

Inland
Navigation
Week



TECHNOLOGY MATCHMAKING WORKSHOP

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Cargill

Monday March 20th 2023





Inland Navigation Week

20 - 24 March 2023
Brussels & online



Cargill

How can biodiesel (FAME) play a role in decarbonization of inland shipping?

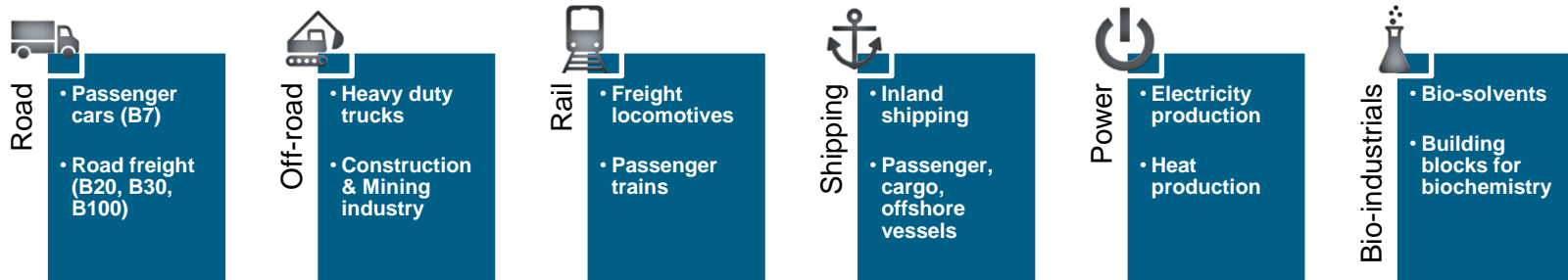


A few words about Cargill

One of the market leaders in the biofuels space in EU:

- 3 biodiesel plants and a distribution network in EU.
- Crop based and waste based biofuels
- Production and distribution of biodiesel FAME
- Trading of HVO

Our ambition - *Being the one-stop shop for decarbonization*



Biofuels: Terminology



Renewable energy

Energy sourced from feedstocks that are constantly replenished



Biofuels

Liquid fuels derived from renewable sources such as plants, algae, organic waste



Biodiesel

Biofuel that is a diesel-replacing substitute for transport sector

Renewable Biodiesel

- Biodiesel (FAME) : obtained through transesterification of advanced feedstock
- HVO : hydrotreated vegoils



Biofuels feedstock

1st generation = food/feed crop based
2nd generation = waste and residue based

Advanced feedstock (2nd generation)

Listed in RED II Annex IX :

Part A. Biomass and waste from agri-industrial processes and forestry*

Part B. UCO and animal fats



Drop-in fuels

Biofuel alternatives to fossil fuels that do not require significant modifications to engines and supply chain infrastructures



Biofuels reduce CO₂ and overall GHG emissions

*: as per RED II, advanced biofuels and biogas produced from feedstock sub Annex IX Part A should contribute to share of final energy consumption in transport sector by 0.2% in 2022, 1% in 2025 and 3.5% by 2030

Biodiesel types - *FAME & HVO*

Two types of biodiesel - same feedstocks but different end products:

- FAME: Fatty Acid Methyl Esters
- HVO: Hydrotreated Vegetable Oil

Advantages of FAME:

- Cost competitiveness
- FAME achieves typically 10-15% higher GHG savings
- Easily scalable, large and mature market
- No application in the aviation industry

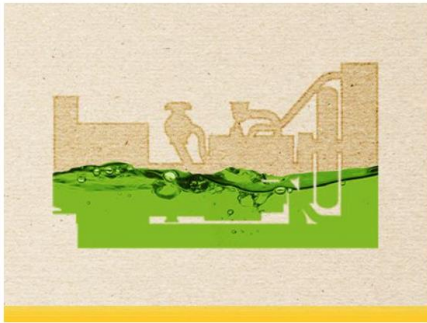
Sustainability:

- FAME achieves 60 to 90% GHGs through lower upstream emissions
- 20 to 50% reduction of particular matter

FAME: A proven track record

FAME use in various markets:

- Road transport.
- Maritime transport
- Power generation
- Etc.



CAN CAT GENERATORS RUN ON BIOFUELS?

Cat® diesel generators can run on biofuels and have accommodated the use of biodiesel and HVD for over a decade. These fuels are available now, and your local Cat dealer can provide guidance and recommendations for switching to renewable liquid fuels.

[VIEW DIESEL GENERATORS PAGE](#)

Bloomberg.com

How the World's Biggest Shipping Company Plans to Cut Emissions

- Trial using biofuel is the biggest yet for the industry
- Rotterdam-Shanghai round trip to save 1.5 million kilos of CO2



ARTIS ENERGIES
le 6 mars à 10:00 · 🌐

[ARTIS BIO100] 📌

👉 Nous sommes heureux de vous partager la mise en service de « Jockey », notre cuve de stockage de carburant Artis Bio100 chez l'un de nos plus fidèles clients : les [Transports Gillois](#).

📌 Cette mini station-service de 5000 litres est mise à disposition de nos futurs clients à Craon. Elle leur permet de tester notre carburant vert avant de faire le grand saut.... [Voir plus](#)



RAPESEED-POWERED TERS COULD LEAVE DIESEL BEHIND

Replacing diesel by B100 biofuel and cutting greenhouse gas emissions by 60% : this is the promise of the TER regional trains running in Normandy. It's a first for France.

FAME: compatibility with more and more engines



ANGLO BELGIAN CORPORATION

We power your future

HVO and Bio fuels

Editie 1 – 06/04/2022

Use of HVO and bio fuels on DZC engines

p. 1/1

To whom it may concern,

With this letter we confirm bio fuels according EN14214 and HVO according EN15940 can be used on ABC DZC and VDZC engines. Both blends with diesel or **pure 100% bio diesel or HVO are allowed, no engine modifications are needed.**

Caterpillar / Zeppelin

Engine Types	Vehicle Types	Emission Level	Approved Blend Level	Special Remarks
ACERT-engines: C3,4B; C4,4; C6,6; C7,1; C9,3; C13; C15; C18; C27; C32	With exhaust gas aftertreatment	EU Stage IIIB and higher Tier 4 interim and final	Up to 20% FAME (B20) acc. to ASTM D7467 and API density 30-45	Special operating requirements and additional maintenance recommendations - operation and maintenance manual. Only in combination with ultra low sulfur diesel (max. 10 mg/kg). Observe CAT-specification of FAME used acc. to ASTM D6751 or EN 14214.
C0.5-C2.2 ACERT-engines : C7, C9, C9, 3, C11, C13, C15, C18, C27, C32, C175	Without exhaust gas aftertreatment	All emission levels	Up to 20% FAME (B20) acc. to ASTM D7467 and API density 30-45 (Information on use of higher mixing ratios up to B100 can be obtained from your Cat dealer)	---

Source: EWABA website



Helping the world *thrive*