TRAINING COURSE

Sustainable Aviation Fuels (SAF), Low Carbon Aviation Fuels (LCAF) and other cleaner energies

Introduction

This course explores the rapidly evolving landscape of aviation energy, focusing on Sustainable Aviation Fuel (SAF), Low Carbon Aviation Fuel (LCAF), and emerging alternatives such as hydrogen and electric propulsion.

Participants will gain insight into production pathways, regulatory frameworks, environmental impacts, and industry adoption strategies. Ideal for aviation professionals, engineers, and sustainability leaders, this course equips participants with the competencies needed to support the transition toward low-carbon aviation.

The training course focuses on introducing of energy sources for air transport that would be different than conventional kerosene - one of the few elements that has remained unchanged throughout aviation history. To secure fuel supply at affordable costs and reduce environmental impact, solutions like hydrogen and electricity can provide alternatives to conventional fuels, alongside Sustainable Aviation Fuels (SAF) and Low Carbon Aviation Fuels (LCAF).

Learners will acquire knowledge on the availability and potential of drop-in fuels such as SAF and LCAF, as well as non-drop-in fuels, which are not compatible with existing aircraft and engine technologies and will require major changes in production, transportation, storage and refuelling procedures, including risk management ones, both on ground and in flight (this is the case hydrogen and electricity). The course will cover these fuels from the definition, characteristics, composition, production pathways, storage, transportation and usage.

Hydrogen and electricity can be considered as solutions for small aircraft modules on short and medium range operations. For instance, hydrogen can be used in two main applications: direct aircraft propulsion, where hydrogen is burned in gas turbines (similar to current architecture) and/or in fuel cell technologies, where hydrogen is converted into electricity to feed electric motors, propellers/fans. Hydrogen can also be combined with captured CO2 to produce e-fuels (or PtL for Power-to-Liquid), one of the most promising sources of alternative fuels for aviation (competing with the direct use of H2). The resulting product is a drop-in fuel classified as SAF and can be used in conventional aircraft and engines.

The course will provide fundamental knowledge on the characteristics of SAF, LCAF and cleaner energies sources, with a strong focus on risk management across all phases of their use (well to wake). It will also emphasize the needs for additional research, test trials and certification processes. Finally, the course will

present the latest commitments and roadmaps from industry stakeholders, policy-makers, NGOs and energy providers.

COURSE DURATION

5 days, starting at 09:00 and ending at 17:00

TARGET GROUP

→ OEMs for the production of new aircraft and engines, capable of flying with direct H2 combustion, and/or to enable higher percentage of blend for SAF and LCAF:

- Engine propulsion experts
- Systems design and production
- Materials experts
- Aircraft design experts (tanks, systems, …)
- Performance experts (payload, range, loads…)
- Engine emissions experts

→ Cockpit and cabin crew to understand the differences between flying on SAF, LCAF, H2 and electric-powered aircraft and flying with conventional fuel, in normal and degraded conditions, including safety and emergency conditions.

→ Ground handling services:

- flight dispatcher
- load controllers,
- passenger and baggage handling experts,
- freight and mail handling experts,
- aircraft servicing technicians,
- loading of catering experts,

- fuelling specialists,
- ground supervisors

→ Air traffic management: communications with crew (in flight and on-ground) in particular to minimize and manage hazards and risks.

→ Regulatory and Safety Officials working with aviation fuel systems.

→ Hydrogen Technology Specialists focusing on storage, distribution, and infrastructure.

Read more about the course Content, Learning Objectives and Pre-requisites on the website: www.jaato.com