

The logo for the 2024 conference. It features the word 'esars.' in white lowercase letters with a blue dot above the 's'. To its right, '2024' is written in blue. Below 'esars.' is the word 'itec' in white lowercase letters, and below that is 'EUROPE' in white uppercase letters. The background is dark blue with a glowing green circuit-like pattern on the right and a glowing green leaf-like pattern on the left.

# esars. 2024 itec EUROPE

7<sup>a</sup> edition of the ESARS-ITEC Europe  
International Conference on  
**Electrical Systems for Aircraft, Railway,  
Ship propulsion and Road Vehicles &  
International Transportation  
Electrification Conference**

**Naples (Italy)**

**26<sup>th</sup>-29<sup>th</sup> November 2024**



ésars. 2024  
itec  
EUROPE

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## Message from Chairs

Dear Colleagues and Friends,

It is both an honour and a pleasure to welcome you to the 7th edition of the **International Conference on Electrical Systems for Aircraft, Railway, Ship Propulsion, and Road Vehicles (ESARS)** and the **International Transportation Electrification Conference**, which will take place in Naples, Italy, from Tuesday, November 27, to Friday, November 29, 2024.

This event is proudly organized by the **University of Naples Federico II**, the **University of Trieste**, and the **University of Cassino**, with support from the **University of Nottingham** and the **University of Toulouse**.

The conference is dedicated to the theme of **Energy Transition in Electrified Transportation**, serving as a platform for the electrical transportation systems community to exchange ideas, share experiences, and address present and future challenges. We are delighted to announce that this edition has been a great success, with nearly **200 high-quality papers** accepted. The program will feature **20 oral sessions** and **1 poster session**, offering rich insights into a wide range of topics.

The conference will also include **meetings, tutorials, technical sessions**, and **industrial workshops** on cutting-edge subjects such as railway and aviation decarbonization, energy storage systems, and electric vehicles.

Furthermore, we are excited to host an **Electric Vehicles (EVs) exhibition** on the picturesque seafront promenade, where attendees will have the unique opportunity to **test drive EVs** and experience the latest advancements firsthand.

This event would not have been possible without the invaluable contributions of our **Sponsors** and the tremendous efforts of the **Organizing and International Technical Committees**, to whom we extend our heartfelt thanks.

We sincerely hope you find the conference both inspiring and enjoyable, leaving you with valuable insights, connections, and lasting memories.

Warm regards,

Diego Iannuzzi  
Mario Pagano

## Committees

### Chairs

#### Conference General Chair

Diego Iannuzzi  
(Università degli Studi di Napoli Federico II)

#### Conference General Co-Chair

Mario Pagano  
(Università degli Studi di Napoli Federico II)

#### Program Technical Chair

Fei Gao

#### Special Session Chair

Fabrizio Marignetti

#### Round-table Chair

Ciro Attaianesi

#### Industry Chair

Giuseppe Tomasso

#### Railway Industry Chair

Laurent Frechede

#### Publication Chair

Massimiliano Chiandone

#### Keynote Chair

Babak Nahid-Mobarakeh

#### Track Chair

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Railways: Philippe Ladoux  
Ship: Giorgio Sulligoi  
Road Vehicles: Babak Fahimi

#### Treasurer

Giorgio Sulligoi

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Marino Coppola, IT  
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Silvio Vaschetto, IT

Ottorino Veneri, IT

Dmitri Vinnikov, EE

Bogdan Vulturescu, FR



## Hosting Universities

### University of Naples Federico II



UNIVERSITÀ DEGLI STUDI DI NAPOLI  
**FEDERICO II**

The University of Naples is named after Federico II (Frederick II), to underline its ancient origins dating back to June 5, 1224, when the Holy Roman Emperor and King of Sicily founded the institution to train secular administrative staff of the Empire. It is recognised as the world's oldest state university and is the third university in Italy by number of enrolled students (i.e., 80,000).

In the long history of the University of Naples Federico II there have been some very influential alumni, including philosopher and theologian Saint Thomas Aquinas who not only studied but later taught at the university. Other notable alumni include former Italian presidents Giovanni Leone, Enrico De Nicola and Giorgio Napolitano.

### University of Trieste



**UNIVERSITÀ  
DEGLI STUDI  
DI TRIESTE**

The community of Trieste's wish to establish a University is first documented in the 1800s when the city's port was built. At that time, local leaders asked the Imperial House of Austria to endow the city with a University to support its flourishing trade and establish a suitable institution to provide citizens with education and training in legal and economic

studies.

In 1920, the school was renamed the 'Institute for Business Studies' and by 1924 it was known as the University of Economics and Business, offering just one degree of the same name. In 1938, a new Faculty of Law and Political Science was opened with two-degree programmes. Henceforth, the institution was referred to as the 'Regia Università degli Studi' (Royal University). In the following years, ten further faculties were added (e.g., Engineering (1942); Literature and Philosophy (1943); Mathematics, Physics and Natural Sciences (1946); etc.).

### University of Cassino



The University of Cassino and Southern Lazio is a public university located in Cassino, Italy. Founded in 1979, it is one of the youngest universities in the country. The university offers a wide range of courses in the fields of humanities, sciences, engineering, economics, and law. It also has a strong research focus, with a number of research centres and institutes dedicated to various disciplines. The university is located in the heart of the Lazio region, close to the city of Rome and has also a number of satellite campuses in the region, including in the cities of Frosinone, Latina, and Rieti.

## University of Toulouse



LABORATOIRE PLASMA ET  
CONVERSION D'ÉNERGIE

The Laboratoire Plasma et Conversion d'Énergie is a Joint Research Unit of the National Center for Scientific Research (CNRS), the National Polytechnic Institute of Toulouse (INPT), and the Toulouse 3-Paul Sabatier University (UPS).

Located on two geographically distant sites a few kilometres apart (on the campuses of the University Paul Sabatier and the National Higher School of Electrotechnics, Electronics, Computer Science, Hydraulics, and Telecommunications), Laplace claims its affiliation with the Federal University of Toulouse Midi-Pyrénées (UFTMiP) and participates in all actions aimed at defining a scientific strategy for the site, involving universities, engineering schools, and research organizations within the field of "Engineering Sciences and Systems."

## University of Nottingham



University of  
Nottingham

UK | CHINA | MALAYSIA

Nottingham's first civic college was opened in the city centre in 1881, four years after the foundation stone was laid by former Prime Minister, W E Gladstone. After the First World War, the college outgrew its original building. A generous gift by Sir Jesse Boot, of 35 acres of land at Highfields, presented the solution and in 1928 the College moved to what is now the main campus, University Park. Initially, it was accommodated in the elegant Trent Building and was officially opened by King George V in November of that year. In 1948, the college was awarded the Royal Charter and became The University of Nottingham, now able to award degrees in its own name. During this period the School of Agriculture was established when the Midland College of Agriculture at Sutton Bonington merged with the University. The University of Nottingham continued to grow and still focuses on its development.



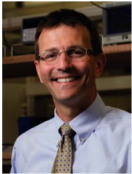
## Keynote

### KN1. Moving Toward Ubiquitous Charging Of Electric Vehicles

- **Date & Time**

Wednesday 27, 09.30 - 10.10,  
Room Magna

- **Speaker**



Prof. **Steve Pekarek** received his PhD in Electrical Engineering from Purdue University in 1996. From 1997-2004 Dr. Pekarek was an Assistant (Associate) Professor of Electrical and

Computer Engineering at the University of Missouri-Rolla. He is presently the Edmund O. Schweitzer III Professor of Electrical and Computer Engineering at Purdue University. He is an active member of the IEEE Power Engineering and Power Electronics Societies, the Electric Ship Research and Development Consortium (ESRDC), and the Research Director of the Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE) Center. He has served as the Program Chair of several IEEE conferences, including the International Electric Machines and Drives Conference and the Applied Power Electronics Conference.

He is presently serving as the Vice President of Conferences for the IEEE Transportation Electrification Council.

### KN2. Innovation and Sustainability - Presentation of the High Speed Train TGV M

- **Date & Time**

Wednesday 27, 10.10 - 10.50  
Room Magna

- **Speaker**



**Didier Frugier** after his electrical engineering degree at university of Grenoble (ENSIEG), Didier Frugier started to work for French Railways (SNCF) in 2000

as power semiconductors specialist at Lyon's locomotives engineering centre. He was in charge of reliability improvement of semiconductors devices with various technologies (diodes, thyristors, GTO, IGBT, Bipolar transistors...) for whole SNCF rolling stock's power converters. Since 2005, he is located in Le Mans at Rolling Stock Engineering Centre.

After many tasks focused in electric traction on rolling stock acquisition or transformation projects and homologations processes, he was involved in resolution of electrical interaction disturbances between rolling stock and power supply, signalling or telecommunication systems (overvoltages, low frequency instability, perturbations due to harmonics...).

Since 2023, he is the senior expert of the "Electrical Traction Energy HV Components" Department for electric traction chain and EMC for railway system.

- **Agenda**

During ESARS 2024 conference, SNCF will unveil the key innovations of the new French High Speed Trains, "TGV M", which contribute to a significant reduction in energy consumption.



The aerodynamic design of the train plays a crucial role in decreasing drag, leading to lower energy consumption. The optimized motors, coupled with power converters and a high-efficiency transformer, make it possible to improve the overall efficiency of the traction chain by 4 to 5%.

Athermic glazing reduces the effect of solar radiation, thus limiting the load on the air conditioning system.

Air conditioning regulation, adjusted to the number of travellers, ensures optimal management of the CO2 level and fresh air, contributing to better energy efficiency.

These technological advances places TGV M as a leader in the evolution towards more sustainable rail transport. The keynote will be an opportunity to highlight these advances and discuss their positive impact on the environment and the traveller experience.



### KN3. Towards Carbon-Neutral Aviation Through Electrification

• **Date & Time**

Thursday 28, 08.30 - 09.10  
Room Magna

• **Speaker**



**Todd Spierling**, Director, Electrification, Collins Aerospace, Rockford, IL.

Todd Spierling is Director for Electrification at Collins Aerospace. He is a part of the Power & Controls

Engineering organization located in Rockford, Illinois.

In his current role, Todd provides technical leadership in all elements of aircraft electrification, including Electric Propulsion, More Electric secondary systems, and Propulsion, Power & Thermal Management Systems.

He supports customer technology engagements, new business pursuits, and company and corporate level strategic technology planning.

He has previously led product groups for generators, motors, power electronics and emergency power systems, as well as corporate and business level advanced projects and research organizations.

He joined Raytheon (Sundstrand) in 1986. Todd has been awarded 43 US and foreign patents and has authored multiple conference papers.

He holds a bachelor's degree in mechanical engineering from Colorado State University, a master's degree in mechanical engineering from Georgia Tech, an MBA from Columbia College, and is currently pursuing his systems engineering PhD at Colorado State.



## • Agenda

The aviation industry is targeting a Net-Zero carbon footprint by 2050. Electrification has emerged as a key strategy to achieving this goal, through both Propulsion and Secondary Systems electrification.

This address will examine past successes, current activities, and future trajectories to develop, demonstrate, and implement electrification across the entire aircraft market spectrum, from small Air Mobility through Large Commercial aircraft platforms.

## KN4.Sailing into the Future: The Role of Direct Current in Ship Electrification.

### • Date & Time

Friday 29, 08.30 - 09.10

Room Magna

### • Speaker



**Andrea Colavitto**, is the Head of Research & Innovation at Fincantieri SI, a subsidiary of the Fincantieri Group, which specialises in the design and supply of advanced integrated systems

for industrial electrical, electronic, and electromechanical components.

He specializes in providing innovative and sustainable solutions for onboard power systems. His work focuses on the electrification of ships using direct current, aiming to reduce greenhouse gas emissions and enhance energy management systems.

Andrea holds a Master's degree with honours in Electrical Engineering and a Ph.D. in Industrial Engineering, focusing



on maritime electrification, from the University of Trieste.

### • Abstract

The keynote speech will explore the transformative potential of direct current (DC) systems in the electrification of maritime vessels. As the shipping industry seeks sustainable and efficient energy solutions, DC technology emerges as a pivotal component. The discussion will cover the advantages of DC over traditional alternating current (AC) systems, including improved energy efficiency, reduced emissions, and enhanced integration with renewable energy sources.



## Tutorial Session

### Battery Degradation and Safety with Application from Vehicles and Grid Storage

- **Date & Time**

Tuesday 26, 15.00 - 18.00, Room A

- **Speaker**



Prof. Anna G. Stefanopoulou  
(University of Michigan)

William Clay Ford Professor  
of Technology at the  
University of Michigan, has  
served as the Director of the

Automotive Research Center, a  
multi-university U.S. Army Center of  
Excellence, and the Michigan Energy  
Institute.

She has mentored and taught a generation  
of engineers in control of advanced  
powertrains through classroom, online,  
and asynchronous courses.

She has been an advisor of new curricula,

training needs, and research in modeling,  
estimation, and control for engines, fuel  
cells, and batteries, with findings docu-  
mented in a book, 21 US patents, and  
400 publications.

She has been recognized by many  
prestigious awards and is a Fellow of the  
ASME, IEEE, and SAE.

She has served on two US National  
Academy committees (2015 and 2020)  
formed upon request by the US  
Congress to report on vehicle fuel  
economy standards and the transition to  
electrification.

- **Agenda**

- Battery aging behavior
- Models of Degradation Mechanisms
- State of Health Estimation in Cells,
- Abuse conditions triggering abnormal  
behavior
- Gas Evolutions, Venting, Thermal  
Runaway
- Detection, Mitigation, and  
Applications





## Workshop

### W1. Roundtable: Towards a Full Batteries Supply Chain In Italy and EU

- **Date & Time**

Friday 29, 11.10 - 12.50, Room C

- **Summary**

Moderated by Proff. **Ciro Attaianesi** (University of Naples Federico II) and **Diego Iannuzzi** (University of Naples Federico II), organized in collaboration with the Italian Interuniversity Consortium on Electrification of Mobility (ELMO), the panel will focus on the prospects of the emerging European battery industry, the financial support implemented by UE for this goal, and the expected short, medium and long term effects.

- **Speaker**

**Matteo Cavalletti**

(MIDAC SpA)

**Maurizio Maggiore**

(formerly Policy Officer European Commission – Research and Innovation Department (RTD));

**Lorenzo Orsini**

(ALKEMIA SpA)

**Peter Qvarfordt**

(REGENERATE TECHNOLOGY)

**Federico Vitali**

(FAAM – FIB SpA)



## W2. Decarbonization In The Railway Sector

### • Date & Time

Wednesday 27, 14.00 - 15.45, Room C

### • Summary

Railway electric traction is widely used across the globe; however, only 50% of railway lines are currently electrified. This highlights the need for more efficient and sustainable solutions.



Even though rail transport is the greenest mode of transportation, we must continue improving the efficiency of the overall system while reducing its carbon footprint-not only in trains but also in electrical fixed installations such as substations, catenaries, stations, and buildings.

Countries worldwide, not just in Europe, are working towards these goals.

Regarding trains, different technologies such as battery multiple units, hydrogen trains, and hybrid trains each have their own areas of relevance.

At the same time, renewable energy solutions like solar panels, photovoltaic plants, wind turbines, and other innovations are being implemented both within Europe and beyond.

This session aims to bring together representatives from railway companies, manufacturers, and academia to exchange experiences, share visions, and discuss ongoing research.

### • Speaker

#### **Masahiro Sawayanagi**

*(EAST JAPAN RAILWAY- Deputy Director of Paris),*

#### **Guido Guidi Buffarini**

*(Head of Technology Design Department-Italferr)*

#### **Dario Romano**

*(Design Engineering Department, Napoli Branch Office, Hitachi Rail S.p.A.)*

#### **Bodgan Vulturescu**

*(Senior Project Manager at SNCF)*

# PROGRAMME

## DAY 1<sup>th</sup> - Tuesday 26 November 2024

■ Registration ■ EU project ■ Tutorial ■ Break ■ Dinner

### Pre-Registration

#### HALL

14:00 ■ Conference Registration

#### Room B

14:00 ■ EU project Registration

14:30 ■ EU Project - HYPOBATT  
General Assembly Meeting

#### Room A

14:00 ■ Conference Registration

15:00 ■ Tutorial  
Battery Degradation and Safety with Application from Vehicles and  
Grid Storage  
Prof. Anna G. Stefanopoulou (University of Michigan)

18:30 ■ Break

19:30 ■ Welcome to Circolo Savoia

21:30 End

## DAY 2<sup>nd</sup> - Wednesday 27 November 2024

- Registration
- Opening Session
- KeyNote Session
- Break
- General Track
- Vehicles
- EU project
- Exhibitor
- Railway
- Workshop
- Storage

**08.00** ■ **Registration**

**08.45** ■ **Opening Session**

Welcome to ESARS-ITEC 2024: General Chair, IEEE PELS Members and Sponsors

### Keynote Session

**09:30** ■ **Moving Toward Ubiquitous Charging Of Electric Vehicles**  
*Prof. Steve Pekarek* - Purdue University

**10:10** ■ **Innovation and Sustainability: Presentation of the High Speed Train TGV M**  
*Eng. Didier Frugier* - Rolling Stock Engineering Centre, SNCF

**10.50** ■ **Coffe Break**

### Oral Session & EU Project & Exhibitor 27/11/2024

Room Magna

General Track

**11:20** ■ **Paper ID 20 - Introducing the port electric distribution network concept** Grece  
*John Prousalidis*, Manos Anastasios, Spathis Dimosthenis

**11:35** ■ **Paper ID 149 - High-side high-voltage, low-current, and temperature sensor with digital interface for electrospray thrusters monitoring** Spain  
*Francisco José Blázquez-Plaza*, Barrado Andrés, Wijnen Mick

**11:50** ■ **Paper ID 196 - Swift Quasi-Peak Detector Implementation using Neural Network** Austria  
*Herbert Hackl*, Stoiber Martin, Reynvaan Jacob, Auinger Bernhard

**12:05** ■ **Paper ID 211 - Parameter Determination of Synchronous Generators Using Load angle Estimation Considering Saturation Effect** Iran  
*Khanzadeh Omid*, Vahedi Abolfazl, Takorabet Nouredine, Marignetti Fabrizio

**12:20** ■ **Paper ID 231 - Comparative Analysis between SiC Converter Designs based on Parallel-connected Discrete Devices and Power Modules** Italy  
*Francesco Porpora*, Marciano Daniele, Di Monaco Mauro, Nardi Vito, Tomasso Giuseppe

**12:35** **Paper ID 168 - A Distributed Simulation of Electrical Machines on FPGAs Using Low Latency Communication Protocol** USA  
*Mustafa Hadil*, Zenor John, Kredo II Kurtis, Alavi Zahrasadat, Crosbie Roy

**Room A**  
**Road Vehicles I**

**11:20** **Paper ID 10 - Component sizing of single-motor heavy-duty powertrains** Germany  
*Arend Jannik*, Ayeb Mohamed

**11:35** **Paper ID 26 - Adaptive Controller Design And Power Loss Analysis Of Resistive And Inductive Cell Balancing during Static, Charging, And Discharging Mode** UK  
*Ashraf Adnan*, Ali Basit, S. A. Alsunjury Mothanna, Tricoli Pietro

**11:50** **Paper ID 15 - GaN-based Resonant Energy Transfer System for EV-Drives with Electrical Excitation** Germany  
*Liebetau Florian*, Haller Fenja, Weber Christian, Rinderknecht Frank

**12:05** **Paper ID 16 - Comparison between Phase-Shifted Full-Bridge and Full-Bridge LLC Topology for an Contactless Energy Transfer System for EV's with Electrical Excitation** Germany  
*Liebetau Florian*, Spielmann Hagen, Weber Christian, Rinderknecht Frank

**12:20** **Paper ID 31 - Optimization-Based Development of a Causal, Cascaded, Map-Based Energy Management Strategy for Hybrid Electric Vehicles with Multiple Control Variables** Germany  
*Metzler Sebastian*, Winke Florian, Jungen Mario, Schmiedler Stefan, Hofmann Peter, Geringer Bernhard

**12:35** **Paper ID 108 - Air Gap Field Comparison of Hybrid and Electrical Excited Synchronous Machines without Rare Earth Magnets for Use in Road Vehicles** Germany  
*Hagen Spielmann*, Benjamin Frieske

**Room C**  
**Road Vehicles II**

**11:20** **Paper ID 48 - Model predictive control of an hybridised modular fuel cell system for heavy-duty transportation** France  
*RIVIER NOE*, Kergus Pauline, Regnier Jérémi, Jaafar Amine, Turpin Christophe, Boucharel Paul, Lachaize Jérôme, Afri Chouaib, Tognan Malik



|       |   |         |
|-------|---|---------|
| 11:35 | <b>Paper ID 68 - Power Density optimization of 48V/12V DC-DC converters considering several topologies and semiconductor technologies.</b><br><i>OUADAD Mohammed</i> , Cousineau Marc, Castelane Anne, Romeo Dominique, Rolland Eric                              | France  |
| 11:50 | <b>Paper ID 110 - Method to optimize the number of submodules of a Cascaded Multilevel Converter for an EV's Powertrain based on power losses analysis</b><br><i>Galvis Castellanos Daniel</i> , Gateau Guillaume, Cousineau Marc, Bachouch Latifa, Santiago Erik | France  |
| 12:05 | <b>Paper ID 188 - Impacts of using different semiconductor technologies on drivetrain optimization</b><br><i>Byden Hannes</i> , Domingues Gabriel, Lu Meng  | Sweden  |
| 12:20 | <b>Paper ID 172 - Comprehensive Numeric-Based Selectivity Analysis of Vehicular Electronic Fuses' Wire Protection Algorithms</b><br><i>Mayer Christoph</i> , Baumann Martin, Herzog Hans-Georg  | Germany |

**Room B**

|       |  |
|-------|--|
| 11:20 | <b>EU Project - HYPOBATT</b><br>General Assembly Meeting |
|-------|--|

**Outdoor  
EV Exhibitor**

|       |  |
|-------|--|
| 11:20 | <b>Audi E-tron Q4, Audi E-tron Q6, Nissan Arya</b> |
|-------|--|

**12.50 Lunch**

**Oral Session & EU Project & Exhibitor 29/11/2024**  
Room Magna  
Railway and Rolling Stock Electrical Systems Track I

|       |  |            |
|-------|--|------------|
| 14:00 | <b>Paper ID 199 - OToward Zero-Emissions Construction Sites: Mobile Battery Energy Storage Units Charged from the Regenerative Braking Energy of Traction Grids</b><br><i>Diab Ibrahim</i> , Starke Stefan | Netherland |
| 14:15 | <b>Paper ID 14 - Train Control System Independent of Communication Transmission Paths</b><br><i>Iwamoto Koki</i> , Kitano Takayasu, Gion Akihiro   | Japan      |
| 14:30 | <b>Paper ID 94 - Improvement of utilizing Renewable Energy by applying Stationary Energy Storage Systems in DC traction power supply system</b><br><i>Konishi Takeshi</i> , Ogata Takamitsu                | Japan      |

**14:45** **Paper ID 187 - Sizing and Energy Management System of Hybrid DC Railway Substation** France  
*Mohammed Reda SAOUTHY*, Stéphane BRISSET,  
 Christophe SAUDEMONT, Tony Letrouve

**15:00** **Paper ID 105 - An Integrated Control Method for Stationary and Onboard Energy Storage Systems on DC Electrified Railway** Japan  
 *Ogata Takamitsu*, Saito Tatsuhito, Konishi Takeshi

**Room A**  
**Road Vehicles IV**

**14:00** **Paper ID 162 - Integrated NMPC-Based Control for in-wheel-motored Rear-wheel drive Electric Vehicles** Turkey  
*Khan Muhammad Umer*, Aydemir Ali Bhadir, Nobahar Amir,  
 Ertan Bulent, Arikan Kukluk

**14:15** **Paper ID 84 - Automation test method and HILS environment configuration for Hydrogen storage system Management Unit verification** South Korea  
*Kim Jaejeong*, Lee Jungin, Hong Jeongmin

**14:30** **Paper ID 9 - Influence of Current Sensor Faults on the Performances of Surface Mounted Permanent Magnet Motor** Italy  
*Ciro Attaianese*, Matilde D'Arpino, Mauro Di Monaco, Michael Nye,  
 Luigi Pio Di Noia

**14:45** **Paper ID 45 - Design and Method for an Experimental Setup to evaluate the Heat Transfer in a Watercooled Eddy Current Brake** Germany  
*Köhler Christoph*, Holtmann Christoph, Rinderknecht Frank

**15:00** **Paper ID 171 - Extended Analytic Selectivity Analysis of a Vehicular Electronic Fuse's Thermal Model- Based Wire Protection Algorithm** Germany  
*Mayer Christoph*, Baumann Martin, Herzog Hans-Georg

**15:15** **Paper ID 179 - Regenerative braking capabilities in e-bike vehicles: comparison between two drive architectures** Italy  
*Minervini Marcello*, Giangrande Paolo, Corti Fabio, Malighetti Paolo,  
 Mantione Lorenzo

**Room C**  
**Decarbonization in the railway sector**

**14:00** **Laurent Frechede** France  
 INTERNATIONAL UNION OF RAILWAYS


**14:20** **Masahiro Sawayanagi** France  
 EAST JAPAN RAILWAY- Deputy Director of Paris

|       |   |   |        |
|-------|---|---|--------|
| 14:40 |  | <b>Guido Guidi Buffarini</b><br>Head of Technology Design Department-Italferr                     | Italy  |
| 15:00 |  | <b>Dario Romano</b><br>Design Engineering Department, Napoli Branch Office,<br>Hitachi Rail S.p.A | Italy  |
| 15:20 |  | <b>Bodgan Vulturescu</b><br>Senior Project Manager at SNCF  | France |
| 15:40 |  | <b>Discussion &amp; Conclusion</b>  |        |

**Room B**

|       |   |  |
|-------|---|--|
| 14:00 |  | <b>EU Project - HYPOBATT</b><br>General Assembly Meeting |
|-------|---|--|

**Outdoor  
EV Exhibitor**





|       |   |  |
|-------|---|--|
| 14:00 |  | <b>Audi E-tron Q4, Audi E-tron Q6, Nissan Arya</b> |
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15.45  **Coffee Break**

**Oral Session & EU Project & Exhibitor 27/11/2024**

**Room Magna**

**BATTERY CHARGING INFRASTRUCTURES**

|       |   |   |           |
|-------|---|---|-----------|
| 16:15 |   | <b>Paper ID 167 - A mixed-integer charging schedule for electric vehicles with request-dependent pricing</b><br><i>Ghavami Mahsa</i> , Liuzza Davide, Mostacciuolo Elisa, Iannelli Luigi, Vasca Francesco   | Italy     |
| 16:30 |  | <b>Paper ID 123 - Stochastic Mobility Integration into Residential Energy Hubs</b><br><i>Slafstein Dario</i> , Menendez Agudin Alvaro, Ram Chandra Mouli Gautham, Ramirez-Elizondo Laura, Bauer Pavol   | Argentina |
| 16:45 |  | <b>Paper ID 208 - Extending Feasible Load-Independent Voltage Gain Range in Wireless Power Transfer Links</b><br><i>Kuperman Alon</i> , Vulfovich Andrey, Kolesnik Sergei, Yuhimenko Vladimir, Sitbon Moshe, Mandrioli Riccardo   | Israele   |
| 17:00 |  | <b>Paper ID 124 - Swift Quasi-Peak Detector Implementation using Neural Network Efficiency Comparison of Full-Bridge DC-DC Converters for High-Power EV Charging Modules</b><br><i>Liu Dong</i> , Mattsson Aleks, Korhonen Juhamatti, Aarniovuori Lassi, Järvisalo Heikki, Luttamus Panu, Silventoinen Pertti | Finland   |

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|-------|---|--------|
| 17:15 | <b>Paper ID 152 - Electric Road Systems for Electric Vehicle Long-Distance Travel: A Multi-Agent Simulation Approach</b><br><i>Pourroshanfekr Arabani Hamoun</i> , Ingelström Mattias, J. Márquez-Fernández Francisco, Alaküla Mats | Sweden |
| 17:30 | <b>Paper ID 49 - Dispatchable battery swapping system with centralized charging and renewable energy generation</b><br><i>Wallander Edvin</i> , J. Márquez-Fernández Francisco  | Sweden |
| 17:45 | <b>Paper ID 230 - Accurate Electro-Thermal Modeling for an Half-bridge Converter based on Parallel- connected SiC Devices</b><br><i>Porpora Francesco</i> , Marciano Daniele, Di Monaco Mauro, Nardi Vito, Tomasso Giuseppe         | Italy  |

**Room A**  
**Energy Storage I**

|       |   |         |
|-------|---|---------|
| 16:15 | <b>Paper ID 61 - An experimental and simulation-based performance evaluation of a commercial high-energy cell - the path towards electric aviation?</b><br><i>Alexander Fill</i> , Nando van Arnhem, Moritz Schuhmann, Sebastian Seemann, Kai Peter Birke | Germany |
| 16:30 | <b>Paper ID 176 - An Empirical Model for State of Charge Estimation Based on Electrochemical Impedance Spectroscopy</b><br><i>Ibrahim Khaled</i> , Sabathiel Silvester, Farooq Farhan, Hofer Günter, Bergmann Alexander, Heer Rudolf                      | Austria |
| 16:45 | <b>Paper ID 229 - Evaluation of Lithium-ion Cell Characterization Procedures and Model Calibration Issues</b><br><i>Porpora Francesco</i> , Martino Giovanni, Di Monaco Mauro, Tomasso Giuseppe   | Italy   |
| 17:00 | <b>Paper ID 6 - Computational range maximization under current constraints for heavy-duty electric vehicles</b><br><i>Immonen Eero</i>  | Finland |
| 17:15 | <b>Papir ID 111 - Online Broadband Electrochemical Impedance Spectroscopy within Direct Power Control of a Neutral Point Clamped Inverter</b><br><i>Liu Kai-Ping</i> , Orfanoudakis Georgios, Cruden Andrew, Sharkh Suleiman M.                           | UK      |
| 17:30 | <b>Paper ID 166 - Electric power prediction of 2D FE magnetic spring energy harvester based on coil using support vector machines</b><br><i>Lo Sciuto Grazia</i> , Bijak Joanna, Kowalik Zygmunt, Trawinski Tomasz, Capizzi Giacomo, Viola Fabio          | Poland  |

17:45 **Paper ID 123 - Stochastic Mobility Integration into Residential Energy Hubs** Argentina  
*Slai Feinstein Dario*, Menendez Agudin Alvaro,  
 Ram Chandra Mouli Gautham, Ramirez-Elizondo Laura, Bauer Pavol

**Room B**  
**Energy Storage II**

16:15 **Paper ID 13 - Power Converter Modulation for Battery SOCEstimation in Electric Vehicle Powertrains: A TorqueRipple Minimization Strategy** UK  
*Muktar Nuradin*, Gadoue Shady, Mehran Kamyar

16:30 **Paper ID 189 - Improved Charging Technique for Reducing the Charging Time in Nickel Manganese Cobalt type Lithium-ion Batteries** India  
*Nannapaneni Sai Vinay Kishore*, Vanjari Seshadri Sravan Kumar

16:45 **Paper ID 28 - State-of-Charge, State-of-Health and State-of-Power Estimation for Traction Batteries** Italy  
*Sabatino Simona*, Calderaro Vito, Galdi Vincenzo, Graber Giuseppe

17:00 **Paper ID 126 - Short-circuit DC Current Estimation of Hybrid Energy Storage Systems** Italy  
*Silvestro Federico*, D'Agostino Fabio, Sivori Fabrizio

17:15 **Paper ID 207 - State of Health Estimation of LiCoO<sub>2</sub> Cells based on Impulse Response and ARMAX Identification** Italy  
*Piegari Luigi*, Barcellona Simone, Ribera Mattia, Fedele Emanuele,  
 Codecasa Lorenzo, Iannuzzi Diego

**Room C**

16:15 **EU Project - HYPOBATT**  
 General Assembly Meeting

**Outdoor**  
**EV Exhibitor**

16:15 **Audi E-tron Q4, Audi E-tron Q6, Nissan Arya**

18:30 **End**

## DAY 3<sup>rd</sup> - Thursday 28 November 2024

■ Registration   
 ■ KeyNote Session   
 ■ Special Session   
 ■ Exhibitor   
 ■ Break  
■ Workshop   
 ■ Vehicles   
 ■ Railway   
 ■ EU project   
 ■ Poster Session   
 ■ Dinner

08.00 ■ Registration

### Keynote Session

09.00 ■ **Towards Carbon-Neutral Aviation Through Electrification**  
*Todd Spierling* - Collins Aerospace

### Oral Session & EU Project & Exhibitor 28/11/2024

Room Magna

Special Session on Innovative techniques and measures for improving rail transit system efficiency

09:10 ■ **Paper ID 138 - Development of an innovative energy management system for a railway smart grid** France  
*Aimad Chegra*, Fawzia Amokrane, Nada Zouzou, Smail Ziani, Tony Letrouve, Herve Caron

09:25 ■ **Paper ID 23 - Railway rolling stocks' long parking strategies for energy saving** France  
*Alonso Luis-M*, Chamaret André-Pilippe, Frugier Didier, Le Falher Marie, Eclercy Daniel, Henry Patrick

09:40 ■ **Paper ID 177 - Energy management solution of the future dual-mode electric train** France  
*Amokrane Fawzia*, Elabachir Mohammed Ilyas, Depature Lançon Clément, Crispiani Danilo, Petit Gilles, Zouzou Nada, Ziani Smail

09:55 ■ **Paper ID 130 - A reversible substation for MVDC railway electrification system** France  
*Bimmel Luc*, Ladoux Philippe, Da Silveira Brito Erick Matheus

10:10 ■ **Paper ID 209 - Optimal Sizing of a Wayside PV System for DC Rail Transit Systems: the Case Study of the Italy 3 kV Cagliari – Oristano Traction System** Italy  
*Di Pasquale Antonio*, Pagano Mario, Guidi Buffarini Guido, Carones Nicola, Laurini Marco, Rullo Emanuele

Room A

Special Session on Enabling Technologies for Electrical Power Systems of Future Green Aircraft

09:10 ■ **Paper ID 34 - Thermal Modeling of an Air-cooled Electrical Machine for Propeller-driven Aircraft** Germany  
*Brenner Lucas*, Alban Daniel, Gerling Dieter

|       |  |         |
|-------|--|---------|
| 09:25 | <b>Paper ID 192 - Effects on airport operations from a new regional electric flight network in Northern Sweden Scandinaviavia</b><br><i>Lindberg Martin</i> , Leijon Jennifer  | Sweden  |
| 09:40 | <b>Paper ID 83 - Simplified Thermal Identification and Modelling of Li-PO batteries for Unmanned Aerial Italy Vehicles</b><br><i>Pugi Luca</i> , Agostini Francesco, Fani Edoardo, Mattei Giuseppe, Franchi Lorenzo, berzi lorenzo     | Italy   |
| 09:55 | <b>Paper ID 52 - Review of failure analysis methodologies and procedures applicable to complex electronic Spain systems</b><br><i>Robles Marcos</i> , Barrado Andrés, Fernández Arturo, Oliver Jesús, Mahillo Raúl, Lázaro Antonio     | Spain   |
| 10:10 | <b>Paper ID 161 - Harmonic Cancellation for Dual-Generator Power Systems in More-Electric Aircraft: A Neural Network Approach</b><br><i>Gao Yuan</i> , Huang Zhen, Xiao Xuechun, Ji Bing   | Uk      |
| 10:25 | <b>Paper ID 163 - Analytical Modeling and Parameter-Based Evaluation of Cooling Technologies for MW- Class High Specific Power Electric Motors in Electrified Aircraft Propulsion Systems</b><br><i>Heise Frederik</i> , Kazula Stefan | Germany |

### Room B

#### Special Session on Advancements, Challenges, and Opportunities in Electrified Mobility and Transport Systems

|       |   |        |
|-------|---|--------|
| 09:10 | <b>Paper ID 216 - LSTM-based Predictive Control for Connected Autonomous Electric Vehicles Platoons</b><br><i>Basile Giacomo</i> , Lui Dario Giuseppe, Napoletano Elena, Petrillo Alberto, Santini Stefania | Italy  |
| 09:25 | <b>Paper ID 223 - Comparative Energy Assessment of Automated Electric Vehicles equipped with ACC Systems</b><br><i>Coppola Angelo</i> , Di Costanzo Luca, Marchetta Andre                                   | Italy  |
| 09:40 | <b>Paper ID 224 - Preliminary Methodologies for Selecting Diesel Railways to Be Converted to Hydrogen</b><br><i>D'Acerno Luca</i> , De Matteis Luca, Stefanelli Rosario                                     | Italy  |
| 09:55 | <b>Paper ID 213 - Optimisation Models for the Location of Refuelling Stations for Fuel Cell Electric Freight Vehicles in Italy: Preliminary Tests</b><br><i>Gallo Mariano</i>                               | Italy  |
| 10:10 | <b>Paper ID 117 - Evaluation of Direct Torque Predictive Control for SRM with Reduced Computation Resources</b><br><i>Gholaminejad Azadeh</i> , Dhale Sumedh, Nahid-Mobarakeh Babak                         | Canada |

**10:25** **Paper ID 87 - Reliability-Oriented Design of Electrified Aircraft Propulsion by Means of Hierarchical Reliability Models** Germany  
*Kammermann Jörg*, Sikander Wajeeha, Bolvashenkov Igor, Hans-Georg Herzog

**Room C**

**Special Session on Accelerating Electrification of Waterborne Transport with Battery Systems**

**09:10** **Paper ID 40 - Development of Operational Strategies for Optimal Usage of Batteries Onboard Commercial Vessels** Turkey  
*Erol Erdeniz*, Çakan Batuhan, Çetin Nazlı Nur, Bayrakçı Veysel, Güzel Samed, Semiz Ferit, Eyüboğlu Bünyamin

**09:25** **Paper ID 50 - Lessons learnt from high impact R&D projects from ZEWTE and other sectors with ESS** Spain  
*Meneses Pilar*, Aizpurua Izaskun, Batalla Jokin

**09:40** **Paper ID 206 - A Multi-Objective Co-Design Optimization Framework for Microgrid Architecture in Marine Application** Belgium  
*Saeed Kazemian*, Geury Thomas, Hegazy Omar

**09:55** **Paper ID 64 - Sizing a heterogeneous battery system for an offshore vessel: methodology and application** France  
*Vincent Phlippoteau*, Julien Dauchy, Solène Goy, Guénaël Le Sollic

**10:10** **Paper ID 147 - Hybrid Ship Fuel Consumption Prediction Through Operational Performance Simulation** Romania  
*Husar Calin*, Irimia Cristi, Szabo Robert-Matei, Grovu Mihail, Touat Amine, Petiteau Mathieu

**10:25** **Paper ID 144 - Integrated Digital Platform for Marine Energy Management** Romani  
*Husar Calin*, Baicoianu Alexandra, Pescaru Dan, Sasu Daniela, Tran Dai-Duong, Larsen Lars Petter

**Outdoor EV Exhibitor**

**09:10** Audi E-tron Q4, Audi E-tron Q6, Nissan Arya

**11:40** Coffee Break



**Oral Session & EU Project & Exhibitor 28/11/2024**

**Room Magna**

**Special Session on Innovative techniques and measures for improving rail transit system efficiency**

|       |  |        |
|-------|--|--------|
| 11:10 | <b>Paper ID 215 - Optimizing Regenerative Braking Energy with Bidirectional Active Traction Substations: Italy Multi-Train Simulation and Transient Modeling</b><br><i>Jafari Kaleybar Hamed</i> , Brenna Morris, Pugi Luca, Kociu Aljon | Italy  |
| 11:25 | <b>Paper ID 228 - Energy evaluation of urban railroad systems</b><br><i>Lutemberger Giovanni</i> , Ceraolo Massimo, Kociu Aljon, Quilici Francesco Giuseppe, Ruvio Alessandro, Pugi Luca   | Italy  |
| 11:40 | <b>Paper ID 133 - Infrastructure and battery capacity impact on BEMU's battery lifetime</b><br><i>Maxime Juston</i> , Clement Depature, Andre-Philippe Chamaret, Bogdan Vulturescu   | France |
| 11:55 | <b>Paper ID 82 - The Static Phase Converter. A Solution to Reinforce the Power Supply of 25 kV/50Hz Railway Lines</b><br><i>Sacco Paul</i> , Ladoux Philippe, Sanchez Sébastien, Sonier Benoit, Hassan Mahmoud                           | France |
| 12:10 | <b>Paper ID 37 - Two-Stage Energy Management of Urban-Rail-Transit-based Micro Grid Integrated with EV</b><br><i>Tian Zhongbei</i> , Dong Hongzhi, Spencer Joseph W.   | UK     |

**Room A**

**Special Session on Electric Machines and Power Converters Models for Digital Twins in Air Transportation Systems**

|       |  |         |
|-------|--|---------|
| 11:10 | <b>Paper ID 72 - Development of 1 MW Hybrid Electric Propulsion Drive System</b><br><i>Sawata Tadashi</i> , MInshull Stephen   | UK      |
| 11:25 | <b>Paper ID 116 - Optimal Voltage Selection for Electrical Power Systems on More Electric Aircraft</b><br><i>Wang Xin</i> , Atkin Jason, Yeoh Seang Shen, Bozhko Serhiy                  | UK      |
| 11:40 | <b>Paper ID 121 - Simulation framework of tethered fixed-wing Unmanned Aerial Vehicle</b><br><i>Yan Changjin</i> , Zhang Shu, Zhang Donghui, Chen Zhenhai, Zhang Taihua                  | Cina    |
| 11:55 | <b>Paper ID 47 - Reliability Assessment of Power Modules across Mission Phases in Electric Aircraft Propulsion</b><br><i>Kugener Jeff</i> , Kazula Stefan                                | Germany |
| 12:10 | <b>Paper ID 205 - Map-based Simulation Model for Energetic Assessment of Electric Propulsion Systems</b><br><i>Perilli Lorenzo</i> , Graffeo Federica, Vaschetto Silvio, Tenconi Alberto | Italy   |

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|-------|--|--------|
| 12:25 | <p><b>Paper ID 160 - Hardware-In-the-Loop Modeling and Simulation of the Fin Control Subsystem with DSP</b><br/> <i>Sotero Matheus</i>, Figueiredo de A. Campos Bernardo,<br/>         Sol Salgado Silva Ícaro, Mello Gabriel, B. Rolim Luís Guilherme</p> | Brasil |
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**Room B**

**Special Session on Advancements, Challenges, and Opportunities in Electrified Mobility and Transport Systems**

|       |   |             |
|-------|---|-------------|
| 11:10 | <p><b>Paper ID 136 - Assessing the Transformation to Heavy-Duty EVs in the EU: Policy and Technological Aspects</b><br/> <i>Liu Dong</i>, Ahonen Kasimir, Vilko Jyri, Aarniovuori Lassi</p>                         | Finland     |
| 11:25 | <p><b>Paper ID 128 - Vehicle to Grid from the Electric Vehicle point-of-view to reduce peak demand and system cost</b><br/> <i>Menendez Agudin Alvaro</i>, Chandra Mouli Gutham Ram, Bauer Pavol</p>                | Netherdland |
| 11:40 | <p><b>Paper ID 104 - Design Assessment of GaN FET-Based Inverter for Low-Voltage Braking System</b><br/> <i>Musumeci Salvatore</i>, Barba Vincenzo, Mandrile Fabio,<br/>         Carbone Fabio, Abate Francesco</p> | Italy       |
| 11:55 | <p><b>Paper ID 67 - Optimal Current Control of Switched Reluctance Motors Over the Entire Operating Range</b><br/> <i>Niazi Yasaman</i>, Nahid-Mobarakeh Babak</p>  | Canada      |
| 12:10 | <p><b>Paper ID 93 - Systematic error correction of SUMO traffic simulator's HBEFA vehicle emission model</b><br/> <i>Varga Balazs</i>, Lulic Zoran, Tettamanti Tamas</p>  | Hungary     |
| 12:25 | <p><b>Paper ID 58 - Neural network estimators of SoC trained with model-based dataset in BMS for ground electric vehicles</b><br/> <i>Capasso Clemente</i>, Chianese Giovanni, Iannucci Luigi, Veneri Ottorino</p>  | Italy       |

**Room C**

**The ports interoperability to serve the green shipping policy via electrification**

|       |   |       |
|-------|---|-------|
| 11:10 | <p><b>Opening Round Table</b><br/>         Prof. John Prousalidis, Dr. Fabio D'Agostino, Prof. Giorgio Sulligo,<br/>         Prof. Federico Silvestro, Daniele Bosich</p> | Italy |
| 11:25 | <p><b>Luca Lo Schiavo</b><br/>         ARERA</p>  | Italy |
| 11:32 | <p><b>Damiano Landi</b><br/>         Terna</p>  | Italy |
| 11:39 | <p><b>Eric Marcone</b><br/>         Port Authority of Eastern Adriatic Sea</p>  | Italy |

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| 11:46 |  | <b>Vittorio Torbianelli</b><br>Port Authority of Eastern Adriatic Sea | Italy  |
| 11:53 |  | <b>Oliviero Giannotti</b><br>Assoportì                                | Italy  |
| 12:00 |  | <b>A. Manos</b><br>HEDNO  | Greece |
| 12:07 |  | <b>Fourlaris</b><br>RAWEW   | Greece |
| 12:14 |  | <b>Ioannis Tolia</b><br>TSO   | Greece |
| 12:21 |  | <b>Alex Papalexopoulos</b><br>Energy Market                           | Greece |
| 12:28 |  | <b>Discussion &amp; Conclusion</b>                                    |        |

Outdoor  
EV Exhibitor

11:10 Audi E-tron Q4, Audi E-tron Q6, Nissan Arya

12.45 Lunch

Oral Session & EU Project & Exhibitor 28/11/2024  
Room A  
Road Vehicles III

|       |  |   |         |
|-------|--|---|---------|
| 14:00 |  | <b>Paper ID 118 - Combined Control of a Segmented Stator Switched Reluctance Motor Drive for an Electric Motorcycle</b><br><i>Andrada Pere</i> , Blanqué Balduí, Monjo Lluís, Kobeaga Pol, Bravo Joel   | Spain   |
| 14:15 |  | <b>Paper ID 39 - Frequency-Domain Sensitivity Analysis Method for Mitigation of Automotive Power Supply Disturbances</b><br><i>Gerten Michael</i> , Frei Stephan  | Germany |
| 14:30 |  | <b>Paper ID 106 - Centralized Diagnosis of On-Board Power Supply Network Faults with LSTM-Networks</b><br><i>Rübarsch Marvin</i> , Schwierz Martin, Wang Qingping, Frei Stephan   | Germany |
| 14:45 |  | <b>Paper ID 79 - Characteristics of Battery-Internal-Heating Method involving dq-axis Current Pulsation in Permanent Magnet Synchronous Motors during Electric Vehicle Operation</b><br><i>Hasegawa Ryuhei</i> , Kondo Keiichiro, Funayama Chikako, Imura Akihiro | Japan   |





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| 15:00 | <b>Papr ID 17 - Smooth Pole Change Method for Multiphase Induction Motor Drive System</b><br><i>Kobayashi Momoka</i> , Doki Shinji, Kato Hiroataka, Ito Jun-ichi, Kobayashi Masashi | Japan |
| 15:15 | <b>Papr ID 92 - Loss characteristics of PMSM drive system for inverter switching</b><br><i>Kokago Takumi</i> , Kondo Keiichiro, Aiso Kohei, Aoki Yasuaki, Imai Koji, Oishi Ryohei   | Japan |

**Room B**  
**Railway and Rolling Stock Electrical Systems Track II**

|       |   |        |
|-------|---|--------|
| 14:00 | <b>Paper ID 174 - System Model for Initial Charging of a New Battery Set Using Grid and Solar PV System for Railway Applications</b><br><i>SAPAWAT JITESH KUMAR</i> , Miyatake Masafumi   | Japan  |
| 14:15 | <b>Paper ID 183 - Real Time Energy Supervision for Battery Storage System in a Hybrid DC Railway Smart Grid</b><br><i>Shmaysani Mhamad</i> , Almaksour Khaled, Caron Hervé, Robyns Benoit, Saudemont Christophe   | France |
| 14:30 | <b>Paper ID 22 - Estimating Cost Benefit of Supply-Demand Adjustment Utilizing Railway Onboard Batteries Based on their Deterioration Test</b><br><i>Watanabe Aruto</i> , Taguchi Yoshiaki  | Japan  |
| 14:45 | <b>Paper ID 99 - Method for Determining Substation Output Voltage for Energy Saving Focused on Regenerative Train FC Voltage in DC-Electrified Railway</b><br><i>Ohata Ryosuke</i> , Kondo Keiichiro, Kobayashi Hiroyasu, Nishi Kentaro, Suzuki Takashi, Yoshinaga Takashi, Takahashi Ryo | Japan  |
| 15:00 | <b>Paper ID 217 - Multi-objective design of a bidirectional DC-DC converter for battery-powered locomotive</b><br><i>Simone Palazzo</i> , Antonio Fusaro, Emanuele Martano, Giovanni Canale Parola, Enzo de Santis, Annunziata Sanseverino, Francesco Velardi, Giovanni Busatto           | Italy  |

**Room C**  
**Special Session on Power Sources and Drivers for Electric Vehicles**


|       |  |       |
|-------|--|-------|
| 14:00 | <b>Paper ID 107 - Gradient-Based Predictive Pulse Pattern Control for Permanent Magnet Synchronous Motor Drives</b><br><i>Benevieri Alessandro</i> , Karamanakos Petros, Formentini Andrea, Marchesoni Mario | Italy |
| 14:15 | <b>Paper ID 186 - An Innovative Discrete-Time dq-Axis Model Considering Phase Discretization Error for Cina High-Speed IM Drive And Its Analysis</b><br><i>Fang Zhifa</i> , Doki Shinji                      | Cina  |

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| 14:30 |  | <b>Paper ID 24 - Multilevel level inverter for EV charging via hybrid storage unit (Fuel Cell, Battery, Ultracapacitor)</b><br><i>Ioana-Cornelia Gros</i> , Daniel Fodorean   | Romania |
| 14:45 |  | <b>Paper ID 132 - Real-Time Hardware In the Loop simulation setup for automotive grid interfacing system based on PLECS RT BOX and National Instruments PXIe</b><br><i>Ioana-Cornelia Gros</i> , Lucian-Nicolae Pintilie, Petre-Dorel Teodosescu, Horia-Cornel Hedesi, Vasile-Mihai Suci, Adrian-Mihai Iuoras | Romania |
| 15:00 |  | <b>Paper ID 185 - Integration of Electric Vehicles Charging Infrastructure with Renewable Energy Sources in Urban Enviroments: Modeling and Optimization Perspectives</b><br><i>Rusinaru Denisa</i> , Mircea Paul Mihai, Buzatu Cosmin Gabriel, Manescu Leonardo Geo, Bratu Cristian                          | Romania |
| 15:15 |  | <b>Paper ID 214 - Electric Propulsion System with Hybrid Powertrain Equipped with Diesel/Gas Generators and Battery-Buffered AC Common Bus for LNG Ships</b><br><i>Savrun Murat Mustafa</i> , Sari Taha Bugra, Senler Orçun   | Turkey  |

**Room Magna**




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|-------|---|---|
| 14:00 |  | <b>Clustering Activity EU Project V-Access, AENEA, Nemoship, Poseidon</b><br>General Assembly Meeting |
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**Outdoor  
EV Exhibitor**

|       |   |  |
|-------|---|--|
| 14:00 |  | <b>Audi E-tron Q4, Audi E-tron Q6, Nissan Arya</b> |
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**15:30  Coffee Break**

**Workshop Session & EU Project & Poster Session & Exhibitor  
28/11/2024  
Room A  
Road Vehicles V**

|       |   |  |         |
|-------|---|--|---------|
| 16:00 |  | <b>Paper ID 232 - Rule-Based Strategy for Optimal Energy Management in Battery-Supercapacitor Hybrid Electric Vehicles</b><br><i>Noui Meryem</i> , Achour Yahia, Lashab Abderezak, Benidir Mohamed                                     | Algeria |
| 16:15 |  | <b>Paper ID 113 - Continuous Wireless Power Supply with Solid-State Transformers for a Bidirectional Integrated System in a Light EV Using In-wheel PMSM</b><br><i>POPESCU Liviu</i> , PREDESCU Dragos, BOSTAN Valeriu, GRIVA Giovanni | Romania |
| 16:30 |  | <b>Paper ID 29 - Optimization of Sensor Setup and Filter Frequency for End-of-Line Partial Discharge Testing of Electrical Machines</b><br><i>Rauscher Andreas</i> , Stenzel Peer, Endisch Christian                                   | Germany |

|       |   |         |
|-------|---|---------|
| 16:45 | <b>Paper ID 109 - Systematic Approach to Design, Modeling and Characterization of Externally Excited Synchronous Machines for Traction Applications</b><br><i>Henke Markus, Sharaf Abdullah</i>   | Germany |
| 17:00 | <b>Paper ID 65 - Implementation and Preliminary Testing of 26 kW Induction Machine in an Electric Traction System</b><br><i>Velazquez-Elizondo Pedro-Enrique, Guerra-Elguera Anahi, Gonzalez-Ramirez Miguel-Angel, Araujo-Vargas Ismael, Cano-Pulido Kevin, Mondragon-Escamilla Nancy</i> | Mexico  |

**Room C**  
**Special Session on MW-Charging System**

|       |   |
|-------|---|
| 16:00 | <b>Welcome and General Introduction</b><br><i>E. Bilbao, Á.Reina</i>                    |
| 16:05 | <b>Scenarios for the future of sustainable transportation</b><br><i>S. Moqaddamerad</i> |
| 16:20 | <b>Road to MW Charging systems; the Heliox approach</b><br><i>T. Gerrits</i>            |
| 16:35 | <b>Marine Charging standardization – proposals from HYPOBATT</b><br><i>G. Gommer</i>    |
| 16:50 | <b>Digitalization of Energy charging systems</b><br><i>E. Bilbao, Á.Reina</i>           |
| 17:05 | <b>Megawatt charging of Ships – connections beyond the hull</b><br><i>P. Rampen</i>     |
| 17:20 | <b>Questions and Farewell</b>   |

**Room Magna**

|       |   |
|-------|---|
| 16:00 | <b>Clustering Activity EU Project V-Access, AENEA, Nemoship, Poseidon</b><br>General Assembly Meeting |
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**Room A1**  
**Poster Session**

|       |   |       |
|-------|---|-------|
| 16:00 | <b>Paper ID 227 - Experimental identification of the Inrush Safety Regions in single-phase power transformers</b><br><i>Balato Marco, Di Pasquale Antonio, Clemente Carmine Stefano, Liccardo Annalisa, Pagano Mario, Petrarca Carlo, Visone Ciro</i> | Italy |
| 16:01 | <b>Paper ID 169 - Research on Parallel Control Method for More Electric Aircraft High Voltage DC Electric Power System Considering Line Impedance</b><br><i>Wang Yonggan, Yang Shanshui, Wang Li</i>  | China |

|       |   |        |
|-------|---|--------|
| 16:02 | <b>Paper ID 95 - Two-Stage Current Limiting Control Strategy For DC Solid-State Power Controller</b><br><i>Wang Li</i> , Huang Mingqiang, He Yongsheng, Yang Shanshui, Li Xing  | China  |
| 16:03 | <b>Paper ID 102 - A Diagnosis Method for Open-Switch Faults in Open-Winding Sinusoidal Doubly Salient Electromagnetic Machine Drive System</b><br><i>Zhou Bo, Yin Yujie</i> , Fang Wenjing, Xie Xie, Wang Huizhen                       | China  |
| 16:04 | <b>Paper ID 100 - A Position Sensorless Startup Method for DSEM Based on Pulse Injection</b><br><i>Zhou Bo</i> , Xie Xie, Fang Wenjing, Yin Yujie, Wang Huizhen   | China  |
| 16:05 | <b>Paper ID 101 - Common Mode Voltage Suppression Strategy for Third-Harmonic Injection Two-Stage Matrix Converter</b><br><i>Zhou Bo</i> , Shi Yaotian, Chang Qingyun, Lu Chengjia, Wang Huizhen, Meng Xiaoli                           | China  |
| 16:06 | <b>Paper ID 103 - Position Estimation for Sinusoidal Doubly Salient Electromagnetic Machine Considering Cross-Coupling Effect</b><br><i>Zhou Bo</i> , Huang Yang, Yu Xiaodong, Huang Yurong, Wang Huizhen, Meng Xiaoli                  | China  |
| 16:07 | <b>Paper ID 8 - A potential 15 kVdc catenary-fed rail induction motor drive at 780 kW, 1.5-3 krpm: preliminary design and key FEM validation</b><br><i>Ali Salman</i> , Boldea Ion, Tutelea Lucian, Popa Ana Adela, Marignetti Fabrizio | Italy  |
| 16:08 | <b>Paper ID 42 - A Novel Empiric Model-Based Classification Algorithm for Fault Detection in DC Railway Systems</b><br><i>Lanzarotto Damiano</i> , Wallart Francois, Leclere Loic   | France |
| 16:09 | <b>Paper ID 7 - 150 kVA Compact modular three-level NPC Auxiliary converter for the Railways Application</b><br><i>Rong Xiaoyun</i> , Dou Zechun, Jain Prashant, Qi Yu, Liu Bin, Li Chengxi, Zhu Qingwei, Shen Chengjun                 | UK     |
| 16:10 | <b>Paper ID 36 - Configuration Research of the Multi-Mode Hybrid Electric Vehicles with Two Electric Machines</b><br><i>Zou Yunge</i> , Zhang yuxin, Yang Yalian  | China  |
| 16:11 | <b>Paper ID 5 - Integrated Framework for Initial Position Estimation and Self-Commissioning of SRM Using Voltage Signals</b><br><i>Gholaminejad Azadeh</i> , Nahid-Mobarakeh Babak  | Canada |
| 16:12 | <b>Paper ID 25 - A Novel Isolated Connector for Bidirectional Direct V2V Charging Using Onboard Chargers</b><br><i>Chong Benjamin</i> , Zhou Renwentai  | UK     |

|       |  |          |
|-------|--|----------|
| 16:13 | <b>Paper ID 120 - Dynamic Wireless Power Transfer Optimization Using Adaptative Termination in Center-Fed Resonant Array</b><br><i>Dinis Joao</i> , Alberto José, Marques Cardoso Antonio J.                                   | Porugal  |
| 16:14 | <b>Paper ID 181 - An LLC-DAB Hybrid Converter with High Input-Output Voltage Ratio Based on an Integrated Matrix Transformer</b><br><i>Yang Xiaodong</i> , Xiao Lan, Wu Qunfang, Zhao Wenjie, Chen Wenlong                     | China    |
| 16:15 | <b>Paper ID 53 - A quantitative approach to measure the resilience of freight transport utilizing battery- electric trucks</b><br><i>Mauch Lars</i> , Otteny Felix, Kilic Cem  | Germany  |
| 16:16 | <b>Paper ID 12 - The present status of the extremely high-power charging systems</b><br><i>Suojansalo Rasmus</i> , Aarniovuori Lassi, Korhonen Juhamatti, Peltoniemi Pasi  | Finland  |
| 16:17 | <b>Paper ID 182 - An Improved Feature-Position-Based Sensorless Direct Torque Control Scheme for SRM Drives at Medium-High Speeds</b><br><i>Tian Chongyang</i> , Nahid-Mobarakeh Babak   | Canada   |
| 16:18 | <b>Paper ID 74 - A Methodology to Assess the Sustainability of Motors for Electric Vehicles</b><br><i>Bhagat Prithvi</i> , Jones Dr.Catherine, Miscandlon Dr.Jill  | UK       |
| 16:19 | <b>Paper ID 69 - Modeling and Control of a Direct Current Ferry Shipboard Power System</b><br><i>Boujoudar Younes</i> , Micallef Alexander, APAP Maurice, Sciberras Edward, Rampen Peter                                       | Malta    |
| 16:20 | <b>Paper ID 32 - Quasi-Square-Wave PWM Modulation for Modular Multilevel Converter in Variable Speed Motor Drives with Self Voltage Recovery</b><br><i>Xia Peizhou</i> , Zhang Xinyun, Finney Stephen                          | UK       |
| 16:21 | <b>Paper ID 43 - Maximizing the energy-saving potential of declutchable BEV powertrains via Eco-driving</b><br><i>Xu Yu</i> , Lokur Prashant, Klacar Simon, George Shino, Andersson Andreas, Sedarsky David, Murgovski Nikolce | Sweedden |
| 16:22 | <b>Paper ID 27 - Reverse Engineering-Based Modeling of an EV Motor Drive for Digital Twin Development</b><br><i>Ibrahim Mahmoud</i> , Rassólkin Anton, Rjabtšikov Viktor   | Estonia  |
| 16:23 | <b>Paper ID 46 - Extraction of Ferrite Material Properties and Application to Simulation-Based Common- Mode Filter Design</b><br><i>Konrad Werner</i> , Hackl Herbert, Stoiber Martin  | Slovenia |



|       |  |         |
|-------|--|---------|
| 16:24 | <b>Paper ID 73 - Design-Method of a High Power Eddy Current Brake as a Retarder for electric Trucks</b><br><i>Holtmann Christoph</i> , Köhler Christoph, Weber Christian, Möckel Andreas   | Germany |
| 16:25 | <b>Paper ID 151 - On Control of the Auxiliary Current Space Vector of Dual Three-Phase Permanent Magnet Motors</b><br><i>Sala Giacomo</i> , Mancini Marianna, Antonino Cagliari Gabriele, Femia Antonio, Vancini Luca, Rizzoli Gabriele, Nuzzo Stefano | Italy   |
| 16:26 | <b>Paper ID 148 - Exploration of Partial Power Converter Topology for Fuel Cell Multi-Stack Systems in Heavy-Duty Applications</b><br><i>Siad Ines</i> , Battiston Alexandre, Leroy Thomas, Martin Jean-Philippe, Pierfederici Serge                   | France  |
| 16:27 | <b>Paper ID 11 - Performance comparison of inductive charging systems for electric buses</b><br><i>Di Noia Luigi Pio</i> , Attaianese Ciro, Del Pizzo Andrea   | Italy   |
| 16:28 | <b>Paper ID 150 - High Efficiency Smart Urban Mobility Method</b><br><i>Eelis Hytönen</i> , Lassi Aarniovuori, Jussi Niemioja, Dong Li   | Finland |

Outdoor  
EV Exhibitor

16:00 Audi E-tron Q4, Audi E-tron Q6, Nissan Arya

19:00 GALA DINNER - D'Angelo

22:00 End



## DAY 4<sup>th</sup> - Friday 29 November 2024

■ Registration  
 ■ KeyNote Session  
 ■ Ship  
 ■ Special Session  
 ■ EU project  
■ Mobility  
 ■ Exhibitor  
 ■ Break  
 ■ Workshop  
 ■ AI Track  
 ■ Opening Session

08.00 ■ Registration

### Keynote Session

08:30 ■ **Sailing into the future: The Role of Direct Current in Ship Electrification**  
*Andrea Colavitto* - Head of Research & Innovation at Fincantieri SI

### Oral Session & EU Project & Exhibitor 27/11/2024

Room Magna

#### SHIPBOARD ELECTRICAL SYSTEMS I

|       |  |            |
|-------|--|------------|
| 09:10 | <span style="color: grey;">■</span> <b>Paper ID 197 - Reinforcement Learning Based Energy Management System to Maximize Efficiency for the Hybrid Marine Propulsion System</b><br><i>Albakri Saeed</i> , Mehran Kamyar, Gadoue Shady                               | UK         |
| 09:25 | <span style="color: grey;">■</span> <b>Paper ID 90 - PPL Integration Employing SMES System on Naval Vessel: Modeling and Co-simulation</b><br><i>D'Agostino Fabio</i> , Cepollini Pietro, Kaza Daniele, Roncagliolo Daniele, Silvestro Federico, Chiarelli Antonio | Italy      |
| 09:40 | <span style="color: grey;">■</span> <b>Paper ID 89 - Status and future trends of electrification-based solutions for efficiency-oriented ship retrofitting</b><br><i>Di Piazza Maria Carmela</i> , Pucci Marcello, Iafraati Alessandro                             | Italy      |
| 09:55 | <span style="color: grey;">■</span> <b>Paper ID 195 - Evaluation of a Dual MLC2 Converter for Electrified Ship Propulsion Application</b><br><i>Dias Bellar Maria</i> , Martins Diogo  | Brasil     |
| 10:10 | <span style="color: grey;">■</span> <b>Paper ID 153 - Impact of Counting Methods &amp; Objectives on Expected Battery Lifetime &amp; Fuel Consumption</b><br><i>Durgaprasad Sankarshan</i> , W. van Keulen Lars, Polinder Henk, Coraddu Andrea                     | Netherland |
| 10:25 | <span style="color: grey;">■</span> <b>Paper ID 80 - Optimal Energy Management of FC-Battery Shipboard Power System using Dynamic Programming</b><br><i>Kopka Timon</i> , Coraddu Andrea, Polinder Henk  | Netherland |

## Room A

### Special Session on Advancements in Sustainable Propulsion Technologies for Ground, Maritime and Air Transportation

|       |  |             |
|-------|--|-------------|
| 09:10 | <b>Paper ID 202 - Double Stator Axial airgap Spoke-PMSM Performance Investigation for high torque density by 3D FEM with a direct drive powertrain case study</b><br><i>Ali Salman</i> , Boldea Ion, Marignetti Fabrizio, Qadeer Neelam, Tutelea Lucian  | Italy       |
| 09:25 | <b>Paper ID 63 - Sensorless Start-up Synchronization of Multi-3-Phase Segmented PMSM for Electrical Aircraft Propulsion Systems</b><br><i>Baum Lukas</i> , Grumm Florian, Schulz Detlef  | Germany     |
| 09:40 | <b>Paper ID 203 - Inner claw-pole stator outer PM rotor small synchronous motor/actuator for vehicular service technologies: 3D-FEM simulation and experimental test</b><br><i>Ciprini Luca</i> , Martin Adrian Daniel, Isfanuti Andy-Sorin, Tutelea Lucian Nicolae, Marignetti Fabrizio, Boldea Ion   | Italy       |
| 09:55 | <b>Paper ID 201 - Robustness Assessment of Dual Vector Control in DFIM with Stator Flux Orientation for France Clean Maritime Propulsion</b><br><i>Youssef DRIMIZI</i> , Maria PIETRZAK-DAVID, Pascal Maussion   | France      |
| 10:10 | <b>Paper ID 76 - Decoupled Levitation and Propulsion Control of Single-Sided Linear Induction Motors</b><br><i>Rametti Simone</i> , Pierrejean Lucien, Hodder André, Paolone Mario   | Switzerland |
| 10:25 | <b>Paper ID 233 - Multi-Phase Fault Tolerant MW Range Synchronous Machine Drives for Hybrid Electric Italy Aircraft</b><br><i>Tenconi Alberto</i> , Molina Matías Jiménez, Perilli Lorenzo, Crescimbin Fabio, Vita Leonardo, Tursini Marco, Credo Andrea, Fabri Giuseppe, Tani Angelo, Bellini Alberto, Cagliari Gabriele Antonino, Sala Giacomo | Italy       |






## Room B

|       |   |  |
|-------|---|--|
| 09:10 | <b>V-ACCESS</b><br>General Assembly Meeting |  |
|-------|---|--|


## Room C

### Special Session on Digital Twin Technologies in Modern Transportation Systems

|       |   |         |
|-------|---|---------|
| 09:10 | <b>Paper ID 158 - State-Space Modeling of Protection Circuits for Electronic Fuses in Vehicular Power Systems</b><br><i>Baumann Martin</i> , Shen Pengxin, Mayer Christoph, Eisenmann Bastian, Camacho Molina Samantha, Herzog Hans-Georg | Germany |
|-------|---|---------|

|       |   |  |         |
|-------|---|--|---------|
| 09:25 |  | <b>Paper ID 51 - Model-based fault diagnosis for large-scale marine battery systems</b><br><i>Reiter Alexander</i> , Lehner Susanne, Bohlen Oliver, Sauer Dirk Uwe   | Germany |
| 09:40 |  | <b>Paper ID 122 - Modular representation of Components to Enable Generative Engineering</b><br><i>Vepsäläinen Jari</i> , Malik Rohail, Ahmad Muhammad  | Finland |
| 09:55 |  | <b>Paper ID 212 - Analysis of an Equivalent Consumption Minimization Strategy for a Fuel Cell Electric Aircraft</b><br><i>Penta Marco</i> , Fedele Emanuele, Manrique Camilo, Iannuzzi Diego, Accardo Grazia   | Italy   |
| 10:10 |  | <b>Paper ID 142 - Cloud-Based Digital Twin for Optimized Multi-Megawatt Charging Control Strategies in Spain Maritime Applications</b><br><i>Elezgarai Gorka</i> , Mascaro Vincenzo, Lopez Mikel, Zwysen Jeroen, Reina Alvaro, Bilbao Endika, Villar Irma, Worigi Imane, Kostalas George | Spain   |
| 10:25 |  | <b>Paper ID 245 - Recurrent Neural Network Vs Kalman Filter for Development of Digital Twin of DC-DC Converters</b><br><i>Pasquale Franzese</i> , Benjamin J Jessie, Babak Fahimi, Diego Iannuzzi  | Italy   |

Outdoor  
EV Exhibitor

09:10  Audi E-tron Q4, Audi E-tron Q6, Nissan Arya

10.40  Coffee Break

Oral Session & EU Project & Round Table & Exhibitor 29/11/2024  
Room Magna  
SHIPBOARD ELECTRICAL SYSTEMS II

|       |   |  |            |
|-------|---|--|------------|
| 11:10 |  | <b>Paper ID 91 - Gate Driver Design for Solid-State Circuit Breaker with Integrated Latch Current Limiter in Shipboard DC Systems</b><br><i>Latorre Alejandro</i> , Batista Soeiro Thiago, Geertsma Rinze, Polinder Henk | Netherland |
| 11:25 |  | <b>Paper ID 139 - Optimizing Fuel Consumption of a Dual-Fuel Full-Electric Vessel Using Model Predictive Control</b><br><i>Löffler Charlotte</i> , Geertsma Rinze, Polinder Henk, Coraddu Andrea                         | Netherland |
| 11:40 |  | <b>Paper ID 81 - Design of a Test Bench for 1.5kV Solid State Circuit Breaker for Transport Electrification</b><br><i>Meraj Mohammad</i> , Weston Paul, Tricoli Pietro   | UK         |

**11:55** **Paper ID 98 - Load Profile Estimation for Electric Power Load Analysis** Italy  
*Silvestro Federico*, D'Agostino Fabio, Kaza Daniele, Gallo Marco,  
 Benevieri Fabio

**12:10** **Paper ID 146 - Refitting a cruise ship with more electric power & energy systems: a methodology to evaluate the impact on fuel efficiency** Italy  
*Vicenzutti Andrea*, Braidotti Luca, Utzeri Samuele, Bucci Vittorio,  
 Sulligoi Giorgio

### Room A

#### INFRASTRUCTURES FOR E - MOBILITY AND H- MOBILITY

**11:10** **Paper ID 88 - Multiobjective System Sizing for Heavy-Duty Electric Vehicle Charging Stations** Netherland  
*Shams Ashkezari Leila*, Ram Chandra Mouli Gautham,  
 Yorke-Smith Neil, Bauer Pavol

**11:25** **Paper ID 129 - Optimal Sizing of a Multi-Energy Port with Vehicles Charging Capabilities** Italy  
*Silvestro Federico*, Gallo Marco, Saviozzi Matteo, D'Agostino Fabio,  
 Kaza Daniele

**11:40** **Paper ID 127 - Mobile EV Charging: Design, Optimization and Evaluation of Battery-Integrated Robots to Improve Electric Mobility** Netherland  
*Sulecik Arda Fikret*, Agudin Alvaro Menendez, Bauer Pavol

**11:55** **Paper ID 157 - Exploring the Potential Demand Side Flexibility of a Microgrid: A Case Study at a Multi-Functional Building in Uppsala, Sweden** Sweden  
*Tibaldi Martina*, Wallberg Alexander, Martins Mattos Marina,  
 Waters Rafael, Castellucci Valeria

### Room B

**11:10** **V-ACCESS**  
 General Assembly Meeting





### Room C

#### Round Table - Towards a Full Batteries Supply Chain In Italy and EU


**11:10** **Introduction** Italy  
 Ciro Attaianese & Diego Iannuzzi

**11:20** **Maurizio Maggiore** USA  
 Formerly Policy Officer European Commission – Research and  
 Innovation Department (RTD)

**11:35** **Federico Vitali** Italy  
 FAAM – FIB SpA







|       |   |  |        |
|-------|---|--|--------|
| 11:50 |  | <b>Lorenzo Orsin</b><br>ALKEMIA SpA                                    | Italy  |
| 12:05 |  | <b>Matteo Cavalletti</b><br>MIDAC SpA                                  | Italy  |
| 12:20 |  | <b>Peter Qvarfordt</b><br>REGENERATE TECHNOLOGY                        | Sweden |
| 12:35 |  | <b>Discussion &amp; Conclusion</b><br>Ciro Attaianese & Diego Iannuzzi | Italy  |

**Outdoor  
EV Exhibitor**

11:10  **Audi E-tron Q4, Audi E-tron Q6, Nissan Arya**

13.00  **Lunch**

**Oral Session & EV exhibitor 29/11/2024**  
**Room Magna**  
**Special Session on Electrical Power Sources and Energy Storage**  
**Systems for Sustainable Transportation**

|       |   |  |        |
|-------|---|--|--------|
| 14:30 |    | <b>Paper ID 191 - Driving Conditions Leading to Thermal Runaway in Li-Ion Battery EV's</b><br><i>Azuaje-Berbeci Bernardo J., Ertan H. Bulent</i>   | Turkey |
| 14:45 |   | <b>Paper ID 178 - Battery Modeling for Road Vehicles Application: a Comparative Study</b><br>Campagna Nicola, Bossi Giuseppe, Fedele Emanuele, Miceli Rosario, Damiano Alfonso, Rizzo Renato   | Italy  |
| 15:00 |  | <b>Paper ID 86 - Kinetic Energy Recovery System for Electric Buses: A Method for Extending Mileage Range</b><br><i>Elgenedy Mohamed,</i> Singh Dharminder, Coman Chris   | UK     |
| 15:15 |  | <b>Paper ID 141 - Feature Identification and Extraction for Battery Aging Estimation in Aircraft Auxiliary Applications</b><br><i>Gauchia Lucia,</i> Shekhar Shivanshu, Amaris Hortensia, Sargadui Jon                                   | Spain  |
| 15:30 |  | <b>Paper ID 115 - Analytical Approach to Define the Stability Boundaries in Controlled DC Microgrids</b><br><i>Bosich Daniele,</i> Tavagnutti Andrea Alessia, Sulligoi Giorgio   | Italy  |
| 15:45 |  | <b>Paper ID 164 - Techno-Economic Investigation of Power Systems for a Decarbonized Naval Sector</b><br><i>Nevoloso Claudio,</i> Caruso Massimo, Schettino Giuseppe, Miceli Rosario, Passalacqua Matteo, Mantelli Luca, Traverso Alberto | Italy  |

## Room A

### INFRASTRUCTURES FOR E - MOBILITY AND H- MOBILITY

|       |   |         |
|-------|---|---------|
| 14:30 | <b>Paper ID 165 - Impact Assessment of Electric Vehicles Charging on the Loss of Life of Distribution Transformers</b><br><i>Bande Rasmane</i> , Toquica David, Kelouwani Souso, Agbossou Kodjo, Kloutse Follivi                              | Canada  |
| 14:45 | <b>Paper ID 131 - Energy management algorithm for an advanced EV fast-charging system with bipolar DC-link, energy storage and photovoltaics integration</b><br><i>Kopacz Rafal</i> , Kalinowski Krzysztof, Miskiewicz Rafal, Rabkowski Jacek | Poland  |
| 15:00 | <b>Paper ID 54 - Cost Analysis of Megawatt Charging and Overnight Charging for Battery Long-Haul Trucks</b><br><i>Otteny Felix</i> , Mauch Lars, Klausmann Florian, Dörr Julian, Litauer Rebecca Elena, Lanz Luca                             | Germany |
| 15:15 | <b>Paper ID 143 - Cross-compartment Virtio-loopback: a bare-metal virtualization solution for the edge</b><br><i>Panagopoulou Anna</i> , Rigo Alvise, Raho Daniel   | Greece  |
| 15:30 | <b>Paper ID 246 - Small vs large BEV and ICE vehicles: a few real life clarifications</b><br><i>M. Maggiore</i> , G. Pede   | Italy   |

## Room B

### AI AND SOFTWARE SYSTEMS FOR TRANSPORTATION ELECTRIFICATION

|       |  |       |
|-------|--|-------|
| 14:30 | <b>Paper ID 190 - AI-Enabled Security Framework for VANETS: Detecting Position Falsification Attacks</b><br><i>Bassiony Ibrahim</i> , Morsy Sherif, Salama Gouda   | Egypt |
| 14:45 | <b>Paper ID 236 - Sailing Towards Efficiency: A Variational Mode Decomposition Based Approach to Forecasting Shipboard Electrical Power Consumption</b><br><i>Di Piazza Maria Carmela</i> , Fazzini Paolo, La Tona Giuseppe, Diez Matteo | Italy |
| 15:00 | <b>Paper ID 114 - Fault Diagnosis of Aircraft Power Systems Based on Transients and Artificial Intelligence</b><br><i>Guzman Ian</i> , Babiceanu Radu  | USA   |
| 15:15 | <b>Paper ID 173 - Multi-objective Control of Urban Railway Speed with Deep Reinforcement Learning</b><br><i>Lyu Mingyu</i> , Geng Haoran, Pinon Pereira Dias Joao Victor, Miyatake Masafumi  | Japan |

**Outdoor  
EV Exhibitor**

14:30 Audi E-tron Q4, Audi E-tron Q6, Nissan Arya

**Room C  
Special Session on Electrical Power Sources and Energy Storage  
Systems for Sustainable Transportation**

14:30 **Paper ID 200 - Ethanol and Renewable Diesel as Agile Solutions in Emerging Countries to Achieve NET Zero ASAP** Brasil  
*Labigalini Marcio*, Barreto Gilmar

14:45 **Paper ID 210 - Integration of Free Piston Linear Generator and Battery Pack in Hybrid Vehicles** Italy  
*Mostacciolo Elisa*, Baccari Silvio, Beatrice Carlo, Capasso Clemente, Capuano Francesco, Continillo Gaetano, Iannelli Luigi, Liuzza Davide, Rubino Luigi, Saviano Raffaele, Vasca Francesco, Veneri Ottorino

15:00 **Paper ID 115 - Comparative study of passive and active reconfigurable equalizer for lithium-ion cells** Italy  
*Rubino Luigi*, Cuomo Giuseppe, Rubino Guido, Ferrarello Rosario, Simonelli Domenico

15:15 **Paper ID 62 - Energy Efficiency Analysis of BESS Installed in Polar Exploration Vessel** France  
Touat Amine

15:30 **Paper ID 238 - Reinforcement Learning Based Energy Management System to Maximize Efficiency for the Hybrid Marine Propulsion System** UK  
*Albakri Saeed*, Mehran Kamyar, Gadoue Shady

15:45 **Paper ID 219 - Plant simulation of a methanol fueled HT PEM Fuel Cell for Ship Propulsion** Italy  
*Scamardella Filippo*, Garibaldi Davide, Bianchi Fiammetta Rita, Altosole Marco, Balsamo Flavio, Bosio Barbara

16.00 Closing Session ESARS-ITEC 2024

16.20 End

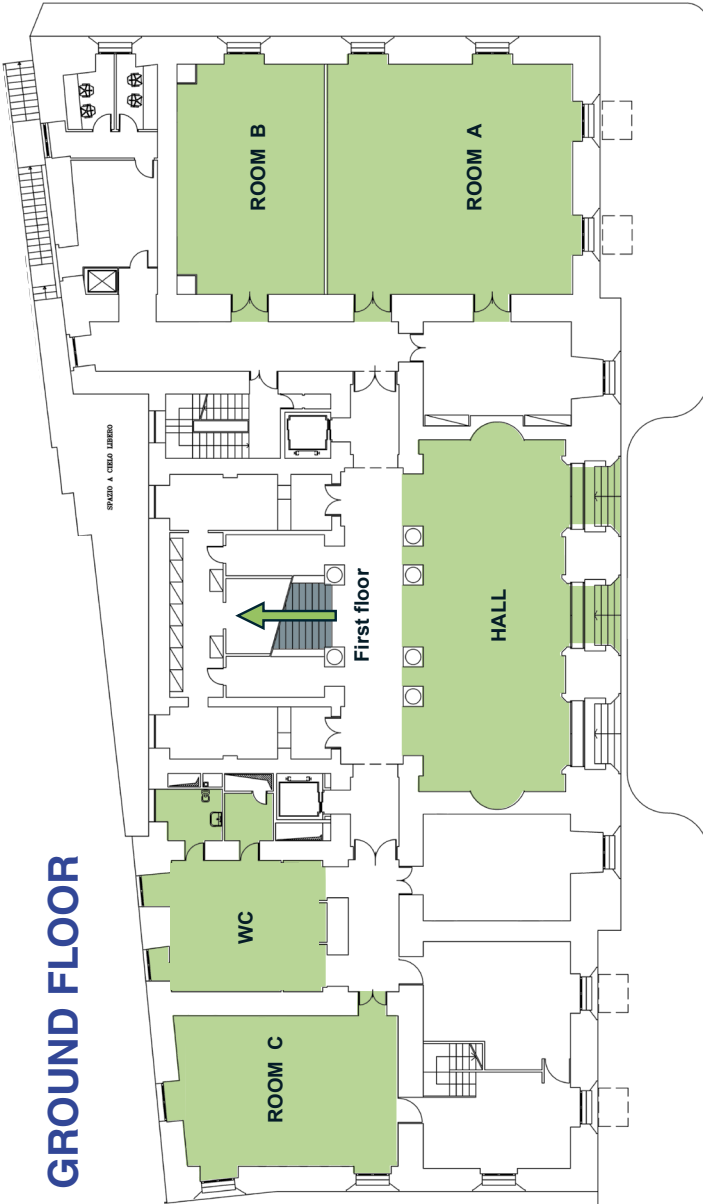


## Papers repository

The repository, accessible via the QR code provided below,  
contains all the papers accepted for the  
ESARS-ITEC 2024 Conference



# Congress Center Maps





**FIRST FLOOR**

## Welcome Party



The Welcome party will be hosted by the prestigious **Reale Yacht Club Canottieri Savoia**, founded in Naples in 1893 as **Circolo Canottieri Sebezia**. This is a historic sailing club located on Banchina Santa Lucia near the San Ferdinando district.

Since World War II, its crews have claimed numerous national, European, and world titles.

In 1949, the club's 8-meter "Miranda III" was selected to represent Italy in the Coupe de France, and in 1960, it served as the operational center for the Naples Olympic sailing events, where its Dragon-class "Venilia," helmed by Nino Cosentino, won bronze.

In recent years, the club's success has continued, with the maxi yacht IDEA winning the World Championship in Porto Cervo in 2003 and Viviana Bulgarelli taking silver in double sculls at the World Rowing Championships in Athens.

Today, the club draws members from the highest levels of politics, science, industry, and the arts.

Alongside its sporting achievements, it hosts prestigious social events, establishing itself as a cultural center in Naples.

In 1997, under the leadership of President Dalla Vecchia, the club reinstated the "Reale" title, which had been removed in 1946 after the Italian referendum.

## Gala Dinner

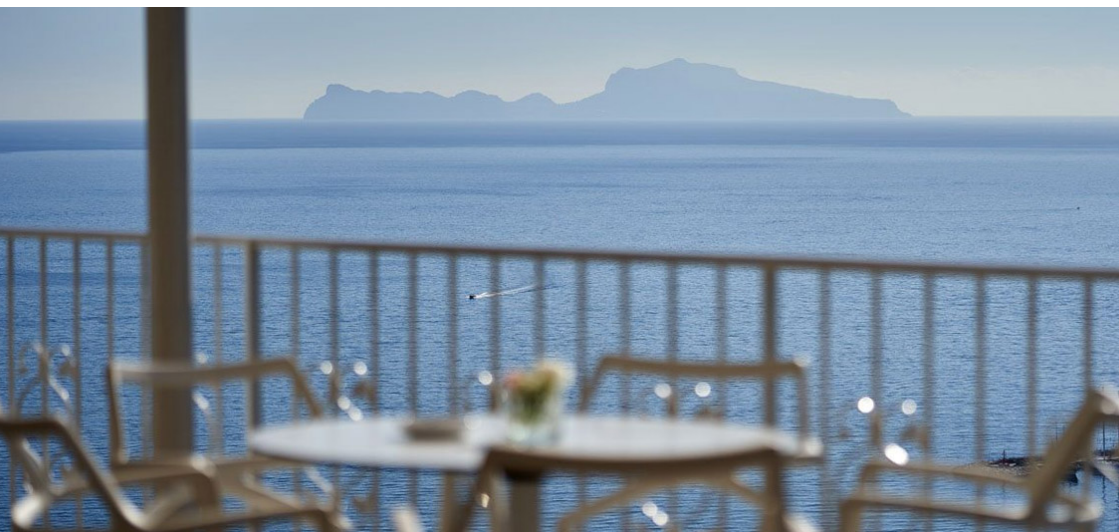
The Gala Dinner will be hosted by D'Angelo Restaurant, located in the heart of Vomero in Naples, was opened in the mid-1930s by Alfredo Attolini, the son of a chef, and his wife Nunzia D'Angelo, who came from a family of restaurateurs. In 1926, while strolling along Via Aniello Falcone, Don Alfredo noticed a semi-abandoned wooden hut surrounded by a garden, sparking the idea to open a small trattoria named "D'Angelo" in honor of his wife.



In the following years, especially after the Diana Theater opened in 1933, the restaurant became a meeting point for some of the era's most celebrated artists and figures, including Viviani, Murolo, Guglielmo Marconi, and the De Filippo brothers.

Today, D'Angelo Santa Caterina serves as a premier venue for weddings, private parties, and corporate events, continuing to showcase exceptional cuisine as its hallmark.

Each event is carried out with the same dedication and passion, honoring tradition while embracing innovation and continuous improvement.





## Conference Facilities

The event will be held in the Conference Center of the University of Napoli Federico II, located in the center of a large pedestrian seafront promenade, close to Castel dell'Ovo and a few minutes away from Piazza del Plebiscito.



*"Piazza del Plebiscito", one of the biggest squares in Napoli at a walking distance*



*"Castel dell'Ovo" is located just in front of the conference venue*



## Main rooms and break areas

Technical Sessions will be held at the Conference Center of the University of Napoli Federico II.





Audi

A&C Motors



## Concessionaria e Service Audi e Volkswagen a Napoli, Caserta, Nola, Torre Annunziata e Sorrento

### SEDE DI NAPOLI

IV Traversa Pisciarelli, 19 - 80078 Pozzuoli  
+39 081 19370988 [audinapoli@aecmotors.it](mailto:audinapoli@aecmotors.it)

### SEDE DI CASERTA

Via Regalone, snc - 81022 Casagiove  
+39 0823 167 0184 [audi.caserta@aecmotors.it](mailto:audi.caserta@aecmotors.it)

### SEDE DI NOLA

Strada statale 7 bis Km 50, 41 - 80035 Nola  
+39 081 19370797 [audinola@aecmotors.it](mailto:audinola@aecmotors.it)

### SEDE DI TORRE ANNUNZIATA

Via Piombiera, 74 - 80058 Torre Annunziata  
+39 081 5364092 [clienti@aecmotors.it](mailto:clienti@aecmotors.it)

### SHOWROOM DI SANT'AGNELLO

Corso Italia, 15 - 80065 Sant'Agnello  
+39 081 19370708 [sorrento@aecmotors.it](mailto:sorrento@aecmotors.it)



**NetCom Group S.p.A.** is an Italian company operating in **Automotive & Railway System**, in the **Information and Communication Technology** segment, providing advanced and innovative services in the engineering field.

The company has been active in the **national and international markets** since **2006** and is recognized among the European giants for the solidity and versatility of its offerings. The Group was formed as a natural evolution of various entrepreneurial experiences and boasts an efficient team of engineers who conceive brilliant and innovative ideas across different areas, ranging from automotive to telecommunications, transportation, and defense avionics systems.

NetCom Group is a leader in test automation, software validation, and is an expert in the design and realization of customized solutions tailored to the needs of its clients.



# Driving the Mobility Transition

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# Driving the Mobility Transition

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# ARIYA



Premium Crossover 100% electric

Wanderfull, inspired by Japanese tradition

## DESIGN

Sporty crossover coupé with floating roof  
Sophisticated, minimalist and avant-garde design with Japanese DNA.

## INTERIORS

Exterior dimensions of a C-segment vehicle and spacious and sophisticated interiors like D-segment models  
Spacious and relaxing interiors.

## TECHNOLOGY

Nissan Intelligent Mobility technologies, including Nissan ProPILOT Assist with Navi-Link and ProPILOT Park.

## PERFORMANCE

Thrilling driving experience that only an electric vehicle can offer.  
Powerful acceleration and quiet cabin: power ranging from 214 to 300 hp.  
Dual-motor and e-4ORCE all-wheel drive system, capable of providing balanced power, and thrilling performance in any situation.



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