TURBOTECH AND ANSYS: COLLABORATION TO ADVANCE HYDROGEN-POWERED LIGHT AVIATION

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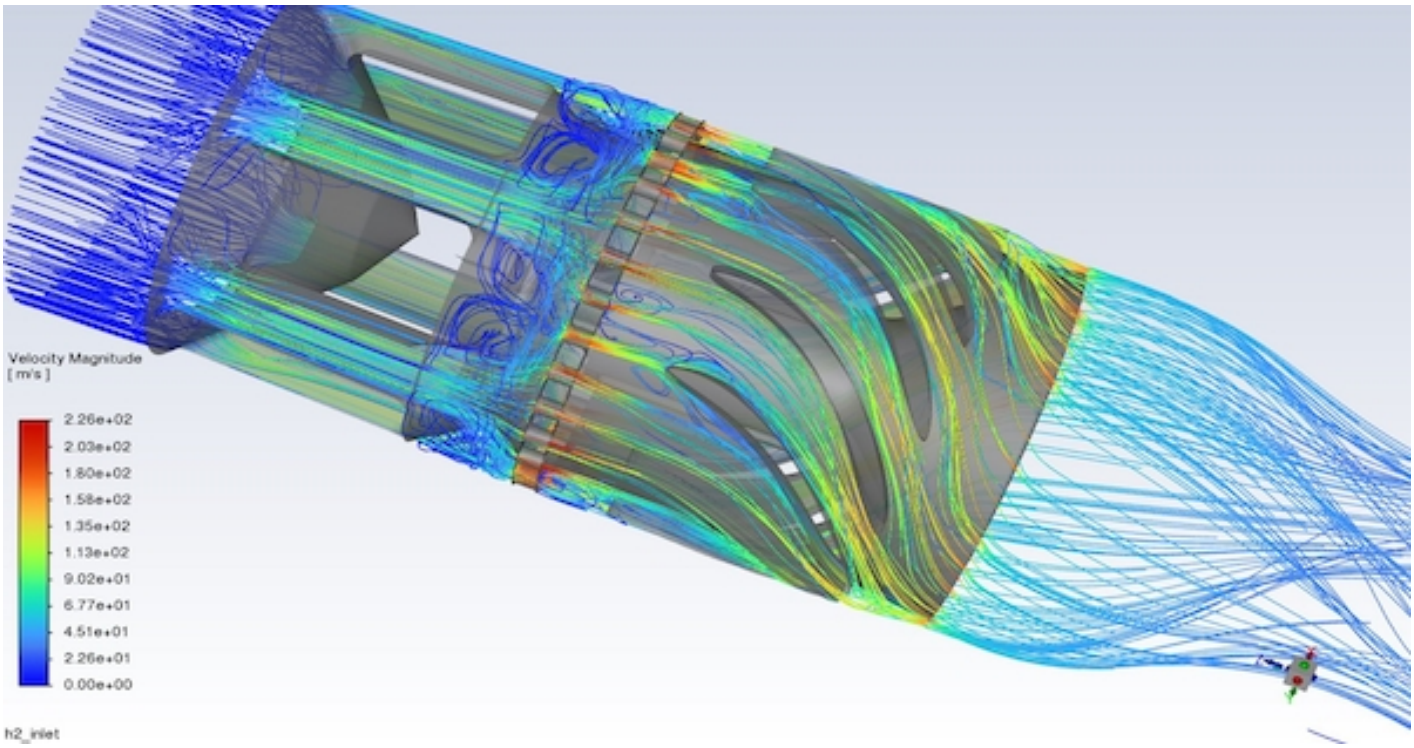

Turbotech, a provider of efficient and sustainable aeronautical solutions, relies on Ansys simulation to develop the first truly viable hydrogen-powered turbine engine for light transport aircraft, VTOL vehicles, drones and more. In partnership with the BeautHyFuel project, Turbotech is the first company to successfully demonstrate a hydrogen-powered turboprop engine, underlining the crucial role of Ansys simulation in advancing next-generation technologies.

Exploratory turbine designs struggle to use hydrogen as a fuel safely and reliably, complicating the balance between power delivery, fuel consumption, heat and combustion system life. Turbotech takes an evolutionary approach, using Ansys simulation to design and validate a fuel-independent gas turbine, easing the transition to hydrogen.

Simulation-driven product development enabled Turbotech to quickly identify the two best injector designs for real-world testing, reducing prototyping time and costs. Fluent software provided high-fidelity predictions of flame shape and temperature. After 30 hours of hydrogen combustion, the injectors retained their structural integrity virtually intact, with no increase in turbine emissions. Ansys solvers also allowed Turbotech to run these simulations on optimized workstations, avoiding the need for the large clusters traditionally required to model combustion.

Turbotech first developed an innovative regenerative turbine through the Ansys Startup program. This work paved the way for a digital wire allowing data to be connected and managed

seamlessly, subsequently allowing conversion to hydrogen.

Guillaume Malet, Turbotech's Technical Director commented: “Turbotech's aim is to bring to the light aviation market an integrated solution that reduces carbon emissions and allows pilots to concentrate solely on flying. Ansys' reliability helped us enormously throughout the redesign, allowing us to adapt the turbine to hydrogen in a much shorter time. It would not have been possible to test or optimize our prototypes without Ansys simulation."

This series of tests is part of the BeautHyFuel project, supported by the French Civil Aviation Authority (DGAC) and led by Turbotech and Elixir Aircraft, in partnership with Safran, Air Liquide and Daher.

Walt Hearn, Senior Vice President of Customer Excellence and Global Sales at Ansys stated: “Ansys is committed to supporting customers like Turbotech to push the boundaries of what can be achieved through simulation. This success on the first quick attempt was made possible not only by Turbotech's expert engineers and their deep understanding of complex multiphysics, but also by Ansys' strong technical support at every stage of the project. This collaboration is essential to help Turbotech save time, money and resources while developing this new market."

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