



Lufthansa

Aviation Biofuels: “Are you getting on Board?” Lufthansa Remarks

**DoE
Biomass Conference
Washington DC
10.-11. July 2012**



Sustainable bioenergy farming is possible ...

...but needs precautionary protective actions!

- Avoid competition with local Food Supply!
- Protect Biodiversity!
- Be aware of Land Use Change (LUC) problems!
- Be aware of Indirect Land Use Change (ILUC) problems!
- Provide professional water management!

Harmonization of Sustainability Criteria and Measurements between the United States and the European Union is necessary.



Lufthansa Geared Up with Aviation Biofuels

Lufthansa tested biofuel in regular flight operations for six months.

It is technically possible to use biofuels in routine flight operations.



Lufthansa - Project burnFAIR : Facts

Duration: 15 July to 27 December 2011
8 flights per day

Route: HAM-FRA-HAM
(1h flight time)

Aircraft: Airbus A321

Biofuel quantity: 800 tonnes

Biofuel ratio : 50% in one engine

Costs: 6.6 million euros



Results at a glance

A 321-200 D-AIDG

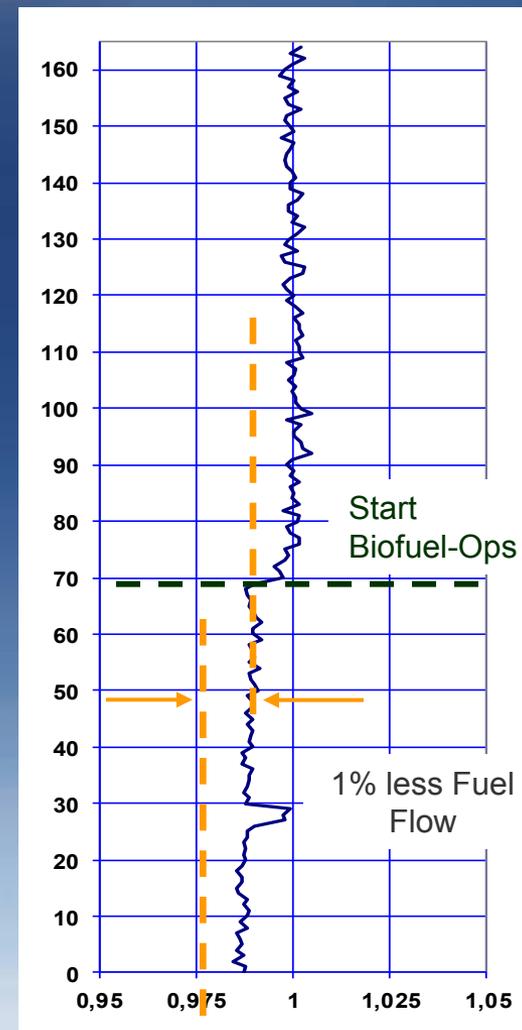
Conducted number of flights:	1187
Total Consumption of bio blend [t]:	1557
Saved CO ₂ [t]:	1471



Improved Engine Performance

Engine condition monitoring

- Lower fuel consumption of the starboard engine as a result of higher energy density of the biofuel (~1%)
- “Biojet fuel burns cleaner” – particle output lower and size of particles smaller



Climate friendly from FRA to IAD

- The first transatlantic scheduled flight was conducted to the USA on 12. January 2012 using biosynthetic fuel.
- A Lufthansa Boeing 747-400 fuelled with 45 tonnes of bio kerosene blend flew from Frankfurt to Washington, DC.
- 38 tonnes of CO₂ were saved on this flight.



Industry Recognition

- Clean Tec Media Award 2011 – Germany
- Air Transport World Golden Award Winner 2012 – USA
- Airline Business Strategy Award Winner 2012 – United Kingdom

“It takes teamwork to make it run like clockwork.”



Objective: sustainable solutions

- The global aviation industry is committed to continuous improvement of reliability, safety and performance – this is our industry approach (i.e. FAA, NTSB, EASA, IATA).
- Aviation Biofuels have the strongest impact on mitigation of climate change.
- Efficient biomass production and a variety of processing options are the key elements of a climate friendly global air traffic.



Synergies necessary

- Synergies between feedstock producers, refinery operators and airlines as the end-users in a brand new supply chain are necessary
- Development of an economically viable price model for airlines



Call for a new (Bio-)Fuel Procurement

- Think global – act local!
Marine and Aviation are the founders of global transport.
- A brand new market is coming up: Do we want to copy the existing price model? For the first time ever we have the chance to change the game.
- But we are going to compete with road and marine fuels for the same biomass feedstock. The global network of airlines has a lot of opportunities.

The sky has no limits!



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A big step forward: CAAFI and aireg

- aireg provides the platform for renewable energy in German aviation with currently 31 members and still growing



Aviation Initiative for
Renewable Energy in Germany e.V.



CAAFI and aireg are looking forward to seeing you at the Berlin Airshow
Aviation Biofuels Convention on 12. September 2012 in Berlin

The beginning is half the way to success
(Korean word of wisdom)



Thank you Boeing for supporting Aviation Biofuels!