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Cabin noise Reduction by Experimental and numerical Design Optimization

Fact Sheet

Project Information

CREDO

Grant agreement ID: 30814

Project closed

Start date

1 July 2006

End date

30 June 2009

Funded under

Aeronautics and Space: thematic priority 4 under the Focusing and Integrating Community Research programme 2002-2006.

Total cost

€ 3 494 100,00

EU contribution

€ 2 166 000,00

Coordinated by

UNIVERSITÀ POLITECNICA
DELLE MARCHE

 Italy

Objective

Motivated by the aircraft industry's acute need to validate and calibrate prediction models and advanced design tools for the cost-effective design of low-noise cabins, the CREDO project addresses a critical deficiency in the available data by developing technologically viable experimental procedures and analytical tools by which the sound power entering an aircraft cabin can be determined sufficiently quickly, accurately and with the necessary spatial resolution. Owing to the

reverberant nature of the sound field in an aircraft cabin, existing methods are categorically insufficient for this task and entirely new methods shall be developed. Two parallel approaches are pursued. In the first, the sound power entering the cabin is locally extracted from local measurements of the total field. This approach employs a hitherto unavailable microphone array concept: the double layer array, together with purpose-developed processing and procedural algorithms. In the second approach, the sound power entering the cabin is determined globally through numerical inversion of measurements throughout the entire cabin using the new experimental tools. This will be achieved with pioneering Inverse Finite Element implementations and groundbreaking Inverse Simplified Energy Methods, developed in close connection with novel measurement technology and algorithms, extended from the local to the global level. At all stages in the project, the interaction between local and global approaches and between measurement and processing is exploited to maximum innovative effect. The successful implementation of the results of these developments is ensured by a carefully designed validation campaign involving ground and flight tests in both aircraft and helicopter cabins.

Fields of science (EuroSciVoc)

[engineering and technology](#) > [mechanical engineering](#) > [vehicle engineering](#) > [aerospace engineering](#) > [aircraft](#) > **[rotorcraft](#)**



Programme(s)

[FP6-AEROSPACE - Aeronautics and Space: thematic priority 4 under the Focusing and Integrating Community Research programme 2002-2006.](#)

Topic(s)

[AERO-1.1 - Strengthening competitiveness](#)

Call for proposal

FP6-2005-AERO-1

[See other projects for this call](#)

Funding Scheme

[STREP - Specific Targeted Research Project](#)

Coordinator



UNIVERSITÀ POLITECNICA DELLE MARCHE

EU contribution

No data

Total cost

No data

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Piazza Roma 22

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[HORIZON collaboration network](#)

Participants (14)



ALENIA AERONAUTICA S.P.A.



EU contribution

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Total cost

No data



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Total cost

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Total cost

No data



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No data



EADS DEUTSCHLAND GMBH

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No data



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No data



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Total cost
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Total cost

No data



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Total cost

No data



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Total cost

No data

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European Union, 2025