



LABORATORY OF SCIENCES FOR THE ENGINEER APPLIED TO MECHANICS AND ELECTRICAL ENGINEERING

APPLICATION SECTORS

- Oil engineering
- Civil engineering
- Electrical engineering
- Aerospace
- Coastal engineering

PARTNERSHIPS

INDUSTRIAL

TOTAL, ABB, ALSTOM, ITHPP, EFFITECH, EDF

INSTITUTIONAL

CEA, C.S.T.B, DGA, IFP, CEOS.FR, ANR, Communities

EUROPEAN AND INTERNATIONAL PROJECTS

- **PRE2PLA:** Interreg Spain France Andorra
- **MAGIC:** FP7 People - ITN

PERSONNEL

- 29 researchers and professors - researchers
- 13 PhD students and 3 post PhDs
- 1 design engineer

RESEARCH THEMES

- Emulsification and low energy mixing
- Multiphase flows
- Damage, cracking, coupling in geomaterials (concretes and rocks)
- Power switching, high voltage transient pulse generators
- Electric discharges: electrical fracturing, electrofiltration, electroporation
- High voltage pulse metrology
- Aerodynamics and flows of compressible fluids
- Coastal hydrodynamics, sedimentary transport
- Low impact construction materials

KNOW-HOW

- Modelling and numerical simulations
 - Solid mechanics, damage and cracking of geomaterials (concretes and rocks), flows in porous medium, civil engineering structures.
 - Fluid mechanics (compressible, incompressible, multiphase), hydrodynamics, aerodynamics, turbulence.
 - Electricity: dielectric media, discharges, electromagnetic fields.
- Experimentation and characterisation
 - Mechanical strength, coupling, permeability, thermal characterisation
 - Electrical discharges, pulsed electric fields, pulsed high voltages

MAIN EQUIPMENT

- | | |
|-------------------------------|------------------|
| ▪ Computation server, cluster | ▪ Energy benches |
| ▪ Hydraulic presses | ▪ Emulsifiers |
| ▪ Furnaces, climatic chambers | ▪ Wave recorder |
| ▪ Marx generators | ▪ Current meter |

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