



IEEE

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6^a edition of the International Conference on
**Electrical Systems for Aircraft,
Railway, Ship Propulsion and
Road Vehicles (Esars) and
International Transportation
Electrification Conference**

Venice, 28-31 March 2023



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March 28, 2023

- 17:30** | **Registration - Circolo Sottufficiali**
1h 30m | Calle Seconda de la Fava, 2179, 30122 Venezia VE
↓ 30m
- 19:30** | **Welcome Reception - Circolo Sottufficiali**
Calle Seconda de la Fava, 2179, 30122 Venezia VE

March 29, 2023

- 08:15** | **Registration**
45m | Palazzo San Martino
- 09:00** | **Welcome Cerimony**
45m | Biblioteca - Palazzo San Martino
- 09:45** | **Keynote - Prof. Anna G. Stefanopoulou**
45m | **“The Price of Battery Degradation and the Value of predicting Remaining Useful Life (RUL)”**
Biblioteca - Palazzo San Martino
- 10:30** | **Coffee Break - Circolo Ufficiali “Adriano Foscari”**
30m | Castello 2168 - 30122 VENEZIA

MORNING SESSION

BIBLIOTECA - Palazzo San Martino

■ 2023 GENERAL TRACK

CHAIR: Ottorino Veneri (CNR-STEMS - Institute of Sciences and Technologies for Sustainable Energy and Mobility, Italy)

11:00 | **DC Series Arc Fault Detection Using Fractal Theory**
15m | *Danny R. Seeley; Mark Sumner; David Thomas; Steve Greedy*

11:15 | **Unidirectional DC-DC Converters for Ultrafast Charging of Electrical Vehicles**
15m | *Oswaldo Lopez-Santos; David Alejandro Zambrano-Prada; Luis Martinez-Salamero; Abdelali El Aroudi; Luis Vazquez-Seisdedos*

11:30 | **GA-Based Features Selection for Electro-Chemical Impedance Spectroscopy on Lithium Iron Phosphate Batteries**
15m | *Carmine Bourelly; Michele Vitelli; Filippo Milano; Mario Molinara; Francesco Fontanella; Luigi Ferrigno*

11:45 | **Online Loss Reduction of Isolated Bidirectional DC-DC Quad-Active Bridge Converters**
15m | *Ahmed Ibrahim; Tommaso Caldognetto; Davide Biadene; Paolo Mattavelli*

12:00 | **Capacitor Voltage Balancing of Four-Level ANPC and π -Type Converters Based on Simplified Virtual-Vector PWM**
15m | *Muhammad Attique Qamar; Alber Filba-Martinez; Sergio Busquets-Monge; Kui Wang*

12:15 | **Finite Element Analysis of a Set of Four Electric Machines With the Same Stator Armature and Main Size of the Rotor Magnetic Core**
15m | *Virgiliu Fireteanu*

12:30 | **Modeling and Experimental Validation of Tram Power Consumption**
15m | *Nermin Čolo; Senad Huseinbegovic; Senad Smaka; Branislava Perunicic; Šemsudin Mašić*

12:45 | **Performance Analysis of a Cell Equalizer Based on a Multiple Active Bridge**
15m | *Emanuele Di Fazio; Francesco Porpora; Mauro Di Monaco; Giuseppe Tomasso*

13:00 | **Operating Areas Overview of Electrically Excited Synchronous Motors**
15m | *Charbel Zaghrini; Gabriel Khoury; Maurice Fadel; Ragi Ghosn; Flavia Khatounian*

AULA BERNOTTI - Palazzo San Martino

■ AIRCRAFT

CHAIR: Seang Yeoh (University of Nottingham, UK)

11:00 | **Fuel Cell/Battery Hybrid Electric System for UAV**
15m | *Jenica Ileana Corcau; Liviu Dinca*

11:15 | **Design Approach of an Integrated SiC-Inverter for an Electric Aircraft**
15m | *Dirk Fischer; Robert Rohn; Regine Mallwitz*

11:30 | **Simplified Modelling and Control of Dual Active Bridge Converter for Future Electrified Aerospace Application**
15m
Xingyu Yan; Yiren Zhu; Zhenyu Wang; Tao Yang; Serhiy Bozhko; Patrick Wheeler

11:45 | **Ground-Based Power Supply System to Operate Hybrid-Electric Aircraft for Future Regional Airports**
15m
Markus Meindl; Martin März; Kai Johannes Weber

12:00 | **Implementation of Alternative Aircraft Evaluation Techniques to Assess Electrical Aircraft Performance**
15m
Roland Furmanek; Roman Skrasek; Bartosz Filochowski; Sébastien Gonczaronek

12:15 | **Optimal Design of a Three-Phase 540V/70kVA SiC Inverter for Aircraft Applications**
15m
Tran Duc Hoan; Bernardo Cougo; Gilles Segond; Hans Hoffmann Sathler

AULA BERNOTTI - Palazzo San Martino

WORKSHOP

CHAIR: Vittorio Bucci (University of Trieste, Italy)

12:30 | **Water E-Mobility**

30m

EX SALA TV - Circolo Ufficiali

- **SPECIAL SESSION Battery Management Using Estimated State of Health, State of Power, And State of Safety and ETUT Project**

CHAIR: Diego Iannuzzi (University of Naples Federico II, Italy)

11:00 | **Dynamic Behavior of an Aged Lithium Phosphate-Iron Battery**
15m
Diego Iannuzzi; Babak Fahimi; Ciro Napolitano

11:15 | **Parameters Identification for Open Circuit Voltage Characteristic in Battery Models**
15m
Elisa Mostacciuolo; Luigi Iannelli; Domenico Natella; Silvio Baccari; Francesco Vasca

11:30 | **Enhanced Online Identification of Battery Models Exploiting Data Richness**
15m
Chengxi Cai; Daniel J. Auger; Suresh Perinpanayagam

11:45 | **A Novel Root-Finding Algorithm to Solve the Pseudo-2D Model of a Lithium-Ion Battery**
15m
Don Toshan Gayan De Silva Wickramanayake; Mehrnaz Javadipour; Kamyar Mehran

12:00 | **Capacity Fade Estimation of LiFePo Cells Based on Improved Impulse Response Method: Experimental results**
15m
Pagliarini; Pasquale Cennamo; Filippo Orsini; Luigi Petrazzuoli; Marcello Spinelli; Paola Satariano

12:15 | **Cycle Aging Effect on the Open Circuit Voltage of Lithium-Ion Battery**

15m

Simone Barcellona; Lorenzo Codecasa; Silvia Colnago; Luigi Piegari

12:30 | **Enhanced Control of PV CHB Inverter with Embedded BESS**

15m

Monica De Riso; Pierluigi Guerriero; Marino Coppola; Santolo Daliento; Andrea Del Pizzo

12:45 | **An Integrated Approach to Lithium-Ion Battery Cell Management Through Accurate Voltage Measurement and Cell Balancing**

15m

Regis Nibaruta; Prasanth Venugopal; Gert Rietveld; Volodymyr Havryliuk; Thiago Batista Soeiro

13:00 | **A Hardware-Based Bidirectional Power Flow Decoupling Approach for Multi-Active-Bridge Converters**

15m

Peyman Koohi; Alan J. Watson; Thiago Batista Soeiro; Jon Clare; Marco Rivera; Prasanth Venugopal; Patrick Wheeler

13:15 | **ETUT Project Meeting**

30m

13:00 | **LUNCH - Circolo Ufficiali "Adriano Foscari"**

1h 30m

Castello 2168 - 30122 VENEZIA

AFTERNOON SESSION

AULA 1 - Palazzo San Martino

■ 2023 GENERAL TRACK

CHAIRS: Rosario Miceli (University of Palermo, Italy)

14:30 | **Upgrading a DC Source to a PHIL Amplifier**
15m | *Lucas Rotava; Selimcan Deda; Oliver König; Gernot Pammer*

14:45 | **Advantages of a Variable Board Supply Voltage in All-Electric Aircraft with Regard to Cosmic Radiation Induced Failures**
15m | *Leon Fauth; Janine Ebersberger; Yongtao Cao; Jens Friebe*

15:00 | **Smart Integration and Energy Optimization of EVs Charging Systems in a Nanogrid**
15m | *Stefano Leonori; Cristina Moscatiello; Maria Carmen Falvo; Fabio Massimo Frattale Mascioli*

15:15 | **Evaluation of the Effects of Propeller Imbalance on PM Motors for Aircraft Electric Propulsion**
15m | *Gianluca Brando; Adolfo Dannier; Andrea Del Pizzo; Luigi Pio Di Noia*

15:30 | **Virtio-FPGA: A Virtualization Solution for SoC-Attached FPGAs**
15m | *Anna Panagopoulou; Michele Paolino; Daniel Raho*

↓ 15m

16:00 | **Coffee Break - Circolo Ufficiali "Adriano Foscari"**
30m

AULA 1 - Palazzo San Martino

■ WORKSHOP

CHAIR: John Prousalidis (NTUA Athens, Greece)

16:30 | **Port Electrification**

1h

AULA 2 - Palazzo San Martino

■ AIRCRAFT

CHAIR: Daniele Bosich (University of Trieste, Italy)

14:30 | **Power Distribution and Propulsion System
for an All-Electric Regional Aircraft**

15m

*Janine Ebersberger; Ralf Johannes Keuter; Bernd
Ponick; Axel Mertens*

14:45 | **Driving Power Supply for Ultrasound
Piezoelectric Transducers**

15m

*Modar Jomaa; François Costa; Dejan Vasic;
Pierre-Etienne Lévy; Marwan Ali*

15:00 | **Hydrogen-Fuelled Fixed-Wing RPAS. an
Approach to Design and Size the Electrical
Propulsion System**

15m

*Cirilo Delgado Asencio; José Manuel Andújar Márquez;
Francisca Segura Manzano; Juan Mora Macías*

15:15 | **Development of Quadrotor Hovering System
With Permanent Magnet Synchronous Motors**

15m

*Joon Sung Park; Hyoung-Kyu Yang; Pooreum
Jang; Yong-Su Noh; Byong Jo Hyon*

15:30 | **An Advanced Power Generation Architecture for More-Electric Aircraft Applications**
15m
Ge Bai; Tao Yang; Seang Shen Yeoh; Xiaoyu Lang; Serhiy Bozhko; Patrick Wheeler

15:45 | **Optimised Architecture Design for an MEAPower Distribution System Considering Load Profile and Fault-Tolerance**
15m
Xin Wang; Jason Atkin; Seang Shen Yeoh; Serhiy Bozhko

16:00 | **Coffee Break - Circolo Ufficiali “Adriano Foscari”**
30m

AULA 2 - Palazzo San Martino

AIRCRAFT

CHAIR: Rosa Mastromauro (University of Firenze, Italy)

16:30 | **Design and Efficiency Measurement of a Sub-Unit for a 20kW DC-DC Multiphase Power Converter**
15m
Bastien Pasquet; Sébastien Vinnac; Jean-Marc Blaquièrè; Thierry Meynard; Sébastien Sanchez

16:45 | **Overview on the Effects of Mission Profiles on Radiation Induced Failures in All-Electric Aircraft**
15m
Leon Fauth; Jens Friebe

17:00 | **Investigation of Electric Motors for All-Electric Aircraft with Different Material Combinations From an Environmental Perspective**
15m
Ralf Johannes Keuter

MARCH 29, 2023

17:15 | **Brazilian Engineering Research Center for the Aerial Mobility of the Future**
15m
Domingos Alves Rade; Luciano J. Pedrote dos Santos; José A. Pomilio; Roberto G. Annes da Silva; Carlos H. C. Ribeiro; Alfredo R. de Faria; Emilia Villani

17:30 | **Inverter Emulator as Multi-Purpose Test System for Aerospace Electric Power Systems**
15m
Selimcan Deda; Oliver König; Gernot Pammer; Thomas Haidinger

17:45 | **Design and Verification of Aircraft Electrical Power System**
15m
Huseyin Sagirkaya

EX SALA TV - Circolo Ufficiali

■ SPECIAL SESSION Design and Management of Battery Packs for Electric and Hybrid Vehicles Applications
CHAIRS: *Clemente Capasso (CNR-STEMS - Institute of Sciences and Technologies for Sustainable Energy and Mobility, Italy); Ottorino Veneri (CNR-STEMS - Institute of Sciences and Technologies for Sustainable Energy and Mobility, Italy); Diego Iannuzzi (University of Naples Federico II, Italy)*

14:30 | **Low Complexity and High Safety Architecture of Automotive Li-Ion Battery Management Systems in Compliance with the ISO 26262 Standard**
15m
Apostolos Delizonas; Christos Mademlis; Evangelos Tsioumas; Dimitrios Papagiannis; Nikolaos Jabbour; Tilemaxos Matiakis

- 14:45** | **A Novel Bidirectional CLC-T Resonant Immittance Converter for CC/CV Battery Charging**
15m
Merlin Mary N. J.; Shelas Sathyan
- 15:00** | **Energy Storage System Hybridization Algorithm for Mobility Applications Based on Future Battery and Fuel Cell Technologies**
15m
Bruno Lemoine; Priscilla Caliandro; Thomas Wannemacher; Nils Baumann
- 15:15** | **Opportunity Charging for Public Transportation Opportunities and Challenges**
15m
Nicola Campagna, Massimo Caruso, Vincenzo Castiglia, Rosario Miceli, Filippo Pellitteri
- 15:30** | **Battery Thermal Management Systems: a Case Study on Li-NMC Storage Systems for Electric Vehicles**
15m
Clemente Capasso; Luigi Iannucci; Stanislao Patalano; Ottorino Veneri; Ferdinando Vitolo
- 15:45** | **A Thermal Investigation on a Commercial Stack of Prismatic Lithium-Ion Batteries**
15m
Nicolò Zatta; Giovanni Bonanno; Andrea Trovò; Simone Visonà; Giovanni Cristofoli; Lorenzo Mozzato; Paolo Mattavelli; Massimo Guarnieri
- 16:00** | **Coffee Break - Circolo Ufficiali “Adriano Foscari”**
30m

MARCH 30, 2023

EX SALA TV - Circolo Ufficiali

■ ROUND TABLE

*CHAIRS: Stephan Bihn (RWTH Aachen, Germany);
Diego Iannuzzi (University of Naples Federico II, Italy)*

16:30 | **Battery Lifetime - Oversizing
vs. Enhanced diagnostics**

1h

March 30, 2023

08:15 | **Registration**

45m

Biblioteca - Palazzo San Martino

09:00 | **KEYNOTE- Prof. Babak Fahimi**

45m

**“Optimal electric propulsion for land and air
vehicles”**

Biblioteca - Palazzo San Martino

MORNING SESSION

BIBLIOTECA - Palazzo San Martino

■ ROAD

CHAIR: Giuseppe Tomasso (University of Cassino, Italy)

09:45 | **Intelligent Driver Monitoring System for Safe Driving**

15m

Adarsh Vijay

10:00 | **Multiport DC-DC Converter for Integrating**

15m

Energy Systems in All-Electric Vehicles

*Immanuel N. Jiya; Pasan Gunawardena; Khang
Huynh; Nand Kishor; Yunwei Li*

- 10:15** | **Development of Electric Drive System for Two In-Wheel Motors**
15m
Hyoung-Kyu Yang; Dae Yeon Hwang; Sang Min Park; Joon Sung Park; Dongmyoung Joo
- 10:30** | **Integrated Braking and Traction Torque Vectoring Control Based on Vehicle Yaw Rate for Stability Improvement of All-Wheel-Drive Electric Vehicles**
15m
Mahmoud Said Jneid; Peter Harth
- 10:45** | **Benefits of Selecting PMASR Machines as Traction Motors in Battery Electric Forklift Trucks**
15m
Matteo Olivo; Alberto Tessarolo; Luca De Carli; Riccardo Pozzo
- 11:00** | **Coffee Break - Circolo Ufficiali “Adriano Foscari”**
30m
- 11:30** | **Drive Cycle Evaluation and Consumption of PM Motors for a Typical Battery Electric City Bus**
15m
Emma Grunditz; Mikael Alatalo
- 11:45** | **Multi-Battery Swapping Station Modelling for EVs with Strategic Discounting and Solar Energy**
15m
Manish Sharma; Deep Kiran
- 12:00** | **Normalised Flux Weakening Control Technique Acting on the Actual Speed for Automotive Dual Three-Phase IPMSMs**
15m
Adriano Navarro; Edorta Ibarra; Iñigo Kortabarria; Andrés Sierra-González; Ibon Elosegui

MARCH 30, 2023

12:15 | **A Traffic Flow Modeling Approach
Based on Car-Following Models**
15m
Roa Sabah Naser; Saad Talib Hasson

12:30 | **Operating Areas Overview of Electrically
Excited Synchronous Motors**
15m
*Charbel Zaghrini; Gabriel Houry; Maurice Fadel;
Ragi Ghosn; Flavia Khatounian*

AULA BERNOTTI - PALAZZO SAN MARTINO

■ V-ACCESS

09:45 | **EU Project V-Access KO Meeting
Vessel Advanced Clustered and Coordinated
Energy Storage Systems**
1h 15m
ACCESS ONLY TO PARTNERS

11:00 | **Coffee Break - Circolo Ufficiali “Adriano Foscari”**
30m

11:30 | **EU Project V-Access KO Meeting
Vessel Advanced Clustered and Coordinated
Energy Storage Systems**
1h 30m
ACCESS ONLY TO PARTNERS

EX SALA TV - Circolo Ufficiali

■ RAILWAYS

*CHAIRS: Hamed Jafari (Politecnico di Milano, Italy); Didier
Frugier (Rolling-stock Engineering French Railways, France)*

09:45 | **Propulsion System Based on the NPC
Multi-Source Inverter for Battery Hybrid Trams:
Experimental Validation**
15m
Emanuele Fedele; Diego Iannuzzi; Ivan Spina

10:00

15m

Modelling and Determination of Short Circuit Traction Line Parameters for the Italian 3 kV DC Railway System

Antonio Di Pasquale; Mario Pagano; Fabio Villone; Antonio Martinelli; Luigi Rufolo; Maurizio Santamaria; Francesco Vaccaro

10:15

15m

A Comprehensive Study of a Railway Power Conditioner for 25 kV Substations with Scott and V/V Transformer

Paul Sacco; Philippe Ladoux; Sébastien Sanchez; Mahmoud Hassan

10:30

15m

New Model-Based Algorithm for Fault Detection and Identification in DC Railway Systems

Damiano Lanzarotto; Francois Wallart; Paul Verrax; Alberto Bertinato; Loic Leclere; Gal Blaszczyk

↓ 15m

11:00

30m

Coffee Break - Circolo Ufficiali “Adriano Foscari”

EX SALA TV - Circolo Ufficiali

■ SPECIAL SESSION Innovative Solutions to Increase Energy Efficiency in Railways

CHAIRS: Philippe Ladoux (University of Toulouse, France); André-Philippe Chamaret (Rolling-stock Engineering French Railways, France)

11:30

15m

Battery Trains Operation From the Infrastructure Manager Perspective

Benoit Sonier; Bogdan Vulturescu; Ignacio Riezu; Dimitri Mantel; Thomas Bausseron

11:45 | **Opportunity Charging of Electric Buses Directly From a DC Metro Catenary and Without Storage**
15m
Ibrahim Diab; Gautham Ram Chandra Mouli; Pavol Bauer

12:00 | **A Statistical Approach for the Optimal Sizing of Partial Electrification for Battery Trains**
15m
Maxime Juston; Bogdan Vulturescu; André-Philippe Chamaret

12:15 | **Comparison of Two Cascaded Converter Topologies for Voltage Balancing in AC Railway Substations**
15m
Didier Flumian; Philippe Ladoux; Joseph Fabre

13:00 | **LUNCH - Circolo Sottoufficiali**
1h 30m
Calle Seconda de la Fava, 2179, 30122 Venezia VE

AFTERNOON SESSION

BIBLIOTECA - Palazzo San Martino

ROAD

CHAIR: Fei Gao (University of Technology of Belfort-Montbéliard (UTBM), France)

14:30 | **Comparison of V-Shaped IPM Machines Winding Topologies for Heavy-Duty EV Applications**
15m
Leia George; Fengyu Zhang; Gaurang Vakil; Chris Gerada

14:45

15m

A Neural Embedding-Based Recommender System to Get the Most Out of EV Recharge Times

Luigi Libero Lucio Starace; Luca Bianco; Sergio Di Martino

15:00

15m

Modernized or Traditional Jeepney: A Comparative Study for Future-Proofing Philippines' Jeepney Transport System

Keanu Oryck B. Escobar; John Paolo B. Esmele; Jhon Theo G. Laurian; Jocelyn Buluran

15:15

15m

Future Workplace EV Charging Architectures: DC and AC Charging Choices

Mohamed Yasko; Attila Balint; Silvia Colnago; Johan Driesen; Wilmar Martinez

15:30

15m

Assessing E-Vehicle Utilization in Supply Chains

Jyri Vilko; Dong Liu; Lassi Aarniovuori

↓ 15m

16:00

30m

Coffee Break - Circolo Ufficiali "Adriano Foscari"

AULA BERNOTTI - Palazzo San Martino

WORKSHOP

14:30

1h 30m

V-Access Vessel Advanced Clustered and Coordinated Energy Storage Systems

16:00

30m

Coffee Break - Circolo Ufficiali "Adriano Foscari"

AULA BERNOTTI - Palazzo San Martino

■ CROSS-BOARD TOPICS

CHAIR: Babak Fahimi (University of Texas Dallas, USA)

16:30 | **Using the Thermal Inertia of Trains for Contributing to Primary Frequency Control in Grids with Photovoltaic Generation**
15m | *Jesús H Araúz; Sergio Martinez*

16:45 | **Control and Coordination of Ultra-Capacitor and SMES Systems for Transient Power Provision in Electric Vessels**
15m | *Faysal Hardan, Pietro Tricoli*

17:00 | **Optimising the Energy System for Electrified Airport Operations Using Digital Twin**
15m | *Stefano Ferrari; Mika Grundström; Tommi Laitinen*

17:15 | **High Frequency Interactions Among Power Converters in Built-In Dc Networks**
15m | *José A. Pomilio; André F. Hernandez; Debora P. Damasceno; Mateus P. Dias; Joao Inacio Yutaka Ota; Gustavo Ortenzi; Rafael K. Carneiro*

17:30 | **Analytical Model for Device Currents in 5-Level Active Neutral Point Clamped Converter**
15m | *Daniel Zakzewski; Rakesh Resalayyan; Apurv Yadav; Alireza Khaligh*

17:45

15m

Low-Temperature PEM Fuel Cell Voltage Prediction Linked to Operating Conditions for a Mission Profile
Mélanie Grignon; Amine Jaafar; Christophe Turpin; André Rakotondrainibe; Benoit Guenot; Emilie Soyez

18:00

15m

Technico Economic Analysis of EV Charging Station in Smart Grid
Mariacristina Roscia; Alexandra Catalina Lazaroiu; Mihai Popescu; Luiza Brindusa Popa; Claudia Laurenta Popescu; Monica Alexandru

EX SALA TV - Circolo Ufficiali

■ **SPECIAL SESSION Innovative Solutions to Increase Energy Efficiency in Railways**
CHAIRS: Bogdan Vulturescu (Technologies and Innovation Department - French Railways, France); Hervé Caron (Fixed Installation of Electric Traction Department - French Railways, France)

14:30

15m

Investigation and Optimisation of Urban Rail Transit Lifecycle Energy Saving in Coordinating Section Running Time and Slope
Haoran Geng; Masafumi Miyatake

14:45

15m

Diagnosis of Energy Consumption During Parking of Different Rail Vehicles and Evaluation of Energy Savings Solutions
André-Philippe Chamaret; Didier Frugier; Patrick Henry; Jérôme Deon; Luis Maria Alonso

15:00

15m

Smart Hybrid Electric Railway Grids: A Comparative Study of Architectures
Hamed Jafari Kaleybar; Morris Brenna; Francesco Castelli-Dezza; Maria Stefania Carmeli

15:15 | **Sizing the Energy Source and Battery for Electrical Driven Railway Vehicles for Non-Electrified Lines**
15m | *Shunsuke Jindo; Kana Matsunaga; Keiichiro Kondo*

15:30 | **Two-Phase Interleaved DC-DC Converter with 3.3 kV SiC MOSFET Modules**
15m | *Radek Sobieski; Rafał Miśkiewicz; Jacek Rabkowski; Rafał Kopacz*

16:00 | **Coffee Break - Circolo Ufficiali “Adriano Foscari”**
30m

EX SALA TV - Circolo Ufficiali

■ **WORKSHOP**

CHAIR: Philippe Ladoux (University of Toulouse, France)

16:30 | **Railway Efficiency**

1h

↓ 2h

19:30 | **GALA DINNER - Circolo Ufficiali “Adriano Foscari”**
3h 30m | **Castello 2168 - 30122 VENEZIA**

March 31, 2023

09:00 | **KEYNOTE - Ing. Pierluigi Punter**
“Future of Power Generation on board of cruise vessel”
Biblioteca - Palazzo San Martino

MORNING SESSION

BIBLIOTECA - Palazzo San Martino

SHIP

CHAIR: Andrea Vicenzutti (University of Trieste, Italy)

- 09:45** | **Average Modeling of DC-DC Converters for DC Shipboard Microgrids with Constant Power Loads**
15m
Fabio D'Agostino; Federico Silvestro; Fabrizio Sivori; Antonio Fidigatti; Enrico Ragaini
- 10:00** | **Resonant Controllers to Achieve Torsional Stability: A Ship Case Study**
15m
Lorenzo Bongini; Rosa Anna Mastromauro
- 10:15** | **A Case Study on High-Temperature Fuel Cells for Hybrid Electric Ship Propulsion**
15m
Flavio Balsamo; Clemente Capasso; Tommaso Coppola; Luca Micoli; Roberta Russo; Ottorino Veneri
- 10:30** | **Scaling of Hybrid Propulsion in Respect of Power, Energy and Redundancy**
15m
Jens Biebach; Michael Lorenz; Alfons Doerr; Alexander Oswald
- 10:45** | **Reliability Modelling of Marine Hybrid Power and Propulsion System Considering Operation Profile**
15m
Ziwen Wang; Siamak Karimi; Mehdi Zadeh; Markus Heimdal

11:00 | **Coffee Break - Circolo Ufficiali “Adriano Foscari”**

30m

11:30 | **Study and Validation of a Contra-Rotating Dual Rotor Switched Reluctance Machine in Marine Propulsion**

15m

Ruben De Croo; Thomas Van Lierde; Frederik De Belie

11:45 | **A Reduced Order Model for the Stable LC-Filter Design on Shipboard DC Microgrids**

15m

Andrea Alessia Tavagnutti; Daniele Bosich; Stefano Pastore; Giorgio Sulligoi

12:00 | **Water Transport Decarbonization: Preliminary Case Study in Venice**

15m

Alessandro Saldarini; Cristian Giovanni Colombo; Michela Longo; Morris Brenna; Seyedmahdi Miraftebzadeh; Wahiba Yaici

12:15 | **Impact of Fuel Switch to Methanol on the Design of an All Electric Cruise Ship**

15m

Serena Bertagna; Vittorio Bucci; Alberto Marinò; Giorgio Sulligoi; Andrea Vicenzutti

12:30 | **Review on EMC Standards (9-500 kHz) for DC Microgrids to Support Arc Fault Detection & Power Line Communication and Its Potential Application in Hybrid Ships**

15m

Da Wang; Dominique Weyen; Paul Van Tichelen

12:45

15m

Minimization of Dc-Link Capacitance in Voltage Source Rectifiers Through Nonlinear Controls Based on Lyapunov's Direct Method
Mark Vygoder; Robert M. Cuzner; Brian S.R. Armstrong

AULA BERNOTTI - Palazzo San Martino

■ **SPECIAL SESSION Sustainable Maritime**
CHAIRS: *John Prousalidis (NTUA Athens, Greece); Fabio d'Agostino (University of Genova, Italy); Daniele Bosich (University of Trieste, Italy)*

09:45

15m

Holistic Design of a Twin-Hull Short-Sea Shipping Vessel with Hybrid-Electric Propulsion
Panagiotis Margaronis; Aphrodite Kanellopoulou; Nicholas Sillionis; Dimitrios Liarokapis; Elias Sofras; John Prousalidis

10:00

15m

A Security-Constrained Optimal Power Management Algorithm for Shipboard Microgrids with Battery Energy Storage System
Fabio D'Agostino; Marco Gallo; Matteo Saviozzi; Federico Silvestro

10:15

15m

Integrated Energy Systems for Green Ports; A Cost Model and Case Study
Ritvana Rrukaj; Mehdi Zadeh

10:30

15m

The SSE-ID Card of Ships in the Sustainable Maritime Framework
John Prousalidis; Fabio D'Agostino; Anastasios Manos; Daniele Bosich

10:45 | **The Maritime Sector in the Electric Energy Markets**
15m
Anastasios Manos; Dimitrios Lyridis; John Prousalidis

11:00 | **Coffee Break - Circolo Ufficiali “Adriano Foscari”**
30m

11:30 | **Progress in Marine Hybrid Propulsion Drive Systems**
15m
Marco Altosole; Flavio Balsamo; Andrea Bove; Ugo Campora; Nunziante Ianniello; Luigi Vitiello

11:45 | **Changes in Weight and Stability on Ships After Conversion From Diesel to Hybrid-Electric**
15m
Germano Degan

12:00 | **A Hybrid-Electric Passenger Vessel for Inland Waterway**
15m
Donato Padolecchia; Samuele Utzeri; Luca Braidotti; Alberto Marinò

AULA BERNOTTI - Palazzo San Martino

WORKSHOP

CHAIR: Giorgio Sulligoi (University of Trieste, Italy)

12:00 | **Electrification in underwater domain**
1h

EX SALA TV - Circolo Ufficiali

■ **SPECIAL SESSION** Wound Field and PM-free Synchronous Machines: Innovative Design, Control and Diagnostic Solutions for Transportation Applications
CHAIRS: Silvio Vaschetto (Politecnico di Torino, Italy); Federica Graffeo (Politecnico di Torino, Italy)

09:45

15m

Review and Future Developments of Wound Field Synchronous Motors in Automotive
Gaia Petrelli; Stefano Nuzzo; Tianjie Zou; Davide Barater; Giovanni Franceschini; Chris Gerada

10:00

15m

Optimal Shaping for Electrically Excited Synchronous Motor
Luca Cinti; Nicola Bianchi

10:15

15m

PM-Free Electric Motor Powertrains in Road and Rail Transport: An Overview
Fabrizio Marignetti; Ion Boldea; Luigi Fratelli; Giuseppe Graber; Mario Porzio

10:30

15m

Design of Electric Spindle Control System for High-Grade CNC Machine Tools
Jinhua Liang; Haiping Xu; Wei Liu

↓ 15m

11:00

30m

Coffee Break - Circolo Ufficiali “Adriano Foscari”

11:30

15m

No-Load Characteristic Computation for Wound Field Synchronous Propulsion Motors
Federica Graffeo; Silvio Vaschetto; Alberto Tenconi; Andrea Cavagnino

13:00

30m

CLOSING SESSION

Circolo Ufficiali “Adriano Foscari”

Castello 2168 - 30122 VENEZIA

13:30

1h 30m

LUNCH - Circolo Ufficiali “Adriano Foscari”

Castello 2168 - 30122 VENEZIA

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