



ENERGY AND PROPULSION SYSTEMS (ESP)

The ESP Carnot institute gathers academic research laboratories of excellence and Regional Centers for Innovation and Technology Transfer focused on topics related to Energy and Propulsion Systems.

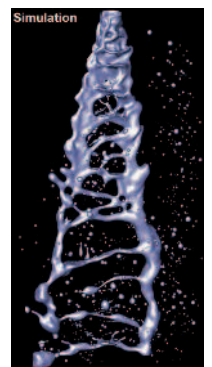
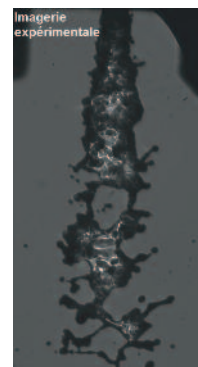
Strong synergies between various skills enabling a multidisciplinary approach

- The ESP Carnot institute provides its partners with expertise, know-how and relevant measurement means in the fields related to the optimization of energy systems and propulsion systems: **from fluid mechanics and energetics to the study of the emissions and their environmental impacts**, as well as **materials, acoustics and embedded systems**.
- The ESP Carnot institute teams are located in the same area and they are used to implement joint projects while having complementary means. That enables them to offer a suitable answer to the industrial problems through an approach ranging from the most fundamental stage to the pre-competitive one.
- The ESP Carnot institute aims to successfully implement new transformation processes which require less energy and which are more reliable and environmentally favourable.



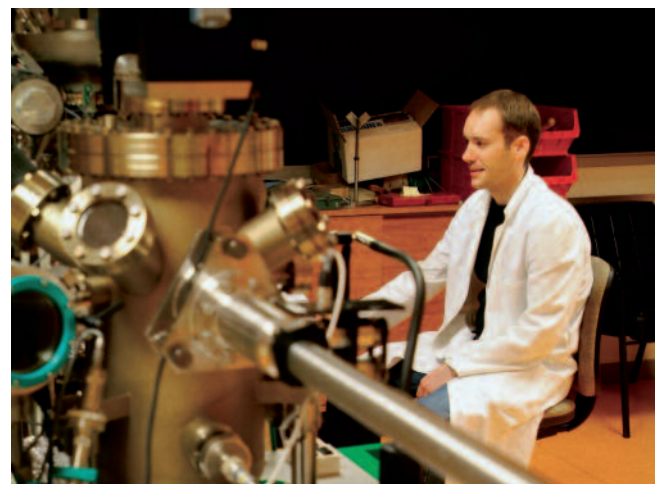
Main markets

- Aerospace
- Surface transportation
- Energy
- Environment
- Electronics and micro technologies
- Lasers and optical metrology



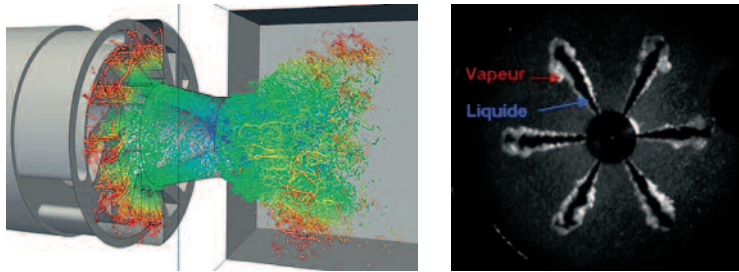
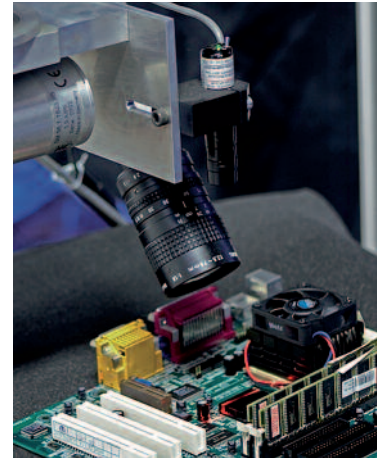
A highly developed partnership research

- Most research activities of the ESP Carnot institute deals with industrial needs and is carried out in partnership with companies.
- The ESP Carnot institute supports **the regional Normandie AeroEspace and Energies Haute-Normandie networks**.
- Its teams are research actors in a lot of French “**pôle de compétitivité**” clusters such as MOV'EO, Aerospace Valley, ASTech, Nov@log, TES, System@tic...



Know-how and skills

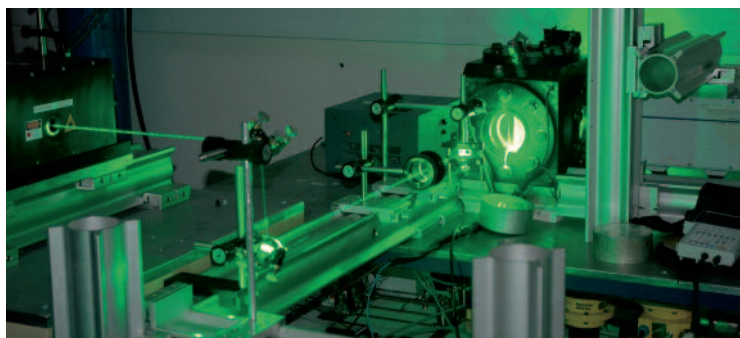
- Tests, analysis and research activities in the fields of combustion, injection and plasmas
- Modelling and supercomputing in reactive fluid mechanics
- Micro and nanostructural characterization of materials
- Electromagnetic compatibility studies
- Diagnostics, control/command for complex systems
- Intelligent vehicle and transport systems
- Investigation and test for acoustic and vibratory phenomena
- Engine test
- Study of the emissions from energy systems (sources, impacts, toxicology)
- Scientific instrumentation
- Physical and optical measurements



PhD students financed by industry

The ESP laboratories are very active both at a good national level and on the European stage. That enables them to develop sustainable contractual relationships through common theses with industrial partners.

This involvement in academic research ensures a large permanent potential of high quality human resources for the ESP Carnot institute.



Parent institutions

- ESP Carnot institute
- University of Rouen
- INSA (National Institute for Applied Science) of Rouen
- CNRS (National Scientific Research Centre)
- CERTAM (Investigation and technological research centre for aerothermodynamics and engine)
- CEVAA (Technological centre in the fields of acoustics and vibrations)
- IRSEEM (Embedded Electronic Systems Research Institute)

→ KEY FIGURES

Staff

Permanent staff (full-time equivalent): 160

PhD students: 150

Budget

Global budget: 25 260 k€

Partnership research incomes: 6 260 k€

→ CONTACTS

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