

## Executive Summary

### Hydrogen for Aviation

#### Results of a Workshop

held at the University of Sheffield (USFD), UK, on January 25, 2007



In plenary, the participants to the workshop concluded that Hydrogen is not a solution for aviation in term of propulsion. Without even considering the impact on aircraft and engine design the use of cryogenic hydrogen would have, the amount of hydrogen necessary and the cost and the technical difficulties to overcome, with regard to the production and transportation of liquid hydrogen, would be way too heavy for the air transportation industry to allow a transition from kerosene to hydrogen.

However, it is conceivable to consider the use of Hydrogen for aircraft internal systems: APUs, water supply, air conditioning etc. In this case, it is necessary though to enlarge our horizon and not consider hydrogen as such but to focus on fuel cells technologies and their applications, keeping in mind that hydrogen is not the only feasible carburant for fuel cells.

To consider seriously a transition from conventionally driven to fuel-cell based aircraft internal systems, the costs, feasibility and the benefits for the environment must be carefully determined. The impact on the whole transportation chain (mainly at the airport level) in terms of organization and costs must also be evaluated. It appeared obvious to everyone present at the workshop that such a transition would clearly require a driver to justify the changes and the costs, the development and introduction of new systems would imply.

#### **The following results, research needs and challenges were identified:**

- Hydrogen is not a solution for aviation propulsion
- Hydrogen can be used for aircraft internal systems
- Research on fuel cell technologies for aviation is necessary, costs and environmental benefits need to be assessed