

CRYOPLANE – HYDROGEN VS. KEROSENE AS AIRCRAFT FUEL

C.J.KORONEOS and N.MOUSSIOPOULOS

Laboratory of Heat Transfer & Environmental Engineering (LHTEE)
Box 483, Aristotle University Thessaloniki, 54006 Thessaloniki, Greece

ABSTRACT

Liquid Hydrogen is the only known fuel suitable for aircraft to be produced from renewable energy and offering extremely low emissions (zero CO₂, very low NO_x). Use of Liquid Hydrogen can: eliminate the dependency of aviation upon dwindling crude oil resources; eliminate, or at least reduce dramatically, the contribution of aviation to the anthropogenic greenhouse effect. The CRYOPLANE project shall provide a comprehensive analysis of the complex interrelated aspects, the feasibility of safety and environmental compatibility. It shall produce technical solutions and tools and indicate possible strategies for Europe for a smooth transition to the new fuel. Life Cycle Analysis (LCA) of kerosene is the first step for comparing the environmental impacts with those from different production chains of hydrogen fuel. A complete and accurate identification and quantification of air emissions, water effluents, and other life-cycle inputs and outputs has been performed. The environmental performance of kerosene that has been determined by the LCA study will be used as a reference point for the evaluation of hydrogen as an aviation fuel.