



ATPI

Aeronautical Project (EC DG RTD)

**High performance damping technology for
Aircraft vibration attenuation and Thermo-
Phonic Insulation**



PARTNERS



ARTEC
(France)



EURO INTER
(France)



LRMA
(France)



OPTRION
(Belgium)



AMORIM
(Portugal)



HPK
(France)



CATHERINEAU
(France)





OBJECTIVES

High level Objectives

To increase the comfort of aircraft passengers and crew by reducing the impact of external noise (fluid flow turbulence, noise propeller for turboprop engine)



OBJECTIVES

Technical Objectives

- To design a new vibro-thermo-phonic solution.
- To develop an alternative/complementary technology able to provide a high thermo-phonic insulation from low to medium frequencies.
- To reach the best performance at low temperature.
- To simulate the vibration characteristics of the skin of an aircraft.
- To simulate the noise and acoustic transmission through the skin of an aircraft.
- To validate the concept with a prototype
- To disseminate the research information



INNOVATIONS

- The design of an innovative technology, replacing the heavy standard solution, with a real damping efficiency and intrinsic acoustic properties on a large frequency band.
- The adaptation of the current SPADD® Surfacic technology to aeronautical constraints enables to:
 - ✓ attenuate vibration levels of shell structures and their acoustic radiation
 - ✓ decrease the noise transmissibility through the fuselage skin while avoiding the weight increase.
- The research of new damping/insulating materials able to sustain and to keep performance on extreme temperature.



EXPECTED ACHIEVEMENTS

- Representative simulation of compound damping technology incorporating the new materials.
- High damping performances for vibrations and noise.
- Lower weight than conventional devices at similar performances.
- High spin off possibilities for aeronautics, when large temperature range will be possible for the damping technology.
- Prototype and quantifiable verification of damping efficiency of aircraft skin, using this innovative thermo-phonic technology.
- Validation of innovative principles for a future aircraft use.



WORK PACKAGES

- **WP1:** Detailed specifications.
- **WP2:** Vibration attenuation and Acoustic insulation study.
- **WP3:** Material study (Visco-elastic polymer, Cork).
- **WP4:** Prototyping.
- **WP5:** Acoustic final validation.
- **WP6:** Management.
- **WP7:** Dissemination.



FIGURES

- Project of small enterprises serviced by SCRATCH (<http://www.aero-scratch.net>).
- Duration: From 01/12/04 to 30/05/06.
- 6 Partner from 3 EU states (and associated).
- Budget: 1 049 264 € Million (Project is co-funded by Industry and the European Commission within FP6 Aeronautical Programme.)
- Dissemination on <http://www.aero-scratch.net>