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D3.5 Traceability procedures & guidelines

Traceability for biojet fuel

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Executive summary

Fuel traceability is important to demonstrate the origin of the fuel and the journey from point of manufacture to point of delivery. It is the paper trail that demonstrates to an airline customer that the fuel they purchased is the fuel they wanted to purchase, from a quality perspective as well as from a sustainability perspective.

With the introduction of biojet fuel, traceability becomes even more important, since airlines need to report on the biojet fuel they use, either for their own company reporting or for reporting under biofuel (voluntary) schemes.

Suppliers of biofuel need therefore to provide transparent, consistent and practical traceability reporting with the biofuel that is delivered.

For the deliveries of fuel that took place within the ITAKA project, traceability reporting has been developed. This report provides general guidelines for traceability. The key is the use of unique batch numbers that are shown on documentation throughout the chain.

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Abbreviations

ASTM = American Society for Testing and Materials

Defstan = Defence Standard

PoS = Proof of Sustainability

Definitions

ASTM: originally known as the American Society for Testing and Materials, this international standards organization develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services. ASTM International works with aircraft and engine manufacturers, government authorities and fuel suppliers to set the standards for aviation fuels such as the required characteristics for jet fuel.

ASTM D1655: Standard Specification for Aviation Turbine Fuel. This specification defines the minimum property requirements for Jet A and Jet A-1 aviation turbine fuel and lists acceptable additives for use in civil operated engines and aircrafts. Specification D1655 is directed at civil applications, and maintained as such, but may be adopted for military, government or other specialized uses.

ASTM D7566: Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons. The main part of this standard contains the specifications for synthetic jet fuel blended with Jet A or Jet A-1. Once certified, the blended jet fuel batch is automatically recertified to ASTM D1655 and considered a drop-in fuel batch. Blending is only allowed after the neat synthetic jet fuel batch is certified to the applicable Annex of D7566. Each Annex belongs to a specific synthetic jet fuel production pathway; a total of five pathways are currently certified.

DefStan 91-91: “Defence Standard 91-91”, the Aviation Turbine Fuel (Kerosene Type, Jet A-1) standard developed by the UK Aviation Fuels Committee (AFC) on behalf of the Ministry of Defence (MOD). Developed for use in the UK, but today also used in many European countries.

1 Introduction

Fuel traceability is important to demonstrate the origin of the fuel and the journey from point of manufacture to point of delivery. It is the paper trail that demonstrates to an airline customer that the fuel they purchased is the fuel they wanted to purchase, from a quality perspective as well as from a sustainability perspective.

With the introduction of biojet fuel, traceability becomes even more important, since airlines need to report on the biojet fuel they use, either for their own company reporting or for reporting under biofuel (voluntary) schemes.

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For the deliveries of fuel that took place within the ITAKA project, traceability reporting has been developed. This report provides some guidelines for traceability reporting as well as an example traceability report.

2 Traceability guidelines for bio jet fuel

The purpose of traceability reporting for bio jet fuel is that the customer can trace back a specific batch to its manufacturing and/or feedstock origin. Traceability reports should therefore give insight in the full supply chain and should be supported by documents that accompany the batches on their journey to the airport according to the path traveled.

The following should be taken into account in traceability for biojet fuel:

- Requirements related to traceability as laid down in fuel quality standards (Defstan 9191, JIG, ASTM)
- Requirements related to (voluntary) reporting under certain sustainability scheme
- Additional customer requirements

The following are general guidelines for traceability of bio jet fuel batches:

Biojet manufacturing:

- Every batch of bio jet fuel should be given its specific batch number directly after manufacturing.
- The quality certificate of the biojet fuel (used to prove ASTM D7566 compliancy) should at least show the following information
 1. Specification name, issue and any amendment number (e.g. ASTM D7566-16)
 2. Name and address of testing laboratory
 3. Name of manufacturer
 4. Batch # or unique identifier
 5. Quantity of fuel in the batch (different from ASTM D7566-16)
 6. Properties tested including spec limit, test method and result of test
 7. Additives, including qualification reference (RDE/A/XXX number) and quantity added (concentration)
 8. Name and position of authorized test certificate signatory or electronic signature
 9. Date of certification
- If bio jet fuel is transported to a separate location for blending with fossil jet fuel, transport documentation should state the bio jet batch number.
- Declaration from biojet producer stating feedstock allocated to the batch of bio jet fuel
- In case of reporting (by airline/supplier) under certain sustainability scheme, sustainability proofs (PoS = Proof of Sustainability in case of EU RED) should be provided.

Blending:

- Every batch of blended bio jet fuel should be given its specific batch number, and that batch number is used on all documentation throughout the chain from that moment onwards.

- The quality certificate of the bio jet fuel blend (the RCQ proving the blend meets ASTM D7566 and conventional jet fuel specification) should at least show the following information:
 1. Point of manufacture (=location of blending)
 2. Original source locations of blend components (bio jet fuel and fossil jet fuel)
 3. Certification references of blend components
 4. Batch number of blend component
 5. Volumes or volume percentage of blend components
- In case of reporting (by airline/supplier) under certain sustainability scheme, sustainability proofs (PoS = Proof of Sustainability in case of EU RED) should accompany the blend batch.

Downstream logistics:

- Every transport, transfer or storage in between blending and airport delivery should be accompanied by documents that demonstrate the event and that show the link to the bio jet fuel batch. Such documents could be for instance a release certificate, Bill of Lading or delivery document
- In case of reporting (by airline/supplier) under certain sustainability scheme, sustainability proofs (PoS = Proof of Sustainability in case of EU RED) should accompany the blend batch.

Delivery into commingled airport system:

As demonstrated within ITAKA, bio jet fuel can be supplied via existing co-mingled storage and distribution systems at the airport, without having to rely on segregated infrastructure. From the moment a batch is inserted into the co-mingled airport system, the batch identity is lost and a batch cannot be physically traced to aircraft level. This is not a problem as long customer and voluntary sustainability scheme allow that demonstration of delivery until the airport is enough (which has been the case for the ITAKA deliveries).

Conclusion

Fuel traceability is important to demonstrate the origin of the fuel and the journey from point of manufacture to point of delivery. It is the paper trail that demonstrates to an airline customer that the fuel they purchased is the fuel they wanted to purchase, from a quality perspective as well as from a sustainability perspective.

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