

Airports and Alternative Fuels

ICAO –
Alternative Fuels Workshop

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Outline

- ACI
- Alternative Fuels for Aircraft
 - Drop-In Fuel
 - New Technology – Non Drop-In Fuel
- Environmental Issues and Interdependencies
- Non-Aircraft Alternative Fuels



Airports Council International

- ACI has 597 members operating over 1679 airports in 177 countries and territories.
- In 2007, ACI members handled 4.8 billion passengers, 89 million metric tonnes of freight, and 76.4 million aircraft movements.

ACI's MISSION:

- To advance the collective interests of the world's airports and promote professional excellence in airport management and operations.



Alternative Fuels for Aircraft – Drop-In

The “perfect” solution

- Prepared at the refinery
 - Delivered to the airport
 - Stored and Distributed to the aircraft
 - All using the existing infrastructure
 - Seamless transition
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- No significant modifications to airport infrastructure and procedures
 - Major contribution to the sustainability of aviation



Non Drop-In Fuels for Aircraft

Exotic - New Technology - Hydrogen, Ethanol, LNG, CH₃

- Currently no realistic proposals
- New aircraft and engines

New fuels systems for:

- Delivery to airport
- Storage at airport
- Distribution to aircraft
- Pressure and temperature of fuel

Major infrastructure changes will affect viability



Environmental and Operational Issues

Effects of Burning the New Fuel in Aircraft

- GHG/Climate change – full life-cycle effects of fuel
- Local Air Quality – NOX, SOX, CO, HC, PM

New versus existing aircraft

- Size of aircraft – terminal layouts
- Noise certification and climb rates (far out noise)
- Avoid erosion of recent noise gains (A380, B787, C-Series) in favour of fuel efficiency



Environmental and Operational Issues

Effects of Fuel on Ground Activities

- Safety issue – hazardous material handling
- Spill prevention, containment, clean-up
- Evaporation, fumes, odour
- Flammability, fire risk, fire fighting



Experience in South Africa

- CTL fuel is a drop-in fuel
- Up to 50% fuel content
- Sulfur free
- No major operational or environmental issues in South Africa



Non-Aircraft Alternative Fuels

Mobile Equipment – GSE, Landside/Airside transport etc.

- CNG, LPG
- Liquid Hydrogen
- Electricity

Stationary Equipment

- Power Generation on and off site
- Heating/Cooling Plants



Cost and Benefits

Costs

- Vehicles
- Infrastructure

Benefits

- GHG reduction
- LAQ emissions



Rapid recharge station for Electric Vehicles
at DFW



Operational Issues

Passenger vehicles need whole network



Hydrogen vehicle filling station at LAX



Stationary Equipment

- Solid waste burners realistic for stationary plants
- Transportation and storage of fuel
- Operator commitment to carbon neutrality

Wood pellets for new boilers at Sweden's Sturup airport





In closing

- A Drop-In Alternative Fuel for aircraft should have no adverse impact on airport infrastructure, operation and environmental management
- Researchers of Exotic fuels don't need to be reminded of impacts of fuel supply infrastructure, airports and the aircraft fleet.
- LAQ benefits welcomed
- Noise should not be compromised

THANK YOU

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