NORIS

Novel Open Rotor Icing Solutions

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Key Facts

- Duration July 2025 - June 2028 (36 months)
- conducted in partnership with the German LuFo-funded project **AIM-ICE**

Consortium

- Austrian Institute for Icing Sciences (AIIS)
- AIT Austrian Institute of Technology GmbH
- ATT advanced thermal technologies GmbH
- AeroTex GmbH (ATX)
- FH JOANNEUM Gesellschaft mbH
- Rail Tec Arsenal (RTA)
- Technische Universität Wien
- External Partner: GE Aerospace

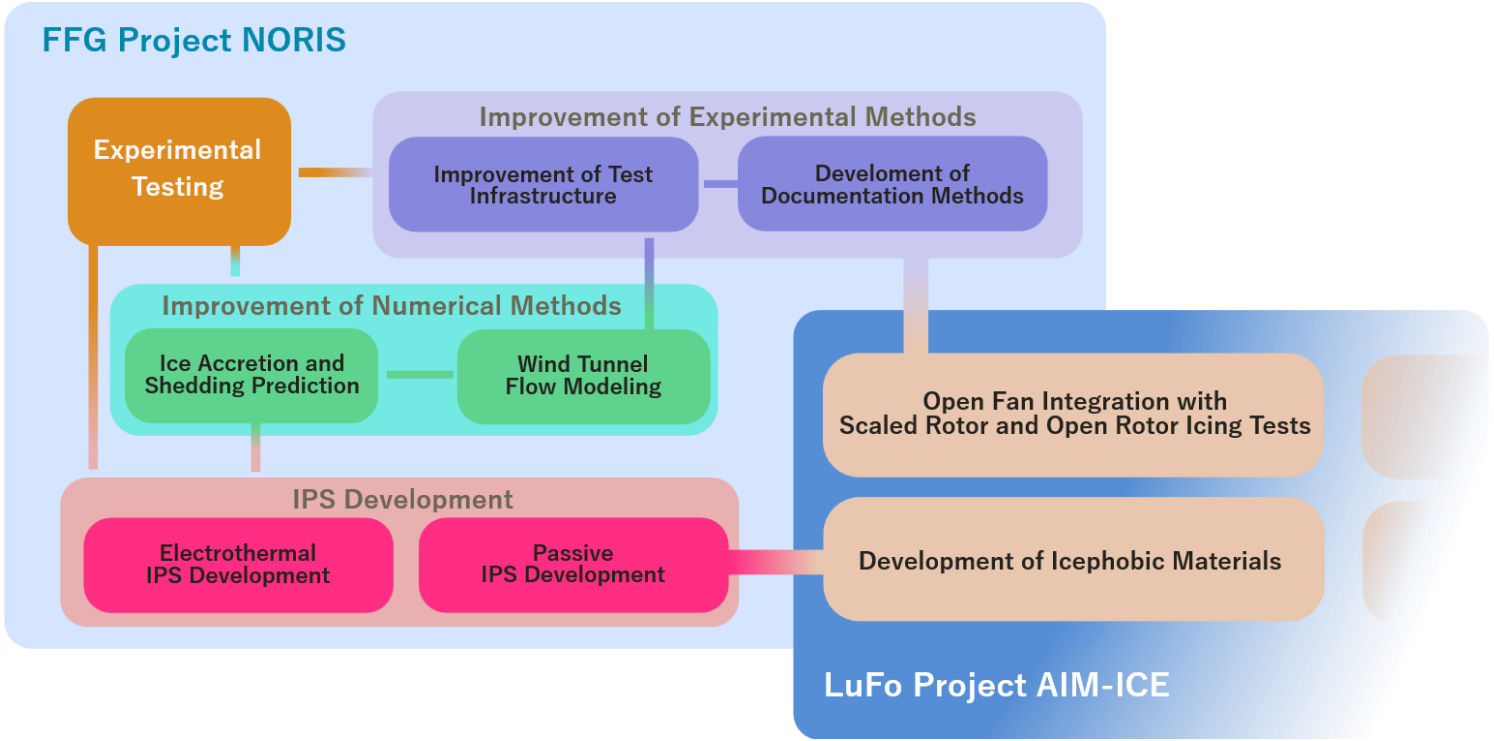
Project Goals

1. Increasing the **safety**, **efficiency** and **reliability** of new-generation **open-rotor engines** for operation under icing conditions

2. Establishing Austrian **test infrastructure** and **methodology** for **propeller icing** tests and associated **documentation methods** for ice accretion and shedding

3. Developing Austrian **active** and **passive ice protection systems** for next generation rotor engines

Project Overview



WP2: Development of experimental and numerical methods

AIIS, AIT, ATX, FHJ, RTA	**Start:** M1 / July 2025 **End:** M36 / June 2028

- Improve experimental infrastructure and documentation methods for testing of propellers in icing conditions
- Refine numerical tools for predicting ice accretion, shedding, erosion, and surface treatment effects

WP3: Development of ice protection systems for large propellers

TUW, AIIS, AIT, ATX, ATT	**Start:** M1 / July 2025 **End:** M24 / June 2027

- Develop and build a hybrid ice protection system for large propellers
- Electrothermal system of screen-printed electrically conductive layers on foil-based substrate for operation in de-icing mode
- Laser-induced periodic surface structures (LIPSS) to optimise the wetting behaviour and reduce ice adhesion
- Integrate the system into the propeller's IPS slot for testing in the second IWT campaign

WP4: Experimental testing

RTA, AIIS, AIT, ATT, ATX, FHJ, TUW	**Start:** M1 / July 2025 **End:** M30 / December 2028

- Small-scale testing at FHJ icing chamber
- Planning of two large-scale propeller icing test campaigns
- 3 testing days in IWT for establishing a performance benchmark for the electrothermal IPS and test prototypes of documentation systems
- 13 testing days in IWT with hybrid IPS to quantify performance and determine optimal heating cycle in realistic conditions

Exploitation

- Commercialization of new icing test and measurement services for propellers
- Development and industrialization of electrothermal and hybrid ice-protection technologies for large propellers
- Strengthening numerical analysis and testing capabilities to support future propeller and open-rotor aircraft developments
- Dissemination through journal publications, conferences, and student theses while advancing research in icing, surface functionalization, and experimental methods.

Contact

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