April 24, 2025

BEST Webinar

- Synthetic Aviation Turbine Fuel Qualification/Standardization

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Terminology

SATF, synthetic aviation turbine fuel

aviation turbine fuel containing synthesized hydrocarbons

SBC, synthetic blending component

synthesized hydrocarbons that meet the requirements of one of the annexes in ASTM D7566 standard specification

CBC, conventional blending component

blending streams derived from hydrocarbons that come from conventional sources such as crude oil, natural gas liquid condensates, heavy oil, shale oil, and oil sands

SAF, sustainable aviation fuel

aviation turbine fuel containing synthesized hydrocarbons derived from sustainable feedstocks and processes

Drop-in Fully-SATF, drop-in fully synthetic aviation turbine fuel

synthetic aviation turbine fuel that exhibit essentially identical composition, performance, and physical properties as existing petroleum-derived fuels and require no special handling or unique operating procedures

Paraffinic-SATF, paraffinic synthetic aviation turbine fuel

synthetic aviation turbine fuel comprised primarily of paraffinic hydrocarbons





Qualification into D7566 via D4054 process







Clearinghouse

- US Univ. of Dayton Research Inst.
- EU Trinity College Dublin
- UK Univ. of Sheffield
- process, data, plans
- 50-100 gal fuel early
- 1000's gal later if req'd

Prescreening

- US WSU
- EU DLR
- < 1L fuel

- Wider tech community engagement
- overview at ASTM/CRC

ASTM Task Force

D02.J06 Chair

OEM introduction

- ready for clearinghouse?
- fast track?



Prescreening:Josh Heyne (WSU), Georg Echel (DLR)OEM intro:George Wilson (SwRI)Clearinghouse:Zach West (UDRI), Stephen Dooley (Trinity College), Matthew Jee (Univ. of Sheffield)ASTM J06:Gurhan Andac (GE Aerospace)



 new or modified Annex



- ASTM balloting & deliberations
- comments
- negatives





* Until service experience gained; none of the fully-formulated annexes are currently in production or working towards scale-up, nor do they have any plans to approach ASTM to increase their blend % at this time.



Fully-SATF (Drop-in vs Paraffinic)

<u>Drop-in</u>: not just compatible with a particular engine and/or aircraft, but fleet-wide and infrastructure-wide compatible

	Drop-in $\boxed{\bigcirc_{f}}_{100\%}$ or \bigcirc_{A} + \bigcirc_{B} +	Paraffinic
Composition:	Fully formulated Jet A/A-1	Subset of Jet A/A-1
Applicability:	Fleet Wide drop-in	Designated aircraft/engines only
Example pathways:	CHJ (D7566 Annex A6), FT-SKA (D7566 Annex A4), ATJ-SKA (D7566 A8), future: HEFA-SKA, multi-blend, others	FT-SPK (D7566 Annex A1) HEFA-SPK (D7566 Annex A2) ATJ-SPK (D7566 Annex A5) <i>certain types</i>
Specification:	ASTM D7566	New standard needed
Regulatory Cert/Substantiation:	No change	Required for each intended aircraft/engine model
Infrastructure:	No impact	Separate supply chain/handling/storage required

ASTM Task Force est. Apr '21 Chair: G. Andac (GE), Vice-Chair: M. Rumizen (Air Company) Approval of use as Jet A/A-1 for conforming fully-SATF ASTM Task Force est. Apr '22 Chair D. Parmenter (Airbus), Vice-Chair: A. Hobday (Rolls-Royce) <u>NOT</u> approval of use currently; standardization of test fuel



Directly from single fully-formulated SBC



Normal-paraffins



By blending of SBCs





Thank you!