



ISAFF
Italian Sustainable Aviation Fuel Forum

**The Italian R&I Excellence in the Global Trends
and in the European Vision**

Secretariat Italian Sustainable Aviation Fuel Forum – ISAFF

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<http://www.industriaenergia.it/isaff>

SCOPE OF THE FORUM

Nowadays the aviation is committed to face many topics connected to energetic and environmental matters. Among them, the most challenging appear: i) the increasing number of passengers and the related increasing fossil energy needs, ii) the environmental burden, both in terms of greenhouse gas emissions and of environmental effects still to be correctly assessed such as contrails and cloud systems formation due to NO_x emissions, iii) the implementation of CO₂ trading mechanisms in the air transport system, currently enforced for intra-European flights and under discussion under the ICAO umbrella for its worldwide extension through the so called Market Base Measures (MBM).

The aviation European Research and Innovation sector is deeply engaged on these topics and, in an attempt to maintain a global leading position, both with traditional (United States) and new competitors (Brazil, Russia, China and India), has defined a clear long-term vision strategy aiming at answering to social demands and at maintaining and developing air transport systems well connected and integrated with other transport networks and based on safety, reliability, cost reduction and emission abatement.

These objectives have been transformed into European research strategies based on primary topics such as: i) aircraft propulsion technologies and design, ii) alternative fuels, iii) air traffic and airport management including its integration with other transport systems at national, European and global level iv) noise reduction, v) passengers safety and security and, vi) regulation and standardization (ACARE, Strategic and Innovation Research Agenda, September 2012).

The matter related to alternative fuels appears rather relevant as it affects not only energetic, environmental and technological aspects but also social aspects and public acceptance. In this context, the forum aims at collecting, monitoring, selecting and disseminating relevant information in the aviation field and in complementary energy areas, particularly on the following main topics:

- Development of propulsion technologies and related energy efficiencies;
- Progress on European and international regulations related to reduction of greenhouse gas emissions in aviation (e.g. EU-ETS, ICAO-MBM), quality fuel standards and usage of sustainable biofuels;
- Advancements on sustainability policies and support to new aviation fuels (e.g. policies for sustainable biofuels);
- Development of a production, handling and distribution supply chains for alternative aviation fuels compatible with fuel systems currently in use and approved;

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- Implementation of the latest airport technologies, transportation and handling ground systems in order to improve energy and environmental performances.

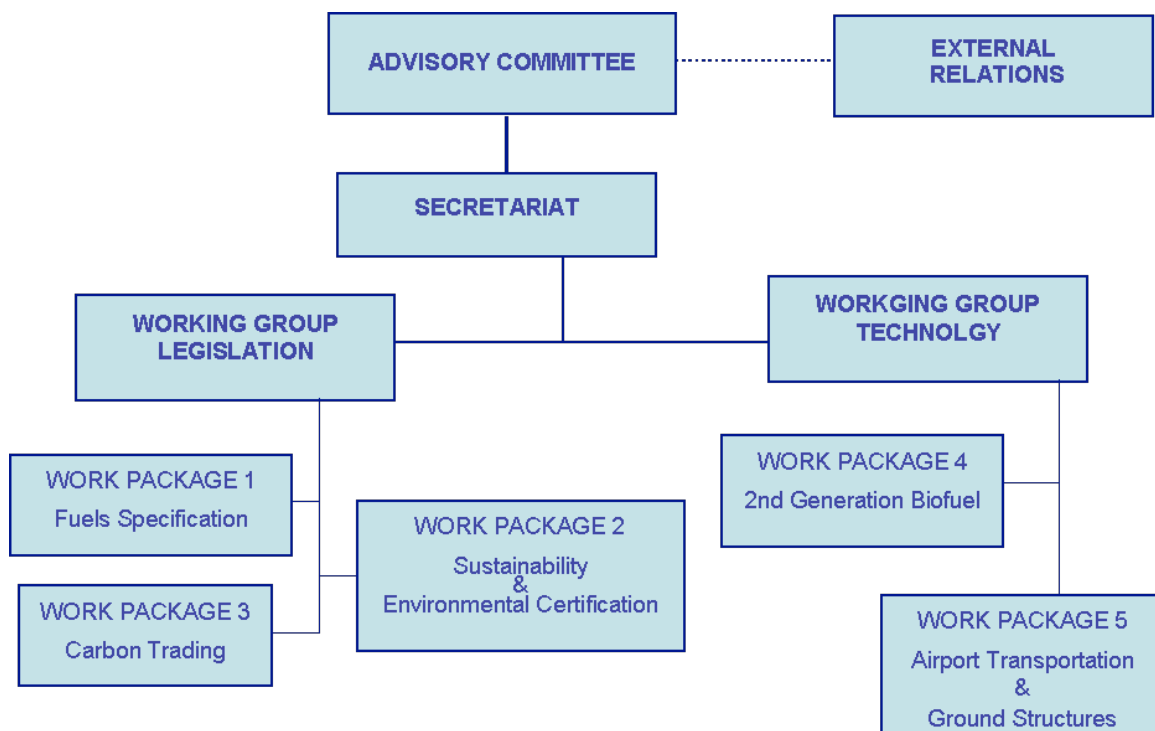
Within activities related to collection and dissemination of updated information, the Forum aims at:

- Making information available to all participants and discuss them within the Forum;
- Identifying instances of individuals and Forum participants having interest and expertise in the civil aviation in order to transmit them to the authorities and institutions engaged on energy, environment and transportation topics.

The Forum aims also at identifying Italian supply chains based on technologies developed at industrial/demonstrative level by its member and, at assessing them from the environmental, social and economical point view in order to check large scale feasibility.

The Forum act also as a trait d'union among its member, in order facilitate campaigns aiming at planning flight testing with new jet fuel.

ORGANIZATIONAL FLOW DIAGRAM



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WORKING GROUPS AND TERMS OF REFERENCES

Legislation

This group is focused on the whole matter related to legal compliance and marketability of alternative fuels, particularly on topics concerning quality standards, aircraft and propellers requirements, sustainability, environmental certification and mechanisms of CO₂ trading. In details, the main tasks of the group are:

1. Evolution of international and European general and specific aviation requirements particularly for environmental subjects
2. International aspects
 - 2.1. Monitoring of extra-European countries initiatives and international airlines activities on topics related to environmental regulations
 - 2.2. Progress on development and usage of alternative fuels
3. CO₂ trading
 - 3.1. Evolution of European legislation on enforcement of the Emission Trading System (ETS) mechanism to intra-European flights by monitoring annual emissions, CO₂ price and credits availability
 - 3.2. Monitoring of the debate in progress under the ICAO umbrella on the mechanism for CO₂ trading on a global scale (MBM, Market Based Measures) by paying attention particularly to measures under examination by ICAO technical organisms and public consultations campaigns
4. Quality standards
 - 4.1. Evolution of quality standard of alternative fuels to be used both in mixture with kerosene (drop in fuel) or as such
 - 4.2. Proposal of standards for new jet fuels in compliance with requirements for storage and distribution ground systems and aircraft utilization
5. Progress on enforcement of Energy Taxation directive and its possible impact on the aviation system
6. Monitoring of studies reported in the current literature on Life Cycle Analysis of alternative fuels. Evolution of the European directives on environmental certification of biofuels particularly, for aspects related to Indirect Land Use Change (ILUC)

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Technology

This working group deals with new technologies aiming at improving energy efficiency of air transportation systems and reducing air emissions. Particularly, the group is focused on:

1. Compatibility between alternative and traditional jet fuels
 - 1.1. Compatibility of current transportation, storage and refueling airport systems with those required by alternative fuels
 - 1.2. Airport technologies and ground systems for transportation and passengers and goods handling
2. New technologies for high efficiency propellers
3. Technologies for production of new jet fuel at low environmental impact both from fossil resources, i.e. jet fuel from natural gas, as well as from renewable resources. In this last case, the following main topics will be addressed:
 - 3.1. Biomass for jet fuel production from no food resources, i.e. oleaginous (camelina, brassicaceae, jatropha, tobacco oil - TOBOIL, etc.) or lignocellulosic energy crops (SRF, reed, miscanthus etc.), as well as agro-industrial residues and by-products, organic fraction of municipal solid waste and algae
 - 3.2. Evolution of most advanced technologies for synthetic kerosene production, i.e. vegetable oil hydrogenation and biomass to liquids processes
 - 3.3. New technologies for jet fuels production from alcohols (AtJ, Alcohol to Jet fuel), sugars (StJ, Sugars to Jet fuel) and, from gaseous substrates (fermentation of CO containing gaseous effluents)
4. Main barriers to large scale production and marketing of new jet fuel and initiatives to be undertaken for their removal, i.e. public support, take-off agreements at reasonable costs for jet fuel as well as for ground transportation fuels

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DELIVERABLES

Main outputs of the Forum are:

1. A three month basis Newsletter
2. Four annual reports: two each working groups
3. One annual workshop
4. Access to a month basis report on biofuel
5. Definition of possible Italian supply chains and their study in terms of feasibility and sustainability
6. Organization of experimental flight testing campaign with new Italian alternative jetfuel
7. Position papers on specific subjects such as availability and sustainability of biomass, European and national policy on biojet fuel, CO₂ trading, etc

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MEMBERS

 Aeroporto di Firenze	http://www.aeroporto.firenze.it
	http://www.alitalia.com/IT_IT/
biochemtex 	http://www.biochemtex.com/
	www.chimec.it/
 <p>ENTE NAZIONALE PER L'AVIAZIONE CIVILE</p>	http://www.enac.gov.it/Home/
	http://www.eni.com/it_IT/home.html
	http://www.enea.it/it
	http://www.marina.difesa.it/Pagine/default.aspx
 <p>MINISTERO DELL'AMBIENTE E DELLA TUTELA DEL TERRITORIO E DEL MARE</p>	http://www.minambiente.it/

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