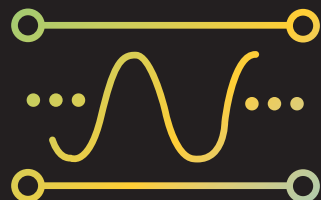


POWER ELECTRONICS

Smarter electrical energy generation, consumption and storage



DISTRIBUTED ENERGY RESOURCES

Renewables, energy management and storage systems

SMART GRIDSLAB

laboratory
of smart grids
and electric
vehicles

The Laboratory of Smart Grids and Electric Vehicles (SGEVL), integrated in INESC TEC facilities, is an infrastructure that supports research in the domain of Power and Energy. Home to 14 researchers and a variety of MSc/PhD students, it serves as an idea incubator, promoting peer discussion, prototyping, testing, and deployment.

Activities at SGEVL go from elementary proof of concept to field demonstrations that take science-based innovation to leading players in the energy sector. Its clients come from all business areas, such as electrical energy production, transmission, distribution, grid automation and energy digital platforms.

The laboratory is also a centre for social awareness in energy-related topics, such as energy efficiency, electric mobility, smart grids, or renewable energy. Being integrated in INESC TEC, the laboratory puts into practice all concepts and algorithms developed at the Power and Energy Cluster. It hosts young students, researchers and teachers from all scientific domains who often visit the institute.

Campus da FEUP
Rua Dr. Roberto Frias
4200-465 Porto
Portugal



ELECTRIC MOBILITY

Smart electric vehicles charging for grids and users



SMART GRIDS

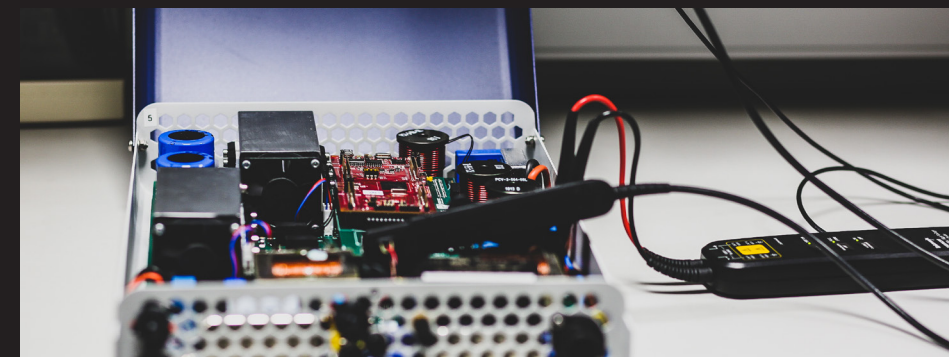
Microgrids, energy efficiency and energy communities, power hardware-in-the-loop testing

SMART GRIDSLAB

laboratory
of smart grids
and electric
vehicles



sgevl.inesctec.pt





CONSULTANCY

USING **KNOWLEDGE** TO EMPOWER **BUSINESS**

- Consultancy in power conversion systems
- High accuracy measurement and analysis
- Functional and performance tests
- Real-time co-simulation with a power hardware-in-the-loop test bed
- Thermal and thermographic analysis
- Testing of electronic systems for control, measurement, communication and energy management



INDUSTRY

APPLYING **KNOWLEDGE** TO EMPOWER **COMPANIES**

- Performance and operation assessment
- Optimization of high-power industrial equipment
- Design and implementation of prototypes (eg. bidirectional AC/DC converters for energy storage systems, advanced HEMS)
- Equipment testing and analysis in a climate chamber
- Lab validation of hardware and software architectures
- Real-time assessment of smart EV charging and fleet management solutions
- Support to patent and licensing



EDUCATION

SHARING **KNOWLEDGE** TO EMPOWER **ACADEMIA**

- Development of physical components for energy storage and power conversion devices
- Student supervision and support for several academic degrees (MSc, PhD, Post-doc)
- Laboratorial tests and proof of concepts for validation of research questions
- In-house infrastructure provision for rapid prototyping and assessment of new EV charging solutions
- Advanced laboratorial testing using power-hardware-in-the-loop set-ups



COMMUNITY

DISSEMINATING **KNOWLEDGE** TO EMPOWER **SOCIETY**

- Technical and non-technical visits to the laboratory
- Demonstration events about projects, technologies and research findings
- Open courses and workshops for internal and external communities
- Open data for industry and academia
- Social awareness activities related to energy consumption and management