AERONET III

Aircraft Emissions and Reduction Technologies

**Funding:** European (6th RTD Framework Programme)

**Duration:** Apr 2004 - Jul 2010

**Status:** Complete with results

**Total project cost:** €1,855,710

**EU contribution:** €1,799,400

**Call for proposal:** FP6-2002-AERO-1

**CORDIS RCN:** 72812

**Background & policy context:**

Forecasts show continuing growth of 3-4% per year for air transport to meet the needs of modern society. Despite good progress and impressive reductions in aero-engine emissions, further R&D is necessary to safeguard the environmental sustainability of the future entire air transport system. ACARE set a goal to reduce CO2 emissions by 50% and NOx emissions by 80% by 2020. Developing the necessary technologies and making them available to the stakeholders for production and operation is essential for the future of the European aviation industry in the face of global competition.

**Objectives:**

The AERONET III Coordination Action is a platform where all the stakeholders in the air transport system can meet, exchange information, views and experiences gathered in different EC projects and national programmes with regard to aircraft emissions and reduction technologies.

The aims of AERONET III were:

- To support communication in aeronautics community and with atmospheric scientists;
- To facilitate exchange of information and experience;
- To foster and support co-operation and joint actions;
- To identify gaps and needs for research and development;
- To support policy in the regulatory process and R&D programme;
- To increase visibility and general awareness.

**Methodology:**

AERONET III is a platform where stakeholders can exchange information, views and experiences. It consists of 11 thematic areas supported by a Coordination and Management Team, a Steering Group and a Policy Liaison Group. The areas are:

- Aircraft Technology,
- Engine Technologies,
- Fuels, Emissions Indices,
- Measurement Technology,
- Aircraft Plumes,
- Emissions-Noise,
- Air Traffic Management,
- Air Transport Development,
- Emissions Inventories, and

They are clustered within three Work Packages:

1. Aircraft and engine technology aspects of emissions reduction;
2. Airport air quality;
3. Air Transportation Environmental System.

Through these Work Packages and Thematic Areas the stakeholders exchange knowledge and information in order to support the overall European aeronautical strategic context and development with respect to aviation emissions and reduction technologies. The mechanisms used for dissemination are:

- **Workshops**: The workshops were planned on an annual basis according to the needs of the community. The workshop proceedings are confidential and restricted to the partnership and the participants. A summary is accessible to the public through the AERONET website. Important workshop topics are, for example, the 'airport air quality' issue with an objective to contribute to a reliable assessment of air traffic's contribution to airport air pollution, the 'fuel thermal stability' issue in advanced combustors, and the 'hydrogen as a potential aviation fuel' issue plus the associated problems of storage and handling.

- **Studies**: According to the needs of the community, the Co-ordination and Management Team (CMT) identified particular topics that are not necessarily appropriate to a dedicated workshop but that form a vital input to another workshop. Examples for studies are 'potential for reducing the NOx emissions for hydrogen and kerosene-fuelled aero gas turbines' or 'review of hydrocarbon (HC) speciation at airports and potential for local air pollution'.

- **Website**: The AERONET website contains information on AERONET activities, links to related projects and networks, a library section with publishable reports and documents and a partner section containing documents (e.g. workshop reports, studies) restricted to the partners.

**Related Projects:**

- **AERO2K** - Global inventories of aircraft fuel usage and emissions are required for the quantification of the atmospheric effects of aviation [2001-2003].


- **CONSAVE 2050** (2002-2005) Constrained Scenarios on Aviation and Emissions


- **EUFAR** is an Integrating Activity funded by the European Commission under FP5/FP6/FP7 bringing together operators of instrumented aircraft and hyperspectral imaging sensors, and experts in airborne measurements in the field of environmental and Geo-sciences.

- **ISTC** - The International Science and Technology Center (ISTC) is connecting scientists from Russia, Georgia and other countries of the Commonwealth of Independent States (CIS) with their peers in Canada, EU, Japan, Republic of Korea, Norway and the United States.

- **JTI Clean Sky** - one of the largest European research projects (2008-2014).

- **OMEGA** - One of Omegaâ€™s main objectives is to share the expert, world-class knowledge of our partners with the wider aviation community and with society as a whole.

- **OPTIMAL** - Optimised Procedures and Techniques for Improvement of Approach and Landing, is an air/ground co-operative project.


- **SESAR** - Single European Sky ATM Research, the European air traffic control infrastructure modernisation programme (Joint Undertaking), to develop the new generation European air traffic management system (2007-2016).

- **VITAL** - EnVironmenTAlly Friendly Aero Engines - EU research & technology programme aiming at reducing aircraft engine noise and carbon dioxide CO2 [2002-2006].

- **X-NOISE** is a collaborative network project in the area of aeroacoustics. The X3-NOISE Coordination Action (2006-2010) is addressing the aircraft noise challenges set by the ACARE 2020 Vision.

**Parent Programmes:**

- **FP6-AERO-1.2** - Improving environmental impact with regard to emissions and noise

**Institute type**: Public institution

**Institute name**: European Commission

**Funding type**: Public (EU)

**Lead Organisation**:

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<th>Deutsches Zentrum Fr Luft Und Raumfahrt E.v</th>
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12489 KLN  
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Organisation Website:  
http://www.dlr.de  
EU Contribution: €0  

Partner Organisations:  

Swedish Defence Research Agency  

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Mtu Aero Engines  

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Organisation Website:  
http://www.mtu.de
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<td>Eurocontrol - European Organisation For The Safety Of Air Navigation</td>
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<td>Gromov Flight Research Institute</td>
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<td>Rolls-Royce Deutschland Ltd &amp; Co Kg</td>
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<td>Snecma</td>
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Key Results:

AERONET has contributed to an environmentally friendly air transport system by bringing together European expertise in a cooperative, relevant and proactive network covering emissions from commercial aviation and its potential effects on the environment.

AERONET has contributed to cooperation and understanding of aviation and its impact on the environment with a number of varied activities, principally 14 workshops, 10 studies and various related expert meetings. During the course of the project, the public debate on aviation and its local climate impact has gained significant momentum, significantly more than expected and significantly more than was the case in past decades. Partially as a consequence, an important change of emphasis was initiated in AERONET III to give a stronger focus on the multi-discipline and multi-community subject of the Air Transport System and less on the vehicle and its technological developments which were now covered in other EC projects.

AERONET III gave important impulses to the field of interdependency modelling and tradeoffs. Reducing aviation’s impact on the environment is more and more related to finding the right balance between different technical and non-technical developments, specifically social needs and economic costs. Only then can we achieve sustainable development for the air transport system as a whole.

In that context, AERONET III was also actively involved in contributing to the ACARE process by promoting topics such as alternative fuels and atmospheric science. AERONET III actively participated in European and international expert groups (ACARE, ANCAT/MITG, SAE E-31) contributing to the environmental policy and scientific debates.

During the 6 years of the AERONET III project, research gaps have been identified. Many of these research gaps have of course subsequently been addressed by AERONET members and by others.

Finally AERONET III worked closely together with other related projects and networks (e.g. X-NOISE, ECATS, ELECT) and contributed to a number of project proposals in the field of airport air quality, interdependency modelling and aviation climate impact research.

Looking forward, although the project is ended, the aim is to keep the website and intranet operational after end of the project, for continued dissemination of relevant information; and of course to continue to build on the strong relationships and cooperation built up over the 12 years of the AERONET network.