• Hydrogen production from RES or methanol (biomethanol) and use it in fuel cells for power generation (design, implementation, design control and energy management, installation and operation system).

• Biofuel production (design, implementation, control system design, installation and operation system).

• Hydrogen production from biomass pyrolysis liquid.

• Production of synthesis gas through the combined thermochemical and catalytic partial oxidation reformer hydrocarbon and intermediate products for conversion of biomass.

• Synthesis gas conversion processes through high-pressure liquid synthetic fuels and chemical feedstocks.

• Development of optimal control innovative systems in complex processes systems.

• Check power supply chain, product.

• Analysis and design of innovative systems of liquid separation (purification syngas, CO2 sequestration by absorption).

• «Smart» electrical energy networks.

• Development of embedded systems for control applications in electromechanical devices and chemical processes.

• Development of electrodes and devices for use in solid oxide fuel cells (SOFC).

• Development and optimization of electrodes and membrane electrode assemblies for fuel cells and polymer electrolyte membrane type provisions (PEM).

• Application of three-way operation to optimize fuel cell performance.

• Study of the phenomenon of electrochemical promotion. Specially in hydrogenetion and delydrogenation reactions in proton conductor reactors.

• Development of provisions solid oxide fuel cells solid electrolyte proton conductors.