Airworthiness Regulations For Aviation Fuel

Regulatory Authorities Do Not Certify Fuel, They Certify Airplanes and Engines to Operate on Specified Fuel

Aircraft Operator (Airlines) Operating Rules
- Must Adhere to Aircraft and Engine Limitations

Aircraft Operating Limitations
- Engine limitations Used for Aircraft

Engine Operating Limitations
- Fuel Specification

ASTM Fuel Specification

CAAIFI
Why is ASTM Approval so Important?

ASTM Qualification

- D7566 New Annex Drop-In Fuel
- New Spec Non-Drop-In Fuel

Airworthiness Certification

- Re-Certify All Engines
- Re-Certify All Aircraft
- Approved for Airline Operations

The Key to Commercialization

Unchanged Operating Limitation

Why is ASTM Approval so Important?

- New Oper Limitation
  - ASTM Qualification
  - Airworthiness Certification

Why is ASTM Approval so Important?

- ASTM Qualification
  - D7566 New Annex Drop-In Fuel
  - New Spec Non-Drop-In Fuel
- Airworthiness Certification
  - Re-Certify All Engines
  - Re-Certify All Aircraft
  - Approved for Airline Operations

The Key to Commercialization

Unchanged Operating Limitation
Approved Alternative Jet Fuels

- **ASTM D7566**
  - Sept 1, 2009

- **FT**
  - Sept 1, 2009

- **HEFA**
  - July 1, 2011
  - Also Called HRJ or Bio-SPK

- **Plant/Animal Oils**
- **Biomass**
- **Coal**
- **Natural Gas**

Drop-In Fuel Spec

- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015

November 14, 2012
Certification-Qualification: Future Fuels

- **Plant/Animal Oils**
  - Hydrotreated Depolymerized Cellulosic Jet (Pyrolysis) (DHCJ)
  - Catalytic Hydrothermolysis (CH)

- **Lignocellulose**
  - corn stover
  - forest waste

- **Switchgrass**

- **Coal**
  - FT-SKA

- **Sugar**
  - Direct Sugar to HC’s (DSHC)

- **Other Catalytic Conversion Processes**
  - Alcohol to Jet (ATJ)
  - Hydrotreated Depolymerized Cellulosic Jet (Pyrolysis) (DHCJ)
  - Catalytic Hydrothermolysis (CH)

- **Catalytic Conversion Processes**
  - ARA
  - KiOR
  - UOP
  - SASOL
  - Virent
  - Amyris
  - Lanza Tech
  - GEVO
  - Byogy
  - Cobalt USN
  - UOP
FUELING SOLUTIONS FOR SECURE & SUSTAINABLE AVIATION