Supply & Operation

Introduction

This factsheet summarizes the findings of an online seminar, organized by AMF TCP Task 63 on Sustainable Aviation Fuels (SAF) in November 2022. Several challenges still hinder the market introduction of SAF and the market is only growing slowly. The aim of the seminar was to highlight best practice examples for the market uptake of SAF in terms of supply and operation.

From producer to plane

After opening words and an introduction by the moderator Dina Bacovsky (BEST) the seminar started with a presentation by Alexander Bjørn Hansen (NISA) on results of the ALIGHT project. Aim of the project is to showcase a way to the sustainable airport of the future with e.g. Copenhagen Airport as a case study. So far there is no indication that there are any issues with blending SAF except for administrative ones. There are three ways for SAF delivery - segregated delivery, mass balance and book & claim. However, only a segregated system allows for reducing regional non-CO_2 effects. SAF demand will increase in future and as a result sustainable feedstock availability will decrease, since waste feedstocks are limited. Therefore, e-fuels are expected to become a game changer. So far SAF is not available in Denmark. When there is no physical delivery possible, chain of custody becomes even more important.

The role of SAF to decarbonize logistics

Henrik von Storch (DHL Group) presented the role of SAF in decarbonizing logistics. DHL Group aims for becoming a leader in sustainable aviation since currently about 70% of their GHG emissions are related to aviation. In 2020 they started to buy low volumes of SAF. In 2022 these volumes increased to already about 28.000 tons (plus additional volumes via 3rd party carrier airlines), which is still a small share but already relevant in total. A steady increase is planned. Main issues for SAF introduction are increasing price premiums (tight market due to increasing demand but stable production facilities), low investment security (there are companies willing to produce, but uncertain regulations hinder them) and sustainability requirements (differences across the globe lead to uncertainties, chain of custody). DHL Group is highly in favor of book & claim, which is needed when a costumer/passenger wants to purchase SAF in a specific plane. Additionally, small SAF suppliers can only deliver SAF to specific airports. A central SAF registry is required to enable book & claim. DHL Group have an own sustainable fuel policy to cover different frameworks around the world (CORSIA, US, EU, etc.).

Use of multiblend Jet A-1in practice – insights in the DEMO-SPK project

Subsequently, Franziska Müller-Langer (DBFZ) presented results of the Demo-SPK project, which was investigating behavior of multi-blend SAF in practice. Key results include a reduction of particle emissions in ground runs between 30% and 60% and a reduction of GHG emissions by about 35% through the use of multi-blend SAF instead of fossil Jet A-1. In practice, multi-blend of SAF cannot be avoided, but the results show that this does not lead to any problems. There were no adjustments of airport infrastructure with regard to fuel storage and delivery needed. The project further shows that multi-blend SAF meet ASTM requirement if the single fuels are doing so. E-fuel based PtL (PtL-SPK) can also meet these requirements.

U.S. perspectives on SAF

The final presentation of this seminar was covering the U.S. perspective and was held by Steve Csonka (CAAFI). SAF are not really new, they are pure hydrocarbons in the jet fuel range (C7 to C17). This is why they don´t need to be necessarily handled in a different way. Specific characteristics of fossil jet fuels are very different, so as for SAF. Worldwide there are six production facilities in operation, with Neste as market leader in 2021.In the U.S. there are two production facilities in operation and several others are in commissioning, under construction or announced. The production forecast for 2027 is about 60 times higher compared to 2022, which indicates a significant ramp-up. Currently, renewable diesel is favored in terms of policies. A lot of offtake agreements have been already signed between future producers and airlines. U.S is unlikely to dismiss agricultural crop-based feed-stocks for SAF production. There is no single feedstock targeted, nor sufficient. The biggest challenge remains the cost delta between SAF and fossil Jet A-1. However, there is increasing engagement from buyers, regulators, policy-makers, producers, etc. in the U.S., but also worldwide. The governmental approach “SAF Grand Challenge” aims for 10% SAF by 2030 and 100% SAF by 2050.

Key findings

- Main barriers for capacity increase are non-technical, such as availability of sustainable feedstock, lack of stable long-term policies, high production costs
- Consumers (e.g. DHL) desire global registry and prefer book & claim, but non-CO_2 effects have to be considered as well
- Recordings and slides of the seminar are available at: AMF (iea-amf.org)