Turboshaft Engine Exhaust Noise Identification

Fact Sheet

Project Information

TEENI

Grant agreement ID: 212367

Status
Closed project

Start date 1 April 2008
End date 31 March 2013

Funded under
FP7-TRANSPORT

Overall budget
€ 4 686 636,88

EU contribution
€ 3 297 418

Coordinated by
SAFRAN HELICOPTER ENGINES

France

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Objective

Helicopters can generate a large amount of external noise, as their traditional missions – rescue, medical, law enforcement – are very close to populated areas. As
emphasised in ACARE SRA2, increasing rotorcraft missions in the public vicinity should not lead to increasing public disturbance. Turboshaft engine is known as a major contributor to exterior noise for take-off conditions. ACARE SRA2 objectives imply that noise reduction must be maximised for the most dominant engine noise source in flight. An increased knowledge of the exhaust sound sources balance is then required. Broadband noise at a turboshaft exhaust is assumed to be a mix between combustion and turbine noise. TEENI (Turboshaft Engine Exhaust Noise Identification) will find the relationship between engine modules (combustion chamber, HP Turbine, Power Turbine) and their broadband noise signature and will give a recommendation about the noise source to be reduced in priority. But noise sources breakdown is an ambitious goal, due to the complexity of the physics involved, the harsh environmental conditions, and the small space available. TEENI carries in parallel 4 objectives: 1. To develop sensors for fluctuating quantities, adapted to such an environment 2. To develop noise sources breakdown methods 3. To understand broadband noise generation and propagation through blade rows 4. To discriminate engine exhaust noise sources TEENI’s workplan includes: - Innovative sensors development, - New noise sources breakdown techniques, - Basic studies, including rig experiments, to understand the propagation effects of broadband noise through blade rows. These tests will also help to verify noise breakdown techniques. - New instrumentation and source breakdown techniques will be applied to a full-scale engine test - Development in HELENA (from Friendcopter) of the source breakdown capability - Estimation with HELENA of the engine noise source to be reduced in priority in flight

Field of science

/social sciences/law
/engineering and technology/mechanical engineering/vehicle engineering/aerospace engineering/aircraft/rotorcraft

Programme(s)

Topic(s)

Call for proposal

FP7-AAT-2007-RTD-1

Funding Scheme
CP-FP - Small or medium-scale focused research project

Coordinator

SAFRAN HELICOPTER ENGINES

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Private for-profit entities (excluding Higher or Secondary Education Establishments)

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