



ICAO EUR/NAT and ACI EUROPE

REGIONAL GREEN AIRPORTS SEMINAR

**Hosted by the Ministry of Transport
Republic of Kazakhstan**

SAF Blending Solution

Presented by:
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- Jan
2022

Launched FlyORO Brand
- Jul
2022

IATA Strategic Partner Fuel Technical Group
Seed Investment & Government Grants
- Aug
2022

Shell Startup Engine Programme and
Featured Startup at Singapore International Energy Week
- Jan
2023

Trial & Commissioning of First AlphaLite Unit (TRL 9)
- Apr
2023

Grand Launch with Jet Aviation
- Q4
2023

ISCC Corsia Plus & ASTM Organization Member
Pre-A Expansion Funds to AU & US
- Q1
2024

Signed First Commercial Deal for Australia Project
- Q3
2024

ICAO ACT-SAF Partner
Collaboration with European Partners Focused on ReFuelEU



Bulk movement of single kerosene commodity **was the norm.**

From  To



Refinery



Shipping



Terminals



Distribution



Airport Fuel Farm

Rigid, Bulk MOQ to fulfil for storage, distribution & inventory.

Proprietary Technology

WO2020/145893



A revolutionary cost-effective way to blend SAF for airports.

Custom Blend

On-Demand

Digital Integrated

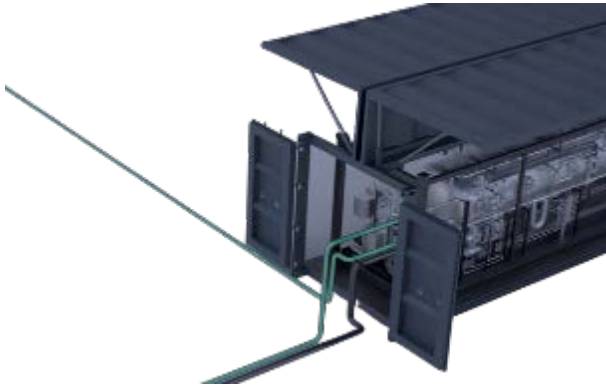
ASTM Specification

Deploy Anywhere

Flexible Scale-Up

Modular & Easy Tie-in

1 Fluid Detection



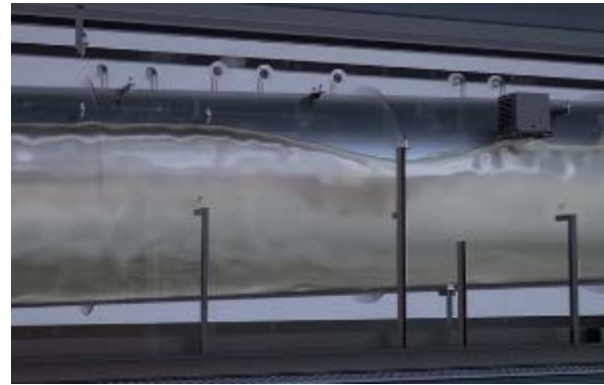
- Fuels charged at precise volume, ratio and charging rates.
- Fluid properties detected along charging line.

2 Automated Blend Recipe



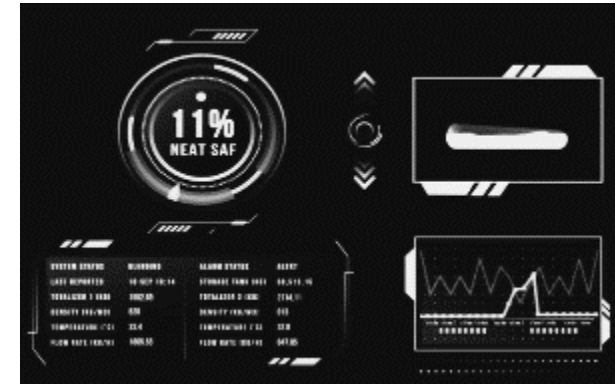
- Feed data sent to control system.
- Auto generate blend recipe specific to fuel type, volume and compositions.

3 Precision Blend Control



- Based on feed data and computational fluid dynamics for ASTM QA.
- No need for conventional mixer.

4 Data Integrations



- Blend recipe is optimized fit-for-purpose to exact blend product type.
- Short batch cycle of 20-30 mins.

Precision Quality & Energy Efficiencies

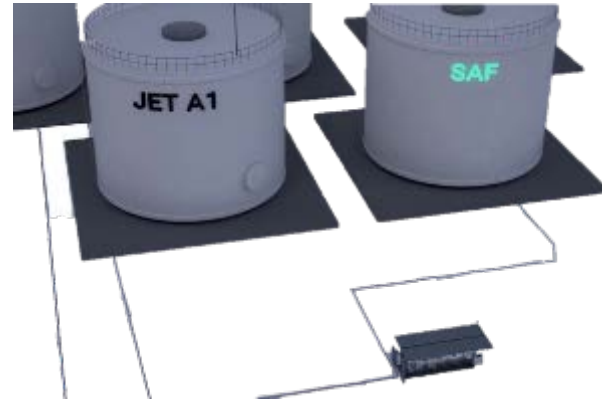
1 Standalone



Blend throughput

- 2,160,000 litres/day per unit
- Higher capacity can be configured

2 Bulk Tank Integration



Blend throughput

- Depends on tank capacity
- Higher capacity can be configured
- OR multi-units integrated for scaleup



TOOWOOMBA WELLCAMP AIRPORT (WTB) BY WAGNER SUSTAINABLE FUELS

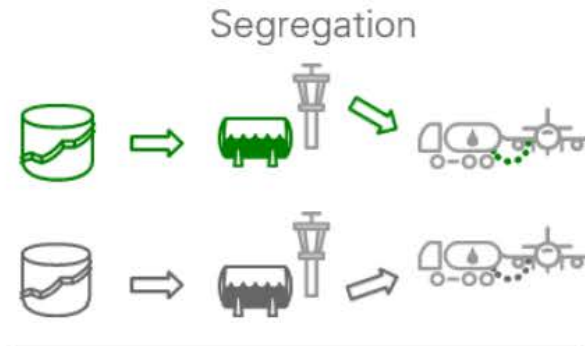
AlphaLite on track to be commissioned in Dec 2024.





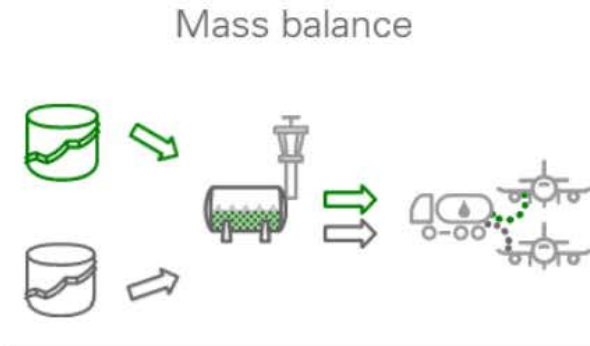
Examples of chains of custody for SAF

Three distinct supply methodologies are available:



Physical segregation to traditional jet fuel all the way to wing tip.

- ⊕ Physical delivery to customer
- ⊕ Variable cost of SAF products and credit generation
- ⊕ Operationally flexible and scalable
- ⊖ Higher cost for separate infrastructure and transport



Co-mingled in airport storage or pre-airport pipelines.

- ⊕ Using existing infrastructure
- ⊕ Enable a Lower carbon footprint than a segregated supply chain
- ⊖ Higher carbon footprint than **book and claim**



Most efficient supply chain used. Product does not get delivered to customer location.

- ⊕ Using existing infrastructure
- ⊕ Enables reduction in logistics cost and carbon emissions
- ⊖ Not eligible for most local incentive schemes or regulatory measures



Renewed capability to optimise physical supply chain and credit generation

Supply chain infrastructure readiness

- Airports develop capability in SAF blending, storage and supply
- Administrative and physical tracking of SAF becomes available for airlines



Regional SAF production capacities

- Incentivising suppliers to prepare for production at supply chain ready markets
- Building SAF value chain within a single market
- Custom SAF blends can be tailored to the airport ecosystem



Mass SAF adoption

- More supplies readily available will lead to better cost economics leading to higher offtake
- Mutually beneficial for the aviation industry

Creating a robust SAF supply chain can be cost-effective for aircraft operators and flyers

CONCEPTUALISING LAST-MILE SUPPLY CHAIN AT ALMATY INTERNATIONAL AIRPORT ¹²



- FlyORO offers site visit and engineering review to provide the best recommended solution, applicable to all projects.
- 1 unit of AlphaLite typically sufficient, possibility to scale according to demand.
- SBC to be transported and stored separately from Jet A1 storage.
- Jet A1 and SBC will remain positively segregated.

A wide-angle photograph of an industrial oil storage facility at dusk. Numerous large, white, cylindrical storage tanks are arranged in rows, illuminated by warm lights. The sky is a mix of orange, yellow, and blue, with a body of water and distant land visible in the background.

UNLOCKING THE FUTURE OF BLENDS

Thank You

