ICE GENESIS

Creating the next generation of 3D simulation means for icing

Funding: European (Horizon 2020)
Duration: Jan 2019 - Dec 2022
Status: Ongoing
Total project cost: €21,980,550
EU contribution: €11,964,300

Objectives:

Current design methodologies used to characterise ice accretion and its effects on air vehicle components and power plant systems are mainly based on empirical methods, comparative analysis, 2D simulation tools and past experience gained on in-service products. Due to the associated uncertainties, cautious design margins are used, leading to conservative and non-optimised solutions.

As future air vehicle and propulsive system architectures introduce radical design changes, it will no longer be possible to rely on the existing design methodologies, making future development extremely difficult to accomplish efficiently and within short development cycles that are demanded by customers and desired by industry. These difficulties are increased by the recent changes in certification regulations, in particular for Supercooled Large Droplets (SLD), which require manufacturers to certify their products against more stringent requirements. Snow also remains a challenge, especially for turbine engines and APUs. ICE GENESIS will provide the European aeronautical industry with a validated new generation of 3D icing engineering tools (numerical simulation tools and upgraded test capabilities), addressing App C, O and snow conditions, for safe, efficient, right first time, and cost-effective design and certification of future regional, business and large aircraft, rotorcraft and engines.

ICE GENESIS will permit weather hazards to be more precisely evaluated and properly mitigated thanks to adapted design or optimised protection through either active or passive means. Furthermore, ICE GENESIS will pave the way for 3D digital tools to be used in the future as acceptable means of compliance by the regulation authorities. Overall, ICE GENESIS will contribute to flight safety, reduced certification costs and increased operability.

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: MG-2-5-2018 Innovative technologies for improving aviation safety and certification in icing conditions (InCo flagship)

Lead Organisation:

Airbus Operations Sas
Address:
ROUTE DE BAYONNE 316
31060 TOULOUSE
France

Organisation Website:
http://www.airbus.com
**Partner Organisations:**

**Rta Rail Tec Arsenal Fahrzeugversuchsanlage GmbH**

**Address:**
PAUKERWERKSTRASSE 3
1210 WIEN
Austria

**Organisation Website:**
http://www.rta.eu

**EU Contribution:** €882,608

**Airbus Helicopters**

**Address:**
Aeroport International Marseille-Provence
13725 Marignane
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**Organisation Website:**
http://www.aibus.com

**EU Contribution:** €384,083

**Ait- Austrian Institute Of Technology GmbH**

**Address:**
Donau-City-Strasse 1
1210 WIEN
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**Organisation Website:**
http://www.arcs.ac.at

**EU Contribution:** €104,286

**Avions De Transport Regional**

**Address:**
Allee Pierre-Nadot 1
31712 Blagnac
France

**EU Contribution:** €205,750

**Safran Aircraft Engines**

**Address:**
2 Bvd Du General Martial-Valin
75724 Paris
France

**Organisation Website:**
http://www.safran-aircraft-engines.com

**EU Contribution:** €596,298

**Corporation De L Ecole Polytechnique De Montreal Association**
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<th>Organisation Name</th>
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<tr>
<td>Osterreichisches Institut Fur Vereisungswissenschaften In Der Luftfahrt</td>
<td>KARLSCHACHTSTRAÈSE, 7 8580 ROSENTAL AN DER KAINACH Austria</td>
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<td>Moscow Institute Of Physics And Technology (State University)</td>
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<td>Federal State Unitary Enterprise Aerohydrodynamic Institute</td>
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<td>Centro Italiano Ricerche Aerospaziali Scpa</td>
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81043 CAPUA (CE)
Italy

Organisation Website: http://www.cira.it

EU Contribution: €1,509,900

Technische Universität Darmstadt

Address: KAROLINENPLATZ 5
64289 DARMSTADT
Germany

Organisation Website: http://www.tu-darmstadt.de

EU Contribution: €642,050

Leonardo - Societa Per Azioni

Address: Piazza Monte Grappa 4
195 Roma
Italy

EU Contribution: €285,585

Rainbowvision

Address: 30 RUE EAU DE ROBEC
76000 ROUEN
France

EU Contribution: €240,625

IAG Industrie Automatisierungs GmbH

Address: INDUSTRIESTRASSE 2
2722 WEIKERSDORF
Austria

EU Contribution: €372,370

Cranfield Aerospace Limited

Address: Cranfield University Campus Hangar 2
Cranfield
MK43 0AL
United Kingdom

Organisation Website: http://www.cranfield.ac.uk

EU Contribution: €324,555

Rolls Royce Plc
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**Central Aerological Observatory**

| Address: | PERVOMAYSKAYA STREET 3  
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**Technologies:**

- Aircraft operations and safety
- Safety (and maintenance) improvement through automated flight data analysis

**STRIA Roadmaps:** Vehicle design and manufacturing

**Transport mode:** Air transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Safety/Security

**Geo-spatial type:** Other