IRSEEM

ESIGELEC Research Institute




Ambient Assisted Living

Sustainable Mobility

Telecommunications

Energy

irseem

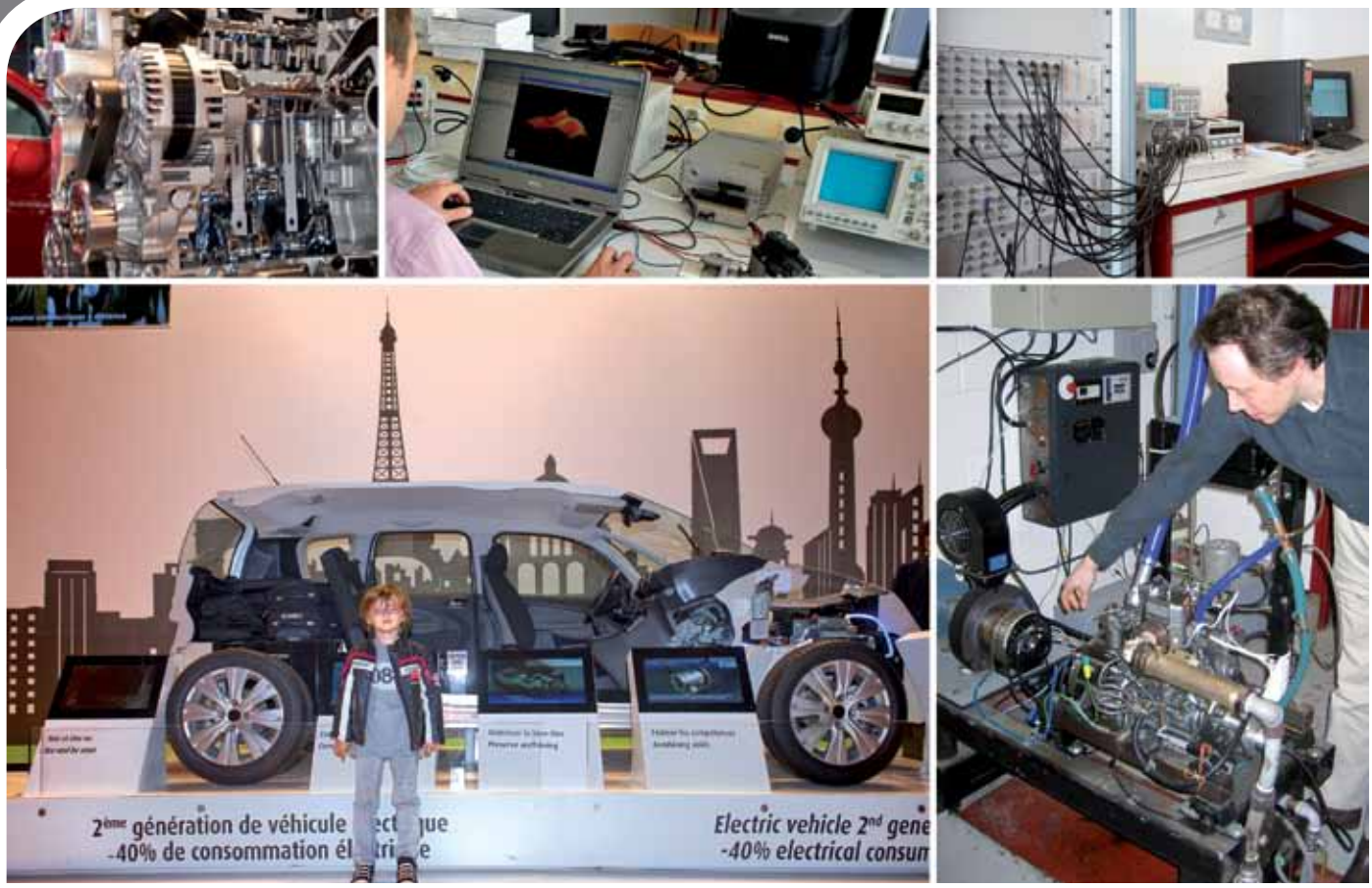
INSTITUT CARNOT ESP

CRT CENTRE DE RESSOURCES TECHNOLOGIQUES

EA 4353

ESIGELEC

The activity centres of IRSEEM leverage their expertise in electronics, automation, signal and image processing, networks and telecommunications within partner research programmes. They aim at bringing innovative and sustainable solutions for integrating electronics systems-which are increasingly present in the objects and products around us.



Automatic control and Systems Centre

Engine control and diagnosis, complex systems monitoring

The research works of the Automatic control and Systems Centre deal with the so-called active command putting together the areas of complex systems diagnosis and advanced fault-tolerant command. The goal is to improve reliability, functioning security and energy efficiency for hybrid and electric vehicles as well as for operative industrial systems.

- Analysis of vibration signals in a view of diagnosing faults
- Estimation of state parameters and variables
- Robust Diagnostic for uncertain systems
- Control strategies for multi-sources energy systems
- Predictive fault-tolerant control

Simulation and measurement platforms

- Platform for hybrid and electric vehicles: Euro V 4-wheel drive rolls test bench, Exhaust gas and energy efficiency analysis
- Common laboratory with Aircelle : test benches for pods, variator drive/electric motor test benches

We conduct industry-oriented research in partnership with the automotive, aerospace and energy networks and the electronics and telecommunications sectors in 4 research areas : Reliability – Energy efficiency - Integration – Navigation and smart systems.

Electronics and Systems Centre

Electromagnetism, ElectroMagnetic Compatibility (EMC) and microwaves

Our Electronics & Systems research is focused on electromagnetic compatibility (EMC) and on component and electronic systems reliability. This activity leverages competences in micro-electronics, microwaves, power electronics and multi-physics simulation over three main themes :

- Developing innovative EMC measurement and diagnostic platforms
- EMC and the reliability of components, whose main goal is the development of EMC and multi-physics models integrated into simulation platforms
- EMC modelling at the levels of systems and equipment. These works imply developing modelling techniques for sub-systems such as cables and shielding as well as developing specific simulation tools

Simulation and measurement platforms

- EMC testing facilities : 2 semi-anechoic chambers, one mode-stirring reverberating chamber, 2 near-field test benches, BCI and DPI test benches
- Test benches dedicated to component reliability : LF and HF noise benches, electrical characterisation benches (DC Analyser DC, IC-CAP software)
- Electrical and electromagnetic simulation platforms (LF and HF)
- Micro-electronics platform : ISO 6 and 7 clean rooms, probing, electro-optical near field measurement bench
- Common laboratory with Aircelle : test benches for pods, variator drive/electric motor test benches

Our technology transfer, valorisation and innovation activities promote our research work and make its results available to our socio-economic partners. IRSEEM is a founding member of the Carnot Institute for Energy and Propulsion systems, Host Team 4353 (research activities labelled by the French Ministry of Research) and Technological Resources Centre.






Instrumentation, Computing and Systems Centre

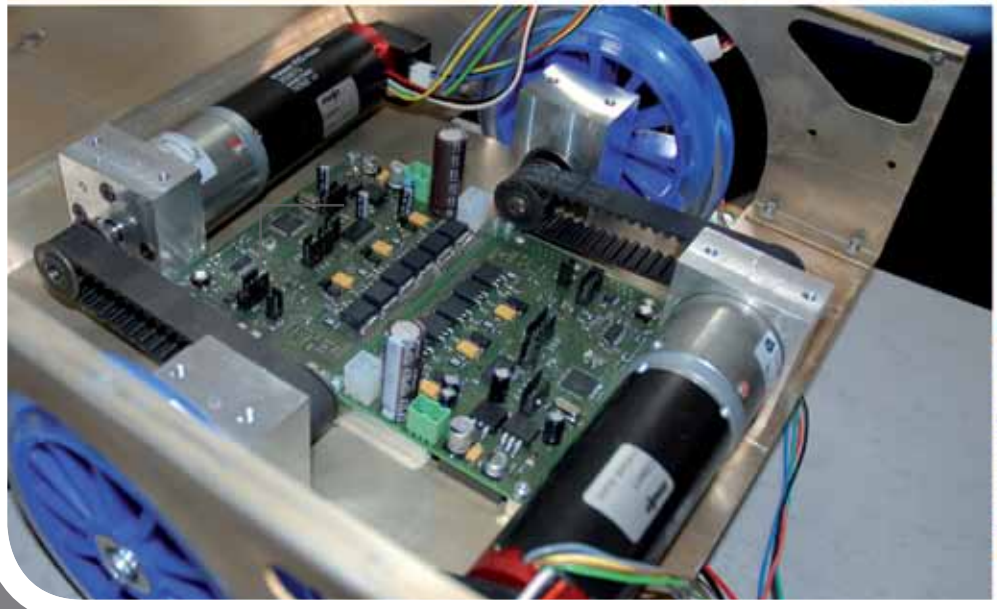
Instrumentation and signal, robotics and 3D vision, communicating systems for transport

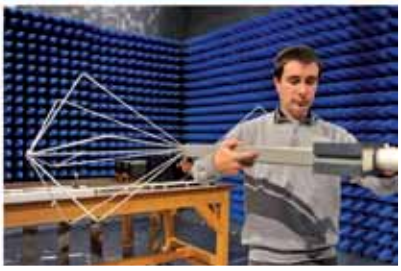
Within the Instrumentation, Computing and Systems Centre, we carry out research on computing vision, instrumentation and networks. We aim at bringing innovative responses in the fields of smart and connected vehicles, smart road, mobility systems, autonomous navigation, as well as for the emerging concepts of ambient smart systems for well-being and assisted living.
The research axes mainly concern omni-directional vision, vehicle to vehicle communication and the use of information and communication technologies for logistics and transport.

Simulation and measurement platforms

- Autonomous navigation platform: controlled environment, 3D trajectography via opto-electronic measurement, fleets of autonomous and communicating vehicles.





CRT CENTRE DE RESSOURCES TECHNOLOGIQUES (Technological Resources Centre)

Transfer, valorization, innovation

Our expertise :

- Electromagnetic Compatibility (EMC), electric/hybrid power train, micro-electronics, mechatronics
- Embedded systems: simulation, communication, navigation, vision
- Tests benches, HMI (Human Machine Interface), 3D digitizing techniques
- Instrumentation on systems and living
- Computing/electronic development
- Energy conversion

Our competences :

- Valorization of the various platforms : simulation, measurement and testing (EMC, navigation, micro-electronics, powertrains)
- Technological expertise to SMEs, large companies, research centres
- Turning research work into industrial applications
- Supporting entrepreneurs and innovative small businesses : proof of concept and technological demonstrator
- Technological watch : workshops, seminars and training
- Supporting joint initiatives aiming at structuring the Haute-Normandie Region: clusters, networks

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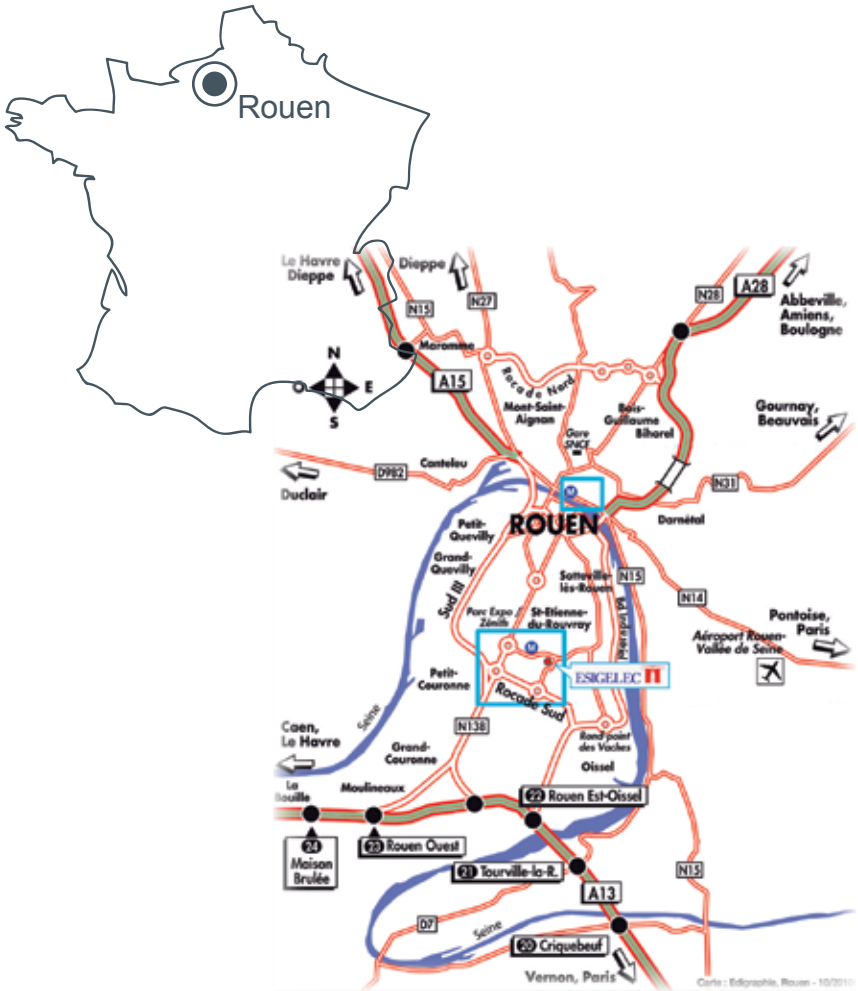
La CREA

Simulation and measurement platforms

2 semi-anechoic chambers, one mode-stirring reverberating chamber, autonomous navigation platform, platform for power-trains, clean room.



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GEM
Groupe des Ecoles des Mines
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CHAMBRE DE COMMERCE ET D'INDUSTRIE DE ROUEN