

Energy and sustainable industry

Theoretical and practical knowledge with state of the art technologies development for energy and sustainability sector. Hydrogen, smart mobility and green buildings are the main applications under developments. Capabilities on simulation and design for complex energy systems.



Smart Mobility

- **Advanced sensors** Sensors based on silicon technology, radiation sensors, environmental sensors, micro electro-mechanical systems.
- **Distributed Systems** Design, development and verification of embedded systems and virtual tools for automation and industrial control.
- **Predictive models** Mathematical models and ICT platforms for high dimensional data.
- Bio, Treatment and recycling, green buildings

Green Buildings

- **Energy consumption monitoring** in public and private buildings, smart energy metering systems, environmentally friendly hybrid coatings for corrosion protection.
- **Wastewater treatment** and sludge reduction, software/hardware for energy efficient embedded systems.

Energy Harvesting and Hydrogen System

- **Micro-generators** for mechanical energy conversion.
- **Storage** chemical hydrogen storage, energy backup system, green hydrogen
- **Solar** concentrator applications, solar fuels.
- **Mini hydropower energy**, open wind turbines, hydrogen fuelled turbines, hydrogen generation from renewable sources.

Energetic Enhancement of Biomass

- **Transformation and management** of biomass, recycling of organic waste.
- **Waste and biomasses** anaerobic dry digestion.
- **Crops of organic fertilizers** from waste and refuse biomasses.
- **Supercritical water gasification** and hydrothermal carbonization.

Simulation, Modelling and Measuring Systems

- Dynamic modelling of energy systems
- **Analysis**, forecast and optimization of energy demand.
- Energy optimization algorithms
- **Monitoring and measurement** of electrical consumption.