 | Owoeye, K., Gauthier, J., Morel, H., Gaetani-Liseo, M., Chouiter, D., Lin-Shi, X.

9:30 Simulation and Experimental Validation of a Device-Level Control Strategy for Grid-Connected Converters
ID: 194 | Belay, K., Le Goff Latimier, R., Mbayed, R., Meyer, Q., Jodin, G., Ben Ahmed, H.

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TT 3.3: CONTROL AND POWER MANAGEMENT

CHAIRS: A. Accetta *(Italy)*, B. Celik *(France)*
ROOM: Guglielmo **TIME:** 8:30 - 10:00

8:30 A Generalized Energy-Based Control Strategy for Modular Multilevel Converters in Multi-Terminal DC Grids Under Diverse Network Configurations
ID: 54 | Samimi, S., Hosseinnataj, S., Farajpour, R., Boukhenfouf, J., Gruson, F., Guillaud, X., Colas, F.

8:50 A Forecast Aware Digital Twin for System Level Energy Management of Standalone PV-Battery Systems
ID: 184 | Smaoui, S., Aouini, R., Ben Kilani, K., Mesbahi, T.

9:10 Metaheuristic Optimization of Fractional-Order PID Controllers for DC-DC Converters Using Simulation-Based Design
ID: 200 | Okba, S., Marsala, G., Saadi, R., Luna, M.

9:30 Fuzzy Logic-Based Dynamic Droop Control for Grid-Connected DC Microgrids
ID: 46 | Alidrissi, Y., Almaksour, K., Lyousfi, Y., Scolan, R., Picot, A., Saudemont, C.

SS 6.4: PHOTOVOLTAIC ENERGY SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL AND OPTIMIZATION, DIAGNOSTICS

CHAIRS: C. A. Ramos-Paja *(Colombia)*, A. Laudani *(Italy)*
ROOM: Quasimodo **TIME:** 8:30 - 10:00

8:30 Edge-Ready Isomorphism-Based Photovoltaic Array Simulation for Digital Twins
ID: 74 | De Vivo, D., Spagnuolo, G., Del Giudice, D., Bizzarri, F.

8:50 Photovoltaic modeling sensitivities of photovoltaic hosting capacity studies in Nordic distribution grids
ID: 177 | Aaltonen, L., Lappalainen, K.

9:10 A Scalable Multi-Port Split-Pi Converter with Analytic MPPT for Heterogeneous BIPV Systems
ID: 70 | Lozito, G., Corti, F., Becchi, L., Intravaia, M., Bindi, M., Laudani, A.

9:30 Community Energy Sharing evaluation in Spain's SAtComm Pilot
ID: 59 | Ramos, S., Rafael, P., Pereira, D., Araujo, H., Quintian, H., Soares, J.

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10:00 **IEEE IES Italy Chapter presentation**

10:30 **Coffee break**

11:00 **KEYNOTE SPEECH 3: Dr. Ambra Sannino**

SS 10.2: CONTROL, FAULT DIAGNOSIS, AND FAULT TOLERANCE OF POWER CONVERTERS FOR RENEWABLE POWER SYSTEMS
CHAIRS: P. Manganiello *(Belgium)*, N. Blasuttigh *(Italy)*
ROOM: Enrico + Federico **TIME:** 12:00 - 13:00

12:00 Performance Analysis of Multi-Phase PMSG–PWM Rectifier Systems under Open-Phase Fault Conditions: Comparison of Nine-, Twelve-, and Fifteen-Phase Topologies
ID: 193 | Fatahi, A., Benkhoris, M., Ziane, D., Hamida, M.

12:20 Control Synthesis of PV-Fed Boost Converters
ID: 219 | Moreno-Negrete, E., Niculescu, S., Méndez-Barrios, C., Bouvier Rescalvo, Y., Vaquero, J., Rodriguez-Lorente, A., Hernández-Gallardo, J.

12:40 A Parametric Framework for Evaluating SiC MOSFET Degradation in Bidirectional DC-DC Converters
ID: 232 | Farooqi, M., Pellitteri, F., Messina, A., Miceli, R.

SS 12.2: MODELLING AND PREDICTIVE MULTI-ENERGY MANAGEMENT FOR FLEXIBLE AND RESILIENT MICROGRIDS INTEGRATING ELECTRICITY, HEAT, AND GAS
CHAIRS: A. Bouzid *(France)*, D. Ould Abdeslam *(France)*
ROOM: Ruggero **TIME:** 12:00 - 13:00

12:00 Management of electric vehicles to provide energy flexibility under uncertainty
ID: 28 | Bosch Pons, A., Eichman, J., Benveniste, G., Solà Vilalta, A.

12:20 Dynamic Physics-Based Model of a Gas Pipeline for Digital Twin Monitoring in Multi-Energy Systems
ID: 101 | Niyonteze, J., Francois, B., Kestelyn, X., Dazin, A.

12:40 Power Management of Distributed Generators in Islanded AC Microgrids: Distributed Economic Dispatch–Based Secondary Control
ID: 86 | Beral, G., Bouzid, A., Tsuanyo, D., Estibals, B., Tsafack, P., Alonso, C.

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SS 11.2: INTEGRATION, FLEXIBILITY, AND RESILIENCE IN SMART MULTIVECTOR MICROGRIDS: DEMONSTRATIVE PROJECTS AND REAL-WORLD APPLICATIONS
CHAIRS: F. Sergi *(Italy)*, C. Gandolfi *(Italy)*
ROOM: Guglielmo **TIME:** 12:00 - 13:00

12:00 Demonstrating “Cybersecurity in the Loop” at RSE’s Multi-Energy Test Facility
ID: 108 | Dondossola, G., Terruggia, R., Todeschini, M., Corniani, E.

12:20 Digitalization for Seamless Interoperability of RSE Multi-Energy Test Facilities
ID: 146 | Albanese, E., Urban, R., Terruggia, R., Paludetto, G., Bartalesi, D., Lazzari, R., Tornelli, C.

12:40 Measurement Procedures for the Performance Characterization of AC/DC and DC/DC Converters in Hydrogen-Based Infrastructures
ID: 99 | Valenti, M., Merola, A., Graditi, G.

SS 6.5: PHOTOVOLTAIC ENERGY SYSTEMS: ADVANCED MODELING, SIMULATION, POWER CONVERSION, CONTROL AND OPTIMIZATION, DIAGNOSTICS
CHAIRS: C. A. Ramos-Paja *(Colombia)*, A. Laudani *(Italy)*
ROOM: Quasimodo **TIME:** 12:00 - 13:00

12:00 Procedure to Perform Multisine Impedance Spectroscopy in a Photovoltaic Module by Using a Synchronous Boost Converter
ID: 26 | Herrera-Jaramillo, D., Bastidas Rodriguez, J., Ramos-Paja, C., Revelo-Fuelagán, J.

12:20 Calculation of photovoltaic module operating irradiance and temperature from maximum power point measurements
ID: 208 | Kalliojärvi, H., Piliougine, M., Lim, B., Lappalainen, K.

12:40 Albedo-Induced Cell Mismatch and Power Production in Bifacial PV Modules: A Simulation-Based Analysis
ID: 220 | Guerriero, P., Saggese, G., Matacena, I., Daliento, S., d’Alessandro, V.

13:00 **Closing Session**

13:30 **Lunch**

15:00 19:00 **Optional Activity**

WELCOME COCKTAIL

Monday, 18 May | 7:00 PM

The **ELECTRIMACS 2026** Welcome Cocktail will be hosted at **Palazzo Leone**, a few steps away from the Conference Venue. A majestic 15th century palace with a modern and refined atmosphere, featuring spacious interior halls that create an intimate setting. The majestic ceilings and historic arches blend harmoniously with contemporary design elements, creating a unique combination of past and present. In addition, Palazzo Leone offers a large outdoor garden, a true green oasis in the heart of the city, with a relaxing atmosphere under a canopy of stars.

Attendance is limited to 150 guests. In the event of favorable weather conditions, we reserve the right to admit a larger number of guests on the opening day of the Conference.

SOCIAL PROGRAM

GUIDED CITY TOUR

Tuesday, 19 May | 6:30 PM

Participants will have the opportunity to join a pleasant guided walking tour through the **historic center of Palermo**. The tour will last approximately one and a half hours and will offer a chance to discover the rich history, architecture, and vibrant atmosphere of the city.

Accompanied by a local guide, attendees will stroll through some of Palermo's most iconic streets and squares, learning about the city's unique cultural heritage shaped by centuries of different civilizations. Along the way, participants will admire historic buildings, lively urban spaces, and characteristic corners that reflect the authentic spirit of the city. This experience will provide a relaxing and engaging way to explore Palermo while enjoying its remarkable blend of art, history, and Mediterranean charm.

SOCIAL PROGRAM

SOCIAL DINNER

Wednesday, 20 May | 8:00 PM

The **ELECTRIMACS 2026** Social Dinner will be hosted at the **Stand Florio**, a building belonging to the Florio Family. One of Italy's wealthiest families between the nineteenth and early twentieth centuries, the Florios, with a long industrial tradition, were the protagonists of the so-called Belle Époque period. The family came to own a fleet of ninety-nine ships, and a business empire that ranged from chemicals to wine, from tourism to the tuna industry.

The Florio Stand is a building constructed by the Florio family based on a design by Ernesto Basile in 1905 on the southern coast of Palermo. The style is deeply influenced by Islamic culture, and it is also one of the first modern Sicilian structures built using iron. At its center is a red dome with a pinnacle.

The dinner will be hosted in a modern, air-conditioned pavilion, overlooking the garden and the sea.

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