



Frontier Fuels

PIONEERING BIOFUEL TECHNOLOGY

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2024

CURRENT BIOFUELS

Shipping firms lack viable alternative to fossil fuel

Uncompetitive Price

FAME is 1.6x and HVO fuel is 2.1x the price of MGO.

Developed for Road

Designed for automotive engines with specific and costly processing.

Limited in Volume

Competing demand between road, aviation and marine.

Not Zero-Carbon

CO₂ savings of only 77-84% are well below biofuel's potential.

EU regulation

2024

ETS coverage 40%

2025

ETS coverage 70%
FuelEU Maritime 2%
Adv.-Biofuels 1%

2026

ETS coverage 100%

2030

FuelEU Maritime 6%
Adv.-Biofuels 5.5%

2035

FuelEU Maritime 14.5%

OUR APPROACH

Introducing Machine Learning to fuel development



Design Target: Marine

Biofuel specifications that match marine requirements



Biogenic Residue Streams

Leveraging undiscovered residues from the biochemical industry



AI-driven Development

Identifying high-quality biofuel candidates at scale

Substance Selection

Suitability Screening

Testing I: Substance

Blend Formulation

Testing II: Fuel

TECHNOLOGY

We consider a pool of **25.000 substances** produced in the EU.

Our networks for predicting **fuel suitability** help us to identify those that don't require any processing and can be used directly as marine fuels.

Our development process is therefore faster and effective at scale.

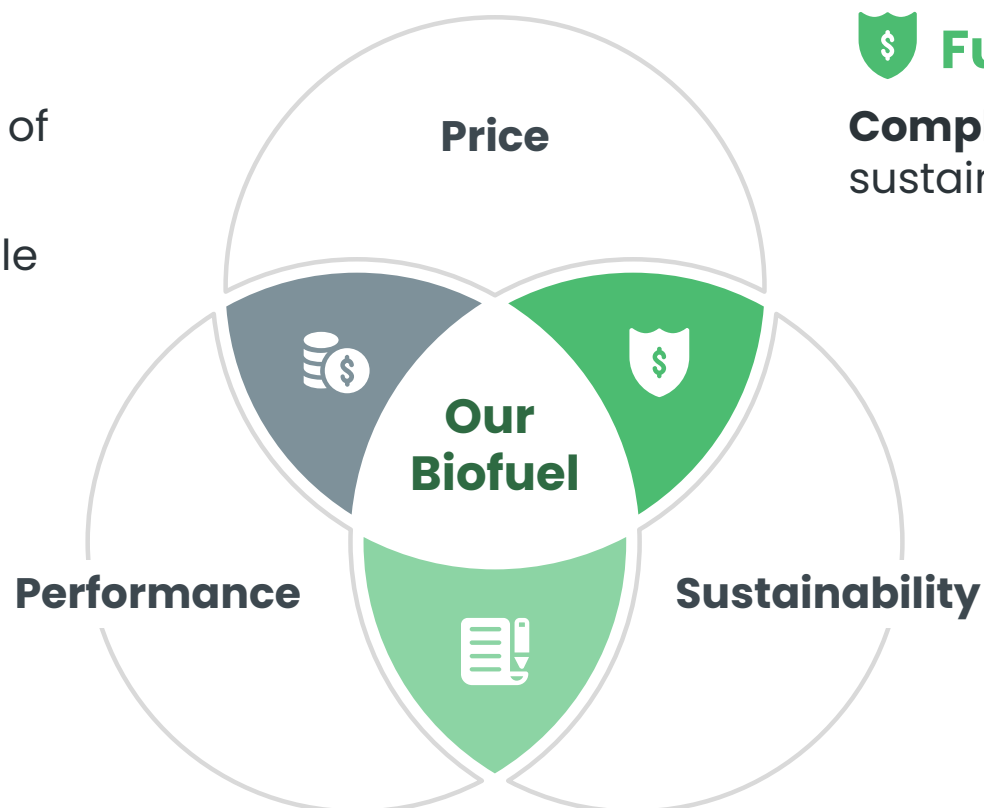
OUR PRODUCTS

Cost-effective and sustainable marine biofuels

Cost-Effective

Always undercut the price of current biofuels

Drop-in solution compatible with all standard marine engines



Future-Proof

Comply with strictest EU sustainability criteria for feedstocks

Avoid exposure to ETS market

High-Quality

CO₂ reductions up to 98%

Superior cold properties and shelf life over FAME

OUR TEAM

In-depth expertise covering core business activities



Luc Siebinga

HEAD OF OPERATIONS

Marine Biofuel Engineer leading fuel development and vessel monitoring at VARO Energy

Commercial Feedstock Analyst at VARO Energy for Europe/Asia

M.Eng in Energy Engineering at KU Leuven



Johann Maack

HEAD OF TECHNOLOGY

Consultant at Simon-Kucher & Partners, KPMG and Porsche AG

Graduate Research Assistant of "Artificial Intelligence Lab" at Bocconi's BIDS institute

M.Sc in Data Science and Business Analytics at Bocconi University



Frans Haafkens

ADVISOR | Founding partner at i4hi and expert in comm. strategies



Johan Blank

ADVISOR | Founder of expansion B.V. and expert in technology and financing



Aleks Kascelan

ADVISOR | Logistics Manager at Laxmi, previously at VARO Energy and ECEM



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