Rome - Italy ■ 5/7 October 2023

AEIT 2023 International Annual Conference

115th edition

FINAL PROGRAMME

Clean Electrification and Digitalization are driving forces which will shape the world. New technologies and knowledge are needed to make the world more livable and safe.

AEIT2023 International Annual Conference aims to address the main scientific and technological challenges needed today both to decarbonize the environment and to guarantee the security of energy supplies for our communities. These themes will in fact be the main themes of the conference.

AEIT2023 is an international forum dedicated to the dissemination of new ideas, research and work in progress in the sectors of integration of renewable energy, generation, transmission and distribution of energy, power systems, power electronics, automation and ICT applications. The objectives of the conference are high quality research and professional involvement between industry and academia for the advancement of science, technology and education.

The event can also be an occasion for fruitful discussions on energy plans to be developed in conditions of uncertainty in a complex world.

AEIT2023 is in its 115 th edition: speakers and participants will be connected all over the world. The main features of the conference include Invited Talks, Regular Sessions, Special Sessions.

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Junbo Zhao ■ *Mississippi State University, USA*
Gaetano Zizzo ■ *Università di Palermo, Italy*

Thursday ■ 5 October, 2023

9:00 ■ Registration & Welcome Coffee

10:00-10:15 ■ Sala del Chiostro
Welcome Statements
Giuseppe Parise ■ *AEIT General President, AEIT2023 General Chair*
Riccardo Lama ■ *CEI General President*
Massimo Cerri ■ *President of Ordine degli Ingegneri di Roma*
Giovanni De Baggis ■ *President of Ordine dei Periti Industriali di Roma e Provincia*
Carlo Massimo Casciola ■ *Dean of Faculty of Engineering, Sapienza University of Rome*
Massimo Pompili ■ *AEIT2023 Local Committee Chair*
Massimo La Scala ■ *AEIT2023 Technical Program General Chair*

10:15-10:45 ■ Sala del Chiostro
Keynote Speech I
Nuove procedure di approvazione delle Opere Lineari del PNRR
Massimo Sessa ■ *Presidente Consiglio Superiore lavori pubblici*

10:45-11:45 ■ Sala del Chiostro
Round Table
Strategie per le sfide energetiche e provvedimenti per mitigare i cambiamenti climatici
Chair: Maurizio Fauri ■ *AEIT*
Senatore Andrea De Priamo ■ *Fratelli d'Italia*
Senatore Michele Fina ■ *PD - IDP*
Senatrice Aurora Floridia ■ *Alleanza Verdi e Sinistra*
Senatore Manfredi Potenti ■ *Lega Salvini Premier - PS d'Az*
Senatore Antonio Salvatore Trevisi ■ *Movimento 5 Stelle*

11:45-13:30 ■ Sala del Chiostro
Panel
REPowerEU e Transizione Energetica
Chair: Guido Bortoni ■ *CESI Chairman*
Giulio Antonio Carone ■ *CEO of areti ACEA Group*
Franco Cotana ■ *CEO of Ricerca sul Sistema Energetico - RSE*
Giuliana Garigali ■ *Director Engineering, Permitting & Construction Service, Snam*
Maria Rosaria Guarniere ■ *Director of Realization of plants and technologies, Terna*
Juan Ortiz ■ *Head of Network Development, e-distribuzione*

13:30-14:30 ■ Lunch

14:30-15:00 ■ Sala del Chiostro
AEIT Student Grants and Awards, AEIT Young Member Group, AEIT for STEM

Parallel Special and Technical Sessions

15:00-16:45 ■ Sala del Chiostro

TS01 ■ Advances in Resilience of Distribution and Transmission Electrical Systems in the times of Climate Changes and Energy Transition - Special Session
Chair: Massimo Pompili ■ *Sapienza University of Rome*; Emanuele Ciapessoni ■ *Ricerca sul Sistema Energetico - RSE*; Luigi Calcara ■ *Sapienza University of Rome*

TS01-01 ■ Preliminary Design of a Multilevel Converter Based De-Icing Application on the Italian Sub-Transmission Grid
Francesca Pizzimenti, Fabio Giulii Capponi ■ *Sapienza University of Rome, Italy*; Luca Buono, Gaia Leone, Francesco Palone, Lorenzo Papi, Roberto Spezie, Gabriele Tresso, Pierluigi Vacante ■ *Terna, Italy*

TS01-02 ■ Installation of ELISAm, Electric Line Ice Sag Accretion Monitor, Systems on a High Voltage Overhead Line
Elena Golinelli, Gian Mario Ogliari, Daniele Bartalesi ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Gregorio Greco ■ *Terna, Italy*

TS01-03 ■ An innovative tree interference mapping with LiDar for overhead lines vulnerability assessment in the Italian power system
Emanuele Ciapessoni, Diego Cirio, Andrea Pitto, Giovanni Pirovano ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Enrico Maria Carlini, Francesco Marzullo, Silverio Casulli, Federico Falorni, Greta Magnolia, Francesca Scavo ■ *Terna, Italy*; Giuseppe Berrettoni ■ *Terna, Italy and University of Cassino, Italy*

TS01-04 ■ An analytical model to quantify the technical benefits of interphase spacers to increase power system resilience against wet snow: the Italian case
Emanuele Ciapessoni, Diego Cirio, Andrea Pitto, Giovanni Pirovano ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Enrico Maria Carlini, Francesco Marzullo, Silverio Casulli, Federico Falorni, Greta Magnolia, Francesca Scavo ■ *Terna, Italy*; Giuseppe Berrettoni ■ *Terna, Italy and University of Cassino, Italy*

TS01-05 ■ Comparative Analysis of Decentralized Edge-Cloud Architecture for Monitoring Smart Grids
Luca Zuanazzi, Elisa Albanese, Roberta Terruggia ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS01-06 ■ NEWMAN Project: IoT sensors for overhead MV line real-time monitoring
Giorgio Ghillardi ■ *ENEL, Italy*; Andrea Cielo ■ *Gridspertise, Italy*; Valerio Vallocchia ■ *Enel Grids, Italy*; Gianluca Di Felice, Alessandro Latini, Niccolò Corsi ■ *e-Distribuzione, Italy*; Massimo Pompili, Luigi Calcara ■ *Sapienza University of Rome, Italy*

TS01-07 ■ Towards a Systemic Asset Characterization of Electrical Systems for Multi-Risk Resilience
Maria Luisa Villani, Sonia Giovinazzi, Luisa Lavalle, Alberto Tofani ■ *ENEA, Italy*

15:00-16:45 ■ Sala degli Affreschi

TS02 ■ Real-Time Simulation for Electric Power System Research - Special Session
Chair: Sergio Bruno ■ *Politecnico di Bari*

TS02-01 ■ Integrating Dynamic Thermal Rating Systems in a Real-Time Power System Digital Twin
Massamba Fall ■ *Polytech Clermont, France*; Fabrizio De Caro ■ *University of Sannio, Italy*; Domenico Villacci ■ *University of Naples Federico II, Italy*; Alfredo Vaccaro ■ *University of Sannio, Italy*

TS02-02 ■ Protection Coordination of MV/LV hybrid AC/DC Test Facility: Real-Time Simulations
Pietro Carmine, Diego Cavaliere, Riccardo Chiumeo, Chiara Gandolfi, Alessandro Veroni, Michele Zanoni ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS02-03 ■ The 10-Bus Model of the Italian Power System: A Tool for Multi-Site Co-Simulations
Mariano Ippolito, Rossano Musca, Eleonora Riva Sanseverino ■ *University of Palermo, Italy*

TS02-04 ■ Remote Power Hardware-in-the-Loop tests of a Control Architecture for Isolated Distribution Systems
Lucio Barbato, Gianpatrizio Bianco, Luigi Mascolo, Marco Menga, Francesco Renna, Gianluca Sapienza ■ *Gridspertise, Italy*, Chiara Micillo ■ *e-distribuzione, Italy*; Sergio Bruno, Cosimo Iurlaro, Massimo La Scala ■ *Politecnico di Bari, Italy*

TS02-05 ■ PHIL-based Impedance Measurement for Electromagnetic Stability Analysis of Gridfollowing Converters
Pavel Purgat, Johan Wurz, Srdjan Srdic ■ *Egston Power Electronics, Austria*

TS02-06 ■ Supporting a "glocal" energy transition, an initiative from ENSIEL: the ENET-RT Lab
Giorgio Benedetto, Ettore Bompard, Andrea Mazza ■ *Politecnico di Torino, Italy*; Domenico Villacci ■ *University of Naples Federico II & EnSiEL, Italy*

15:00-16:45 ■ Aula Didattica

Stato di avanzamento del progetto PNRR - RESTART

Chair: Giovanni Cancellieri ■ *AEIT-AICT*

Introduzione

Nicola Blefari Melazzi ■ *Università di Roma TorVergata*

Spoke 1 - *CNR* ■ Tecnologie e infrastrutture per reti pervasive e reti fotoniche

Andrea Passarella ■ *CNR*

Spoke 2 - *Politecnico di Bari* ■ Integrazione di reti e servizi

Giovanni Grieco ■ *Politecnico di Bari*

Spoke 3 - *Politecnico di Milano* ■ Tecnologie e reti wireless

Marouan Mizmizi ■ *Politecnico di Milano*

Spoke 4 - *Politecnico di Torino* ■ Reti programmabili per futuri servizi e mezzi di comunicazione

Corrado Puligheddu ■ *Politecnico di Torino*

Spoke 5 - *Università di Bologna* ■ Reti industriali e per la transizione digitale

Vittorio Degli Esposti ■ *Università di Bologna*

Spoke 6 - *Università di Catania* ■ Architetture innovative e ambienti estremi

Fabio Busacca ■ *Università di Catania*

16:45-17:00 ■ Coffee Break

Parallel Special and Technical Sessions

17:00-18:45 ■ Sala del Chiostro

TS03 ■ Electric Mobility I - Special Session

Chair: Alessandro Ruvio ■ *Sapienza University of Rome*

TS03-01 ■ Centralised Control Strategy for an Urban Rail Network in the Presence of Onboard Storage Systems

Antonio Di Pasquale, Emanuele Fedele, Diego Iannuzzi, Mario Pagano ■ *University of Naples Federico II, Italy*

TS03-02 ■ Implementation of Active Power Substation for Harvesting Regenerative Braking Energy in Italian 3 kV Railway Systems

Miguel Gurruchaga Llaneza, Hamed Jafari Kaleybar, Morris Brenna ■ *Politecnico di Milano, Italy*

TS03-03 ■ The integration of a PV system for 3 kV dc railway electrical substation: The case study of Cagliari - Oristano line

Alessandro Ruvio, Luca Ranieri ■ *Sapienza University of Rome, Italy*; Guido Guidi Buffarini, Nicola Carones ■ *Italferr, Italy*

TS03-04 ■ Assesment of CIR/RO aggregation model for domestic charging: first experimental results

Piersilvio Marcolin, Andrea Cazzaniga, Giuseppe Mauri ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS03-05 ■ Management optimization of fuell cell electric bus fleet in urban areas

Eleonora Ciotti, Mattia Tritoni, Dario Pelosi, Linda Barelli ■ *University of Perugia, Italy*

TS03-06 ■ A multi-objective Stochastic Power Management Strategy for Vehicle-to-Building and Building-to-Vehicle Integration into Residential Microgrids

Dario Pelosi, Linda Barelli ■ *University of Perugia, Italy*

17:00-18:45 ■ Sala degli Affreschi

TS04 ■ Energy Transition

Chair: Luigi Martirano ■ *Sapienza University of Rome*

TS04-01 ■ A comparative analysis of reactive power compensation using reactors and STATCOMs in primary substations: a case study in Milan, Italy

Luigi Sandrini ■ *Unareti, Italy*; Alessandro Bosisio ■ *University of Pavia, Italy*; Alessandro Cirocco ■ *A2A, Italy*; Mario Turrisi, Caterina Pasetti, Andrea Morotti ■ *Unareti, Italy*; Luca Cavalletto ■ *A2A, Italy*

TS04-02 ■ An integrated planning approach towards the increasing of RES integration and the optimization of connection solutions

Enrico Carlini, Alessandra Zagnoni, Alfonso De Cesare, Lorenzo Del Rio, Andrea Zollo, Roberto Germanà, Chiara Giordano ■ *Terna, Italy*

TS04-03 ■ Relevant Production Units on the Italian Electricity Market: Evolution of Supply and Demand Bids

Silvia Canevese, Antonio Gatti ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS04-04 ■ The new target capacity assessment for the Italian power system

Enrico Maria Carlini, Corrado Gadaleta, Michela Migliori, Francesca Ferretti, Flavius Strimbei ■ *Terna, Italy*

TS04-05 ■ Screening Advanced FACTS and State-of-the-Art Technologies to Improve Power Systems Stability in Scenarios with High RES Penetration

Andrea Carbonara ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Sebastian Dambone Sessa, Francesco Sanniti, Roberto Benato ■ *University of Padova, Italy*; Riccardo Chiumeo, Chiara Gandolfi, Angelo L'Abbate ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS04-06 ■ Power-Flow studies on the Future Electricity Grid of Sicily: Analysis of 2030 Scenario Cases

Rossano Musca, Eleonora Riva Sanseverino, Antony Vasile, Gaetano Zizzo ■ *University of Palermo, Italy*; Adriano Iaria, Angelo L'Abbate, Lorenzo Vitulano ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS04-07 ■ A PV Hosting Capacity Assessment in Distribution Grids: towards the 2030 and 2050 Energy Scenarios

Grazia Barchi, Matteo Giacomo Prina, David Moser ■ *Eurac Research, Italy*

TS04-08 ■ Draft Animal Power Versus Photovoltaic: A Benchmark

Antonio Perrone ■ *WEDAP, Italy*; Mohammad Rajabi Nasab, Massimo La Scala ■ *Politecnico di Bari, Italy*

17:00-18:45 ■ Aula Didattica

Stato di avanzamento del progetto PNRR - RESTART

Chair: Giovanni Cancellieri ■ *AEIT-AICT*

Spoke 7 - *Università di Napoli* ■ Ambienti verdi e ambienti intelligenti

Anna Guerra ■ *CNR*; Stefano Tebaldini ■ *Politecnico di Milano*

Spoke 8 - *Università di Roma TorVergata* ■ Sistemi intelligenti e sistemi autonomi

Tiziana Cattai ■ *Sapienza Università di Roma*

17:30-18:30

Tavola Rotonda

Le competenze dell'ingegnere: cosa sta cambiando?

Chair: Roberto Verdone ■ *Università di Bologna*

Stefania Grea ■ *Manpower*

Maria Rita Spada ■ *AEIT-AICT*

Massimo Pulvirenti ■ *BI-REX*

Marco Santambrogio ■ *Politecnico di Milano*

20:30 Conference Dinner

Friday, 6 October, 2023

Parallel Special and Technical Sessions

9:00-11:00 ■ Sala del Chiostro

TS05 ■ Electric Mobility II Special Session ■ ***Chair:*** Giorgio Sulligoi ■ *University of Trieste, Italy*

TS05-01 ■ Modelling Electric Transients in a Conductive Electric Road System
David Wenander, Francisco J. Márquez-Fernández, Mats Alakula ■ *Lund University, Sweden*

TS05-02 ■ Optimal Operation of a Semi-urban Network Integrating Electric Vehicles
Maria Dicorato, Francesca Marasciuolo, Giuseppe Forte ■ *Politecnico di Bari, Italy*

TS05-03 ■ Green Port and Ferry's Electrification: a Case Study on Italian Lake Maggiore
Francesco Fasana, Sara Salamone ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Paolo Mazzucchelli ■ *Gestione Governativa Navigazione Laghi, Italy*; Giuseppe Mauri ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS05-04 ■ Electrification of a large catamaran water bus for everyday commuting in the Venice Lagoon
Donato Padolecchia ■ *University of Trieste, Italy*; Salvatore Savarese ■ *ACTV, Italy*; Alberto Marinò, Vittorio Bucci ■ *University of Trieste, Italy*

TS05-05 ■ High-Temperature Superconducting Cables for Shipboard Applications: Design Considerations
Fabio D'Agostino, Marco Gallo, Fabrizio Sivori, Federico Silvestro ■ *University of Genova, Italy*; Antonio Chiarelli ■ *Fincantieri, Italy*; Gianni Grasso ■ *ASG Superconductors, Italy*

TS05-06 ■ The User Experience as a Demand Response Action in Large All Electric Ships
Pietro Orciuolo, Daniele Bosich, Andrea Vicenzutti, Massimiliano Chiandone, Giorgio Sulligoi ■ *University of Trieste, Italy*

TS05-07 ■ Feasibility study of a hybrid-electric multipurpose craft for coastal sustainable navigation
Natasha Taucer Marchesi, Samuele Utzeri, Serena Bertagna, Luca Braidotti, Alberto Marinò ■ *University of Trieste, Italy*

TS05-08 ■ Electrified Public Maritime Transport in the Italian Smaller Islands' Context: Potentials and Criticalities
Claudio Carlini, Matteo Rossini, Danilo Bertini, Marco Rossi ■ *Ricerca sul Sistema Energetico - RSE, Italy*

9:00-11:00 ■ Sala degli Affreschi

TS06 ■ High Voltage Overhead Lines and Cables ■ ***Chair:*** Angelo L'Abbate ■ *Ricerca sul Sistema Energetico - RSE*

TS06-01 ■ Experimental Validation of Adaptive Models for Dynamic Rating of Power Cables with Joints
Alfredo Vaccaro, Fabrizio De Caro ■ *University of Sannio, Italy*; Gaetano Iannarelli, Andrea Pegoiani, Bartolomeo Greco ■ *A2A, Italy*; Giovanni D'Avanzo, Marco Airoldi, Johnny Borghetto, Paolo Mazza ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS06-02 ■ Cost-benefit analysis of remote securing of high voltage lines through systems consisting of Disconnector Blocking Devices (DBS)
Paolo Cuccia, Carmelo Mosca, Alessandro Greco, Mario Todaro, Martina Pajussin, Monica Tomasso, Antonio Russi, Antonio Oni ■ *Terna Rete Italia, Italy*

TS06-03 ■ Evaluation criteria to connect the RES power plants to the transmission network through the 36 kV voltage level
Enrico Maria Carlini, Alessandra Zagnoni, Alfonso De Cesare, Luigi Di Bello, Lidia La Maestra, Lorenzo Nuccio, Chiara Giordano ■ *Terna, Italy*

TS06-04 ■ 36 kV: a new standard voltage level for the connection of renewable energy sources to the Italian National Transmission Grid
Elena Benedetti, Gaia Leone, Francesco Palone, Roberto Spezie, Enrico Vellucci ■ *Terna, Italy*

TS06-05 ■ New 5-phases solution and series compensation for OHLs power transfer capacity and static stability increase
Enrico Maria Carlini, Maria Rosaria Guarniere, Corrado Gadaleta, Roberto Spezie, Francesco Palone, Michela Migliori, Luca Buono, Gianfranco Luongo, Davide Monno ■ *Terna, Italy*

TS06-06 ■ Analyses of contingencies impact and key benefits in a HVAC-to-HVDC OHL conversion study case
Lorenzo Carmine Vitulano, Angelo L'Abbate, Roberto Calisti ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Sebastian Dambone Sessa ■ *University of Padova, Italy*

TS06-07 ■ Switching overvoltages study for HVDC mixed overhead lines and submarine cables including circuit breakers
Luca Buono, Francesco Palone, Gabriele Tresso ■ *Terna, Italy*; Stefano Lauria ■ *Sapienza University of Rome, Italy*; Luigi Colla ■ *Prysmian Group, Italy*

TS06-08 ■ HVAC Submarine Cable Loss Reduction at Variable Voltage Level
Stefano Lauria, Riccardo Loggia, Luigi Calcara, Luigi Martirano, Massimo Pompili ■ *Sapienza University of Rome, Italy*

11:00-11:15 ■ Coffee Break

11:15-13:00 ■ Sala del Chiostro

Panel on Energy

The new energy infrastructures to fight the climate change

Chairs: Massimo La Scala ■ *AEIT2023 Technical Program General Chair;* Massimo Pompili ■ *AEIT2023 Local Committee Chair*

How Energy Infrastructures can foster the Ecological Transition

Ercole De Luca ■ *Head of Electrical System Development, areti ACEA Group*

The role of DSO and the evolution of the energy sector

Andrea Caregari ■ *Head of Operation & Maintenance, e-distribuzione*

Terna's strategy to mitigate the effects of climate change on transmission grid

Francesco Marzullo ■ *Head of Integrated Grid Planning and Development Plans Coordination, Terna*

Floating Off-shore Wind Farms & Dynamic Cable Systems

Marzia Mangoni ■ *Dynamic Cable Systems Product Manager, Prysmian Group*

MgB2 superconductors innovation for energy transmission and storage

Matteo Tropeano ■ *Business Development Manager, ASG Superconductors*

Role of the Competent Authority

Marilena Barbaro ■ *Direttore Generale Dipartimento Energia (DIE) del Ministero dell'Ambiente e della Sicurezza Energetica - MASE - Direzione Generale Infrastrutture e Sicurezza (IS)*

Fundamental role of the V.A.S. Procedure

Bernardo Sera ■ *Coordinatore Sottocommissione Valutazione Ambientale Strategica - VAS - MASE*

13:00-14:00 ■ Lunch

14:00-14:20 ■ Sala del Chiostro

Keynote Speech II

Biomedical Photonics and Artificial Intelligence for Third Millennium Diagnostics

Alberto Diaspro ■ *IIT, University of Genoa and CNR, Italy*

14:20-16:00 ■ Sala del Chiostro

Case Histories

Chair: Luigi Calcara ■ *Sapienza University of Rome*

The innovative model of Primary Substation Engineering and Construction

Franco Pierro ■ *Head of Project Management & Construction, e-distribuzione*

Connection to the National Transmission Grid: the first step towards energy transition

Alessandra Zagnoni ■ *Head of Planning and Management of Connection Requests, Terna*

The Pilot Project RomeFlex and the local flexibility market

Ercole De Luca ■ *Head of Electrical System Development, areti ACEA Group*

Edge devices and remote management for the intelligent Unareti's secondary substations

Alessandro Cirocco ■ *Technological Development - A2A*

Multi-energy, multi-level and MV/LV hybrid AC/DC Test Facility system integration for a flexible power system: the RSE's demonstrator

Chiara Gandolfi ■ *Researcher and Project Manager of the national project financed by the Research Fund for the Italian Electrical System in RSE*

Contributing to the Italian energy transition: EF Solare Italia's revamping and repowering activities

Gian Luca Teodori ■ *Head of Operations, EF Solare Italia*

Cable manufacturer role in 2023 sustainability goals

Michele Fontana ■ *HVDC System Engineer, Prysmian Group*

16:00-16:15 ■ Coffee Break

Parallel Special and Technical Sessions

16:15-18:15 ■ Sala del Chiostro

TS07 ■ Renewable Energy Sources

Chair: Alfredo Vaccaro ■ *University of Sannio*

TS07-01 Effect of Voltmetric Unblock on Global Hosting Capacity

Francesca Oliva, Giulia Taromboli, Lorenzo Zapparoli ■ *Politecnico di Milano, Italy*; Ettore De Berardinis ■ *Comitato Elettrotecnico Italiano, Italy*; Giovanni Gambirasio ■ *Selecty, Italy*; Roberto Faranda ■ *Politecnico di Milano, Italy*

TS07-02 ■ Optimisation of the Cooling System of a Synchronous Generator for Hydroelectric Applications

Renato Rizzo, Giuseppe Quaremba, Amedeo Amoresano ■ *University of Naples Federico II, Italy*; Massimo Baret ■ *Motortecnica, Italy*

TS07-03 ■ Simulation of Grid Forming PV Plants in the Medium Voltage Grid - A Maltese Case Study

Antony Vasile, Gaetano Zizzo ■ *University of Palermo, Italy*; Alexander Micallef, Cyril Spiteri Staines, John Licari ■ *University of Malta, Malta*

TS07-04 ■ Wind Power Applications of eXplainable Artificial Intelligence Techniques

Davide Astolfi ■ University of Perugia, Italy; Fabrizio De Caro, Alfredo Vaccaro ■ *University of Sannio, Italy*

TS07-05 ■ Grid connection of large offshore wind plants: techno-economic evaluation of HVAC solutions

Mattia Deriu, Michela Migliori, Corrado Gadaleta, Marco Cortese, Enrico Maria Carlini ■ *Terna, Italy*; Maria Dicorato, Giuseppe Forte, Gioacchino Tricarico ■ *Politecnico di Bari, Italy*

TS07-06 ■ Grid-Listening and Grid-Ringing: Alternative Concepts for Grid-Following and Grid-Forming within Power Systems Frequency Transients

Salvatore Favuzza, Rossano Musca ■ *University of Palermo, Italy*

TS07-07 ■ A Neural Simulator of Photovoltaic Power Plants for Comparing SiC and non-SiC Inverter Yield

Sebastiano De Fiore, Diego Piserà, Christian Melchiorre, Stefano Bianchi ■ *algoWatt, Italy*; Simone Palazzo ■ *University of Catania, Italy*

TS07-08 ■ Using spatial analysis tools to foster energy transition: real study cases applied to energy distribution networks

Luigi Sandrini ■ *Unareti, Italy*; Alessandro Bosisio ■ *University of Pavia, Italy*; Andrea Morotti, Caterina Pasetti ■ *Unareti, Italy*; Alessandro Cirocco ■ *A2A, Italy*; Mario Turrisi ■ *Unareti, Italy*

16:15-18:15 ■ Sala degli Affreschi

TS08 ■ Power System Analysis, Operation and Control

Chair: Roberto Langella ■ *University of Campania Luigi Vanvitelli*

TS08-01 ■ Droop control of wind turbines to provide upward support in frequency regulation

Marco Raffaele Rapizza, Silvia Canevese, Diego Cirio ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS08-02 ■ A Deterministic Approach to Derive the Optimal Synchronous Condenser Synchronization Condition

Roberto Benato, Francesco Sanniti ■ *University of Padova, Italy*; Domenico Tedeschi ■ *Terna Rete Italia, Italy*

TS08-03 ■ An innovative controller for optimal operation of Hybrid Energy Storage Systems

Federico Bianchi, Enrica Micolano, Luigi Pellegrino ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Alessio La Bella ■ *Politecnico di Milano, Italy*; Guido Coletta ■ *Terna Rete Italia, Italy*; Domenica Maria Conenna, Elisa Virone ■ *Terna, Italy*; Giorgio Giannuzzi, Cosimo Pisani ■ *Terna Rete Italia, Italy*

TS08-04 ■ Towards a Decarbonized Power System: a Matrix Tool for the Assessment of Power Flows Under Uncertainties

Giovanni Gardan, Luca Rusalen, Roberto Benato ■ *University of Padova, Italy*

TS08-05 ■ Advanced Model-based Approaches to be Applied in the Context of a Bidding Zone Review

Federico Quaglia, Mario Limone, Giovanni Screpanti ■ *Terna Rete Italia, Italy*; Gianfranco Chicco, Pietro Colella, Andrea Mazza, Angela Russo ■ *Politecnico di Torino, Italy*; Cristian Bovo ■ *University of Pavia, Italy*; Valentin Ilea ■ *Politecnico di Milano, Italy*

TS08-06 ■ Inverter-Based Generators as Potential Flexible Resources for the Provision of Ancillary Services

Silvia Canevese, Gaia Ceresa, Antonio Gatti ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS08-07 ■ A remedial action optimizer for the flow-based capacity calculation

Benedetto Aluisio, Marco Barbetta, Claudio Coluzzi ■ *Terna, Italy*; Fabio Massimo Gatta, Alberto Geri, Stefano Lauria, Marco Maccioni, Ludovico Nati ■ *Sapienza University of Rome, Italy*; Luca Ortolano ■ *Terna, Italy*

TS08-08 ■ Frequency Domain Modelling of a Commercial Heat Pump for Harmonic Studies

Muhammad Ishaq, Roberto Langella ■ *University of Campania Luigi Vanvitelli, Italy*

TS08-09 ■ Tap staggering operation of Autotransformers

Luca Buono, Daniele Difino, Francesco Palone, Simone Sacco, Roberto Spezie, Gabriele Tresso, Andrea Valant ■ *Terna, Italy*

16:15-18:15 Aula Didattica

TS09 ■ Power Electronics

Chair: Antonio Imbruglia ■ *AEIT-AMES*

TS09▪01 Analysis for the Integration of the Toroidal Field Power Supply in the DTT Nuclear Fusion Facility

Elena Benedetti ■ *Sapienza University of Rome, Italy*; Alessandro Lampasi, Sabino Pipolo ■ *ENEA, Italy*; Maria Carmen Falvo, Marzia Caldora ■ *Sapienza University of Rome, Italy*; Antonio Trotta ■ *ENI, Italy*

TS09▪02 Comparative Detailed Analysis of a 7-Level Cascaded H-Bridge Inverter in Symmetric and Asymmetric Configurations

Massimo Caruso, Antonino Oscar Di Tommaso, Gerlando Frequente, Rosario Miceli, Claudio Nevoloso, Gioacchino Scaglione, Giuseppe Schettino ■ *University of Palermo, Italy*

TS09▪03 Investigation on the radiated EMI of a 3-phase traction inverter for urban mobility

Filippo Pellitteri, Nicola Campagna, Massimo Caruso, Antonino Oscar Di Tommaso, Gerlando Frequente, Rosario Miceli, Annalisa Contato, Geraldina Signa ■ *University of Palermo, Italy*

TS09▪04 Performance Analysis of Zeta Converter for Photovoltaic-Powered Micromobility Charging Station

Vipinkumar Shriram Meshram ■ *University of Salerno, Italy*; Alberto Reatti ■ *University of Florence, Italy*

TS09▪05 Variable Inductor Control Strategy in LCC-S Compensated Wireless Power Transfer Application

Vipinkumar Meshram ■ *University of Salerno, Italy*; Fabio Corti ■ *University of Florence, Italy*; Luigi Solimene, Salvatore Musumeci, Carlo Stefano Ragusa ■ *Politecnico di Torino, Italy*; Alberto Reatti ■ *University of Florence, Italy*

TS09▪06 Power, Energy and Efficiency Experimental Characterisation of Different Based-Lithium Chemistries Batteries and Supercapacitors

Massimo Ceraolo, Giovanni Lutzemberger, Francesco Giuseppe Quilici, Claudio Scarpelli ■ *University of Pisa, Italy*

TS09▪07 A Three-Port DC-DC Converter for Solar PV Integration in DC Off-Grid Systems: Design and Control

Anmol Ratna Saxena, Ashima Kulshreshtha ■ *National Institute of Technology, Delhi, India*

18:15-19:00 ■ Sala del Chiostro

SME and START UP Session

Chair: Alberto Birga ■ *AEIT*

Road to a new vision: disruptive approaches for retina degenerations

Giovanni Manfredi ■ *CEO, Novavido*

PRISM by Genoa Instruments: at the Nexus of Biomedical Photonics and AI Diagnostics with Super-Resolution Microscopy

Simonluca Piazza ■ *CEO, Co-Founder, Genoa Instruments*

Saturday, 7 October, 2023

Parallel Special and Technical Sessions

9:00-11:00 ■ Sala del Chiostro

TS10 ■ Smart Grids and Energy Communities

Chair: Marco Maccioni ■ *Sapienza University of Rome*

TS10-01 ■ Innovative software for reliability, resilience, security and adequacy assessment of AC and DC grids and microgrids

Antonio Ricca, Giovanna Adinolfi, Roberto Ciavarella, Giorgio Graditi, Maria Valenti ■ *ENEA, Italy*

TS10-02 ■ The flexibility opportunities offered by Heat Pumps to contribute to grid security

Francesco D'Oria, Lorenzo Croci ■ *Ricerca sul Sistema Energetico - RSE, Italy*

TS10-03 ■ Freeware Digital Platform for Designing Renewable Energy Communities in Italy: An Overview

Diego Piserà ■ *AlgoWatt, Italy*; Tommaso Ferrucci, Davide Fioriti, Davide Poli ■ *University of Pisa, Italy*; Federico Silvestro ■ *University of Genova, Italy*

TS10-04 ■ An Algorithm for Energy Communities Designing by Maximizing Shared Energy

Maria Luisa Di Silvestre, Francesco Montana, Eleonora Riva Sanseverino, Giuseppe Sciumè, Gaetano Zizzo ■ *University of Palermo, Italy*

TS10-05 ■ Quantitative assessment of barriers to innovation in Smart Grids in Europe

Marco Antonio Bucarelli ■ *Sapienza University of Rome, Italy*; Mohammad Ghoreishi, Francesca Santori ■ *ASM Terni, Italy*

TS10-06 ■ Technical-economic Impact of the Deployment of Renewable Energy Communities: An Italian Case Study

Marco Antonio Bucarelli, Angelo Curci, Alberto Geri, Tommaso Bragatto, Marco Maccioni ■ *Sapienza University of Rome, Italy*; Marco Paulucci ■ *ASM Terni, Italy*; Jacopo Dell'Olmo ■ *Sapienza University of Rome, Italy*

TS10-07 ■ Exploring the role of Long Duration Energy Storage in the collective drive to Net Zero

Antonio Zingales ■ Saet, Italy

9:00-11:00 ■ Sala degli Affreschi

TS11 ■ Smart Devices and Systems for Information and Communication Technologies I

Chair: Francesco Matera ■ *Fondazione Ugo Bordoni*

TS11-01 ■ Ethics for Artificial Intelligence: the introduction of the Digital Ethics Officer in Electric Industry

Roberto Magnani ■ *AEIT & EuropIA, Italy*

TS11-02 ■ A family of binary sequences derived from punctured simplex codes

Massimo Battaglioni, Giovanni Cancellieri ■ *Università Politecnica delle Marche, Italy*

TS11-03 ■ 2G, 3G QoS experimental measurements in a 4G/5G transition scenario

Claudia Carciofi, Claudio Cecchetti, Andrea Garzia, Valeria Petrini, Simona Valbonesi ■ *Fondazione Ugo Bordoni, Italy*

TS11-04 ■ Human exposure to electromagnetic fields for new wireless technologies and frequencies: software characterization study

Antonio Iodice, Francesca Lodato ■ *University of Naples Federico II, Italy*; Francesco Matera ■ *Fondazione Ugo Bordoni, Italy*; Rita Massa, Giuseppe Ruello ■ *University of Naples Federico II, Italy*; Simona Valbonesi ■ *Fondazione Ugo Bordoni, Italy*

TS11-05 ■ Ray-tracing simulation of railway station ecosystem in 5G scenario

Simona Valbonesi, Andrea Garzia, Elena Mammi ■ *Fondazione Ugo Bordoni, Italy*; Nerea Canales Sebastian, Marcella Di Mario, Mirko Ermini ■ *Rete Ferroviaria Italiana, Italy*

TS11-06 ■ Non-Public networks for mission/business critical use cases in a 5G scenario

Simona Valbonesi, Andrea Garzia, Paolo Grazioso, Francesco Matera ■ *Fondazione Ugo Bordoni, Italy*

TS11-07 ■ Achieving bandwidth efficiency for IoT edge networks through improved zero forcing

Talha Younas ■ *COMSATS University Islamabad, Pakistan*

11:00-11:15 ■ Coffee Break

Parallel Special and Technical Sessions

11:15-13:00 ■ Sala del Chiostro

TS12 ■ Distribution Systems

Chair: Tommaso Bragatto ■ *Sapienza University of Rome*

TS12-01 ■ A New Inference System for the Robust Identification of Defects Supporting PD in MV Cables
Johnny Borghetto, Giovanni Pirovano, Sergio Chiarello, Manuel Sozzi ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Alfredo Contin ■ *University of Trieste, Italy*; Andrea Pegoiani ■ *Unareti, Italy*

TS12-02 ■ Selection of Viable Distribution Line Surge Arrester for Prospective Optimal Protection
Nagananthini Ravichandran, Amedeo Andreotti, Antonio Di Pasquale, Mario Pagano, Daniela Proto ■ *University of Naples Federico II, Italy*; Erika Stracqualursi, Rodolfo Araneo ■ *Sapienza University of Rome, Italy*; Luigi D'Orazio ■ *Enel, Italy*

TS12-03 ■ Reactive Power Flows and Voltage Issues in Urban Distribution and Subtrasmission Networks
Tommaso Bragatto, Jacopo Dell'Olmo, Fabio Massimo Gatta, Alberto Geri, Marco Graziani, Stefano Lauria, Marco Maccioni, Ludovico Nati ■ *Sapienza University of Rome, Italy*

TS12-04 ■ A Tool for Assessing Distribution Network Expansion due to Load Growth
Tommaso Bragatto, Fabio Massimo Gatta, Alberto Geri, Marco Maccioni ■ *Sapienza University of Rome, Italy*; Alessandro Palazzoli, Paolo Sancioni ■ *Areti, Italy*

TS12-05 ■ A Quantitative Evaluation of the Impact of Remotely Controlled Circuit Breakers on the Quality of Service of Low Voltage Network
Francesco Paolo Palazzotto, Roberto Brandi, Niccolò Corsi, Giulia Muscarà, Ludovico Spitilli, Riccardo Fantacone ■ *e-distribuzione, Italy*

TS12-06 ■ Investigating the impact of short-circuit faults on in different neutral configurations: a real case study
Marco Antonio Bucarelli, Dimitri Agostini, Alberto Geri, Fabio Massimo Gatta, Marco Maccioni ■ *Sapienza University of Rome, Italy*; Marco Paulucci ■ *ASM Terni, Italy*

TS12-07 ■ Reactive Power Flows on Distribution Networks with Dispersed Generation: Current Trends and Opportunities
Giovanni Ambrosini, Edoardo Daccò, Davide Falabretti ■ *Politecnico di Milano, Italy*; Francesco Gulotta ■ *Ricerca sul Sistema Energetico - RSE, Italy*; Stefano Premarini ■ *Politecnico di Milano, Italy*

11:15-13:00 ■ Sala degli Affreschi

TS13 ■ Smart Devices and Systems for Information and Communication Technologies II

Chair: Massimo Celidonio ■ *Fondazione Ugo Bordoni*

TS13-01 ■ From ICT framework compliance to quantitative risk assessment: an example of methodology using Risk Scenarios
Glauco Bertocchi, Alberto Piamonte ■ *ISACA Rome Chapter, Italy*

TS13-02 ■ Experimental measurements on the interferential effects produced by IMT signals operating in UHF band on DVB-T2 signals in MATV systems
Claudio Cecchetti, Massimo Celidonio, Fernando Consalvi, Andrea Neri, Lorenzo Pulcini ■ *Fondazione Ugo Bordoni, Italy*

TS13-03 ■ Experimental Studies on Impact of Mobile Systems Operating in the UHF Frequency Band on DTT Video Signals
Claudio Cecchetti, Massimo Celidonio, Fernando Consalvi, Andrea Neri, Lorenzo Pulcini ■ *Fondazione Ugo Bordoni, Italy*

TS13-04 ■ Behaviorally Inspired Behavioral Process Based Malware and its Impact on Detection
Ashley Chung, Anthony Melaragno ■ *United States Naval Academy, USA*

TS13-05 ■ Scaling a Machine Learning Approach to many kinds of Malicious Behavior for Cybersecurity
William Casey, Anthony Melaragno ■ *United States Naval Academy, USA*

TS13-06 ■ Antenna Array Diagnosis via Smart Sensing of Electromagnetics with Learnable Data Acquisition and Processing
Oluwole John Famoriji, Thokozani Calvin ■ *Shongwe University of Johannesburg, South Africa*

TS13-07 ■ Source Localization of EM Wave in the Presence of neighboring Sources and Noisy Environments using Deep Learning and Meta Learning
Oluwole John Famoriji, Thokozani Calvin ■ *Shongwe University of Johannesburg, South Africa*

13:00-13:15 ■ Sala del Chiostro

Student Contest Ceremony

13:15-13:30 ■ Sala del Chiostro

Conference Closure

Venue

Sapienza University of Rome ▪ Faculty of Engineering
Via Eudossiana 18 ▪ Rome, Italy

On Site Secretariat

The Conference Secretariat will be open on site as follows

Thursday	▪ **5 October, 2023**	**09:00**	▪ **19:00**
Friday	▪ **6 October, 2023**	**08:30**	▪ **19:00**
Saturday	▪ **7 October, 2023**	**08:30**	▪ **13:30**

Secretariat

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