

PROJECT

SMARTWISE

Smart Miniaturized and Energy Autonomous Regional Aircraft Wireless Sensor

Funding: European (Horizon 2020)

Duration: Jul 2020 - Jun 2023

Status: Ongoing

Total project cost: €350,006

EU contribution: €350,006



[CORDIS RCN : 228820](#)

Objectives:

The objective of the proposed project is to develop a smart, miniaturized and energy autonomous wireless sensor platform dedicated to data collection for the Structural Health Monitoring System (SHMS) of future multi mission regional aircrafts.

Structural Health Monitoring (SHM) in aircrafts requires data acquisition from various sensors distributed over the aircraft skin. Among them are strain, shock/acceleration, sound pressure, rotation and temperature sensors. Today such sensors are wired and installing many of them on aircrafts have a high negative impact on weight and wiring complexity. Thus it is believed that collecting data using smart, easy to install self-powered wireless sensors would strengthen the competitiveness of the European aviation industry by providing the much desired SHMS function with very limited impact on complexity and weight and greatly ease maintenance operations.

Precisely, the SMARTWISE consortium ambitions to realise a self-powered versatile wireless sensor network platform dedicated to structural health monitoring with with specific objectives:

- The proposed concept shall reduce the weight of a comparable wired SHMS system by at least 60%.
- The prototype wireless sensors that will be delivered at the end of the project shall rely exclusively on self-generated energy (no pre-flight charging, cold start supported) and comply with the flight test regulations that will be agreed with the topic manager.
- With respect to comparable wired solutions, the proposed wireless SHM system shall expose a potential of 50% installation and maintenance costs reduction.
- The wireless SHM sensor network, including its power supply and on-board data processing parts shall cover 100% of the SHMS application requirements.

The partners have a long experience working together in Clean Sky and they propose a modular approach where a core wireless platform with advanced energy management can be interfaced to various sensors and energy harvesters.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Other programmes: JTI-CS2-2019-CFP10-REG-02-06 SHMS and Dynamic fields sensors development

Lead Organisation:

Csem Centre Suisse D'electronique Et De Microtechnique Sa - Recherche Et Developpement

Address:

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2002 Neuchatel
Switzerland

EU Contribution: €137,994

Partner Organisations:

Serma Ingenierie

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Organisation Website:

<http://www.serma-ingenierie.com>

EU Contribution: €108,413

Imperial College Of Science Technology And Medicine

Address:

Exhibition Road, South Kensington
LONDON
SW7 2AZ
United Kingdom

Organisation Website:

<http://www.imperial.ac.uk>

EU Contribution: €103,600

Technologies:

Sensor technologies
Wireless sensor network with autonomous nodes

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Digitalisation

Geo-spatial type: Network corridors