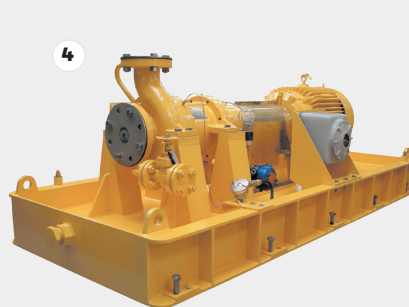


PRODUCT FOCUS

SUSTAINABLE AVIATION FUEL

Supporting the SAF ecosystem

Sundyne's pumps and compressors play an important role across the sustainable aviation fuel (SAF) value chain



1. Dozens of refineries around the globe are adding SAF and renewable diesel services
2. Sundyne low flow, high head pump
3. Sunflo high pressure pump
4. HMD sealless mag drive pump

Approximately 50% of crude oil used around the globe is refined into transportation fuels, which create greenhouse gas emissions. Biomass is a cleaner energy source that can be mixed with crude oil and converted into liquid transportation fuels.

Like ethanol that is mixed with crude to make unleaded gasoline, a range of renewable materials can be used as feedstocks for diesel or aviation fuel to reduce the carbon footprint.

SAF, or sustainable aviation fuel, is a biofuel made from renewable resources, such as used cooking oil, agricultural waste, algae, municipal waste, forestry residues or synthetic fuels.

Last year, the global SAF market was valued at approximately US\$1.1 billion. Analysts are predicting that the market will reach US\$16.8 billion by 2030, a compound annual growth rate (CAGR) of 47.7%. Despite these impressive growth forecasts, current SAF production accounts for less than 1% of total jet fuel demand. Why are analysts predicting such high growth? Perhaps it's because 50 different airlines have made commitments to start blending SAF into their fuel mix by 2030, with plans to ramp up even further by 2050.

While interest and demand continue to increase, numerous challenges remain to move projects from feasibility to final investment decision (FID) to start-up. These involve high capital investments, new feedstock supply chains, policy frameworks to support economic viability, and advancements in process and equipment technology.

Like other capital-intensive industries, SAF production requires collaboration across the value-chain of stakeholders, including airlines (SAF purchasers), refiners (SAF producers), EPCs, technology licensors and equipment manufacturers.

SAF and renewable diesel production

Equipment manufacturers with experience supplying pumps and compressors to conventional refineries have a wealth of expertise that can be directly transferred to SAF production pathways, including HEFA, alcohol-to-jet, biomass-to-liquid and power-to-liquid. One such manufacturer, Sundyne, has supported many of the initial SAF greenfield projects. Sundyne has also provided equipment to refineries that have converted from conventional to renewable fuels production.

Many of the services in SAF production, such as renewable feedstock, overhead, bottoms, reflux and recycle, are characterized by low flow and high head requirements. Pumps that are specifically designed for low flow, high head requirements, such as Sundyne's integrally geared LMV pumps meet these requirements efficiently.

Other services, such as boiler feedwater or desuperheater (to control process steam temperatures), are well-served by single-stage, integrally geared pumps with a close-coupled configuration. This design eliminates the need for motor-coupling-pump alignment and offers a smaller footprint.

Some services in SAF production involve volatile and heat sensitive liquids. For these services, leaks are to be avoided at all costs. Sealless magnetic drive pumps have no seals to replace or seal support systems to maintain. They are a preferred choice for some SAF services, because they increase reliability and extend mean time between failure (MTBF).

A look ahead

Air travel has recovered from post-pandemic levels, and many markets are showing significant growth. Air cargo transport continues to expand, as geopolitical issues around the globe have lengthened ocean cargo routes. Numerous government policies, such as the EU's Fit for 55 package and the US Inflation Reduction Act have incentivized SAF production and usage via tax credits – in some cases as much as US\$1.75 per gallon. Airlines see significant branding and public relations benefits by using SAF to market themselves as eco-friendly businesses. For these and other reasons, SAF adoption is expected to increase significantly. The good news is that equipment providers like Sundyne work well with the entire SAF ecosystem, bringing more than 75 years of experience in conventional refineries to SAF and renewable diesel production. ☑

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