

INNOTECH AREA

R&I EUROPEAN PROJECTS



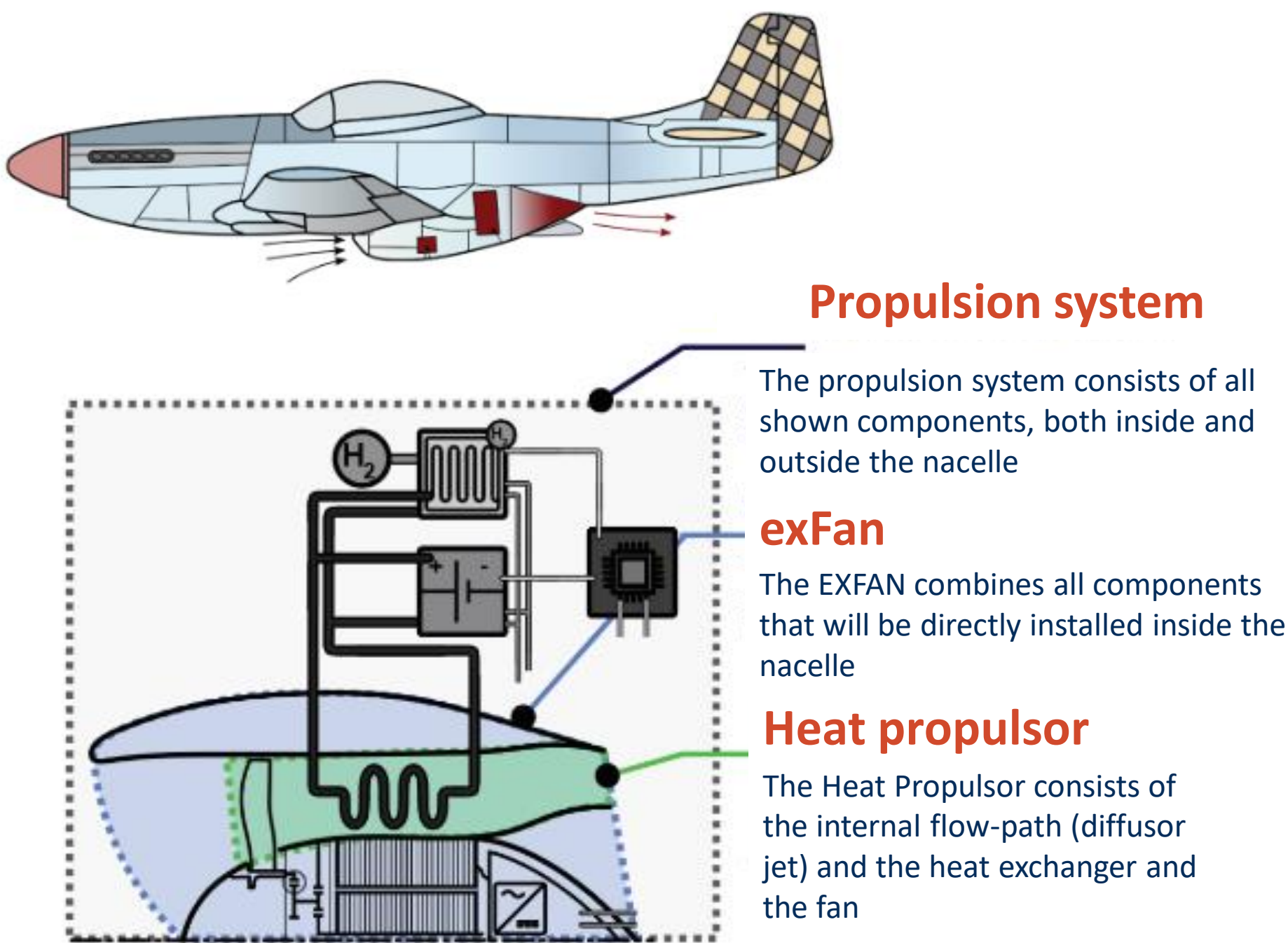
NOVEL RECUPERATION SYSTEM TO MAXIMIZE EXERGY FROM ANERGY FOR FUEL CELL POWERED GEARED ELECTRIC AIRCRAFT PROPULSION SYSTEM

ABOUT

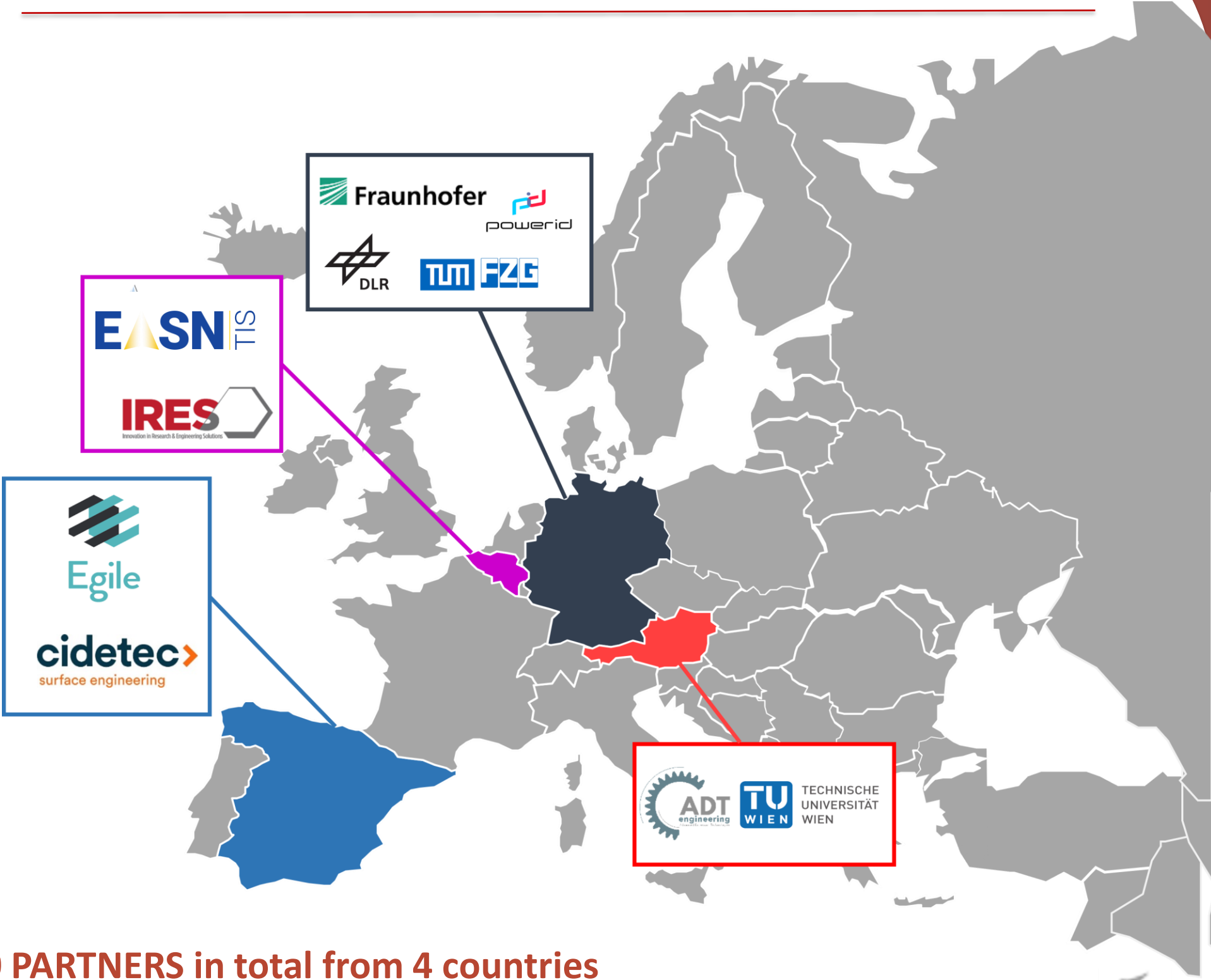
exFan is an EU funded collaborative research project set out to devise a **novel heat dissipation and recovery system within a high-powered electric fan propulsion system driven by fuel cell technology**. Central to this objective is the incorporation of a ducted heat exchanger within the propulsion system's nacelle. It will use the "Meredith effect" incorporating the ram jet effect to **generate thrust from waste heat**.

The **breakthrough innovations** proposed in exFan will:

- allow aircraft manufacturers to offer **savings in operation costs**,
- enable European aeronautics industry to maintain **global competitiveness and leadership**,
- Contribute to the path towards **CO2 and NOx emission free aircraft**,
- investigate how heat propulsor can be integrated within a hydrogen-electric propulsion system.



PROJECT TEAM



- 10 PARTNERS in total from 4 countries
- 4 Industries (3 SMEs: ADT, IRES & PID and 1 Large Industry: EGI)
- 3 RTOs (CID, DLR & FHG)
- 2 Academia (TUM, TUW)
- 1 SME (EASN-TIS)

OBJECTIVES

- To design a revolutionary heat exchanger integrated into a geared electric fan, aiming to optimize heat dissipation and enhance the efficiency of the fuel cell-powered propulsion system.
- To develop an advanced recuperation device to efficiently convert waste heat into additional thrust, based in the Meredith Effect.
- To lay out a sophisticated thermal management system.
- To develop comprehensive system simulations for exFan, providing invaluable insights into the intricacies of the novel propulsion system.
- To reduce global warming potential by 20%, achieved through meticulous parameter balancing and strategic handling of water vapor at high altitudes while focusing on both operational and environmental aspects.
- To facilitate knowledge transfer, sharing project results with Clean Aviation and Clean Hydrogen Joint Undertaking.

BASQUE PARTICIPANTS



ROLE IN THE PROJECT:
Project Administrative **Coordinator**
Participation in the design, testing and characterisation of **Heat Exchangers surfaces**

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ROLE IN THE PROJECT:
Responsible of propulsion system evaluation and main developer of electric drive concept.

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Programme, Pillar and Thematic Area

Horizon Europe, Pillar II - Global challenges and EU industrial competitiveness, Cluster 5, Clean and competitive solutions for all transport modes, Aviation



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Co-organizers:



EXPOSSIBLE!