

October 23-26 | Grenoble, France

2023 IEEE PES ISGT EUROPE

*Powering solutions for decarbonized
and resilient future smartgrids*

POSTER SESSIONS

2023 ISGT
EUROPE



Tuesday 24th

Poster session – P1

Atrium

COMPONENTS

A8619PR

Analysis of PVT hybrid roof-top systems for the energy supply of electricity and heat for buildings

Paul Maximilian Röhrig (1,2) (presenting author), Jasper Martens (1), Nils Körber (1,2), Marcel Kurth (1), Andreas Ulbig (1,2)
1 RWTH Aachen IAEW, Aachen, Germany
2 Fraunhofer FIT, Aachen, Germany

A8866PB

Hardware-in-the-loop Testing of a Deep Deterministic Policy Gradient Algorithm as a Microgrid Secondary Controller

Pedro Barbalho (1) (presenting author), Vinicius Lacerda (2), Ricardo Fernandes (3), Denis Coury (1)
1 São Carlos School of Engineering - University of São Paulo, São Carlos, Brazil
2 Centre d'Innovació Tecnològica en Convertidors Estàtics i Accionaments - Universitat Politècnica de Catalunya, Barcelona, Spain
3 Federal University of São Carlos, São Carlos, Brazil

A8914MN

Extended Kalman Filter for PEM Electrolyzer Condition Monitoring

Marina Nascimento Souza (1) (presenting author), Aline Luxa (1), Georg Pangalos (1), Lennard Giesenber (1), Gerwald Lichtenberg (2)
1 Fraunhofer Institute for Wind Energy Systems IWES, Hamburg, Germany
2 Hamburg University of Applied Sciences (HAW), Hamburg, Germany

A9003JS

Estimation of production losses for curtailed photovoltaic plants

Jonathan Scheidegger (1) (presenting author), Peter Cuony (2)
1 EPFL, Lausanne, Switzerland
2 Groupe E SA, Granges-Paccot, Switzerland

A9087CN

Medium Voltage Shunt Reactor Design and Switching

Christian NGNIE NGONSEU (1) (presenting author), Marc PETIT (1), Martin HENNEBEL (1), Didier LARRAILLET (2), Fabien PETIT (2)
1 Centralesupélec, Université Paris Saclay, Paris, France
2 Srd, Poitiers, France

A9100GA

Ratio of Load Curtailment Based Detection of the Maximum Risk of Substation Devices

Guido Andreesen (1) (presenting author), Madis Leinakse (1), Jako Kilter (1), Mart Landsberg (2)
1 TalTech, Tallinn, Estonia
2 Elering AS, Tallinn, Estonia

A8618PG

Fast load-flow calculations based on spanning trees

Pierrick Guichard (1) (presenting author), Nicolas Retière (2), Didier Mayou (3)
 1 Univ. Grenoble Alpes, CNRS, Institut Néel, F-38042, Grenoble, France
 2 Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, F-38000, Grenoble, France
 3 Univ. Grenoble Alpes, CNRS, Institut Néel, F-38042, Grenoble, France

A8668KA

The focus of this paper is to predict the hourly time series of the accepted number of block order bids and energy quantities in the Greek day ahead electricity market, using CNN models and feature generation and feature selection methods.

Kyriakos Andresakis (1) (presenting author), Aris Dimeas (1), Nikos Hatziaargyriou (1)
 1 ECE NTUA, Athens, Greece

A8733VG

Flexibility Management For Enhanced Distribution Grid Control And Operation - The Case of FEVER Project

Vinicius Gadelha Teixeira Filho (1) (presenting author), Andrea Bragantini (1), Andreas Sumper (1), Joaquim Melendez i Frigola (2), Isidoros Kokos (3), Joana Alsina Sánchez (4)
 1 Universitat Politècnica de Catalunya, Barcelona, Spain
 2 Universitat de Girona, Girona, Spain
 3 Intracom Telecom, Athens, Greece
 4 Estabanell Distribució, Granollers, Spain

A8735AB

Geomagnetic Disturbance Uncertainty Quantification Modeling: An Electromagnetic Transient and Steady-State Simulation based Approach

Arturo Bretas (1,2) (presenting author)
 1 University of Florida, Gainesville, United States
 2 Pacific Northwest National Laboratory, Gainesville, United States

A8768as

Improving Grid Resilience & Protection Performance based on Geographical Diversity and Tripping Statistical Analysis

Alok Singh (1) (presenting author), AKASH Modi (1)
 1 Grid controller of india , ERLDC, Kolkata, India

A8799SK

Comparison of Adaptive Inertia Emulation Control Strategies for HVDC Systems Applications

Gruender Andreas (1), Shahab Karrari (1) (presenting author), Jungkunz Clemens (1)
 1 Siemens Energy, Erlangen, Germany

A8805LP

Open-Source Power System Dynamic Models and Test Cases in Modelica: an application example

Luis David Pabon Ospina (1) (presenting author), Sören Lohr (1), Maria Nuschke (1), Diana Strauß-Mincu (1), Mathilde Bongrain (2), Quentin Cossart (2), Marco Chiaramello (2)
 1 Fraunhofer IEE, Kassel, Germany
 2 RTE Réseau de Transport d'Électricité, Paris, France

A8810MG

A flexible architecture for performance and stability assessment in converter-dominated distribution grids

Marco Giuntoli (1) (presenting author), Alberto Bolzoni (2), Mats Larsson (2), Ravikant Pandey (3), Naoki Kawamoto (3), Shinya Ohara (3)

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2 Hitachi Energy Switzerland Ltd, Baden-Dättwil, Switzerland

3 Hitachi Ltd., Ibaraki, Japan

A8823CW

A Switch Model for Emulation of Zero Current Switching in Dynamic Phasor

Christoph Wirtz (1) (presenting author), Marian Weßelmann (2), Max Murglat (1), Alexander Vanselow (1), Simon Krahl (1), Albert Moser (3)

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2 RWTH Aachen University, Aachen, Germany

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A8839HM

Safe Multi-Agent Reinforcement Learning for Price-Based Demand Response

Hannah Markgraf (1) (presenting author), Matthias Althoff (1)

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A8856MS

Experimentally validated resonance instabilities in distribution grids with high inverter shares

Sandor Simon (1), Markus Stroot (1) (presenting author), Andreas Ulbig (1)

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A8864SK

Reconfiguration Method for Low Voltage Distribution Networks

Sari Kerckhove (1,2,3) (presenting author), Reinhilde D'hulst (2,3), Dirk Van Hertem (1,2)

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2 EnergyVille, Genk, Belgium

3 VITO, Genk, Belgium

A8897SE

Open-Source EMT Model of Grid-Forming Converter with Industrial Grade SelfSync and SelfLim Control

Simon Eberlein (1) (presenting author), Peter Unruh (1), Tobias Erckrath (1)

1 Fraunhofer IEE, Kassel, Germany

A9015IH

Optimal Grid Sections for a Temporary Emergency Back-Up Power Supply in Islanded Grid Mode

Imke Hebbeln (1) (presenting author), Maximilian Rose (1), Michael Hübner (1), Lutz Hofmann (2)

1 Schleswig-Holstein Netz AG, Quickborn, Germany

2 Institute of Electric Power Systems, Leibniz University Hanover, Hanover, Germany

A9089VI

Impact of line length, EV and PV on LV Grid topology identification based on voltage correlation

Victor Bossard (1) (presenting author), Lena Joyeux (1), Sylvain Marie (1), Thi Thu Ha Pham (1), Regis Vautrin (1), Carl Mugnier (1), Theo Lagarde (1), Vanya IGNATOVA (1)

1 Schneider Electric, Grenoble, France

A9135HA

Concept of a new three-stage power system operation regime based on voltage angle control

Hassan Alhomsy (1) (presenting author), Franz Linke (1), Dirk Westermann (1)

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A9142SO

LVDC microgrid topology, control and protection in the EU funded project Hyperride

Sergio Orlando (1) (presenting author), Stefan Dan Costea (1)

1 Eaton, Prague, Czechia

A9162MP

Detecting suspicious behaviour in power consumption with Fuzzy Logic

Matej Pecjak (1) (presenting author), Maria Symponi (2), Dimitrios Stratogiannis (2)

1 University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia

2 Hellenic Electricity Distribution Network Operator (HEDNO) S.A, Athens, Greece

A9182SB

Modeling and Pre-installation Stability Assessment Of a Real Grid-connected MV DC Microgrid With 100% Power Electronics Based Generation

Sameh Betamony (1,2) (presenting author), Thai-Phuong Do (1), Jérôme Buire (2), Anthony Bier (1), Quoc Tuan Tran (1), Seddik Bacha (2)

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2 Grenoble Electrical Engineering Laboratory (G2Elab), Grenoble, France

PROTECTION, ICT & AUTOMATION

A8719FS

Power Quality Challenges by Integrating Modern Customers into the Low-Voltage Grid

Farhad Safargholi (1) (presenting author), David Kühnert (1)

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A8848KK

Evaluation of Countermeasures Against Harmonic Disturbances Caused by Agricultural Heat Pumps

Kyohei Kawamura (1) (presenting author), Fukushima Kentaro (1), Okada Naotaka (1), Okawa Kohei (2)

1 Central Research Institute of Electric Power Industry, Yokosuka, Japan

2 Shikoku Electric Power Transmission & Distribution Company, Inc., Takamatsu, Japan

A8852ES

Analysis of the impact of harmonics and a DG on a novel earth-fault location method in MV distribution networks with compensated neutral grounding

Elie SALHAB (1,2) (presenting author), Quentin LEBOURG (1), Dominique CROTEAU (1), Trung Dung LE (2), Marc PETIT (2)

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A8885FN

A Learning Testbed for False Data Injection Attacks

Filip Natvig (1) (presenting author), Göran Ericsson (1), Lars Nordström (2)

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2 KTH Royal institute of technology, Stockholm, Sweden

A9081MD

Digital Privacy and Cyberphysical Security Perspectives of Grid-Edge Power Systems and Markets

Umit Cali (1), Marthe Dynge (1) (presenting author), Faria Kamal (2), Rajnish Deo (2), Badrul Chowdhury (2), Robert Cox (2)

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A9095GN

Comparison of Machine Learning-Based Methods for High Impedance Fault Detection in Distribution Systems

Gabriela Nunes Lopes (1) (presenting author), Mauricio Pavani da Silva (1), José Carlos Melo Vieira (1)

1 University of São Paulo (USP), São Carlos School of Engineering (EESC), São Carlos, Brazil

A9129AS

Optimal Time Coordination of Definite-Time Overcurrent Relays for Adaptive Protection Systems

Antigona Selimaj (1) (presenting author), Immanuel Hacker (1), Ronja Steinfurth (1), Andreas Ulbig (1)

1 Institute for High Voltage Equipment and Grids, Digitalization and Energy Economics at RWTH Aachen University, Aachen, Germany

TOWARDS THE LARGE SCALE DEPLOYMENT OF NEW SOLUTIONS



A8992TD

Microgrid realtime control for transient modes: development, simulation and experimental validation in full-scale

Thai Phuong DO (1) (presenting author)

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Wednesday 25th

Poster session – P2

Atrium

MARKET DESIGN, END-USERS, REGULATION, PROSUMERS

A8744AO

Emerging Role of Industry 5.0 Digital Twins in Demand Response Electricity Market and Applications

Abiodun Onile (1) (presenting author), Juri Belikov (1), Petlenkov Eduard (1), Yoash Levron (2)
1 Tallinn University of Technology, Tallinn, Estonia
2 Technion israel institute of technology, Haifa, Israel, Israel

A8782AS

The impact of energy crisis on the residential consumers' consumption behavior based on a Finnish case study

Araavind Sridhar (1,2) (presenting author), Samuli Honkapuro (1), Fredy Ruiz (2), Salla Annala (2), Annika Wolff (1)
1 LUT University, Lappeenranta, Finland
2 Politecnico di Milano, Milan, Italy

A8825TK

On the Definition and Classification of Power System Flexibility

Taulant Kërçi (1) (presenting author)
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A8934YB

Improved RC Model for Air Conditioning Load - A Case Study

Yahia Baghzouz (1) (presenting author)
1 UNLV, Las Vegas, United States

A8953MG

Costs Allocation in Energy Communities: An Insight on Users' Preferences

Maria Victoria Gasca Segura (1) (presenting author), Remy Rigo-Mariani (1), Vincent Debusschere (1), Yousra Sidqi (2), Cedric Clastres (3)
1 Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, Grenoble, France, Grenoble, France
2 Lucerne University of Applied Sciences and Arts, Lucerne, Switzerland
3 Univ. Grenoble Alpes, Grenoble INP, GAEL - Laboratoire d'Economie Appliquee de Grenoble, Grenoble, France

A8964CS

How Much Energy Do Bounded Rational Participants Share in Vehicle-to-Grid (V2G)?

Chenxi Sun (1) (presenting author)
1 Shenzhen Institute of Artificial Intelligence and Robotics for Society, Shenzhen, China

A9022ZV

Optimizing House Energy Management with MILP Considering Shifting of Electric Appliances and Battery Storage System

Ricardo Faia (1) (presenting author), Pedro Faria (1), Zita Vale (1)
1 Polytechnic of Porto, Porto, Portugal

A9121IG

Real-life demonstration of flexibility provision by smart charging of EVs and stationary battery storage

Ibrahim Gazioglu (1) (presenting author), Jaikrishnan Pillai (2), Le Anh Tuan (3)

1 Osmangazi Electricity Distribution Company, Eskisehir, Turkey

2 Bovlabs SAS, Aix-en-Provence, France

3 Chalmers University of Technology, Gothenburg, Sweden

A9126MT

The Role of Hydrogen Energy in Future of the Power Systems: Study of Resource Adequacy in Finland

Mehdi Tavakkoli (1) (presenting author), Amin Moghimi Fam (2), Ilkka Jokinen (2), Matti Koivisto (3), Poul Sorensen (3), Matti Lehtonen (2)

1 Trading and Asset Optimization, Fortum, Espoo, Finland

2 Department of Electrical Engineering and Automation, Aalto University, Espoo, Finland

3 Department of Wind and Energy Systems, Technical University of Denmark, Roskilde, Denmark

A9145NE

Design of a virtual power plant using slower domestic resources with minimum end-user impact

Nicholas Etherden (1,2) (presenting author), Petersson Albert (1)

1 Vattenfall R&D, Stockholm, Sweden

2 Luleå University of Technology, Skellefteå, Sweden

A9153DM

Comparison of different types of users in Sweden mitigating energy poverty and utilizing green technologies

Daniel Månsson (1) (presenting author)

1 KTH Royal Institute of Technology, Stockholm, Sweden

A9163NE

Home charging in Scandinavia - an empirical study with cloud-connected EV data

Nicholas Etherden (1) (presenting author), Tavares de Oliveira Taís (1)

1 Luleå University of Technology, Skellefteå, Sweden

A9168WA

Flexibility of IoT-based Smart Houses for Enhancing Distribution System Margins

Yaser Ahmed (1), Mohammed Aljarboa (1) (presenting author), Walied Alfraidi (1)

1 Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia

A9185NR

Evaluating the Self Balancing Potential of Rooftop Photovoltaic Systems and its Impact on the Net Demand Profile

NIDA RIAZ (1) (presenting author), Repo Sami (1), Lindfors Anders (2)

1 Tampere University, Tampere, Finland

2 Finnish Meteorological Institute, Helsinki, Finland

PLANNING

A8598AG

Techno-Economic-Environmental Analysis for Net-Zero Sustainable Residential Buildings

Ankita Garg (1) (presenting author), Gagangeet Singh Aujla (1), Hongjian Sun (1)

1 Durham University, Durham, United Kingdom

A8659CC

Designing AC Low-Voltage Topologies for a Non-Electrified Area - A Case Study in Cambodia

Chhith Chhlonh (1), Marie-Cécile Alvarez-Herault (1), Vannak Vai (2), Bertrand Raison (1) (presenting author)

1 University of Grenoble Alpes, Grenoble, France

2 Institute of Technology of Cambodia, Phnom Penh, Cambodia

A8690WP

EV FAST CHARGER OF EV TWO WHEELS TO SUPPORT THE DEVELOPMENT OF EV ECOSYSTEM AND REDUCE CARBON GAS

WAHYU PUTRA SEJATI (1) (presenting author), Eko Yuwono (1), Fikri Pradiya (1)

1 PT PLN (PERSERO), JAKARTA, Indonesia

A8774DO

Linear Three-Phase Power Flow for Unbalanced Power Distribution Systems With Distributed Generation and Approximating Distribution Losses

MIGUEL SALTOS (1), DIEGO ORTIZ (1) (presenting author), Jacqueline Llanos (1)

1 UNIVERSIDAD DE LAS FUERZAS ARMADAS ESPE, SANGOLQUI, Ecuador

A8820MH

Energy Resources Scheduling in Energy Communities: A comparison between Mixed Integer Linear Programming and Hybrid-adaptive Differential Evolution with decay function

Gomes Eduardo (1,2), Pereira Lucas (1,2), Morais Hugo (1) (presenting author)

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2 Interactive Technologies Institute, LARSyS, Universidade de Lisboa, Lisbon, Portugal

A8838QR

Prospective bottom-up modelling of industry: what place for electrification in a cost optimised trajectory ?

Quentin Raillard--Cazanove (1) (presenting author), Robin Girard (1), Antoine Rogeau (1)

1 MINES Paris - PSL University, Sophia-Antipolis, France

A8892AC

Photovoltaic Power Prediction from Medium-Range Weather Forecasts: a Real Case Study

Alessandro Ciocia (1) (presenting author), Gianfranco Chicco (1), Alessandro Gasperoni (1), Gabriele Malgaroli (1), Filippo Spertino (1)

1 Politecnico di Torino, Torino (TO), Italy

A8960ED

Smart Meter Data-Driven Voltage Forecasting Model for a Real Distribution Network Based on SCO-MLP

Emrah Dokur (1) (presenting author), Ibrahim Sengor (2), Nuh Erdogan (3), Ugur Yuzgec (4), Barry P. Hayes (2)

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A9007KS

Optimized photovoltaic power forecast using k-means clustering based error reduction

Katrin Schulte (1) (presenting author), Lars Engel (1), Lars Quakernack (1), Jens Haubrock (1)

1 Bielefeld University of Applied Sciences and Arts, Bielefeld, Germany



STRATEGIES FOR THE MANAGEMENT OF POWER SYSTEMS

A8616JC

On the Estimation of Phase-Angles in European-Type Distribution Grids

Jose Manuel Cano Rodriguez (1) (presenting author), Mahmoud Rashad Ahmed (2), Yamen Alsyoufi (1), Pablo Arbolea Arbolea (1), Gonzalo Alonso Orcajo (1), Lucía Suárez Ramón (3)

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3 EDP Redes España, Oviedo, Spain

A8666TS

Automated Tertiary Voltage Control in Transmission System

Tomislav Stupić (1) (presenting author), Renata Rubeša (2), Zoran Bunčec (2), Marko Rekić (2), Domagoj Peharda (1), Matej Nikola Raič (1)

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2 Croatian Transmission System Operator Plc., Zagreb, Croatia

A8700FA

Optimal Energy Management System Using Probabilistic Day-ahead Forecasting

Francisco Araya (1) (presenting author), Duy-Long Ha (1), Dhia Melliti Eddine (1), Franck AL SHAKARCHI (1)

1 Entech, Lyon, France

A8705XZ

Resilience Enhancement of Multiple Energy Hubs via Coordinated EV Routing and Scheduling

Xun Zou (1) (presenting author), Yi Wang (1), Goran Strbac (1)

1 Imperial College London, London, United Kingdom

A8778MK

Impact of Substituting Hydrogen for Natural Gas on Compressor Station Operation in Gas Networks

Marcel Kurth (1) (presenting author), Marie-Sophie Heidi Braun (1), Andreas Ulbig (1)

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A8796HL

Novel DER and OLTC Management Scheme for Coordinated TSO-DSO Flexibility Services Provision

Hannu Laaksonen (1) (presenting author), Hosna Khajeh (1), Nikos Hatziargyriou (2)

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2 National Technical University of Athens, Athens, Greece

A8833KP

Topological Error Localization in Power Distribution Networks Based on WLAV State Estimation

Kemal Parlaktuna (1) (presenting author), Erk Dursun (2), Murat Özcan (2), Murat Göl (1)

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2 Siemens, Ankara, Turkey

A8884TJ

Practical approach for replacement concept in curative system operation

Teng Jiang (1) (presenting author), Matthias Kahl (1), Olaf Brenneisen (1)

1 TransnetBW GmbH, Stuttgart, Germany

A8890YB**On Virtual Complex Impedance Droop Control of VSC-Based Islanded Microgrids**

Yared Bekele Beyene (1), Getachew Biru Worku (1), Lina Bertling Tjernberg (3) (presenting author)

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A8896TG**Impact of Reconfiguration on Optimal Storage Deployment in Active Distribution Networks**

Tripti GANGWAR (1) (presenting author), Kesavarao Gade (1), Narayana Prasad Padhy (1), Premalata Jena (1)

1 IIT ROORKEE, Roorkee, India

A9037KM**Day-Ahead Optimal Resilient Energy Management for Grid-Connected Prosumer Microgrids**

Kihembo Samuel Mumbere (1) (presenting author), Yutaka Sasaki (1), Yoshifumi Zoka (1), Naoto Yorino (1), Ahmed

Bedawy (1), Chiraz Krifa (1), Yoshiki Tanioka (1)

1 Hiroshima University, Higashihiroshima, Japan

A9091MN**Black-start of microgrids: Insights based on demonstration sites in Europe and India**

Mirza Nuhic (1), Alexandros Paspatis (2) (presenting author), Kamini Shahare (3)

1 Technical University of Denmark, Kgs. Lyngby, Denmark

2 National Technical University of Athens, Athens, Greece

3 Visvesvaraya National Institute of Technology, Nagpur, India

A9097EE**Evaluation of Photovoltaic Short-term Forecast Benefits for Isolated System Operation**

Elena Escudero Ramos (1) (presenting author), Thai Phuong Do (2), Pierre Besson (1), Philippe Marechal (2)

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2 CEA Liten, Le Bourget du Lac, France

A9149IV**Use of sensitivity factors to support congestion zoning on flexibility markets**

Bence Bereczki (1), Jozsef Kiss (1), Balint Hartmann (1), Peter Mark Sores (1) (presenting author)

1 Budapest University of Technology and Economic, Budapest, Hungary

A8878BR**Optimizing Hybrid Power Systems for Sustainable Maritime Transportation**

Boubakr Rahmani (1,2) (presenting author), Guenael Le Sollicec (1), Maxime Woznicki (1), Anthony Roy (2), François Auger (2)

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