



MAKING GREEN METHANOL AFFORDABLE

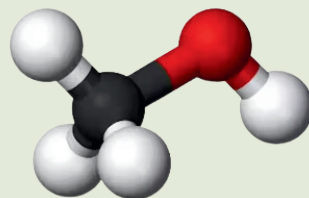
CO2 Challenge

The maritime industry contributes to 2-3% of global CO₂ emissions, and the transition to renewable fuels is a key factor in helping this sector reduce its CO₂ footprint. However, the lack of affordable and abundantly available renewable fuels (e.g., methanol) hampers rapid, global decarbonization efforts.



WHAT IS METHANOL?

Methanol (CH₃OH), also known as methyl alcohol, is the simplest form of alcohol and a key industrial chemical. It is a colorless, volatile, and flammable liquid with a mild alcohol-like odor.



Brown Methanol



Source

Coal

Grey Methanol



Source

Natural Gas

Blue Methanol



Source

Blue hydrogen with captured CO₂

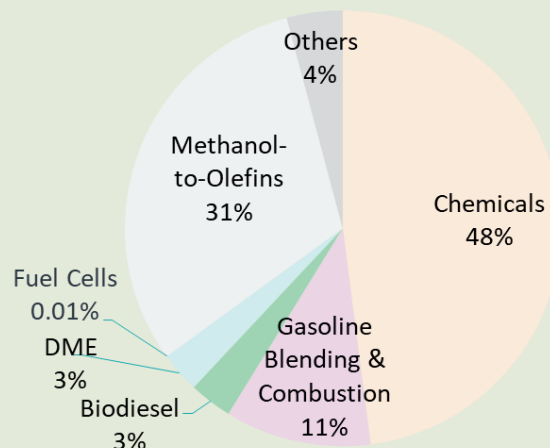
Green Methanol



Source

Bio-methanol derived from biomass or e-methanol from green H₂, captured CO₂ and renewable electricity

METHANOL DEMAND



Green Methanol Challenge

Total methanol supply has breached over 100 million tons per annum today
5x demand for methanol by 2050 to hit 500 million metric tons per annum,
mainly driven by the Maritime.

0.2%* of methanol supply is sustainable

01 Limited Renewable Methanol Supply

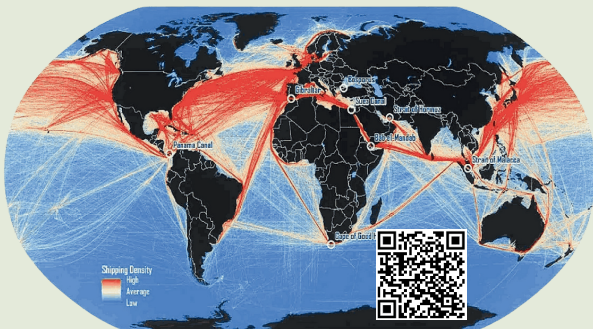
02 High Green Premiums
4 - 10 x more expensive for green methanol

03 Fragmented Supply Accessibility

* as of 2021

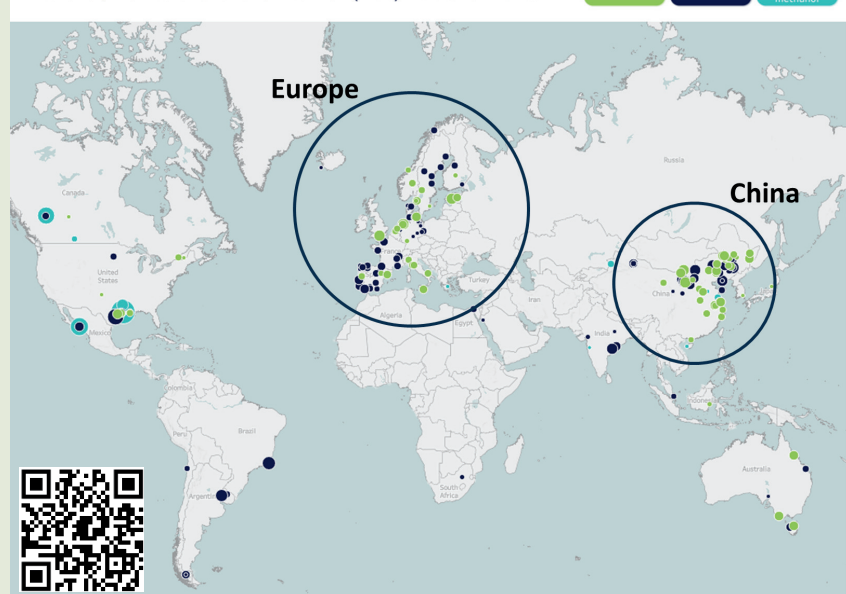
CRecTech's Bio-methanol Technology

Green methanol (bio-methanol and e-methanol) projects are mainly concentrated in Europe and Asia (China). Lack of supply in East and West Coasts of US and SEA (Straits of Malacca) inhibit rampant adoption of green methanol as a maritime fuel



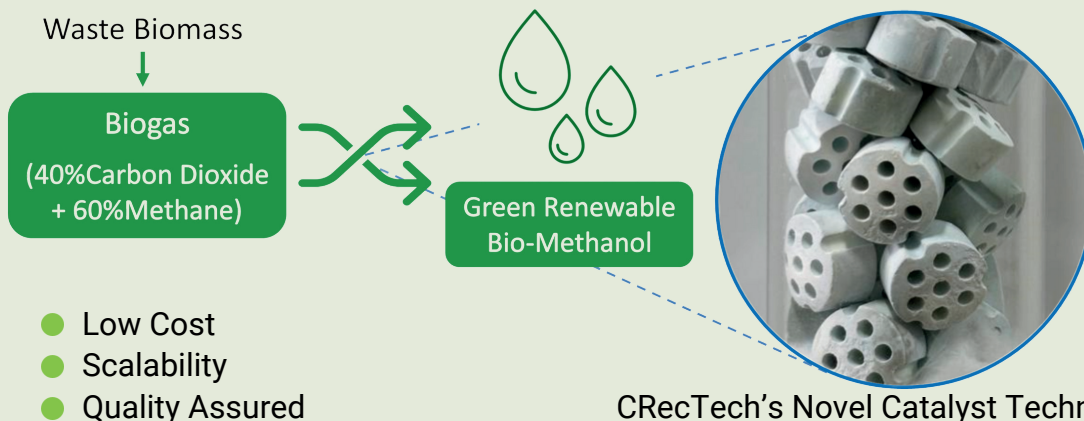
globalsources.com/knowledge/international-shipping-lanes/

E-Methanol, Biomethanol and Low Carbon (Blue) Methanol Plants



From Methanol Institute

CRecTech's Bio-methanol Technology

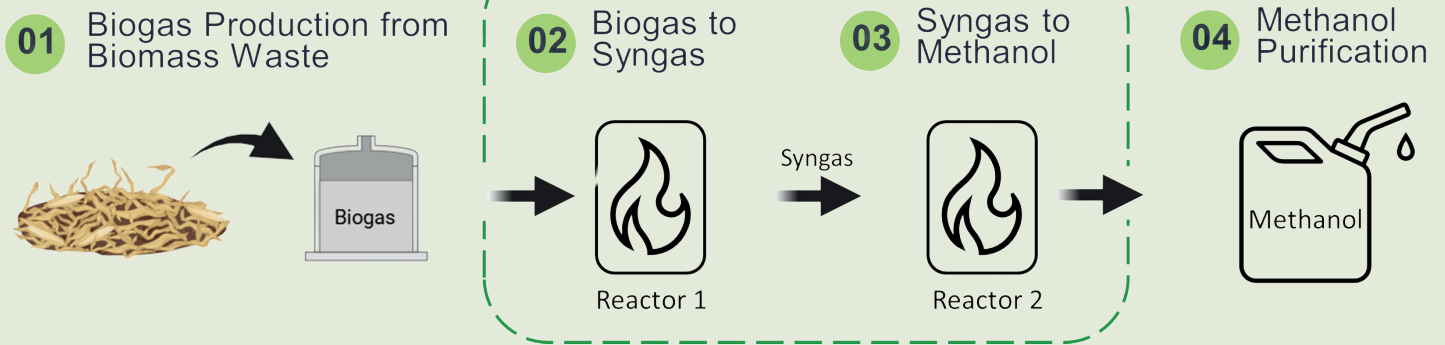


CRecTech's Novel Catalyst Technology
(WO/2023/146478)

Bio-Methanol Solution

CRecTech has developed an efficient process to convert biogas into bio-methanol leveraging our novel catalyst technology. Our approach simplifies bio-methanol production from the current 4-step process down to a 2-step process. CRecTech's process significantly reduces production cost of low carbon footprint bio-methanol, making renewable methanol fuel more affordable for our consumers, such as the maritime sector.

CRecTech Simplified Process



Processes

Steps Involved

Production Cost

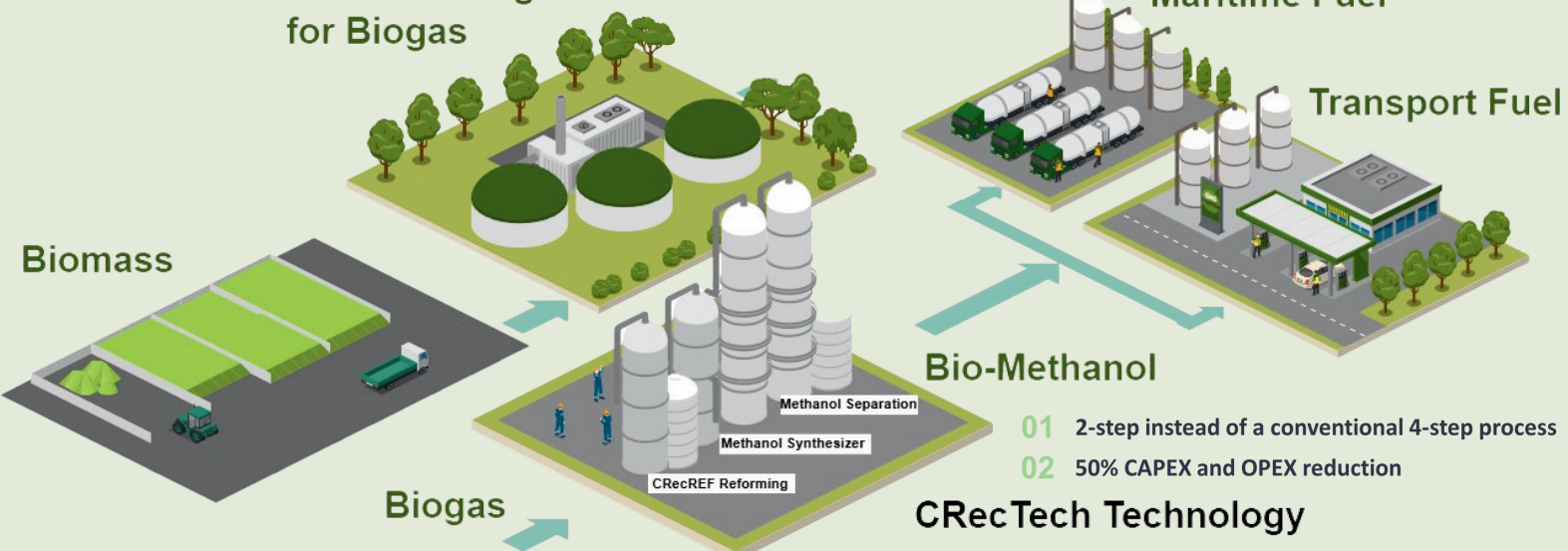
Biogas to Methanol	CRecTech's Reforming	Syn-to-MeOH	US\$ 200 /ton
Bio-Methane to Methanol	Biogas Upgrading CO ₂ Removal Reforming Shift Reaction	Syn-to-MeOH	US\$ 400 /ton
Natural Gas or Coal to Methanol	Feed Processing Reforming Shift Reaction	Syn-to-MeOH	US\$ 150 /ton (Carbon tax at US\$ 50 /ton)

CRecTech Bio-methanol Chain

Anaerobic Digesters for Biogas

Maritime Fuel

Transport Fuel



- 01 2-step instead of a conventional 4-step process
- 02 50% CAPEX and OPEX reduction

CRecTech Technology

Supporting the Advancement of Green Fuels

CRecTech has effective solutions for diverse group of individuals and companies



Waste Biomass Producers

Some of my waste biomass pose environmental concerns (i.e., emit CO₂)

How can I create value from my waste biomass?



Biogas Producers

Biogas-to-Electricity is becoming more challenging to sustain without government incentives, how can I pivot?



Maritime Ship Owners

Regulations are forcing me to source for low-carbon maritime fuel, how can I obtain affordable renewable fuel without hurting my profit margins?



Green Chemical Products

I need to future-proof myself, or circumvent restrictions of supplying grey chemicals, what can I do?

One Solution

Multiple Possibilities

CRecTech's unique catalytic technology can transform biogas into various products and opportunities, paving a way for a sustainable greener future in chemicals, plastics, mobility and energy sectors, creating a ripple effect of value across multiple industries



Watch our 90s introductory video to learn more

01 Biogas to Syngas



Reactor 1



02 Syngas to Methanol



Reactor 2

03 Methanol to Green Plastics

03 Methanol-to-SAFs

03 Methanol Purification

02 Syngas to Ethanol/SAFs



Reactor 2

02 Syngas to Olefins

03 Olefins to Green Plastics/Chemicals



Reactor 2



Reactor 3

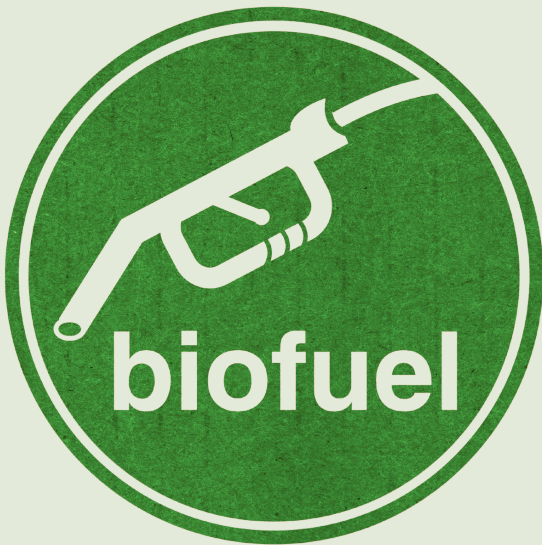
02 Hydrogen Purification



CRecTech

Carbon Recycle Technologies

Technology Provider for Unlocking Greener Fuels and Chemicals



We are inviting partners to collaborate with us in the strategic design, scaling, implementation and funding of our pilot plant, to leverage your expertise and insights to align technical advancements with market demands for renewable methanol

Co-Founders



Kang Hui LIM
CEO

15+ years in catalytic technology development
Experience in translational industrial catalysts applications



Kok Giap HAW
CTO/COO

Key Supporters



Breakthrough Energy
Fellows



Shell
StartUp Engine



Institute of Sustainability
for Chemicals, Energy
and Environment
ISCE²

Enterprise
Singapore
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Enterprise

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