

Onera carries out basic research for major aerospace and defense programs.

Airplanes
Helicopters
Propulsion
Orbital systems
Missiles
UAVs
Defense systems
Security



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Introducing

O n e r a



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Onera is the French aerospace research organization. It carries out six key missions:

- > Direct and conduct aerospace research.
- > Transfer results to companies in France and Europe.
- > Build and operate test facilities and the associated processing systems.
- > Provide top-flight services and expert analysis for industry.
- > Provide expert analysis for government agencies.
- > Train new researchers and engineers.

Onera's core business is application-oriented research for the French government and the aerospace industry. Its scope of business encompasses:

- > Civil and military aircraft.
- > Helicopters and tiltrotors.
- > Propulsion.
- > Orbital systems.
- > Space Transport.
- > Missile, defense and security systems.
- > Aerospace systems.



The S1 wind tunnel at Modane-Avrieux, the largest wind tunnel in Europe, with a test section measuring 8 meters in diameter.

A number of major aerospace programs owe their success to Onera's expertise and facilities, including:

- Airbus jetliners, from the A300 to the A380: Onera research labs and wind tunnels.
- Dassault aircraft: from the Mystère II fighter to the Falcon 7X bizjet.
- European launch vehicles: from Ariane 1 to Ariane 5.
- Graves space surveillance system (operated by the French air force) and Nostradamus over-the-horizon radar.
- Scramjets, from concept to flight tests.
- New very-high-temperature alloys for turbine blades and disks.
- Very Large Telescope (VLT) in Chile: adaptive optics system to correct the effects of atmospheric turbulence.
- Ultrasensitive accelerometers used in many space applications, e.g., to measure the Earth's gravity field.
- High-resolution infrared measurement instruments.
- The first "silent" blades for helicopters.

Multidisciplinary skills

Onera's scientists and engineers cover all disciplines needed to drive progress in aerospace, organized in four main branches:

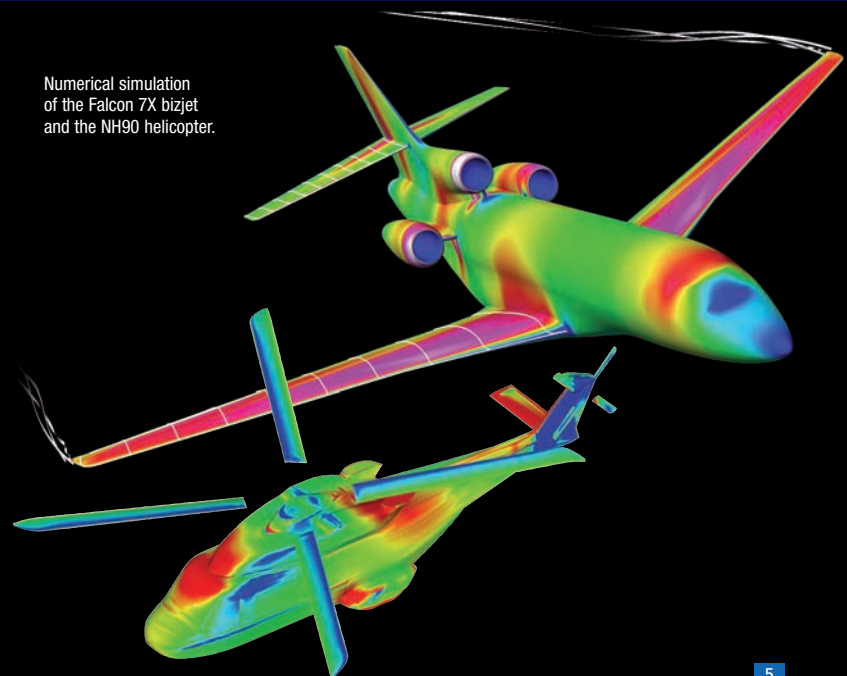
- Materials and structures
- Fluid mechanics and energetics
- Physics
- Information processing and systems.

Experimental resources

- Laboratory equipment: laser velocimetry test benches, electron guns, etc.
- Large scientific facilities: free-flight laboratory, combustion test stands, etc.
- Europe's largest fleet of wind tunnels (Fauga-Mauzac, Modane-Avrieux, etc.).

Onera's role is to come up with innovative solutions that enhance industry's competitiveness and meet the major challenges facing our Society: environmental protection, security, sovereignty.

Numerical simulation of the Falcon 7X bizjet and the NH90 helicopter.



Industry competitiveness

- Enhance performance and reduce costs for airplanes, helicopters, launchers, etc.
- Protect aircraft against lightning and icing.
- Protect satellites against the aggressive space environment.

Environment and society

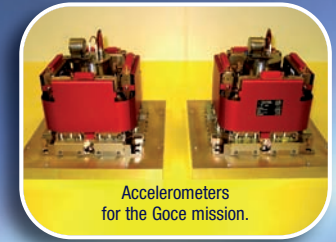
- Decrease polluting emissions.
- Reduce aircraft noise.
- Improve air transport safety.
- Design and evaluate the future air transport system.
- Enable the integration of drones in airspace.

Defense and security

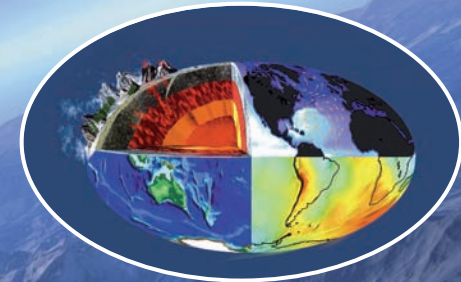
- Detect, recognize, defend and protect: radars, optical imagery, onboard systems, missiles.
- Develop future military capabilities.

Enhance knowledge

- Develop world-class knowledge base.
- Carry out continuous scientific intelligence.

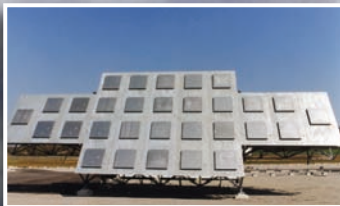


Accelerometers for the Goce mission.



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Graves, the first space surveillance system developed in Europe.



Onera participates in the French civil aviation research advisory board CORAC and is a pivotal partner in major international projects, primarily in Europe. Nearly one-fourth of its business is generated in international markets.

Onera is an actor in the Paris Saclay Campus technology cluster and works with major players in the aerospace industry, including Airbus, Dassault Aviation, Eurocopter, Snecma and Thales, as well as leading research organizations and universities such as Polytechnique, Supaéro, CNRS, DLR, Nasa and ENS.

The Carnot label reflects Onera's successful efforts in establishing partnerships with industry.

A prime mover in European aerospace research, Onera is a founding member of the association of European Research Establishments in Aeronautics (EREA).



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