

AUTOMOTIVE INDUSTRY & MOBILITY IN NORMANDY

TOWARD ELECTRICAL, CONNECTED AND AUTONOMOUS VEHICLES

AUTOMOTIVE INDUSTRY

45000 **direct**
Industrial jobs

5000 **Innovation jobs**

345 **companies**
with more than 20 employees

25% **of the industrial
employment in Normandy**

1st **Industrial sector
in Normandy**
(10 billion€ turnover in 2017)

4th **French region**
for automotive Industry

70% **of national R&D**
activities in the field
(Normandy and Ile de France)
High value skills on materials,
mechanics, mechatronics, etc.

HAROPA 1st **logistic platform
for car import/export**
Africa/USA/Asia

MAIN COMPANIES

PSA Peugeot Citroën • Renault
Renault Trucks / Volvo Group
Chéreau • Faurecia • Valeo
Robert Bosch • Sofedit • SNOP
Autoliv • Magneti Marelli • Acome
Sealynx • Sogefi • Holophane
Lecapitaine • Vans Theault
KME Brass • Arkema
Inteva Products • Knorr Bremse •
Donaldson • Alpine
Benteler • Gevelot • FEV
...

With more than 500 establishments in the automotive sector, Normandy is particularly strong in the automotive industry. Indeed, Normandy Region has important industrial sites, from mechanical parts to vehicle assembly through several specialized car body-designers and OEM parts manufacturers as well as many advanced engineers. In addition, the Norman territory hosts many laboratories, research centers and higher education state of the art institutions that make reference in the automotive and mobility sector.

The automotive industry offers many assets such as first-class facilities and human expertise for cutting-edge technological research; a dense network of suppliers and advanced engineers in all the main fields (metallurgy, electronics, chemicals, plastics & rubber, composites, and more); research and innovation with a focus on materials (composites, flax, bio-plastics, etc.), testing equipment, mechanisms & motor combustion to meet the challenges now facing the automotive industry.

With a large autonomous electrical car experiment, the new Alpine sporty car, the eco-system electrical car engines production... the automotive industry in Normandy shows major signs of innovation.

INNOVATION, RESEARCH & DEVELOPMENT

▲ CNRT MATERIAUX (www.cnrt.ensicaen.fr)

It relies on the scientific and technical resources of five laboratories depending on Universities of Normandie and Le Havre, ENSICAEN engineering School under the CNRS framework.

The objectives are to support high level collaborative research partnerships in the material science field, with a particular emphasis on thermoelectricity and composite material projects; to contribute to the visibility of the Norman research potential by creating technological relationships with industry leaders.

▲ ISPA LABORATORY (www.ispa.asso.fr)

The ISPA Laboratory is a R&D Center for plastics processing focused on polymer based materials and clean, money-saving processes.

▲ NORMANDINNOV (https://normandinnoov.fr/)

Proposes a unique Dynamic Test Center on seat mechanisms and R&D activities in mechatronics and characterization of materials. This site is open to all key players of the automotive industry.

▲ CORIA (www.coria.fr)

The research fields of CORIA cover fundamental studies and applied to reactive or non-reactive flows: diphasic flows, turbulent mixing phenomena, combustion, plasmas, etc. Physical mechanisms and processes leading to the reduction of polluting emissions in reactive systems are priority research axes.

▲ CEVA (www.cevaa.com)

The NVH and reliability research center supports industrial companies in Acoustic and vibrational comfort; Silent design; Reliability of embedded mechatronic systems; Development of innovative methods for NVH characterization; Vibration & Acoustic Simulation & Calculation.

▲ CERTAM (www.certam-rouen.com)

Since 1991, CERTAM is an innovation center that has provided many solutions in the field of innovation, engine test benches, air quality and pollutant emissions characterisation.

▲ IRSEEM (www.esigelec.fr/IRSEEM)

Research Institute working on the instrumentation and modification of electric vehicles, the development of energy management systems, and vehicle-vehicle and vehicle-infrastructure communication, while ensuring electromagnetic compatibility standards.

▲ CED (www.ced-normandie.com/en)

Vibration testing laboratory composed of two vibrating six-axis benches allowing to reproduce identically all types of 3D multi-axis simulations. It also has a crash-test laboratory consisting of a hydro-pneumatic Inverse Catapult, the most powerful in Europe to test in real life configuration the dynamic behavior of structures and equipment (dashboard, seat, child restraint ...).

▲ INSTITUT CARNOT ESP (www.carnot-esp.fr)

A major player in industrial research, the Carnot Institute ESP (Energy and Propulsion Systems) supports its partners in their R&D work by offering an integrated expertise that draws its richness from the complementarity and interdisciplinarity of its laboratories.

TRAINING



▲ ENSICAEN ENGINEERING SCHOOL (www.ensicaen.fr)

750 students, more than 8000 engineers, 150 PhD students. Electronics & applied physics, Materials & Mechanics, Computer Science.



▲ ESIGELEC (www.esigelec.fr)

Engineering school with more than 1650 students. 5 departments: Information Technology, Electronics and Telecommunication, Electrical Engineering and Energy, Embedded Systems and Instrumentation, Humanities Languages and Management. The ESIGELEC research laboratory, IRSEEM, leads several research projects on the theme of autonomous vehicles.



▲ INSA ROUEN (www.insa-rouen.fr)

Engineering school with 7 specializations, 7 Masters, 6 doctoral programs. Chemistry and Processes, Control of industrial risks, Energy and Propulsion, Mechanics, Architecture of information systems, Mathematical Engineering, Civil engineering



▲ CESI ROUEN (www.eicesi.fr)

The CESI campus in Rouen includes a Research and Innovation Platform in Industrial Performance.



▲ ESIX NORMANDIE (www.unicaen.fr/esix/)

Engineering school with a diploma in Engineering of Industrial Systems.



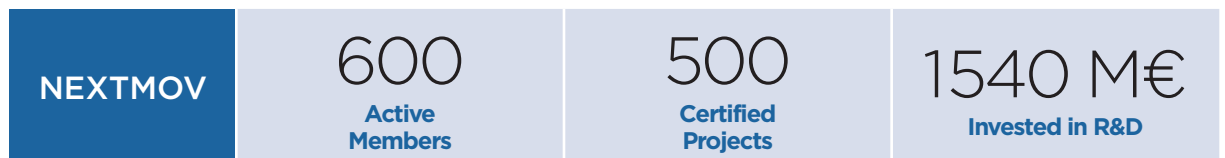
▲ ECOLE DE MANAGEMENT DE NORMANDIE (www.ecole-management-normandie.fr/uk/)

Masters degree in Supply Chain Management.



▲ ITII (www.itii-evreux.fr/)

Institute of engineer. Training of engineers in mechanics and production.



AUTOMOTIVE CLUSTERS & SUPPORTS



▲ NEXTMOV COMPETITIVENESS & INDUSTRY CLUSTER (www.nextmove.fr)

Nextmov is a Mobility and Automotive R&D competitiveness cluster, which since 2006 has been mobilizing its energies to foster the development of collaborative projects between members, to contribute to development in the regions of companies, in particular SMES, and to promote innovation in the sector.



▲ SOTRABAN (www.sotraban.com)

Sotraban is an organisation which promotes and enhances regional expertise in subcontracting, with around eighty industrial manufacturers as members.



▲ AD NORMANDIE (www.adnormandie.fr)

AD Normandie (regional agency for economic development) works closely with companies for improving local competitiveness. **Representative of Business France Invest** in Normandy, AD Normandie extends a whole range of services to foreign investors setting up their businesses in Normandy.

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