EMERGE 2023

The Summer School on

ELECTRICAL MACHINES AND DRIVES FOR GREEN TRANSPORTATION SYSTEMS

11-15 September 2023

MODENA, ITALY

emergephd.unimore.it

TECHNICAL ENDORSEMENT

UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

MOTORVEHICLE UNIVERSITY OF EMILIA-ROMAGNA

RETE ALTA TECNOLOGIA EMILIA-ROMAGNA HIGH TECHNOLOGY NETWORK
TECNOPOLO MODENA

MOST
CENTRO NAZIONALE PER LA MOBILITÀ SOSTENIBILE

SPONSORS

DEMOCENTER

Ansys

ICS

Particleworks EUROPE

Electrical Machines and Drives for Green Transportation Systems - EMERGE 2023

The Summer School on '**Electrical Machines and Drives for Green Transportation Systems**' is organized by the **University of Modena and Reggio Emilia** in cooperation with **MUNER - The Motorvehicle University of Emilia-Romagna**, the **Electrical Machine Technical Committee of the IEEE IES** and **DORNA project** with support of **Tecnopolo di Modena**, **Democenter Foundation**, **MOST**, **Ansys** and **Particleworks.**

It's a unique event in Europe for **young researchers and PhD students** to exchange experience and technical information about their projects and meet representatives from top industries in the transportation field. **Engineers from Industry** are also welcomed, it is an opportunity for them **to stay updated with the latest research in electric transportation** thanks to the flexible formula of single day registrations.

The Summer School starts with **two Industry Day covering keynote presentations from industry experts** as well as a dialogue session for detailed face-to-face discussions. **The rest of the week is dedicated to high-level lectures from several experts from academia but also from industry**, related to the following thematic technical areas:

Electrical Machines Design and Modeling

Electrical Drives and their Control

Electrical Drives Reliability and Monitoring

Industrial and Transport Applications of Machines and Drives

Sessions related to the development of **soft skills**, **techniques and methodologies for successful research**, **fundraising, effective leadership and entrepreneurship will also be covered**.

11th -15th September 2023
h 9.00 - 18.00
Department of Engineering Enzo Ferrari - Via P. Vivarelli 10, 41125 Modena (Italy)
All speeches and lessons will be in English.

Read more: https://www.emergephd.unimore.it/

OBJECTIVES

- Foster closer interaction between academia and industry and provide young engineers with a platform to collaborate on sustainable solutions, facilitate networking, and discuss innovative developments.
- Engage young engineers and researchers in a positive, reciprocal relationship with academia and industry, and actively contribute and share perspectives to help advance the electrification in the transportation sector.
- To attend lectures on the latest development end research in the green transportation sector.
- To develop soft skills, techniques and methodologies for successful research, fund rising, to be the leader of tomorrow and drive the electrical revolution in transportation.

SCIENTIFIC COMMITTEE

- Prof. ***Davide Barater*****,** UniMORE, IEEE-IES EMTC Secretary (Summer school Chair)
- Prof. **Giovanni Franceschini,** UniMORE
- Prof. **Emilio Lorenzani**, UniMORE
- Prof. ***Jose Antonino-Daviu*****,** Universitat Politècnica de València, IEEE-IES EMTC chair
- Dr. ***Shafigh Nategh*****, Polestar,** IEEE-IES EMTC Vice-chair
- Prof. ***Fabio Immovilli*****,** UniMORE
- Prof. ***Stefano Nuzzo*****,** UniMORE
- Prof. ***David Gerada*****,** The University of Nottingham, Project DORNA coordinator
- Prof. ***Giampaolo Buticchi*****,** The University of Nottingham Ningbo China

PROGRAM

DAY 1 - *MONDAY, 11TH SEPTEMBER*

- **Opening ceremony - Welcome address.**
  UniMore Rector, MUNER president, IES rappresentative, IES EMTC, Giovanni Franceschini & Davide Barater – Unimore.
- **The challenge of electrification in high performance cars –** *Keynote.*
  Ernesto Lasalandra, Chief R&D Officer Ferrari, Italy.
- **Current Status and Trends in Electrical Machines used in Transportation Application –** *Keynote.*
  Shafigh Nategh, PhD, Senior Principal Engineer and also Manager of Electric Drive Unit CAE and Electromagnetic Design with Polestar, Göteborg, Sweden.
- **Electric powertrains for offroad e-Mobility –** *Keynote.*
  Dmitry Svechkarenko, R&D Team Manager at ABB Corporate Research, Sweden.
- **PhD poster session.**
- ***Live-Demo* - Particle simulation for oil-cooled e-motors: fluid and solid temperature prediction using Particleworks.**
  Michele Merelli is Business Development Specialist and CAE Engineer at Particleworks Europe and Enginsoft, Italy.

DAY 2 - *TUESDAY, 12TH SEPTEMBER*

- **Electrification in commercial vehicles –** *Keynote.*
  Shaohong Zhu, Electric Machine Engineer at Cummins, The United Kingdom.
- **The frontier of electrification in agriculture and off-highway vehicles –** *Keynote.*
  Arshan Khan, Global Director, Power Electronics & Electric Machines, CNH Industrial, The United States.
- **Modern technics and methodologies for Testing Power Electronics Equipment –** *Keynote.*
  Marcin Szlosek, R&D Department Manager ABB PL, Poland.
- **Electric Propulsion and e-Machine technologies -** *Technical lecture.*
  David Gerada, The University of Nottingham, UK.
- ***Live-Demo* – Design and Optimization of Power Electronics with Ansys.**
  Antonio Camarda - Senior Application Engineer, Ansys.

DAY 3 - WEDNESDAY, *13TH SEPTEMBER*

- **From idea to commercialisation -** *Soft skill lecture.*
  Christian Kumar, director of Maverx Academy, Maverx Foundation, Italy.
- **Funding and pitching -** *Soft skill lecture.*
  Christian Kumar, director of Maverx Academy, Maverx Foundation,Italy.
- **Maserati Museum -** *Factory tour.*
- **Panini Museum -** *Cars exhibition.*
- **Hombre Farm -** *Tasting Experience.*

DAY 4 - *THURSDAY, 14TH SEPTEMBER*

- **Insulation in electrical machines for green transportation: challenges and solutions -** *Technical lecture. Prof. Andrea Cavallini, University of Bologna, Italy*
- **Modern Design and manufacturing of induction machines for transportation electrification -** *Technical lecture. Prof. Gerard Capolino, distinguish lecturer IEEE, France*
- **Powertrains with multiphase motors supplied by multilevel converters -** *Technical lecture.*
  Prof. Carlo Cecati, University of L'Aquila, Italy
- **Advanced methods for condition monitoring of electric motors based on the analysis of electrical quantities -** *Technical lecture.*
  Prof. Jose Antonino Daviu, Universitat Politècnica de València, Spain.

DAY 5 - *FRIDAY, 15TH SEPTEMBER*

- **Additive manufacturing applied to electrical machines -** *Technical lecture.*
  Prof. Elena Bassoli, University of Modena and Reggio Emilia, Italy.
- **Final pitch presentation: discussion and feedback -** *Soft skill lecture.*
  Christian Kumar, director of Maverx Academy, Maverx Foundation,Italy.
- **Final test for ECTS.**

Read more on speakers here: https://www.emergephd.unimore.it/speakers/

REGISTRATION AND PAYMENT

If you are an ***Engineer*** there are 4 options to join:

- **Single day registration for day 1, 2 or 4 (11th, 12th or 14th September) – 150€.**
- **Special price for 3 days registration (11th, 12th and 14th September) – 400€.**
- **Social dinner on 14th September – €60.**
- **Maserati Museum Factory tour, Panini Museum Cars exhibition, Hombre Farm Tasting Experience on day 3, 13th September – €60.**

You can use the **following form** to registration. This form must be sent to the Democenter-Sipe Foundation by email to: formazione@fondazionedemocenter.it.

CONTACT

For general information, administrative questions and registration procedure, please contact:
Democenter Foundation, Via P. Vivarelli, 2 (c/o Campus DIEF) 41125 Modena – Italy.
Phone number: +39 059.2058153
Email address: formazione@fondazionedemocenter.it.

Electrical Machines and Drives for Green Transportation Systems - EMERGE 2023

Name Surname.....

Phone number..... .....E-mail.....

Degree .....Job role.....

AGENCY

Business Name.....

tax code or VAT number.....Codice SDI (if need) .....

Company activity.....

Address.....PostalCode.....

State.....City of.....Prov. .....

Number of employees .....Phone .....E-mail.....

BILLING DATA (only if different from the company data)

Header and address.....

Tax code or VAT number.....Codice SDI.....

PARTECIPATION FEE (sign the choice)

Single day registration for: ☐ **day 1 (11th September)** ☐ **day 2 (12th September)** ☐ **day 4 (14th September) -** 150€ +Vat.

☐ **Special price for 3 days registration (11th, 12th and 14th September) -** 400€ +Vat.

☐ **Social dinner on day 4, 14th September** - 60€ +Vat.

☐ **Maserati Museum Factory tour, Panini Museum Cars exhibition, Hombre Farm Tasting Experience on day 3, 13th September -** 60€ +Vat

For registrations for individual days there is a maximum number of members. Priority will be given to the first registrants.

REGISTRATION

Registration must take place within 7th september sending the form by email to: formazione@fondazionedemocenter.it. For clarifications you can contact the Democenter Foundation on: 059 2058153.

PAYMENT

The registration fee must be paid before the beginning of the course. Payment of registration fees is via bank transfer (currency Euros) to: **Fondazione Democenter-Sipe** IBAN: **IT44C0538712905000000551764** BIC **BPMOIT22 XXX Banca Popolare dell'Emilia - Romagna, Ag. 5 di Modena.** Democenter-Sipe Foundation will send the invoice upon receipt of the registration fee.

The data collected will be processed in accordance with the European data protection regulation (EU Reg. 2016/679). For more information on treatment, privacy and exercisable rights, see the information on the website www.democentersipe.it/privacy/

Consent to the processing of your personal data with reference to the information received

☐ YES ☐ NO

Date .....Stamp and signature.....