

# AERONAUTICS, SPACE, DEFENSE & SECURITY IN NORMANDY

## A DYNAMIC SECTOR FOR INNOVATION & TECHNOLOGY

### SPACE AND AERONAUTICS INDUSTRY

- 160 companies
- 84 SMEs and Mid-cap companies
- 16 major industrial sites
- 21500 employees
- 24 research laboratories
- 3,7 billion€ turnover
- 17 professional training centers
- 4 airports
- 1 military base
- 1<sup>st</sup> in France for production of ARIANE rocket engines
- 3<sup>rd</sup> French Aerospace cluster
- 5<sup>th</sup> region for Aeronautics industry

### MAIN COMPANIES

Safran • Zodiac • Thales LAS  
Hutchinson • Revima Group  
DGA Technique Hydrodynamique  
Solcera • TE Connectivity  
Smiths Interconnect  
Alcoa Howmet • Paulstra SNC  
PPG Coating • UTC Aerospace Systems  
Gauthier Connectique • Naval Group  
Filtres Guerin • Arelis  
Dedienne Multiplasturgy Group  
Correge • Efinor • Factem  
Elvia PCB Group • Astellflash  
Volum-e • Ressorts Masselin • Sumpar  
Heatself • APN Group...

**Normandy is one of the key French territories in aeronautics, space industry, defense and security. With a 3 billion € turnover and federated by the industry association and cluster NAE (Normandie AeroEspace cluster), Normandy is the 1<sup>st</sup> region of France for manufacture of engines for space and aeronautics as well as the 3<sup>rd</sup> aeronautical region of France in terms of highly qualified jobs.**

This industry in Normandy is organized around 4 competencies: engines and equipment, electronics and connective systems, maintenance, defense and security. The sector is also characterized by high quality infrastructures and an outstanding human capital for cutting-edge research and technologies. It has a very extensive network of specialized advanced engineering companies: metallurgy, electronics, electricity, chemistry, plastics and rubber, textile, glass, composites. It also benefits from high standard and adapted port & logistics infrastructures (heavy load, shipment of rocket component...) and from specialized R&D applied to aeronautics, space industry, defense and security.

## INNOVATION, RESEARCH & DEVELOPMENT

### ▲ CNRT MATERIAUX

([www.cnrt.ensicaen.fr](http://www.cnrt.ensicaen.fr))

Federating 5 laboratories involved in material sciences: CIMAP, CRISMAT, LCMT, LCS and LOMC, CNRT supports high level collaborative research partnerships with industries in the field of material sciences.

### ▲ CRIT ANALYSES ET SURFACE

(<https://www.analyses-surface.com/>)

A technical center created in 1993, CRT Analyses et Surface provides industrialists with an operational platform for studying materials. The facilities provide a framework for coupling materials characterization tools with environmental aging means. The laboratory is ISO 9001 certified and is accredited by COFRAC. This ensures customers the relevance and reliability in accordance with deadlines and commitments.

### ▲ IRSEEM

(<https://www.esigelec.fr/fr/irseem>)

The IRSEEM, Research Institute in Embedded Electronic Systems is structured around two axes: Research and Technology Transfer. The Institute conducts primarily upstream research within its three thematic clusters: Automation & Systems Cluster, Electronics & Systems Cluster and Instrumentation, IT & Systems Cluster. Beyond this disciplinary approach, IRSEEM conducts a research partnership with the automotive industry, aerospace, renewable energy, telecommunications and health. In addition, IRSEEM has a Technology Resource Center which conducts technology transfer and development activities.

### ▲ CORIA ([www.coria.fr](http://www.coria.fr))

Research in physical mechanisms and processes to enhance thermal efficiency and to reduce polluting emissions, and in firing safety: reactive flows (combustion, turbulent flows, two-phase flows, plasmas): Computational fluid dynamics with high performance calculation, advanced optical diagnostics, etc.

### ▲ CED ([www.ced-normandie.com](http://www.ced-normandie.com))

The Dynamics Test Centre offers a unique expertise in France to satisfy the needs of manufacturers and equipment suppliers to develop & validate innovations and components using a global systemic approach. It also provides support to laboratories and to the aeronautics industry.

### ▲ LABEX EMC3 ([www.labex-emc3.fr](http://www.labex-emc3.fr))

Involving 700 researchers with more than 200 PhD students, EMC3 focuses on materials for energy recovery, safety of nuclear installations, development of new materials and improvement of fuel, combustion, exhaust gas decontamination and thermal energy recovery.

### ▲ GPM (<http://gpm.univ-rouen.fr/fr/node/6>)

Research in 1) scientific instrumentation and microscopies, 2) physical metallurgy and mechanics of metal and alloys, 3) nanotechnologies in photovoltaic, nanoelectronic, optoelectronic and magnets, 4) physics of polymers and composites and 5) interdisciplinary research between medicine, biology and physics.

### ▲ CEVAA ([www.cevaa.com](http://www.cevaa.com))

Expertise and skills in vibro-acoustics and reliability for industrial companies, notably aviation, aerospace and defense companies for 20 years. CEVAA can provide services in Simulation & Tests to solve NVH problems.

## TRAINING



### ▲ NORMANDY UNIVERSITY ([www.normandie-univ.fr](http://www.normandie-univ.fr))

Community of multidisciplinary Universities (Caen, Rouen, Le Havre) and engineering school (INSA Rouen Normandie, ENSICAEN, Ecole d'architecture) - Master's degrees : Physics, Engineering Sciences, Development of Scientific Instruments, Optics, Detection, Physics, Mechanics, Engineering Sciences, Energy, Fluids and Environment; Mechanics, Mechatronics, Components, Reliability.



### ▲ ENSICAEN ENGINEERING SCHOOL ([www.ensicaen.fr](http://www.ensicaen.fr))

Courses: Electronics and applied physics, information technology, materials and chemistry, materials and mechanics, industrial engineering.



### ▲ ESIGELEC ([www.esigelec.fr](http://www.esigelec.fr))

Engineering school - Electronics Systems for Automotive and Aeronautics.



### ▲ INSA ROUEN NORMANDIE ([www.insa-rouen.fr](http://www.insa-rouen.fr))

Engineering school - Aerospace Propulsion Training of the Department of Mechanics; Energy and propulsion specialty.



### ▲ CESI ([www.cesi.fr](http://www.cesi.fr))

Aeronautical and space specialty preparator training.



### ▲ ESIX NORMANDIE ([www.unicaen.fr/esix/](http://www.unicaen.fr/esix/))

Engineer in Mechatronics and Nomadic Systems.



### ▲ ESITECH ([www.esitech.fr](http://www.esitech.fr))

Engineering school of the University of Rouen Normandy - Physical Engineering : photonics and materials.



### ▲ IUT EVREUX

Diploma: Bachelor in Instrumentation, Measurement and Quality, Metrology.



### ▲ IUT ROUEN ([www.univ-rouen.fr/iutrouen](http://www.univ-rouen.fr/iutrouen))

Diploma: Electrical Engineering and Industrial Computing; Physical Measurements; "Maintenance and Technology": Electronics, Instrumentation, Aeronautics, Space and Transport.

NAE  
CLUSTER

160  
Active Members

21500  
Jobs

3,7  
Billion Euros Turnover

## SERVICES & SUPPORTS



### ▲ NORMANDIE AEROSPACE (NAE - [www.nae.fr](http://www.nae.fr))

The Norman network of actors in Aeronautics, space industry, Defense and Security focuses on 5 axes: Business & Performance; Research; Technology & Innovation; Employment & Training; Communication. NAE is active in networking with major groups and has a European network.



### ▲ SOTRABAN ([www.sotraban.com](http://www.sotraban.com))

Sotraban is an organization which promotes and enhances regional expertise in industrial subcontracting. The association has 75 members with specific and complementary skills in different domains.



### ▲ AD NORMANDIE ([www.adnormandie.fr](http://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.

## CONTACT

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