

PROJECT

AMPWISE

Autonomous Wireless Current Sensor for Aircraft Power Lines

Funding: European (Horizon 2020)

Duration: Feb 2018 - Jul 2021

Status: Complete

Total project cost: €973,748

EU contribution: €879,789



Call for proposal: H2020-CS2-CFP06-2017-01

[CORDIS RCN : 213593](#)

Objectives:

AMPWISE will develop an energy autonomous wireless smart and low-cost current sensor for remotely monitoring of electric lines in the context of the coming generation of aircraft.

This includes the definition of a sensor architecture co-designed to achieve an optimal balance between the harvested energy and the consumption of sensor and electronics, while meeting the desirable sensing, latency and sampling specifications.

The current sensor design will build on an existing product adapted to meet the form-factor, size and sensing requirements. The simulation of the wireless communication system will guide and validate the design and parameters. The wireless communication will operate in the desirable 4.2-4.4 GHz band in compliance with ITU regulations. The protocol will support reliable, secure, low-power and time-bounded communications, and will tolerate interference and co-existing networks, including in metallic environments. The power supply will use inductive power line harvesting and a resonant power management approach to improve power density, dynamically tunable to the line frequency, and employing magnetic field guiding to meet form factor and installation requirements. The developed concept will reach TRL 5. A laboratory testing facility will be used for evaluating the integrated wireless sensor network.

The consortium includes two industry, SENIS (CH), a sensor manufacturer, and SERMA (FR), an OEM for aeronautical equipment. It also includes CSEM (CH), a RTD with long experience in space and aeronautical projects and Imperial College London (U.K.), a university with significant track record in Energy Harvesting, including prototypes for aircraft. The project will build on existing expertise on aircraft power line harvesting and consortium-level experience, know-how and method in co-designing wireless autonomous aircraft sensors. CSEM, Imperial and Serma have previously worked together on developing such aircraft sensors, within Cleansky.

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-CS2-2017-CFP06-SYS-02-33 Development of functionalizable materials

Lead Organisation:

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

Address:

Rue Jaquet Droz 1
2002 Neuchatel
Switzerland

EU Contribution: €430,550

Partner Organisations:

Serma Ingenierie

Address:

RUE DE L AUSSONELLE AU VILLAGE
31700 CORNEBARRIEU
France

Organisation Website:

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

EU Contribution: €119,487

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: €230,001

Senis Ag

Address:

HERTIZENTRUM 11
6300 ZUG
Switzerland

EU Contribution: €99,750

Technologies:

Sensor technologies
Wireless sensor network with autonomous nodes

Development phase: Demonstration/prototyping/Pilot Production

STRIA Roadmaps:

Cooperative, connected and automated transport, Transport electrification, Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Safety/Security, Digitalisation

Geo-spatial type: Infrastructure Node