

SEST 2024

The 7th International Conference on Smart Energy Systems and Technologies

Driving the Advances for Future Electrification

Torino, Italy 10-12 September 2024

https://sest2024.polito.it/

CONFERENCE PROGRAM

PLATINUM SUPPORTER



SILVER SUPPORTERS





BRONZE SUPPORTERS





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WELCOME ADDRESS

Dear SEST 2024 Participant,

it is a great pleasure and honour to organize the seventh edition of the International Conference on Smart Energy Systems and Technologies (SEST) at Politecnico di Torino. SEST 2024 has as its motto "*Driving the advances for future electrification*" and addresses in particular research topics regarding the role of electricity in the path towards a sustainable energy transition.

Smart energy systems and technologies are evolving fast to follow and drive the progress of scientific and industrial developments in the area of power and energy systems and related fields. The trend to provide more efficient and competitive technologies, as well as electricity services to support decarbonization, energy system integration and, progressively, higher involvement of the users, requires to guarantee security, reliability, safety, resilience, and privacy of the applications. In the prospect of increasingly higher electrification, the investments in the electricity business are growing. The wide changes occurring are posing many challenging research questions, which are making the studies in the field particularly attractive and exciting. In this context, SEST 2024 offers a meeting point for scientists and operators working in universities, research institutions, industry and public bodies, to exchange ideas and knowledge on new technologies and applications and discuss the latest developments in the electrical energy system field.

The program of the Conference includes four keynote speeches targeted to the entire audience and 23 parallel sessions scheduled to present the contributions prepared by the Authors. The number of parallel sessions has been limited to two, giving the participants more possibilities to follow the contributions presented in the sessions. Moreover, each presentation is limited to seven minutes, under the supervision of the Session Chair, who drives the discussion by allowing better interactions among the presenters and the audience on the topic of the session without too strict time limits.

The 135 accepted papers are written by 473 Authors coming from 30 countries across the five continents. Over 500 International Reviewers assessed the quality of the scientific contributions. The acceptance rate has been 55%. The papers accepted and presented will be submitted for publication in IEEE Xplore. The top 20% and top 50% papers are invited to send the extended version of their contributions to the journals IEEE Transactions on Industry Applications and Sustainable Energy, Grids and Networks, respectively.

The participants have many opportunities for staying together during the Conference period. The plenary speeches and the Conference sessions take place in two nearby rooms, outside which there are the desks of the Supporters, with coffee breaks and lunches set up in the same area. The Conference dinner is organized at the Museo del Risorgimento of Torino, including a visit to the Museum before the dinner. Some Awards will be given during the Conference dinner.

We wish you to enjoy the Conference and have a wonderful stay in Torino.

Welcome to SEST 2024!

Gianfranco Chicco General Chair



Andrea Mazza Conference co-Chair



Akın Taşcıkaraoğlu Conference co-Chair



HISTORY OF THE SEST CONFERENCES

The first edition of the SEST conferences was held in 2018 in Seville, Spain.

The dates and locations of the previous and current SEST Conferences are:

- 2024: Torino, Italy, 10-12 September 2024 https://sest2024@polito.it/
- 2023: Mugla, Türkiye, 4-6 September 2023
 <u>https://www.sest2023.org/</u>
- 2022: Eindhoven, The Netherlands, 5-7 September 2022
 <u>https://www.sest2022.org/</u>
- 2021: Vaasa, Finland, 6-8 September 2021
 <u>https://sites.uwasa.fi/sest2021/</u>
- 2020: virtual conference, 7-9 September 2020 <u>https://ieeexplore.ieee.org/xpl/conhome/9199229/proceeding</u>
- 2019: Porto, Portugal, 9-11 September 2019 <u>https://web.fe.up.pt/~sest2019/</u>
- 2018: Seville, Spain, 10-12 September 2018
 <u>https://ieeexplore.ieee.org/xpl/conhome/8476665/proceeding</u>

The SEST International Steering Committee has decided to pass from annual to biannual organization of the SEST Conferences. The next edition will be in 2026. The venue will be announced during the Conference dinner of SEST 2024.

COMMITTEES

SEST INTERNATIONAL STEERING COMMITTEE

- Agustin Sanchez de La Nieta, Universidad Loyola Andalucía, Spain
- Akin Tascikaraoglu, Muğla Sıtkı Koçman University, Türkiye
- Alberto Borghetti, University of Bologna, Italy
- Amjad Anvari-Moghaddam, Aalborg University, Denmark
- Anastasios Bakirtzis, Aristotle University of Thessaloniki, Greece
- Andrea Mazza, Politecnico di Torino, Italy
- Andrew Keane, University College Dublin, Ireland
- David Pozo, Joint Research Centre, European Commission
- Dirk Van Hertem, Katholieke Universiteit Leuven, Belgium
- Fei Wang, North China Electric Power University, China
- Felipe Rosa, University of Sevilla, Spain
- Gerardo Osório, Portucalense Univ. Infante D. Henrique, Portugal
- Gianfranco Chicco, Politecnico di Torino, Italy
- Hossein Hafezi, Tampere University, Finland
- Ionel Vechiu, ESTIA, France
- Jamshid Aghaei, Shiraz University of Technology, Iran
- Javier Contreras, University of Castilla-La Mancha, Spain
- João Martins, New University of Lisbon, Portugal
- João P. S. Catalão, University of Porto, Portugal
- Jose L. Martinez-Ramos, University of Seville, Spain
- Juan Manuel Home Ortiz, São Paulo State University, Brazil
- Leonel Carvalho, INESC TEC, Portugal
- Luis Baringo, University of Castilla-La Mancha, Spain
- Miadreza Shafie-khah, University of Vaasa, Finland
- Mohamed El Moursi, Khalifa University of Science and Technology, UAE
- Mohamed Lotfi, SYSTEC and FEUP, Portugal
- Mohammad Sadegh Javadi, INESC TEC, Portugal
- Nikolaos Paterakis, Eindhoven University of Technology, The Netherlands
- Ozan Erdinc, Yildiz Technical University, Türkiye
- Pierluigi Siano, University of Salerno, Italy
- Soumyabrata Dev, University College Dublin, Ireland
- Tarek AlSkaif, Wageningen University & Research, The Netherlands
- Thomas Strasser, AIT Austrian Institute of Technology, Austria
- Tomislav Capuder, University of Zagreb, Croatia
- Vitor Monteiro, University of Minho, Portugal
- Wei Wei, Tsinghua University, China

SEST 2024 TECHNICAL PROGRAM COMMITTEE

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- Anastasios Bakirtzis, Aristotle University of Thessaloniki, Greece
- Andrea Mazza, Politecnico di Torino, Italy
- Andrew Keane, University College Dublin, Ireland
- Angela Russo, Politecnico di Torino, Italy
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- Cristian Lazaroiu, University Politehnica of Bucharest, Romania
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- Gabriel Pinto, University of Minho, Portugal
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- Gregorio Muñoz Delgado, University of Castilla-La Mancha, Spain
- Hamed Jafari, Politecnico di Milano, Italy
- Ibrahim Sengor, Munster Technological University, Ireland
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- José Manuel Ribeiro Baptista, Trás-os-Montes e Alto- Douro University, Portugal
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- Luis Baringo, Universidad de Castilla-La Mancha, Spain
- Marialaura Di Somma, University of Naples "Federico II", Italy
- Meisam Farrokhifar, Eindhoven University of Technology, The Netherlands
- Miadreza Shafie-khah, University of Vaasa, Finland
- Mohammad Sadegh Javadi, INESC TEC, Portugal
- Nataly Bañol Arias, University of Twente, The Netherlands
- Ozan Erdinç, Yildiz Technical University, Türkiye
- Pedram Asef, University College London, UK
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- Ricardo Bessa, INESC TEC, Portugal

- Roberto Sebastiano Faranda, Politecnico di Milano, Italy
- Salah Bahramara, Islamic Azad University, Iran
- Samuele Grillo, Politecnico di Milano, Italy
- Sergio Cruz, University of Coimbra, Portugal
- Sitki Guner, Eskisehir Technical University, Türkiye
- Soumyabrata Dev, University College Dublin, Ireland
- Tarek Alskaif, Wageningen University & Research, The Netherlands
- Thomas Strasser, AIT Austrian Institute of Technology, Austria
- Tomislav Capuder, University of Zagreb, Croatia
- Vincenzo Trovato, University of Trento, Italy
- Vitor Monteiro, University of Minho, Portugal
- Yasser Hegazy, German University in Cairo, Egypt

LOCAL ORGANIZING COMMITTEE

Honorary Chairs	Nikolaos Paterakis (Eindhoven University of Technology, The Netherlands)	
	Domenico Villacci (Ensiel Consortium and University of Naples "Federico II", Italy)	
General Chair	Gianfranco Chicco (Politecnico di Torino, Italy)	
Conference Co-Chair	Akın Taşcıkaraoğlu (Muğla Sıtkı Koçman University, Türkiye)	
Conference Co-Chair	Andrea Mazza (Politecnico di Torino, Italy)	

Technical Program Chair	Gerardo Osório (Portucalense University Infante D. Henrique, Portugal)	
Publications Chair	Angela Russo (Politecnico di Torino, Italy)	
External Relations Chair and Webmaster	Enrico Pons (Politecnico di Torino, Italy)	-
Communications and Student Activity Chair	Alessandro Ciocia (Politecnico di Torino, Italy)	
Technical Activity Chair	Pietro Colella (Politecnico di Torino, Italy)	
Local Support Team Chair	Paolo Di Leo (Politecnico di Torino, Italy)	
Logistics Chair	Filippo Spertino (Politecnico di Torino, Italy)	

CONFERENCE ADMINISTRATION

SEST 2024 is organized under the administration of the Italian Consortium EnSiEL.



EnSiEL is an organization of public Italian universities operating in the energy, electrical systems and electrical systems sector. It is a non-profit research organization founded in 2007. EnSiEL is recognized and supervised by the Italian Ministry of University and Research and has legal personality, attributed with the MIUR Ministerial Decree of

04.15.2009 – Official Journal no. 105, dated 08.05.2009. The governance of the Consortium is entrusted to the Board of Directors in which representatives of the MUR and the Ministry of Economic Development (MISE) also participate; the Consortium is controlled through the Ministry of Economy and Finance (MEF). To achieve its goals, the Consortium makes use of the human, scientific and instrumental resources of the consortium member universities and can proceed with the establishment and management of research sections and laboratories at the consortium member universities; can open Research Laboratories and Representative Offices in Italy and abroad.

The mission of EnSiEL is:

- promote and coordinate studies and research in the field of Energy, Electrical Systems and Systems in accordance with national and international research programmes;
- contribute, also through the granting of study and research grants, to the preparation of expert researchers in the Energy, Electrical Systems and Installations sector;
- encourage collaboration between the associated universities and between them and both national and international research and industry bodies;
- carry out a concerted action to provide multidisciplinary support to those who work in the design, construction, use and management of electrical energy systems, plants and equipment, with the possibility of extending the initiative internationally;
- promote and encourage initiatives aimed at teaching and training in the Energy, Electrical Systems and Systems sectors, including master's degrees;
- propose itself as a scientific interlocutor towards the various National Government Bodies, the Regions, the Municipalities, the Regulatory Authority for Energy, Networks and the Environment (ARERA), the standardization bodies, as well as all the public and private institutions operating in the field of Energy, Electrical Systems and Installations.

ORGANISING SECRETARIAT

Centro Congressi Internazionale S.r.l. Via G. Guarini, 4 – 10123 Torino www.ccicongress.com info@ccicongress.com

CONFERENCE VENUE

POLITECNICO DI TORINO, ITALY



Fig. 1 - Politecnico di Torino main entrance (corso Duca degli Abruzzi 24): please note that this is **NOT** the closest entrance to the conference venue.

The conference will be hosted by Politecnico di Torino (Fig. 1), which was the first Italian Engineering School founded in the wave of the technical and scientific innovation that gave rise to the most prestigious European polytechnic schools in the mid-19th century. Founded as School for Engineers in 1859, it then became Regio Politecnico di Torino in 1906. Engineers, architects, designers and urban planners have been trained at Politecnico di Torino for over 160 years with rigor, integrity and high-level standards.

The large complex that houses the Engineering departments with entrance in corso Duca degli

Abruzzi 24 covers 122,000 square meters. It was opened in 1958 and now extends to the Cittadella Politecnica, a developing area next to the main site, where the conference will be hosted. The Cittadella is a modern campus of over 170,000 square meters, and includes spaces dedicated to students, research activities, technology transfer and services.

This long ever-changing history has rated Politecnico di Torino among the top European technical Universities for education and research, with 38,700 students and a teaching staff of more than 1,000.

The activities for SEST 2024 are scheduled in the Rooms "P" of Cittadella Politecnica located in corso Castelfidardo 44 (Fig. 2).



Fig. 2 - Rooms "P" – Politecnico di Torino: entrance to rooms "P" is from corso Castelfidardo 44, Torino, Italy

For more information, please refer to the conference program in the next page and at the link https://sest2024.polito.it/conference-program/



CONFERENCE PROGRAM

TUESDAY 10 SEPTEMBER 2024

Time	Room	ID	Event
8:15			Registration Desk Opens
9:00	3P		Opening Ceremony
			Welcome addresses
			Introduction on the Technical Program
			Plenary Speech, Javier Contreras (UCLM, Ciudad Real, Spain): Incentives for
			electric vehicle integration in electrical distribution systems
10:30	-11:00		Break
11:00	-12:15		Parallel Sessions
	3 P	T1	Demand Management and Demand Response
			Chair: Miadreza Shafie-khah
		138	Optimizing Grid Integration of Heat Pumps for Balancing Hosting Capacity and
			Customer Satisfaction
			Kamran Jalilpoor, Meysam Asadi, Robbert Claeys and Jan Desmet
		114	Demand response for a novel decentralized power-to-methanol process
			Max Kollmer, Markus Vogelbacher, Mucahit Terzi, Mohit Singh, Francisco Vidal
		200	Vazquez and Jorg Matthes
		269	A novel approach to residential load modelling for grid planning purposes
		18	Demand Response Optimization for the Enhancement of the Distribution
		10	System's Operation
			Maria Entopoulou, George Tsekouras, Dimitrios Rakopoulos and Vassiliki
			Kontarayri
		90	Assess the impacts of DR Aggregator's Offering Packages on DR Potential in
			Electricity Market
			Mojtaba Mohseni, Seyed Farshad Fatemi Ardestani, Ehsan Heydarian-
			Forushani and Massimo La Scala
		228	Dynamic Grid Tariffs for Power Peak Reduction Using Reinforcement Learning
			Katharina Kaiser and Gabriela Hug
	4P	Т2	Uncertainty
			Chair: Vincenzo Trovato
		54	Reliable Solution of DC Power Flow Equations for Uncertain Topology Networks
			Alfredo Vaccaro, Fabrizio de Caro and Silvia Iuliano
		230	Chance Constrained Framework for AC Security Constrained Optimal Power
			Flow
		101	Keertni Chacko, Alizaden Monammad, Capitanescu Fiorin and Li Pu
		191	Determining Locational Hosting Capacities of High Voltage Grids Under
			Simon Braun, Andreas Bong, Julian Saat and Andreas Illhia
		296	Reliable Confidence Intervals for Monte Carlo-Rased Resource Adequacy
		230	Studies
		181 296	Determining Locational Hosting Capacities of High Voltage Grids Under Consideration of Uncertainties <i>Simon Braun, Andreas Bong, Julian Saat and Andreas Ulbig</i> Reliable Confidence Intervals for Monte Carlo-Based Resource Adequacy Studies

			Ensieh Sharifnia and Simon Tindemans
		210	Day-Ahead Price Scenario Generation using Conditioned Multivariate Elliptical
			Copulas
			Elise van Wijngaarden, Bart van der Holst and Nikolaos Paterakis
		120	Distributionally Robust Bidding Strategies for Aggregated Demand-side
			Flexibility
			Inoussa Habou Laouali, Aleksandr Egorov, Mateo Toro-Cárdenas, Ângelo
			Casaleiro, Hao Yuan and Nuno Pinho da Silva
12:15	-13:30		Parallel Sessions
	3P	Т3	Grid and Demand Flexibility
			Chair: Alfredo Vaccaro
		117	Formation of Networked Microgrids for Operational Flexibility and Resilience
			Marios Shimillas, Balaji Venkateswaran Venkatasubramanian, Nikos
			Hatziargyriou and Mathaios Panteli
		168	A Decentralized Business Model for Integrating Energy Hubs into Flexibility
			Markets within Renewable-Based Smart Grids
			Leila Bagherzadeh, Seyed Amir Mansouri, Innocent Kamwa and Ahmad Rezaee
			Jordehi
		297	Tuning a Cascaded Online Feedback Optimization Controller for Provision of
			Distributed Flexibility
			Irina Zetti, Florian Klein-Helmkamp, Florian Schmidtke, Lukas Ortmann and
		202	Andreas Uibig
		203	Supermarket Cooling Flexibility Estimation
			Lusya Priya Kota, Ella-Lovise Fi Kørvik, Jayaprakasir Rajasekilaran ana Kareli B Lindhera
		104	Clustering Alternatives in Market-Clearing for Transactive Energy Elevihility
		104	Snot Markets
			Naren Mantilla. David Toauica. Juan C. Oviedo. Nilson Henao and Kodio
			Agbossou
		76	Optimal Operation of Flexible Devices for Bipolar DC Distribution Networks
			Yiyao Zhou, Tao Huang, Xuefei Zhang, Qianggang Wang, Jianquan Liao and
			Niancheng Zhou
	4P	T4	Integrated and Multi-Energy Systems
			Chair: Andrea Mazza
		251	Sustainable future in a university campus: a comprehensive CO ₂ emissions
			analysis and action plan
			Timea Farkas, Andrei Ceclan, Levente Czumbil and Dan Doru Micu
		198	A comprehensive analysis of PV/T-TEGs systems for enhanced solar energy
			conversion
			Paolo Vitulli, Emanuele Principi, Stefano Squartini, Antonio Gagliano and
			Giuseppe Marco Tina
		309	Optimal Sizing of a Community Energy Storage in a Multi-Energy System
			Najmuddin Noorzad, Akin Tascikaraoglu and João Catalão
		111	Coordinated planning of wind turbines and electrolyzers in distribution
			systems: a stochastic model
			Alireza Zakariazadeh and Andrew Keane

		214	Impact of Integration of Hydrogen Electrolysers in the Operation of Coastal
			Power Grid
			Shailendra Kumar Jha, Irina Oleinikova, Basanta Raj Pokharel and Andrei Morch
		250	Towards Sustainable Hydrogen Mobility: Evaluating Renewable Energy Systems
			for Green Hydrogen Generation
			Nicoletta Matera, Domenico Mazzeo, Michela Longo, Seyed Mahdi
			Miraftabzadeh and Sonia Leva
13:30	-14:45		Lunch
14:45	-16:00		Parallel Sessions
	3P	T5	Control Centers and Operational Practices
			Chair: Gianfranco Chicco
		71	Hydrogen Electrolyser participation in Automatic Generation Control using
			Model Predictive Control
			Fernando J. Ribeiro, João A. Peças Lopes, Filipe J. Soares and André G. Madureira
		85	Measurement-Based Framework for Online Identification of Modal Parameters
			and System Inertia Levels
			Achilleas Sfetkos, Eleftherios Kontis, Theofilos Papadopoulos and Grigoris
			Papagiannis
		86	Multistage Optimal PMU Placement in the Spanish Power Grid
			Antonio Pepiciello, Anzhelika Ivanova, Andres Camilo Henao Muñoz,
			Mohammed Debbat, Jose Luis Dominguez Garcia and Effie Makri
		60	Facilitating AI and System Operator Synergy: Active Learning-Enhanced Digital
			Twin Architecture for Day-Ahead Load Forecasting
			Costas Mylonas, Titos Georgoulakis and Magda Foti
		46	Evaluating Backup Control Center Architecture for Power Grid: Path Forward
			and Cloud Solutions
			Sagnik Basumallik, Amit Chowdhury, Debabrata Biswas, Debojyoti Majumdar, Rajih Sutradhar, Bibek Agarwal, Soumya Kanti Das and Anurag K Srivastava
		130	Real-time Canable Control Room Laboratory for Communication and
		150	Integration Analysis of Various Power Grid Software Components
			Gourab Baneriee, Benjamin Reauardt, Frank Marten, Jürgen Hubert, Sebastian
			Wende-von Bera, Ralf Scharnow, Thorsten Arfmann and Martin Braun
	4P	Т6	Electric Vehicles and Transportation Electrification
			Chair: Cesar Diaz-Londoño
		40	Charging Experience Enhancement for Electric and Hydrogen Vehicles through
			a PV-based Mobile Multi-Charging Station
			Mohammad Reza Salehizadeh, Muhammed Ali Beyazıt, Emre Demirel, Akın
			Taşcıkaraoğlu and Jay Liu
		37	Optimal Integration of Rooftop PV and Wind Powers for Cost-Efficient and Low-
			Carbon Operation of Sustainable Railway Systems
			Mohsen Davoodi, Hamed Jafari Kaleybar and Morris Brenna
		205	Electric Vehicle Battery Virtual Partitioning Algorithm for Residential Vehicle-
			to-Home Service
			Andrea Bonfiglio, Manuela Minetti and Renato Procopio
		151	Electric Vehicle-Based Virtual Batteries in Power Distribution System Operation
			Pablo Diaz-Cachinero, Hilmi Cihan Güldorum, Alejandro Cuadra-Garcia,
			Gregorio Muñoz-Delgado and Javier Contreras

		209	Impact of Temperature on the Electric Vehicle Hosting Capacity of Distribution
			Networks
			Zixuan Jia, Daniel L. Donaldson and Xiao-Ping Zhang
		308	Integration of Electric Vehicles in Buildings: Optimization Model and Economic
			Assessment by a Digital Twin Representation
			Giorgio Benedetto, Ettore Francesco Bompard, Andrea Mazza, Enrico Pons,
			Paolo Tosco, Marco Zampolli and Rémi Jaboeuf
16:00	-17:15		Parallel Sessions
	3P	T7	Power System Stability and Control
			Chair: Costas Vournas
		78	Risk Assessment of Cascading Outages Based on an Extended AC Power Flow
			Model
			Moossa Khodadadi Arpanahi and Florin Capitanescu
		83	Operational Mitigation of Cyberattack-Induced Cascading Failures in Power
			Systems
			Sina Hashemi, Mathaios Panteli, Vetrivel S. Rajkumar and Alexandru Ştefanov
		248	Impact of Secondary Voltage Regulation Dynamics on Transmission-Level
			Voltage Stability
			Hugo R. de Brito, Valéria M. de Souza and Kjetil O. Uhlen
		97	Model Predictive Control for offset-free tracking: a new data-driven application
			for Secondary Voltage Regulation on Transmission Network
			Federica Acerbi, Davide Stefano Piccagli, Fabio Pozzi, Luca Sciarpa, Giorgio
		247	Maria Giannuzzi, Cosimo Pisani ana Gianiuca Bruno
		247	Margin Estimation
			Walgin Estimation Valéria M. de Souza, Hugo P. de Brito and Kietil O. Uhlen
		127	Decoupled Deadbeat Current Controller For STATCOM Application
		127	Hikmat Basnet and Tomi Roinila
	4P	TS	Flectric Vehicle Charging
			Chair: Gregorio Muñoz-Delagdo
		171	Predicting Electric Vehicle Charging Demand using a CNN Encoder-Decoder
		1/1	ISTM Model
			Pardis Asahari, Alireza Zakariazadeh, Andrew Keane and Terence O'Donnell
		49	Prediction of Energy Delivered by Rapid and Ultra-Rapid Electric Vehicle
			Chargers: Comparison Between Italy and Germany
			Carolina Coppini, Alessandro Magrini, Cesar Diaz-Londoño, Giambattista
			Gruosso, Michele Motta and Diego Pareschi
		45	Consensus Clustering to Mitigate Inaccurate User Preferences in EV Charging
			Shicong Zhang, Klaas Thoelen and Geert Deconinck
		124	Mid-Term Electric Vehicle Charging Scheduler: Optimizing Plug-in Time from
			the User's Perspective
			Ferran Pinsach Batet, Lucia Igualada, Roger Valdés Martín, Tomás Montes and
			Josh Eichman
		154	Assessing the Impact of Smart Charging Electric Vehicles in the Future German
			Energy System
			Kirstin Ganz and Nadja Helmer

		193	Stochastic Microgrid Sizing Considering Electric Vehicle Charging Demand
			Marcelo Montandon Magalhães, Lucas Zenichi Terada, Juan Carlos Cortez, João
			Soares, Zita Vale and Marcos J. Rider
17:15	-17:45		Break
17:45	-19:00		Parallel Sessions
	3 P	Т9	Smart Buildings
			Chair: Alessandro Ciocia
		241	Energy Management System for a Prosumer with Vehicle-to-Home: a Case
			Study in Italy
			Gabriel Ellemund, Matteo Fresia and Stefano Bracco
		148	Optimizing the Energy Scheduling and Assessing Profitability of BESSs in
			Buildings Considering Battery Degradation
		104	Lysanaros 1210vani, Lenos Hadjidemetriou and Sterios Timotheou
		194	Forecasting
			Grazia Barchi, Enrico Dalla Maria, Marco Pierro and Annamaria Belleri
		36	Deterministic Sizing of Integrated Facade Nodes for Smart Buildings
			Christoph Gehbauer, Manfred Tragner and José Baptista
		137	Optimal Dead Band Control of Occupant Thermostats for Grid-Interactive
			Home
			Alper Savasci, Oguzhan Ceylan and Sumit Paudyal
		260	Thermal Dynamic Models for Predicting the Indoor Temperature of Multi-Zone
			Buildings
			Nicos Koumbari, Lysandros Tziovani, Markos Asprou, Lenos Hadjidemetriou and Stelies Timetheou
	40	T10	Electric Vehicle based Services
	4P	110	Chair: Theofiles Banadonoulos
		219	Spatio-Temporal Modeling of Large-Scale REV Elects' Charging Energy Needs
		215	and Flexibility
			María Parajeles Herrera, Gabriela Hug and Marius Schwarz
		189	Grid Impacts by Providing Flexibility of Electric Vehicles based on Simultaneity
			Factors
			Andreas Bong, Luka Alhäuser Cisneiros E Faria, Edward Leier, Chris Martin
			Vertgewall, Steffen Kortmann and Andreas Ulbig
		112	Energy and Balancing Services Provision by Electric Vehicles with Vehicle-to-
			Grid Capability: A Deep Reinforcement Learning Approach
		125	Alicia Blatlak, Dawel Qiu, Dimitrios Papadaskalopoulos and Goran Strbac
		133	Swapping and Charging Stations with Technical Evaluation
			Hilmi Cihan Güldorum. Pablo Diaz-Cachinero. Gregorio Munoz-Delaado and
			Javier Contreras
		19	Building Bidding Curves for an EV Aggregator via Stochastic Adaptive Robust
			Optimization
			Álvaro García-Cerezo, Luis Baringo, David Bonilla and Javier García-González
		223	Optimal Bidding Strategy for EV Charging Station Aggregator in Integrated
			Energy and Regulation Markets Based on Charging Pricing Model
			Rongfei Qiao, Bing Zhang, Ge Wang, Fei Wang and Guoqiang Zhang

WEDNESDAY 11 SEPTEMBER 2024

Time	Room	ID	Event
8:30-	-9:45		Parallel Sessions
	3P	W1	Distribution Systems
			Chair: Massimo La Scala
		43	A Topology Detector Based Power Flow Approach for Radial and Weakly Meshed
			Distribution Networks
			E. Fatih Yetkin, Oguzhan Ceylan, Ioana Pisica and Aydogan Ozdemir
		58	Comparing the Impact of AI-based versus Standard Load Profiles in ANN State
			Estimation Training in a real Distribution Grid
			Kristina Jurczyk, Leonie Riedl, Marcel Dipp, David Heck, Ben Gerhards, Nikita
			Maksimovic Popkov, Bastian Schäfermeier, Frank Marten, Luka Gildehaus,
			Sebastian Wende-von Berg and Martin Braun
		222	Setpoint Reachability for Congestion Management in Active Distribution
			Networks Diana AA V. D. Farming and Dades AA C. Camadha
		122	Diogo M. V. P. Ferreira ana Pearo M. S. Carvaino
		122	Global Sensitivity Analysis Based Method for Distributed Voltage Control
			Eduardo Da Din, Mirko Ginocchi, Fardinanda Bonci, Antonollo Monti and Andrea
			Reniani
		159	Sub-Daily Temporal Disaggregation of Regional Climate Models with Artificial
		155	Neural Networks: An Application for Power System Planning and Operation
			Rouzbeh Shirvani. Alessandro Bosisio. Cristian Bovo. Saeed D. Manshadi. Roberto
			Bolis and Manuel Eduardo Ferro De Pina
		44	Digital Twin Aided Dynamic Analysis of Distribution Networks with Power
			Hardware-in-the-Loop Validation
			Georgios Barzegkar-Ntovom, Eleftherios Kontis, Theofilos Papadopoulos,
			Zhiwang Feng and Graeme Burt
	4P	W2	Power Quality
			Chair: Angela Russo
		153	Insulation Coordination Studies on the Future Italian 36 kV network – Transient
			Overvoltages
			Luca Buono, Francesco Palone, Roberto Spezie, Lorenzo Papi, Gabriele Tresso
			and Franco Di Bona
		197	Preliminary Study of Transient Overvoltages in a 36 kV Cable Network: Definition
			of Bonding Configuration
			Luca Buono, Gabriele Tresso, Lorenzo Garzelli, Luca Guizzo and Francesco Palone
		4	Power Smoothing as a Mitigation Action against Rapid Voltage Changes: A
			Comparative Study
		277	Stellos C. Dimoullas, Kyrlaki-Nefeli D. Malamaki ana Georgios C. Kryoniais
		211	VILLAS Framework for Distributed- Software-In-the-Loop Voltage Optimization
			with Renewables and Ultratast Charging Stations
			Casolino, Jarar Hussain, Roberto Langella and Paola Vordo
		11	A Novel Al-driven Hybrid Method for Elicker Estimation in Power Systems
		11	A NOVELAFUTVET TYDING METHOD TO FILCKET ESTIMATION IN FOWEL SYSTEMS

			Javad Enayati, Pedram Asef, Aliakbar Yousefi, M. B. Asadpourahmadchali and
			Alexandre Benoit
		249	An Al-based, Error-bounded Compression Scheme for High-frequency Power
			Quality Disturbance Data
			Markus Stroot, Stefan Seiler, Philipp Lutat and Andreas Ulbig
9:45	3P		Plenary Session
		Plena	ary Speech, Andy Knight (University of Calgary, Canada): Data Informed DER
		Integ	iration
		Plena	ary Speech, Costas Vournas (NTUA, Athens, Greece): Voltage Stability Monitoring
		and S	Security Control using Distributed Resources
10:45-	11:15		Break
11:15-	12:30		Parallel Sessions
	3 P	W3	Microgrids
			Chair: Georgios C. Kryonidis
		38	Promotion of Hydrogen Production through a Shared Multi Energy System in a
			Residential Microgrid
			Mohammad Reza Salehizadeh, Muhammed Ali Beyazıt, Akın Taşcıkaraoğlu and Jay
			Liu
		191	Autonomous Harmonic Elimination Using Compact Multilevel Electric Vehicle
			Chargers for Microgrid Environments
			Mohammad Babaie and Kamal Al-Haddad
		139	Adaptive Single-Terminal Fault Location for DC Microgrids
			Valbhav Nougain, Sukumar Mishra, Joan-Marc Rodriguez-Bernuz, Adria Junyent
		1/1	A Distributed Coordinated Control Stratomy for Unbalanced Voltage Suppression in
		141	Rinolar DC Microgrids with Elexible ZIP Load
			Xuefei Zhana. Nianchena Zhou. Qianaaana Wana. Jianauan Liao. Yivao Zhou.
			Xiaolong Xu and Meihui Yang
		125	A Distributed Control Framework with Scalable Stability Guarantees for DC Current
			Sharing under Voltage Limits
			Cornelia Skaga and Gilbert Bergna-Diaz
		91	Assessment of a Dynamic Event-Triggered Voltage Control for Islanded Microgrids
			using High-fidelity Cyber-Physical Platform
			Bianca Calazzo, Amedeo Andreotti, Sara Leccese, Alberto Petrillo, Stefania Santini
	40	14/4	Ontimization
	4P	VV4	
		12	Chair: Luis Burlingo
		12	Inner Approximation of Polytopes for Near-Real Time Available Transfer Capacity
			Optimization Dawn Virginillo, Asia Dervickadic and Marc Hohmann
		25	Ontimal Short-Term Dispatch of Insular Systems: the Case of Ikaria
		23	Kyriaki-Nefeli Malamaki Maria Entonoulou Nikolaos Andrionoulos Diego
			Martinez Lonez Pahlo Ferrer Fernandez Nikolaos Tzanis Georgios Lampsidis
			Konstantinos Kaousias. Effhimia Chassioti and Ioannis Moraitis
		211	Distributed Robust Optimization Method for AC/MTDC Hybrid Power Systems
			with DC Network Cognizant
			Haixiao Li and Aleksandra Lekic
1		1	

		84	Model Predictive Control of Security in Real-Time via AC Security Constrained
			Optimal Power Flow
			Arman Zarrin, Florin Capitanescu, Md Umar Hashmi, Mohammad Iman
			Alizadeh and Dirk Van Hertem
		56	Design Optimization of Protection Layout in DC Distribution Grids based on
			Column Generation
			Julian Saat, Maxim Müllender, Tobias Tillipaul and Andreas Ulbig
		51	Coordinated Generation Expansion Planning for Transmission and Distribution
			Systems via ADMM
			Nahid-Ur-Rahman Chowdhury, Gregorio Muñoz-Delgado, Natalia Alguacil and
			Javier Contreras
12:30-	13:30		Lunch
13:30-14:45			Parallel Sessions
	3P	W5	Grid-connected Power Electronic Converters
			Chair: Salvatore Musumeci
		92	Stability Analysis of Virtual Power Plant with Grid Forming Converters
			Macit Tozak, Sezai Taskin, Ibrahim Sengor and Barry P. Hayes
		240	Assessment of Grid-Forming Control Design for Temporary Islanded Distribution
			Grid Operation
			Alexander Winkens and Andreas Ulbig
		107	Transient Stability Analysis of Grid forming Converter with Current Limitation by
			Extended P-δ Curve
			Yasuaki Mitsugi, Jumpei Baba, Tatsuaki Ambo, Noriko Kawakami and Ruben
		227	Inzunza
		227	Voltage Regulation of Microgrid Inverters in Grid-Following and Grid-Forming
			Mode Cameron Hicks, Kovin Whitener and Eduardo Cotilla Sanshaz
		2/12	A Comparative Analysis of Grid Forming and Grid Following Control
		243	Methodologies for Power Inverters Linder Fault Ride Through Events
			Alper Cakiroalu, Husevin Akdemir, Mufit Altın and Cosku Kasnakoalu
		164	Grid-Forming Controlled Electrolyzer with LVRT Capability and Asymmetric
			Inertia Provision
			Nils Wiese, Phillip Kretschmer, Debraj Ghosh, Simon Eberlein and Diana Strauß-
			Mincu
	4P	W6	Energy Markets
			Chair: Javier Contreras
		178	Synthetic Dataset Generation for an Electricity Market Simulation Game
			Pyae Phyo, Koen Kok and Nikolaos Paterakis
		20	The Role of Machine Learning-based Surrogate Models for Wind Power
			Curtailment Prediction from Electricity Market Data
			Silvia Iuliano, Fabrizio de Caro and Alfredo Vaccaro
		59	Optimal Scheduling of a Hybrid Wind–Battery Power Plant in the Day-ahead and
			Reserve Markets Considering Battery Degradation Cost
			Elahe Ghanaee, Juan I. Pérez Díaz, Daniel Fernández-Muñoz, Jorge
			Najera, Manuel Chazarra and Sandra Castano-Solis
		216	A Foundational Design Methodology for Digital Twins in Local Energy Markets
			Lars Wullink, Onder Babur and Tarek Alskaif

		70	Design, Benefits and Barriers of Local Electricity Markets: Insights from a UK
			Innovation Project
			Dimitrios Papadaskalopoulos and Makedon Karasavvidis
		74	Analysis of the Discrete Iberian Intraday Market: Price Dynamics, Market
			Participation, and Balancing Challenges
			Santiago Maiz, Raquel García Bertrand, Luis Baringo Morales and Tarek Alskaif
14:45-	16:00		Parallel Sessions
	3P	W7	Energy Storage Systems
			Chair: <i>Oguzhan Ceylan</i>
		29	Optimal Scheduling of an Integrated Photovoltaic-Battery Storage System
			Considering Energy Capacity Fade and Revamping Strategy
			Asja Alic, Silvia Zordan, Vincenzo Trovato, Antonio De Paola
		186	Multi-Use Operation of Aggregated Battery Energy Storage Systems
			Florian Schmidtke, Constantin Ernst, Steffen Kortmann, Johannes Jeup and
			Andreas Ulbig
		236	Safe Optimal Control of Battery Energy Storage Systems via Hierarchical Deep
			Reinforcement Learning
		264	Alaa Selim, Huadong Mo, Hemanshu Pota and Daoyi Dong
		264	Characterization and Validation of Hybrid Energy Storage Systems formed by Li-
			Diants
			Fidilis Jorge Nájera Gustavo, Navarro Marcos, Blanco Eduardo, Rausell Valentin
			Jirda Marcos Lafoz Elabe Ghanaee José Janacio Sarasúa and Juan Janacio
			Pérez-Díaz
		42	Gaussian Mixture Model for Battery Operation Anomaly Detection
			Alexandre Lucas, Salvador Carvalhosa and Sara Golmaryami
		220	Energy-efficient Manufacturing Scheduling of Footwear Industries with Onsite
			Photovoltaic Energy and Storage
			Isaias Gomes, Miguel Sousa, Rui Rebelo, Ricardo Bessa and Jose Paulos
	4P	W8	Data Analytics
			Chair: Pietro Colella
		276	Exploring Clustering to Improve Interpretability in Complex Energy Forecasting
			Models
			Brigida Teixeira, Luis Valina, Tiago Pinto, Arsénio Reis, Joao Barroso and Zita Vale
		77	Towards the Partitioning of Node Ancestry and Descendant Sets as a Technique
			for the Identification of Corridors of Coherent Flow in a Directed Acyclic Graph
			Justin Ugwu and Paul Cuffe
		68	Machine-Learning-Based Home Energy Management Framework Via Residents'
			Feedback
			Mahoor Ebrahimi, José M. Fonseca, Miadreza Shafie-Khah, Gerardo J Osório and
		107	Joao P. S. Catalao
		101	Home Energy Management System
			Gerardo I. Osório, Nuno Teixeira-Lones, Mohammad Javadi and João Catalão
		144	Drift-Aware Dynamic Neural Network for Improving Short-term Load Forecasting

		152	152 SMARDcast: Day-Ahead Forecasting of German Electricity Consumption with				
			Deep Learning				
			Nick Krüger, Kolja Eger and Wolfgang Renz				
16:00-	·16:30		Break				
16:30-	·17:30		Parallel Sessions				
3P W9 Grid Integration of Energy Resources			Grid Integration of Energy Resources				
			Chair: Gerardo Osorio				
		175	Comparison of Active Power Curtailment Methods for Safe Operation in Low				
			Voltage Power Systems				
			Cara Kopele, Matteo Guscetti, Mathias Duckheim, Gabriela Hug and Eleni Stai				
		1	Security-Constrained Inertial Response Provision in Distribution Grids				
			Georgios Kryonidis and Charis Demoulias				
		142	Hosting Capacity Region Computation in Transmission Networks: Accuracy and				
			Complexity				
			Sicheng Gong, Koen Kok and Sjef Cobben				
		174	Robust Distribution System State Estimation based on Smart Meter Data under				
			High PV Penetration				
			Hikmat Basnet and Tomi Grazia Barchi and David Macii				
		22	Power Losses Evaluation in Wind Farms Using Temperature-Dependent Power				
			Flow				
			Theofilos Papadopoulos, Kalliopi Pippi, Georgios Kryonidis and Andreas				
			Chrysochos				
			Social Event				
		Visit to the "Museo Nazionale del Risorgimento Italiano"					
			&				
			Conference Dinner				
18:30 -	-19:00	Bus	transportation: meeting point via Paolo Borsellino 28-44				
19:00 -	-23:00	GUI	DED TOUR & CONFERENCE DINNER: "Museo Nazionale del Risorgimento				
		Italiano", Via Accademia delle Scienze 5, Torino					

THURSDAY 12 SEPTEMBER 2024

Time	Room	ID	Event			
9:30	3P		Plenary Session			
		Plenar	ry Speech, João P.S. Catalão (FEUP, Porto, Portugal): Demand Response			
		Impler	mentation: Past Developments and Future Perspectives			
10:00-	-11:30		Parallel Sessions			
	3 P	H1	Power System Protections			
			Chair: Enrico Pons			
		79	Implementation of Adaptive Centralized Protection Scheme in Active Networks			
			with a HIL Setup			
			Meysam Pashaei, Kimmo Kauhaniemi and Hannu Laaksonen			
		280	Enhancing Cyber Resilience in Energy Systems through Automated Attack			
			Scenario Generation: A Toolchain Approach			
		210	Adam Bartusiak, Faik Seidi, Jorg Lassig, Steffen Nicolai and Peter Bretschneider			
		310	Distance Protection Functions Based on the Conic Section Equation and the Bayesian Inference: Implementation and Tests With Field Data			
			Giovanni Manassero Junior Priscila de Lima Vianna and Rodrigo Rozenblit			
			Tiferes			
		237	Overload Protection Scheme to Reduce Cascading Outages Considering			
		_	Thermal Line Limits			
			Gourab Banerjee, Roman Bolgaryn, Christian Hachmann and Martin Braun			
		179	Testing Two Methods for Earth Fault Location in Closed-Ring Operated			
			Distribution Networks: Lessons Learned From Field Tests Thomas Treider, Tesfaye Amare Zerihun and Lars B. Nordevall			
		285	Polarity Reversal Inhibitor for the Future Meshed HVDC Grids in Presence of DC			
			Circuit Breakers			
			Francesca Pizzimenti, Stefano Lauria, Fabio Giulii Capponi, Francesco Palone,			
	40		Luca Buono and Pierluigi Vacante			
	4P	пг	Chaim Proto Di Loo			
		104	Cridit: Public DI Leo			
		184	Mini-Modules Tested under Sunlight and Partial Shading			
			Stefano Schubert, Gabriele Malaaroli, Alessandro Ciocia and Filinno Spertino			
		185	Comparative Analysis of Energy Yield between PERC and HJT Modules Tested in			
			Experimental Campaigns Carried out in Northern Italy			
			Gabriele Malgaroli, Alessandro Ciocia, Filippo Spertino, Silvia Casagrande and			
			Luca Saglietti			
		176	Fuzzy Ensemble Algorithm for Day-ahead Photovoltaic Power Forecasting			
			Juan Carlos Cortez, Jose A. Cumbicos, Lucas Zenichi Terada, Juan Camilo López,			
			Mateus Giesbrecht, Gustavo Fraidenraich and Marcos J. Rider			
		225	Multi-model Adaptive Combination Forecasting Method for Ultra-short-term			
			PV Power Based on Fluctuation Pattern Recognition			
			Bo Yang, Wei Wang, Mingyang Li, Ting An, Liming Li, Chunyang Zhang, Yuxuan Tian and Fai Wang			
			Tian ana Fei Wang			

		224	Contextual Temporal Feature Modeling Based Distributed Photovoltaic
			Abnormal Power Data Repair Method
			Yanran Li, Hanghang Liu, Chen Huang, Zhao Zhen, Fei Wang and Li Li
		229	Integration of Aerial Thermal Imaging and Deep Learning for Fault Detection in
			Photovoltaic Panels: A Study at Thinh Long Solar Power Plant
			Nga Le, Hau Vu, Nuttapong Porntipworawech, Supa Wasaiyarat and Minh
			Doan
11:30-	-12:00		Break
12:00-	-13:00		Parallel Sessions
	3P	H3	Power Electronics and Energy Conversion
			Chair: Filippo Spertino
		262	Energy Synchronization of Grid-Connected Power Electronic Converters
			Rebekka Færøyvik Olsen, Sander Olai Antun and Gilbert Bergna-Diaz
		291	State Space Modeling and Small-Signal Stability Analysis of a Multiport Soft
			Open Point Based on the Triple Active Bridge Converter
			Andrés Camilo Henao-Muñoz, Antonio Pepiciello, Mohammed B. Debbat,
			Andrés Torrasó and José Luis Domínguez-García
		281	Grid Integration of a Novel Linear-generator-based Wave Power Conversion
			System
			Renqi Guo, Yueqi Wu, Xiandong Ma, George Aggidis and Nan Zhao
		255	C-HIL Implementation of Cascaded Multilevel Inverter for Vertical Stabilization
			and Radial Control Power Supplies of Divertor Tokamak Test
			Giovanni Griva, Salvatore Musumeci, Radu Bojoi, Fausto Stella, Alessandro
		120	Lampasi and Stefano Bifaretti
		126	Fault-ride-through Strategies for Modular Multilevel Shipboard Storage System
	40		Fabio Mananie, Michele Pastorelli, Salvatore Musumeci and Mariapia Martino
	4P	Π4	Chaim Deharte Nanali
			Chair: Roberto Napoli
		88	Notwork
			Tobid Hariabi, Stafano Lilla and Alberto Borabetti
		20	Development of a Strategic Trading Agent in a Grid-Aware Energy Community
		20	Market
			Mandy Wältermann, Oliver Kraft, Julia Klara Schmeina and Llf Häger
		150	Advancing Multi-Energy Hub Design: an Integrated Approach for Optimizing
			Residential Clusters in High RES Penetration Scenarios
			Marialaura Di Somma, Lingkang Jin, Christina Papadimitriou and Nicola Bianco
		259	A Game Theory Approach to the Multi-Objective Design of Renewable Energy
			Communities
			Gianmarco Lorenti, Paolo Lazzeroni and Maurizio Repetto
		288	Enabling Technologies for Near Zero Power Renewable Energy Communities
			model to increase RES penetration and support the Electrical Power System
			Daniele Menniti, Nicola Sorrentino, Anna Pinnarelli, Giovanni Brusco, Pasquale
			Vizza, Giuseppe Barone and Giampiero Spena
13:00	3P		Closing Ceremony
13:30-	-14:45		Light Lunch

KEYNOTE SPEAKERS

TUESDAY 10 SEPTEMBER 2024



Javier Contreras

University of Castilla – La Mancha (UCLM), Ciudad Real, Spain

Incentives for electric vehicle integration in electrical distribution systems

The use of electric vehicles (EVs) is increasing to address emerging concerns about global warming associated with emissions from fossil fuels. Besides, in the context of parcel delivery related to e-commerce, EVs are becoming an alternative to conventional fossil fuel technology. The EVs charging process implies the interdependence between the transportation and electric power systems. To address these issues, we present a multistage optimization-based approach that allows linking

delivery routing and aggregated demand management in the transportation and electric power systems, respectively. An EV demand aggregator is used to guarantee the synergy between systems. Incentives are included to motivate electric vehicles to remain at charging intersections. However, attractive incentives can create electric power system congestion due to simultaneous charges on nodes. Thus, an iterative decongestion methodology is developed. The resulting model is divided into three stages: delivery allocation, delivery routing for each independent EV, and optimal energy management by the EV demand aggregator. Numerical results demonstrate the effectiveness of the proposed model on a real 284-intersection map with a set of 100 electric vehicles, showing that incentives allow electric vehicle demand aggregator to achieve cost savings of 8.5%.

BIOGRAPHY

Javier Contreras received the B.S. degree in Electrical Engineering from the University of Zaragoza, Zaragoza, Spain, in 1989, the M.Sc. degree in Electrical Engineering from the University of Southern California, Los Angeles, in 1992, and the Ph.D. degree in Electrical Engineering from the University of California, Berkeley, in 1997. Since 1998 he has been with the University of Castilla – La Mancha (UCLM), Ciudad Real, Spain, where he is currently Full Professor. Dr. Contreras has also been a visiting scholar at the University of Hong Kong and the University of Illinois at Urbana-Champaign. He has been a consultant for several electricity companies in Spain and has participated as principal investigator in national, European and international research projects. In particular, he was part of the European project Singular (https://cordis.europa.eu/project/rcn/106012/en) devoted to the introduction of renewable generation in smart distribution grids. He has also been part of the evaluation committee of international research projects in the European Commission, Spain, Portugal, Italy, the Netherlands, Cyprus, Argentina, and Colombia.

Dr. Contreras has focused his research towards a broad cross-disciplinary program in the area of price forecasting, electricity markets, renewable energy and operation and planning of electrical power systems. Within electricity markets he has focused on their mathematical modeling, including both technical and economic issues as well as risk measures for power producers. Issues such as

uncertainty, stochastic programming, price forecasting, real options and other methodologies have been addressed by him. Within the field of renewable energy, Dr. Contreras has analyzed control strategies for stand-alone renewable energy systems with hydrogen storage, design of grid connected PV systems considering electrical, economic and environmental aspects, optimal contract pricing of distributed generation in distribution networks and risk assessment of wind power generation project investments based on real options.

Dr. Contreras is an active member of *IEEE Power and Energy Society* (PES) as part of the Electricity Market Economics and the System Economics Subcommittees, among others. He reviews papers for many international conferences and journals, such as IEEE Transactions on Power Systems, Energy Policy, Energy Economics, and others. He has received the Best Paper Award at the IEEE International Conference on Smart Energy Grid Engineering — SEGE'15, Oshawa, Canada, August 17-19, 2015: N.G. Paterakis, A.A. Sánchez de la Nieta, J.P.S. Catalão, A.G. Bakirtzis, A. Ntomaris and J. Contreras, Evaluation of Load-following Reserves for Power Systems with Significant RES Penetration considering Risk Management. He is editor of IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, IEEE Transactions on Sustainable Energy, IEEE Power Engineering Letters, IEEE Open Access Journal of Power and Energy and IET Renewable Power Generation and has been Guest Editor of IEEE Transactions on Smart Grid Special Issue on "Real-Time Demand Response", IEEE Transactions on Sustainable Energy Special Issue on "Reserve and Flexibility for Handling Variability and Uncertainty of Renewable Generation, IEEE Journal on Selected Topics in Signal Processing Special Issue on "Signal and Information Processing for Critical Infrastructures" and IET Renewable Power Generation Special Issue on "Demand Side Management and Market Design for Renewable Energy Support and Integration". He is Fellow of IEEE.

WEDNESDAY 11 SEPTEMBER 2024



Andy Knight

Department of Electrical and Software Engineering University of Calgary, Canada

Data Informed DER Integration

This presentation will address some of the approaches to support integration of distributed energy resources through data and AI tools. Applications include energy storage and from renewables, from microgrids to large systems. Data analysis, advanced models and AI are capable of

significantly impacting the performance of DER and associated systems, from technical and economic perspectives and also as tools to inform policy makers. The presentation will review recent advances in the field, and provide examples of specific case studies based in Canada.

BIOGRAPHY

Andy Knight is Professor at the Department of Electrical and Software Engineering at the University of Calgary, with research interests in electrical energy systems, energy conversion and clean and efficient energy utilization. Dr. Knight is a P.Eng. registered in the Province of Alberta, Canada. He is the recipient of an IEEE PES Prize Paper Award and three paper awards from IEEE IAS. He is the

President of IEEE IAS for 2024-2025 and has previously held the roles of Steering Committee Chair of IEEE ECCE and IEEE IEMDC, and Chair of IEEE Smart Grid R&D Committee. He is a Fellow of the Canadian Academy of Engineering.



Costas Vournas

School of Electrical and Computer Engineering National Technical University of Athens, Greece

Voltage Stability Monitoring and Security Control using Distributed Resources

Overview of Global vs Local Voltage Instability Detection approaches including a critical review of Impedance matching based methods and their limitations. Principles of the New LIVES Index (NLI) based on local

measurements at a transmission corridor, with validation using a historical voltage collapse incident and application for on-line stability monitoring at the Control Center of the Hellenic System. In case of an approaching instability or insufficient security margin, distributed resources in a power system can provide significant support. An emergency control approach, as well as a method based on flexibility region determination of an Active Distribution Network and maximization of security margin making use of this flexibility will be presented.

BIOGRAPHY

Costas Vournas is Professor Emeritus in the School of Electrical and Computer Engineering of National Technical University of Athens, Greece. He has published 200 papers in International Journals and Conferences and has co-authored the book "Voltage Stability of Electric Power Systems". His research interests are in the area of power system dynamics, stability and control and include voltage stability monitoring and security analysis, renewable generation integration in power systems, and novel control applications for distribution and transmission systems. Fellow of IEEE (2005) and member of CIGRE. He received the IEEE/PES Prabha Kundur Award in 2019. He served as Region 8 Representative on the IEEE Power and Energy Society (PES) Governing Board (2011-2014). He is currently Chair of PES Greece Chapter, Past Chair of IEEE/PES Power Tech Steering Committee (2007-2019), and Past Chair of the IEEE/PES Power Systems Dynamic Performance Committee. Since 2021 he is Chairing the Energy WG of the IEEE European Public Policy Committee (EPPC) and is member of EPPC. Starting 2024 he serves as the Secretary of the Technical Council of IEEE PES.

THURSDAY 12 SEPTEMBER 2024



João P. S. Catalão University of Porto, Portugal

Demand Response Implementation: Past Developments and Future Perspectives

The Clean Energy for all Europeans package and the European Green Deal both put the consumers at the centre of the European Union's energy system. Under the REPowerEU Plan, the European Commission reinforced the need to effectively allow consumers to become fully-fledged actors in the energy market. Digitalisation could make it easier for consumers to

invest in energy transition, also enabling consumers to actively participate in demand response programs. Demand response is becoming increasingly important to allow for a larger penetration of variable renewables, simultaneously ensuring more flexibility and more resilience. This invited lecture addresses past developments and future perspectives of demand response implementation, from several theoretical breakthroughs to real-life cases, aiming to increase consumer empowerment.

BIOGRAPHY

João P. S. Catalão is a Full Professor ("Professor Catedrático") at the Faculty of Engineering of the University of Porto, Portugal. He is an IEEE Fellow and a Highly Cited Researcher in the field of Engineering. He is among the Top 2% of Scientists and a Best Scientist in Research.com. He was the Primary Coordinator of the 5.2-million-euro FP7-EU project SiNGULAR, 2012-2015. Currently, he is the Primary Coordinator of the 4.5-million-euro Horizon-EU project EU-DREAM, 2024-2027. He has coauthored more than 500 journal publications, with an h-index of 99 and more than 37,000 citations (according to Google Scholar), having supervised more than 130 researchers (post-docs, Ph.D. and M.Sc. students, and other students with project grants). He was the General Chair of SEST 2019 (technically co-sponsored by IEEE), after being the inaugural Technical Chair and co-founder of SEST 2018. He was the Editor of two CRC Press Books: "Electric Power Systems: Advanced Forecasting Techniques and Optimal Generation Scheduling" (2012) and "Smart and Sustainable Power Systems: Operations, Planning and Economics of Insular Electricity Grids" (2015). He is a Senior Editor of the IEEE Transactions on Neural Networks and Learning Systems, and a Senior Editor of the IEEE Transactions on Systems, Man, and Cybernetics: Systems. He was an IEEE CIS Fellows Committee Member in 2022-2024. He was elected Full Member of Sigma Xi, The Scientific Research Honor Society, in 2023. He was recognized as an Outstanding Associate Editor 2023 of the IEEE Transactions on Emerging Topics in Computational Intelligence, an Outstanding Associate Editor 2021 of the IEEE Transactions on Power Systems, and an Outstanding Senior Associate Editor 2020 of the IEEE Transactions on Smart Grid. Furthermore, he has won 5 Best Paper Awards at IEEE Conferences.

SOCIAL PROGRAMME – Museo Nazionale del Risorgimento Italiano

WELCOME COCKTAIL & CONFERENCE DINNER

Museo Nazionale del Risorgimento Italiano Via Accademia delle Scienze 5, 10123 Torino, Italy http://2011.museorisorgimentotorino.it/index.php?l=en

The "Museo del Risorgimento" is the biggest Italian Museum dedicated to the 19th century political and social movement that in 1861 resulted in the consolidation of various states of the Italian Peninsula and its outlying isles into a single state, the Kingdom of Italy.

The museum was established in 1878, shortly after Italian unification. It is housed in Palazzo Carignano in Torino and has been recently profoundly renewed. The period of the Risorgimento is now recounted from a European viewpoint as well as through the eyes of Torino, Piedmont and Italy. Its exhibits include weapons, flags, uniforms, printed and written documents, and artworks. The rooms have been enriched with films created with images from the most important European collections and can be viewed on large screens, while extensive interactive displays help visitors to examine the themes presented in the films in greater depth.

The museum gates will be exclusively opened for the SEST participants, who will have the opportunity to visit it on Wednesday 11 September from 19:00



Fig. 1 - Conference Places

to 20:00 (the visit is included in the conference fee).

Contextually, the welcome cocktail and the conference dinner will be served in the rooms of the Museum as well.

MEETING POINT FOR THE BUSES TO THE CONFERENCE DINNER

A **bus transportation** has been organized to conveniently reach the museum and return to the area close to Politecnico di Torino, and is included in the conference fee. The participants who intend to reach the Conference Dinner venue *without* taking the bus are invited to indicate their intention to the Conference Secretariat during the Conference. A summary is reported in Table 1.

Meeting point	Service time	Destination
Via Paolo Borsellino 28-44	from 18:30 to 19:00	Museo del Risorgimento
Conference dinner site	from 23:00 to 23:30	Via Paolo Borsellino 28-44

Table 1 – Bus transportation to and from the conference dinner site

In more detail, the buses will start at hour 18:30-19:00 from the **meeting point** at Cittadella Politecnica, via Paolo Borsellino 28-44, (NOT from the main entrance in corso Duca degli Abruzzi 24). The buses will make two intermediate stops, at the crossroad of corso Vinzaglio with corso Vittorio Emanuele II (close to the metro stop "Vinzaglio" and at the crossroad of corso Vinzaglio with via Cernaia. The final stop will be in piazza Castello close to Teatro Regio, then there will be a short walk in the pedestrian zone to reach the Museo del Risorgimento.



Before the Conference Dinner there will be a **guided tour** to the Museo del Risorgimento (included in the Conference package).

At the **end** of the Conference Dinner, at hour 23:30-23:50, the buses will leave from the same place in piazza Castello close to Teatro Regio, making the reverse path with intermediate stops in the crossroad of corso Vinzaglio with via Cernaia, in the crossroad of corso Vinzaglio with corso Vittorio Emanuele II, an additional stop at the main entrance of Politecnico di Torino in corso Duca degli Abruzzi 24, and the final destination at Cittadella Politecnica, via Paolo Borsellino 28-44.

INFORMATION FOR SPEAKERS

PRESENTATIONS

At SEST 2024 there will be no poster session. All the papers will be presented and discussed. There will be in general two parallel sessions for presenting the papers.

The Session Chair will introduce the session. Each presenter will have to present the key points of the contribution included in the paper in not more than **7 minutes** (indicatively, max 12 slides). In particular, the presenters are asked to limit as much as possible the indications on general aspects, going straight to the point of the novelty and impact of their proposed contribution.

The Author may keep other slides prepared concerning details in case the discussion will reach the corresponding topic. The Session Chair verifies that the timing for presentation is satisfied and drives the discussion. The Session Chair will stimulate the discussion among the presenters and the audience of the session.

The presentation files have to be prepared in Microsoft Power Point (ppt/pptx) or PDF. The language to be used for slides and presentations is English. The template for presentations is available at the web site <u>https://sest2024.polito.it/template-for-presentations/</u>

There is no need to send the slides of the presentation in advance to the organizers. The presenters have to reach the Conference room of their session and upload their presentation at least 15 minutes before the beginning of the session.

The presentations have to be uploaded in the computer located in the presentation room, with the assistance of local organizers and/or conference volunteers. The computer used will have Windows system. Mac users have to check that the fonts used are compatible. It will not be possible to use personal laptops for presentations.

In case of *no-show*, the paper will not be submitted for publication in IEEE Xplore and, in case it belongs to the top 50% papers, will be excluded from the list that will be sent to the journals for being invited to submit the extended version for re-review.

PLENARY AND PAPER SESSIONS

The plenary activities will take place in room 3P. The Conference papers will be presented in two parallel sessions in two close rooms, labelled as 3P and 4P. The rooms are close to the Conference secretariat, the exhibition area of the supporters, and the coffee break and lunch area. Networking will be facilitated by the close location of all Conference spaces.

SESSION CHAIRS

The Session Chairs are given the task of preparing fruitful discussions among the participants in the sessions. The Session Chairs have communicated their preferred order of presentation of the papers, which is indicated in this booklet. The Session Chairs will organize the presentations and discussions either sequentially or grouping the presentations of the papers with similar topics followed by a common discussion.

GENERAL INFORMATION

HOW TO GET TO TORINO/TURIN

By flight

Turin main airport is "Torino Caselle" (TRN). Other international airports that could be convenient are "Milano Malpensa" (MXP), and "Milan Bergamo Airport" (BGY).

The international airport "Torino Caselle" is connected to the city centre through:

- Trains The railway line connects Turin Airport with Turin Porta Susa station in about half an hour, 7 days a week. The airport station is located opposite the Arrivals area of the terminal. The one-way fare is about € 3.70. For more information, visit the website <u>https://www.trenitalia.com/it/treni_regionali/piemonte/aeroporto-di-torino-caselle.html</u>
- Buses The bus rank is located on the right at the exit of the Arrivals level. Indicatively, the service runs every day of the year with trips every 15/30 minutes. The journey time is around 45 minutes. The one-way fare for the most popular company "Arriva" is about € 7.50 (+ € 1.00 on board). For more information, visit the website https://torino.arriva.it/en/airport-line-torino-city-center-torino-airport/
- Taxies The public taxi rank is located on the left at the exit of the Arrivals level. The taxi fare
 is about € 40 to reach downtown Turin, and the travel time is approximately 30 minutes. For
 more information visit the website <u>https://www.taxitorino.it/tariffe-taxi/</u>

By train

Turin main railway stations are "Torino Porta Susa" and "Torino Porta Nuova". They are at about 15 minutes and 25 minutes walking time from Politecnico di Torino, respectively.

HOW TO GET TO THE CONFERENCE

The activities for SEST 2024 are scheduled in the Rooms "P" of Politecnico di Torino (Cittadella Politecnica) located in C.so Castelfidardo 44.

The conference venue can be reached from the city centre in a few minutes by subway (closest station at about 5 minutes walking distance). Ticket cost: € 1.70.

Detailed information on public transport lines and timetables in Torino can be obtained at <u>https://www.gtt.to.it/cms/en/</u>

REGISTRATION AND FEES

The full registration fee for the participants covers conference materials, attendance to sessions, lunches and coffee-breaks, and the Conference dinner (including transportation and visit). The Accompanying person fee includes lunches and the Conference dinner (including transportation and visit).

ATTENDANCE CERTIFICATE

A Certificate of Attendance will be issued to all registered participants.

WI-FI INFORMATION

The indications for wi-fi connection will be provided during the registration. Each participant will receive a personal access code and will sign a specific agreement.

CONFERENCE PROCEEDINGS

The Conference Proceedings are available on the web site of the Conference for the registered participants, with access protected by a password communicated via email.

COUNTRY INFORMATION

Currency and credit cards

The Currency used in Italy is Euro. Commonly accepted credit cards are Visa and Mastercard.

Local time

In September local time is CEST (Central Europe Summer Time). CEST is EDT+6, UTC+2, BST+1, and CST-6.

Sales tax

The Value Added Tax (VAT) in Italy is called IVA and is included in the prices quoted.

Smoking

Smoking is not permitted in closed public spaces (University, restaurants, ...). Some restaurants may have a specific smoking area.

SUPPORTERS AND SPONSORS

PLATINUM SUPPORTER

C EDISON

Edison is the oldest energy company in Europe, boasting 140 years of achievements, and is one of the sector's leading operators in Italy. The Group is at the forefront of the energy transition challenge, with business activities in renewable energy, energy and environmental services and high value-added services for customers, consistent with the UN Sustainable Development Goals (SDGs) and European decarbonization policies. With over 7 GW capacity distributed throughout the country, Edison covers 7% of the national electricity production. It is an integrated operator along the entire electricity supply chain: from energy production to the operation and maintenance of generation plants, through to sales to customers. Its production fleet consists of more than 200 sustainable and flexible power plants, including hydroelectric power plants, wind plants, photovoltaic plants and highly efficient and latest generation gas-fired combined cycles (CCGTs), which balance the intermittency of renewable sources. The Group is committed to implementing a renewable energy development plan that aims to increase installed renewable capacity from the current 2 GW to at least 5 GW by 2030, bringing green generation to 40% of its generation mix. Through Edison Next, the Group is also a key player in the energy and environmental services market, with solutions to increase the efficiency of processes, buildings and resources of large industries, SMEs, hospitals and Public Administrations. Edison Next operates in Italy, Spain and Poland, managing more than 65 industrial sites, 2,100 public and private facilities and 280 cities. In the gas sector, an indispensable energy carrier for accompanying the country's ecological transition, Edison is committed to diversifying sources and supply routes for the security and competitiveness of the national energy system. The Group has a unique position in Italy, thanks to a large and diversified import portfolio, which satisfies about 20% of demand. The Company is also committed to promoting liquefied natural gas (LNG) and green gases (biomethane, Bio-LNG and green hydrogen) to replace fossil fuels in energy-intensive industrial processes and to make heavy and maritime transport sustainable. To this end, it created Italy's first integrated logistics chain dedicated to LNG, through a small-scale coastal storage in Ravenna and a dedicated LNG carrier. Customer care and proximity are the hallmarks of Edison Energia, the Group company that sells electricity, natural gas and integrated energy services to households and businesses. The Company offers modular and customisable services to meet the lifestyle needs of its customers, for whom the home is the centre of multiple activities: a smart home with measurable and transparent costs, powered by environmentally friendly energy thanks to self-production and energy storage systems. Today, Edison operates in Italy and Europe, employing over 5,500 people.

https://sest2024.polito.it/wp-content/uploads/2024/05/EDISON_corporate_2019_short_03_ENG_HD.mp4 http://sest2024.polito.it/edison/

SILVER SUPPORTERS

CHINT



CHINT supplies low voltage electrical equipment, transmission and distribution systems for medium and high voltage, photovoltaic and renewable energy solutions, measuring instruments, components for industrial automation and electrical components for the residential sector.

https://sest2024.polito.it/464-2/



Founded in 1988, **TW-TeamWare S.r.l.** is a dynamic engineering company, based in Milan, specialized in design and manufacture of instruments and systems for electrical grids monitoring and control.

https://sest2024.polito.it/425-2/

IMPERIX

imperix

Imperix develops high-end control equipment and prototyping hardware for power electronics, drives, smart grids, and related topics. Its products are designed to enable cutting-edge innovation in corporate and academic environments. They are especially valued for their ability to accelerate the implementation of laboratory-scale power converters and facilitate the derivation of high-quality experimental results. The company also offers various levels of integration services, intended to assist its customers in their prototyping activities. As such, its offering ranges from the delivery of plug-and-play hardware and software, to that of fully customized systems involving specialized control software algorithms. Imperix Itd. is established in Sion, Switzerland. Its name is derived from the Latin verb imperare, which stands for controlling – or ruling – and refers to the company's core business: the control of power electronic systems. It is a spin-off of the Swiss Federal Institute of Technology, Lausanne (EPFL).

https://sest2024.polito.it/580-2/

BRONZE SUPPORTERS

ABB



ABB is a technology leader in electrification and automation, enabling a more sustainable and resource-efficient future. The company's solutions connect engineering know-how and software to optimize how things are manufactured, moved, powered and operated. Building on more than 140 years of excellence, ABB's 105,000 employees are committed to driving innovations that accelerate industrial transformation.

https://sest2024.polito.it/583-2/

RTDS



The RTDS Simulator allowed utilities, manufacturers, and research and educational institutions to test multiple devices in a closed loop with the simulated network while easily adjusting network parameters, contingency scenarios, and device settings for the first time. Real-time digital simulation with the RTDS Simulator rose from emerging technology to industry standard for comprehensively de-risking the integration of control and protection systems and power equipment.

https://sest2024.polito.it/588-2/

POLITECNICO DI TORINO TECHNICAL CO-SPONSOR

POLITO/DENERG



The Department of ENERGY (DENERG) is the point of reference in Politecnico di Torino for the areas of knowledge concerned with energy and sustainable development. DENERG has the aim of improving the existing energy technologies and promoting new ones, as well as contributing to the rational and informed use of energy resources. DENERG has won the national **"Department of Excellence"** project for the period 2023-2027 with a project linked to energy and digital transition.

IEEE TECHNICAL CO-SPONSORS

IEEE SOCIETIES



The Industry Applications Society (IAS) is one of the largest special interest societies within the Institute of Electrical and Electronics Engineers (IEEE) and focuses specifically on the unique needs of industry and commerce. IAS is a source of professional power to its 11,000+ worldwide members. Through a network of over 370 chapters globally, regional events and national and international conferences, the society keeps members abreast of current

developments in the area of technology in electricity and electronics. IAS enriches both its individual members and the industry as a whole through the sharing of specific industry-related solutions.

https://ias.ieee.org



With a global network of leading power and electrical engineers, academia and industry professionals from all areas of power and energy, the IEEE Power & Energy Society (PES) sets the standard for engagement, education, and development as the premier provider of scientific and engineering information on electric power and energy. Through PES events, programs, and publications,

Power & Energy Society®

and by bringing together power and electrical engineers at every phase of their career for conversation and collaboration, IEEE PES empowers, develops, and guides the future of our members and the industry for the betterment of society.

https://ieee-pes.org

IEEE SECTION



On 29 June 2005 a single IEEE Italy Section has been established through the merge of the two previous branches: North Italy Section and Central & South Italy Section. IEEE Italy Section has currently 6324 members (December 2023). IEEE is divided into 10 regions, Italy Section belongs to Region 8, which consists of Europe, Middle East and Africa.

https://italy.ieeer8.org

IEEE CHAPTERS

Four Chapters of the IEEE Italy Section act as technical co-sponsors by providing different kinds of services, including technical activities, support to the local organization, session chairs, and reviewing.



PATRONAGES

AEIT



The "AEIT - Italian Association of Electrical, Electronics, Automation, Information and Communication Technology" was established on 1 January 1897 with the original name of "Italian Electrical Association" and from 1 November 2013, following a referendum social, assumed the current name. Then AIIT - the Italian Association of Telecommunications Engineers,

founded in 1962 merged into AEIT. Since 1910, per Royal Decree, AEIT received the recognition of "non-profit organization".

AEIT is a cultural association and aims to promote and support:

- the study of science, electronic, automation, information technology and telecommunications;
- the development of related technologies and applications in the broadest sense;
- cultural growth and professional development of its members in the areas mentioned.

People and organizations interested in the sciences, electronic, automation, information technology, telecommunications and disciplines and technologies related to them can associate to AEIT. https://www.aeit.it/aeit/r02/struttura/pagedin.php?st cod=uc&cod=home&lan=en



The AEIT is composed of a central office in Milan, Italy, and of territorial sections spread throughout the Italian territory. The Piemonte-Valle d'Aosta Section is based in Torino and organizes the activity developed in the two Italian regions Piedmont and Valle d'Aosta.

https://www.aeit.it/aeit/r02/struttura/pagedin.php?st_cod=to&cod=min2

GUSEE

GUSE gruppo universitario sistemi elettrici per l'energia GUSEE is the association "University Group of Electrical Systems for Energy". The Association aims to promote and coordinate university scientific research in the field of electrical and electronic systems for energy. The Association is voluntary and is an unrecognized, non-profit association. The Association is responsible for research activities related to the generation, transmission, distribution and use of electrical energy.

The tools used belong to the entire range of various electrical methodologies and include, in the application field of electrical systems, automation, computer science, analog and digital simulation, power electronics and communications, as well as the methodological aspects of reliability, quality, security, safety and cost-effectiveness. https://gusee.it

SEST 2024 STATISTICS AND DETAILS

NUMBER OF PAPERS AND AUTHORS

Accepted papers: **135**, for a total of **473** authors, with the distribution by country of affiliation indicated in the figure below.



LIST OF AUTHORS

Author	Country	Affiliation	papers #
Achilleas Sfetkos	Greece	Aristotle University of Thessaloniki	85
Adam Bartusiak	Germany	Fraunhofer IOSB-AST	280
Aditya Shekhar	The Netherlands	TU Delft	139
Adria Junyent Ferre	United Kingdom	Imperial College London	139
Ahmad Ahmad	Australia	University of New South Wales	144
Akın Taşcıkaraoğlu	Türkiye	Muğla Sıtkı Koçman University, Muğla	38, 40, 309
Alaa Selim	Australia	Univeristy of New South Wales	236
Alberto Borghetti	Italy	University of Bologna	88
Alberto Petrillo	Italy	University of Naples Federico II	91
Alejandro Cuadra-Garcia	Spain	University Carlos III de Madrid	151
Aleksandr Egorov	Portugal	Centro de Investigação em Energia REN – State Grid, S.A.	120
Aleksandra Lekić	The Netherlands	TU Delft	139, 211
Alessandro Bosisio	Italy	University of Pavia	159
Alessandro Ciocia	Italy	Politecnico di Torino	184, 185
Alessandro Lampasi	Italy	ENEA	255
Alessandro Magrini	Italy	Università degli Studi di Firenze	49
Alexander Winkens	Germany	RWTH Aachen University	240
Alexandre Benoit	United Kingdom	University of Bath	11
Alexandre Lucas	Portugal	INESC-TEC	42
Alexandru Stefanov	The Netherlands	Delft University of Technology	83
Alfredo Vaccaro	Italy	University of Sannio	20, 54, 91
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Alicia Blatiak	United Kingdom	Imperial College London	112
Alireza Zakariazadeh	Ireland	University College Dublin	111, 171
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Amit Chowdhury	India	Grid Controller of India Limited	46
André G. Madureira	Portugal	LIST	71
Andrea Benigni	Germany	IEK - 10 Energy Systems Engineering, Forschungszentrum Jülich	122
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Anna Pinnarelli	Italy	University of Calabria	288
Annamaria Belleri	Italy	Eurac Research	194
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Antonio De Paola	Italy	Joint Research Center, European Commision, Ispra	29
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PROGRAM AT A GLANCE

TUESDAY 10 SEPTEMBER 2024						
8:15 CEST	Registration Desk Opens					
	Room 3P	Room 4P	Conference Area			
9:00 - 10:30 CEST	(Room 3P) OPENING CEREMONY Welcome Addresses Introduction on the Technical Program Plenary Speech, <i>Javier Contreras</i> (UCLM, Ciudad Real, Spain): <i>Incentives for</i> <i>electric vehicle integration in electrical distribution systems</i>					
10:30 - 11:00 CEST	BREAK					
11:00 - 12:15 CEST	T1 - Demand Management and Demand Response Chair: <i>Miadreza Shafie-khah</i> Papers: 138, 114, 269,18, 90, 228	T2 – Uncertainty Chair: <i>Vincenzo Trovato</i> Papers: 54, 230, 181, 296, 210, 120				
12:15 - 13:30 CEST	T3 - Grid and Demand Flexibility Chair: <i>Alfredo Vaccaro</i> Papers: 117, 168, 297, 203, 104, 76	T4 - Integrated and Multi-Energy Systems Chair: <i>Andrea Mazza</i> Papers: 251, 198, 309, 111, 214, 250				
13:30 - 14:45 CEST	LL	JNCH				
14:45 - 16:00 CEST	T5 - Control Centers and Operational Practices Chair: <i>Gianfranco Chicco</i> Papers: 71, 85, 86, 60, 46, 130	T6 - Electric Vehicles and Transportation Electrification Chair: Cesar Diaz-Londoño Papers: 40, 37, 205, 151, 209, 308	Exhibition			
16:00 - 17:15 CEST	T7 - Power System Stability and Control Chair: <i>Costas Vournas</i> Papers: 78, 83, 248, 97, 247, 127	T8 - Electric Vehicle Charging Chair: <i>Gregorio Muñoz-Delgado</i> Papers: 171, 49, 45, 124, 154, 193				
17:15 - 17:45 CEST	BREAK					
17:45 - 19:00 CEST	T9 - Smart Buildings Chair: <i>Alessandro Ciocia</i> Papers: 241, 148, 194, 36, 137, 260	T10 - Electric Vehicle-based Services Chair: <i>Theofilos Papadopoulos</i> Papers: 219, 189, 112, 135, 19, 223				

WEDNESDAY - 11 SEPTEMBER 2024					
	Room 3P	Room 4P	Conference Area		
8:30 - 9:45 CEST	W1 - Distribution Systems Chair: <i>Massimo La Scala</i> Papers: 43, 58, 222, 122, 159, 44	W2 - Power Quality Chair: <i>Angela Russo</i> Papers: 153, 197, 4, 277, 11, 249			
9:45 - 10:45 CEST	(Room 3P) Plenary Speaker, Andy Knight (University of Calgary, Canada): Data Informed DER Integration Plenary Speaker, Costas Vournas (NTUA, Athens, Greece): Voltage Stability Monitoring and Security Control using Distributed Resources				
10:45 - 11:15 CEST	BREAK				
11:15 - 12:30 CEST	W3 - Microgrids Chair: <i>Georgios C. Kryonidis</i> Papers: 38, 191, 139, 141, 125, 91	W4 - Optimization Chair: <i>Luis Baringo</i> Papers: 12, 25, 211, 84, 56, 51			
12:30 - 13:30 CEST	LUNCH		Exhibition		
13:30 - 14:45 CEST	W5 - Grid-connected Power Electronic Converters Chair: <i>Salvatore Musumeci</i> Papers: 92, 240, 107, 227, 243, 164	W6 - Energy Markets Chair: <i>Javier Contreras</i> Papers: 178, 20, 59, 216, 70, 74			
14:45 - 16:00 CEST	W7 - Energy Storage Systems Chair: <i>Oguzhan Ceylan</i> Papers: 29, 186, 236, 264, 42, 220	W8 - Data Analytics Chair: <i>Pietro Colella</i> Papers: 276, 77, 68, 187, 144, 152			
16:00 - 16:30 CEST	BREAK				
16:30 - 17:30 CEST	W9 - Grid Integration of Energy Resources Chair: <i>Gerardo Osorio</i> Papers: 175, 1, 142, 174, 22				
18:30 - 19:00 CEST	Bus transportation: meeting point via Paolo Borsellino 28-44				
19:00 - 23:00 CEST	GUIDED TOUR: Museo del Risorgimento, Torino CONFERENCE DINNER: Museo del Risorgimento, Torino				

THURSDAY 12 SEPTEMBER 2024						
	Room 3P	Room 4P	Conference Area			
9:30 - 10:00 CEST	(Roon) Plenary Speaker: João P.S. Ca Demand Response Implementatio Perspe					
10:00 - 11:30 CEST	H1 - Power System Protections Chair: <i>Enrico Pons</i> Papers: 79, 280, 310, 237, 179, 285	H2 - Photovoltaic Systems Chair: <i>Paolo Di Leo</i> Papers: 184, 185, 176, 225, 224, 229				
11:30 - 12:00 CEST	BREAK		Exhibition			
12:00 - 13:00 CEST	H3 - Power Electronics and Energy Conversion Chair: <i>Filippo Spertino</i> Papers: 262, 291, 281, 255, 126	H4 - Energy Communities Chair: <i>Roberto Napoli</i> Papers: 88, 28, 150, 259, 288				
13:00 - 13:30 CEST						
13:30 - 14:45 CEST	LIGHT LUNCH					