InSPIRe

Innovative Systems to Prevent Ice on Regional Aircraft

Funding: European (Horizon 2020)
Duration: Mar 2018 - Feb 2021
Status: Ongoing
Total project cost: €1,299,340
EU contribution: €1,299,340

Call for proposal: H2020-CS2-CFP06-2017-01
CORDIS RCN: 213939

Objectives:

InSPIRe aims at fulfilling all the requirements of the CfP JTI-CS2-2017-CFP06-REG-01-09 “Innovative low power de-icing system” by designing, developing, and manufacturing a demonstrator for a safe, reliable and compact electrothermal low power de-icing system integrated in the wing leading edge for regional aircraft. The proposed technology will be demonstrated in the Icing Wind Tunnel at TRL5 and will be able to meet the goals of Clean Sky 2, WP2.3.1 “Low power WIPS” of the REG IADP.

Methodology:

The core of the proposed ice protection system is a proprietary heater layer technology developed by Villinger GmbH, which is an elastic, semi-conductive polymer that can be applied as a thin coating to a variety of parts and components. The key features of the proposed system are:

- Low-power electrothermal de-icing capability, offering a 40% power requirement decrease compared to the benchmark electrothermal de-icing protection system;
- High system flexibility in terms of allowed configurations and full compatibility with morphing structure;
- In-service fault tolerance and maintenance-free architecture;
- Wider temperature operating range than the benchmark electrothermal de-icing protection system.

The performance of the InSPIRe technology will be achieved due to:

- Low thermal inertia of the system, reducing the runback ice formation during unheated periods;
- Enhanced thermal diffusivity, i.e. lower conductive and convective heat losses;
- Possibility of removing the parting strip, further reducing the power demand of the system;
- Advanced control strategy to optimise heater scheduling.

The InSPIRe system will be designed by a highly experienced consortium relying on state-of-the-art numerical simulation, innovative materials and manufacturing techniques, and thorough testing and qualification activities. The technology will be delivered fully compliant with Civil Certification requirements.

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-REG-01-09 Innovative Low Power De-Icing System

Lead Organisation:

Ait- Austrian Institute Of Technology Gmbh
### Partner Organisations:

<table>
<thead>
<tr>
<th>Organisation Name</th>
<th>Address</th>
<th>EU Contribution</th>
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<tr>
<td>Cest Kompetenzzentrum Fur Elektrochemische Oberflachentechnologie GmbH</td>
<td>VIKTOR KAPLAN STRASSE 2 2700 WIENER NEUSTADT Austria</td>
<td>€63,436</td>
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<td>Villinger Gmbh</td>
<td>GEWERBEPARK 6 6142 MIEDERS Austria</td>
<td>€230,141</td>
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<td>Peak Technology Gmbh</td>
<td>TECHNOLOGIEPARK STRASSE 6 4615 HOLZHAUSEN Austria</td>
<td>€282,549</td>
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<td>Aerotex Uk Llp</td>
<td>Westmead House Westmead Farnborough Hants GU14 7LP United Kingdom</td>
<td>€179,478</td>
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### Technologies:

- Aircraft design and manufacturing
- Multifunctional layer with ice/fire protection and health monitoring

**Development phase:** Demonstration/prototyping/Pilot Production

### STRIA Roadmaps:

- Vehicle design and manufacturing

### Transport mode:

- Air transport

### Transport sectors:

- Passenger transport, Freight transport

### Transport policies:

- Safety/Security
Geo-spatial type: Other