

100% SAF challenges – EASA Technical Activities on Sustainability

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EASA and Environmental Protection

- Part of original remit since EASA was established in 2002, initially focused on certification of products against environmental standards.
- Environmental remit expanded when Basic Regulation updated in 2018.
- **Sustainable Aviation Programme** created in 2020 to support additional technical activities such as:
 - SAF, zero-emission technology, environmental transparency actions, support EU Taxonomy & EU ETS, ATM performance metrics, non-CO2 research, Climate adaptation assessments, eVTOL noise requirements, etc....

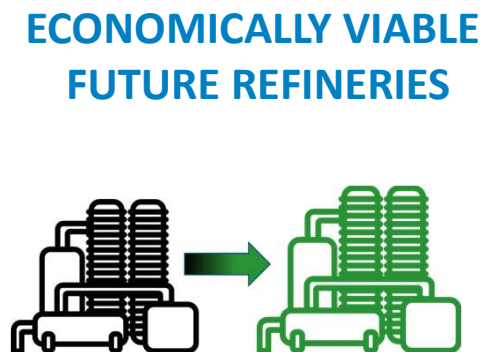
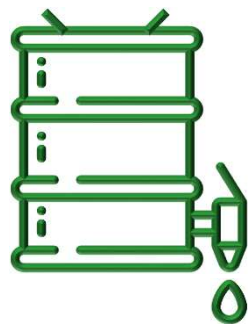


EASA Technical Activities on Sustainable Aviation Fuels (SAF):

- SAF Qualification & 100% SAF Challenge
- SAF monitoring, reporting and analysis under ReFuelEU Aviation (Reg. EU 2023/2405)



SAF Design Challenge: Enabling truly sustainable aviation fuels



Short term

Support scale up of SAF production to fulfill EU mandates.

Long term

Maximize positive impacts of SAF.



Focus: Current EASA activities on SAF in the safety domain

Ensuring the safe use of actual and new aviation fuels and additives.

- ASTM participation (fuel qualification, task forces, ballots)
- Certification of aircrafts to new fuels and additives,
- Handling fuel related Continued Airworthiness issues (mainly due to unanticipated effects, mis-fueling)

An Integral part to support the activities is a continuous dialogue with aircraft and engine OEMs.



Approved SAF Pathways

Year of approval	Blend limit	Feedstocks
2009 (FT-SPK)	50%	flexible
2011 (HEFA-SPK)	50%	Fatty acids and oils
2014 (SIP)	10%	Sugar, Lignocellulose
2015 (SPK/A)	50%	flexible
2016 (ATJ-SPK)	50%	Sugar, Lignocellulose
2020 (CHJ)	50%	Fatty acids and oils
2020 (HC-HEFA SPK)	10%	Specific algae
2023 (ATJ-SKA)	50%	starches/sugars

Co-processing:

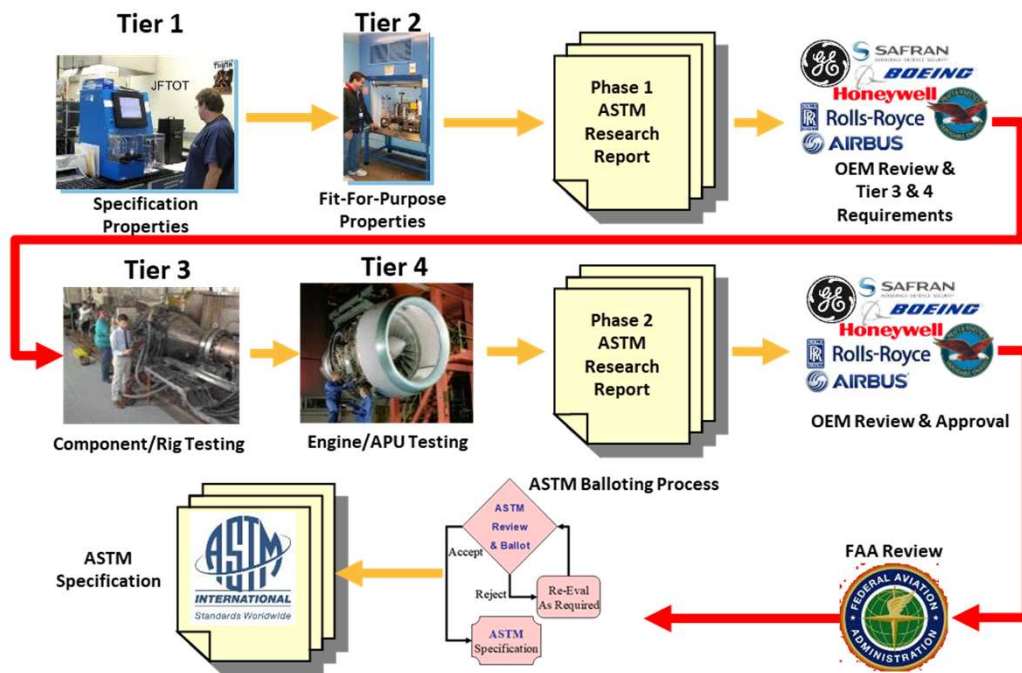
- 5% Lipids
- 5% FT Crude
- 24% Hydroprocessed biomass

1. Approved pathway influences
 - which kind of feedstock that can be converted into SAF and,
 - pathway economics.
2. Specification requirements
 - ensure safety and,
 - impact process economics.



Qualification and Approval of New Fuels

EASA/ FAA airworthiness certification is based on voluntary consensus fuel standards from ASTM & AFC.



EASA/FAA role

- Review submitted data / reports
- Work with OEMs to
 - identify testing requirements
 - decide about final approval
 - If necessary, define certification activities necessary to accommodate new fuel/additive or changes to existing fuels.

ASTM D4054 Standard Practice for Evaluation of New Aviation Turbine Fuels and Fuel Additives.



100% SAF & Airworthiness



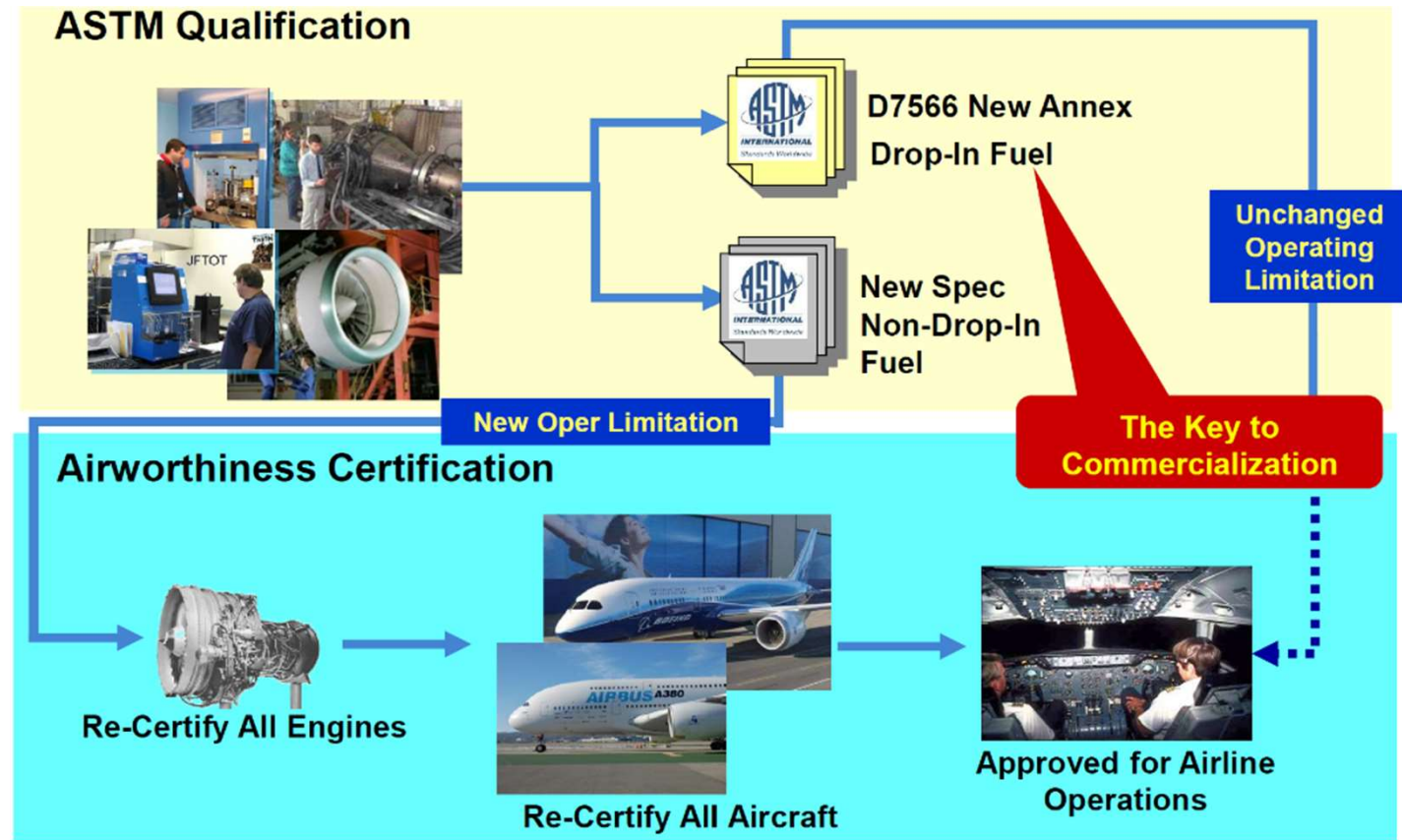
Drop-in 100% SAF,
identical to Jet A/A-1—
fleet-wide &
infrastructure-wide
compatible



Non-Drop-in 100% SAF,
close to Jet A/A-1 but
not identical—not fleet-
wide & infrastructure-
wide compatible



Disruptive Non-Drop-In
Nothing like Jet A/A 1



Source: Mark Rumizen (FAA), Alternative Jet Fuel ASTM Qualification



Why 100% Non-Drop-In SAF ?

Benefits and Challenges

Benefits

1. CO₂ reduction



2. Non CO₂ impacts reduction



3. Reduced maintenance costs & operational benefits



Drop-in 100% SAF, identical to Jet A/A-1 – fleet-wide & infrastructure-wide compatible#



Non-Drop-in 100% SAF, close to Jet A/A-1 but not identical – not fleet-wide & infrastructure-wide compatible



Disruptive Non-Drop-In
Nothing like Jet A/A 1

Challenges for Non-Drop in solution

- New fuel specification, re-certification of aircrafts and engines
- Not compatible with legacy aircrafts
- Segregated fueling infrastructure required
- Additional safety measures required to prevent mis-fueling

Needs to be verified, on-going research activities



ReFuelEU Aviation Regulation (Reg.(EU) 2023/2405)

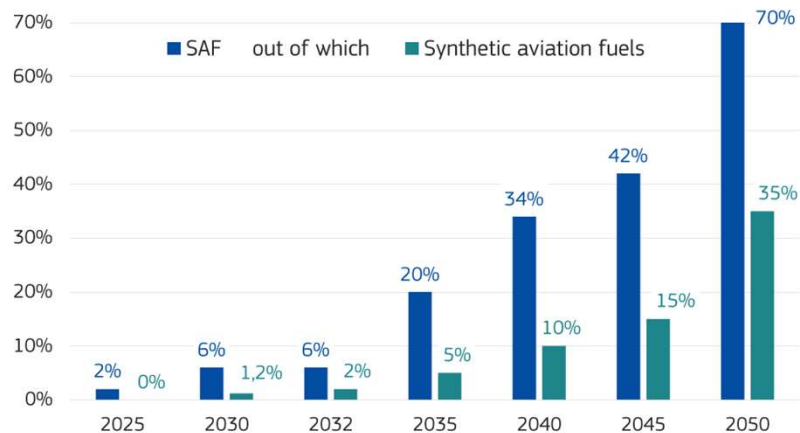


Foster the **ramp-up of SAF supply in the EU** and ensure the availability of SAF to decarbonise aviation

Guarantee a **level playing field in aviation** through a harmonised EU approach



Ambitious **EU-wide binding shares** and realistic **ramp-up 2025-2050**



Other elements



New **environmental label** enabling passengers to book the most sustainable flight



Infrastructure for zero-emission aircraft

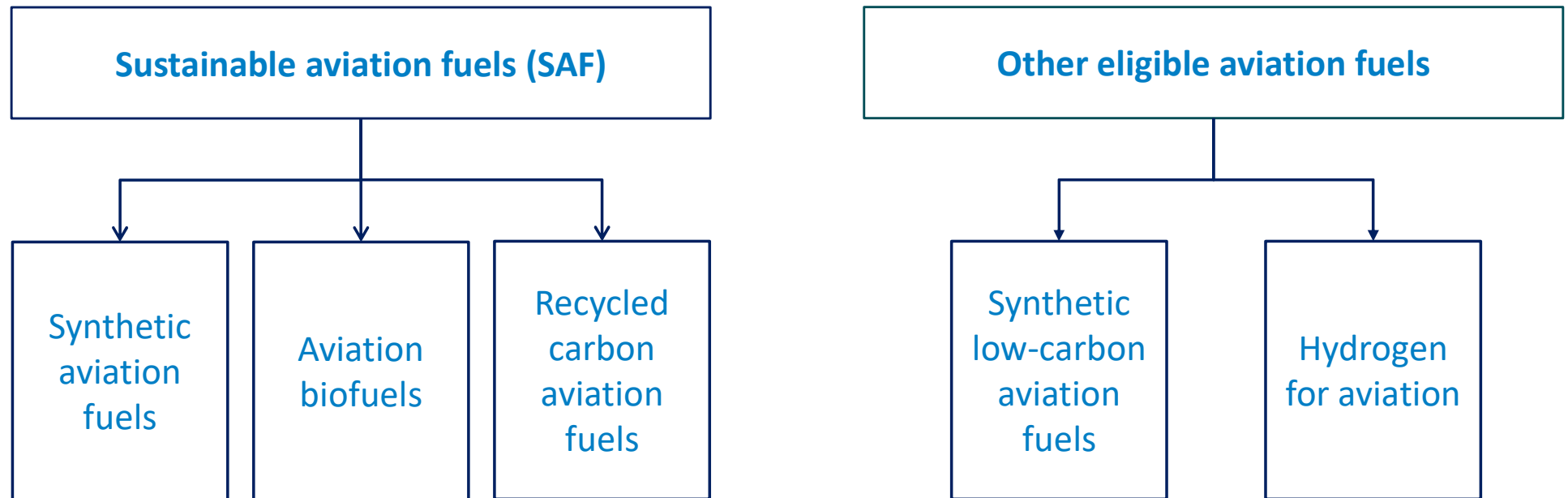


Flexibility measure to ensure a gradual ramp-up of SAF availability



ReFuelEU Aviation (Reg. (EU) 2023/2405)

Eligible aviation fuels



SAF sustainability framework in accordance with Renewable Energy Directive (EU) 2018/2001



ReFuelEU Aviation (Reg. (EU) 2023/2405)

Scope and obligations of the Regulation



Aviation fuel suppliers

Who

All aviation fuel suppliers supplying to Union airports

What

- a) to supply increasing amounts of SAF at each Union airport
- b) with flexibility 2025-34



Union airports

≥ 800 000 passengers
≥ 100 000 tonnes freight
Opt-in for airports below threshold, and those in outermost regions

to facilitate access to SAF



Aircraft operators

> 500 passengers flights
> 52 all-cargo flights
Opt-in for other commercial flights and for non-commercial flights

to uplift aviation fuels at Union airports without 'tankering' practices



ReFuelEU Aviation (Reg. (EU) 2023/2405)

New role for EASA

EASA remit under ReFuelEU (yearly reporting)

- Collect information from Operators on SAF usage and SAF characteristics
- Collect information from Fuel Suppliers on volumes of SAF and fossil fuels delivered at Union Airports including levels of aromatics, naphthalene and sulphur
- Collect information from Airports on infrastructure development on and hydrogen and electricity
- SAF market and price analysis
- Regulation Compliance Status and inform Member States in case of non-compliance
- Make available yearly report to EU Parliament and Council

Flanking measures to RefuelEU

EU Clearing House for SAF

EASA project to facilitate new SAF types going through ASTM qualification

EU Fuel Standards project

EASA project to reinforce European involvement in Fuel specification body and investigate the option to reduce aromatics

RLCF Alliance

Initiative to bring together SAF value chain stakeholders and to remove barriers preventing scaled SAF deployment

EASA SAF technical expertise

Further reinforce EASA technical expertise on SAF to ensure fleet/supply chain safety issues are addressed when scaling up



**Thank you
for your attention!**

Your safety is our mission.



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