

Sessione pitch: spazio alle idee



UNIVERSITÀ
DI PISA



**LEMPED: expertise in
Electric Machines, Power
Electronics, Electrical Drives**

L. Papini, P. Bolognesi

Università di Pisa - *DESTEC*



**Horizon Europe e il
bando orizzontale
Clean Industrial Deal**

11 DICEMBRE 2025



LEMPED - Laboratory of Electric Machines, Power Electronics & Electrical Drives

- **Research group** at the **University of Pisa - Department DESTEC**

- Contact Details

Luca Papini

luca.papini@unipi.it

+39-0502217342

Paolo Bolognesi

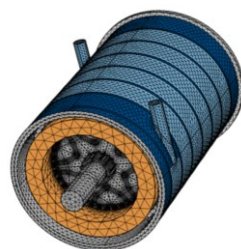
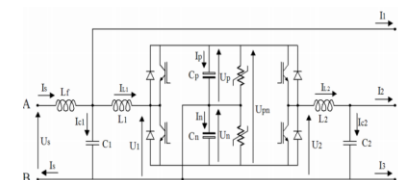
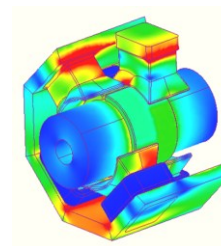
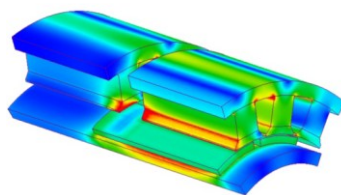
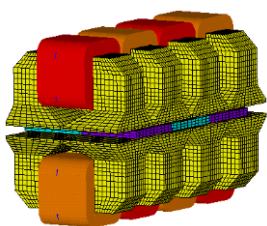
paolo.bolognesi@ing.unipi.it

+39-0502217309

- Topics of interest **Electric Machines, Power Electronics, Electrical Drives
and related Technologies and Applications**
- Keywords **Energy, Industry, Transportation, Electrification, Sustainability**

• Technical-Scientific Expertise

- **Conceptualization, Modeling, Analysis, Design, Prototyping** and **Testing** of electric machines, electromagnetic actuators, power electronic converters, electrical drives
- Conventional as well as **Custom and Innovative Solutions** for machine structures and materials, converter topologies and modulation, drive architecture and control
- **Multi-physics Approach** based on suited **Analytical, Numerical** and **Simulation** models using both **commercial and open-source tools** and **in-house developed software**



• Expertise offered for EU projects

- **Innovative and custom solutions** for electric machines, power converters, or complete electrical drives, from **concept to prototyping** using **multi-physics design approach**:
 - **Electro-magneto-mechanical devices**, including motors and generators
 - **Power conversion** electronic apparatuses and related **modulation** techniques
 - **Drive** architectures and real-time **control** including **monitoring** and **fault management**
- **Multiple potential application fields**
 - * **Energy**:
 - **generation** systems, especially for renewables (solar, wind, marine)
 - **power transmission and distribution** (DC systems, grid converters, storage)
 - * **Industry**:
 - large power, **heavy duty actuation** systems
 - mid power, **multi-motor** systems including **grid interfaces**
 - small power, **automation** systems and **consumer** products
 - * **Transportation**:
 - **propulsion drives** for **automotive, heavy-duty, rail, marine, aviation**
 - **generation** systems and complete powertrains for **hybrid vehicles**
 - **recharge systems** for electric vehicles batteries (on-board, swap)

• Experience with EU Projects

- Presently participating actively in the **MSCA Doctoral Network HIPO**
Integrated high-speed power systems for industry and mobile applications
- Submitted **several proposals** in the past for **different types of calls**, both as **coordinators and partners**; some were **shortlisted** for possible funding

• Expertise requested

- **Universities and Research Institutes** working on **advanced solutions and technologies for electric machines and power converters** (additive manufacturing, soft magnetics ...)
- **Companies** interested in contributing, developing or demonstrating **innovative solutions for effective, pervasive and sustainable electrification** in any application field
- **SME** providing **support in the preparation of proposals and project management**

Collaboration opportunities

- ❖ **LEMPED research group is open** to consider coordinating or participating in **projects related to electrification** in the framework of **Horizon Europe** or any other form of collaboration
- ❖ **Any topic** related to **electric machines, power converters, electrical drives and related technologies and applications** is of potential interest

Thanks for your attention!