ENERGY TECHNOLOGIES

ELECTRIC VEHICLES

- Traction Systems
- Analysis of the Impact of Electric Vehicles on Electrical Grids
- Analysis of New Business Models for Electric Vehicles
- Definition of Specifications for Electric Vehicle Charging Stations
- Design and Development of Chargers and V2G/V2H Systems for Electric Vehicles, Based on Proprietary Protocols and Standards (CHAdeMO)
- Battery Chargers: Lithium-Ion, Ni-MH and VRLA
- Battery Management Systems

PHOTOVOLTAIC SOLAR ENERGY

- PV Installation Integration into the Low Voltage Grid
- PV Inverters Connected or Disconnected from the Grid with Storage
- PV Panel Simulator
- PV Trackers

SOLAR THERMAL ENERGY

- Solar Collectors Using Transparent Insulation Materials
- High Temperature Solar Concentration Plants
- Thermal Storage in Solar Concentration Plants

MICRO-GRIDS

- Design of Small Energy Generation Systems
- Management of Storage Systems
- Management and Smart Control

SUSTAINABILITY IN EQUIPMENT DESIGN

- Energy Assessment of Operating Process Equipment Involving Machinery
- Assessment of the Product and Process Energy Strategy
- Minimization of the Environmental Impact of Consumption and Emissions During the Entire Life Cycle
- Design that Takes into Account Packaging and Transport (DFMA)
- Energy Harvesting

WIND POWER

- Wind Turbine Technology (Turbine Control, Mini Wind Turbines, Etc.)
- Wind Power Grid Integration
- Offshore Wind Power Stations
- Offshore Wind Energy Transmission Systems, Multi-Terminal HVDC
- Harmonic Filters for Wind Farms
- Control of Interactive Converters in the Grid

ENERGY MANAGEMENT

- High Voltage Transport (HVDC Systems)
- Management and Quality of Electricity Supply
- Energy Demand Management and Optimization
- Application of Artificial Intelligence Techniques
- Development of Management Software
- Energy Efficiency in Lighting
- Energy Sector Regulation Studies
THERMAL ENERGY

- Heat exchangers (radiators, condensers and evaporators, burners)
- Storage of heat by liquids and using phase change materials
- Bioclimatic architecture

HYDROELECTRIC POWER

- Assessment of hydroelectric power generation units by means of their dynamic behaviour
- Studies of fluid-structure interaction problems, simulating the vibration of real turbines

ENVIRONMENTAL TECHNOLOGIES

ENVIRONMENTAL POLLUTION CONTROL

- Aquatic and terrestrial ecotoxicology
- Environmental toxicology (processes, products and waters)

NOISE MANAGEMENT

- Control of noise emission
- Environmental noise
- Acoustic quality in construction
- Acoustic impact of infrastructure

WATER MANAGEMENT

- Water systems automation
- Quality measuring and monitoring
- Advanced water purification treatments water reuse and recycling

HYDROMETEOROLOGICAL FORECASTING MODELS AND EARLY WARNINGS

- Development of tools and solutions based on hydrological and meteorological models for the water cycle
- Early warning systems for flood risk and water resources management
- Hydrometeorological DSS for water resources and the water cycle management optimisation
- Hydrometeorological forecasts and warnings for weather exposed activities

MARINE

- Oceanographic instrumentation
- Construction and installation of cabled and autonomous underwater observatories
- Evaluation and monitoring of species of high economic value. Underwater acoustics

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