



Ecocombustibles: Casos de Éxito

Angel Alejandro, General Manager

November 10th 2022



Technip Energies at a glance

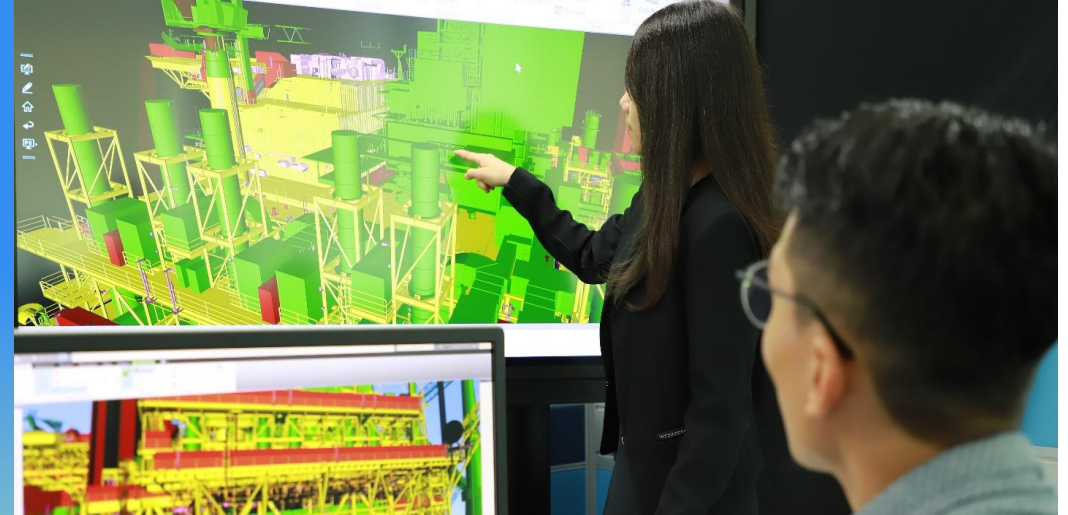
Listed on Euronext Paris Stock Exchange	Headquarters in Paris Registered in The Netherlands	450 projects under execution
€6.7B Full year 2021 adjusted revenue	A leading Project, Engineering & Technology company for the Energy Transition	€15.6B Backlog at end of March 2022
60+ Years of operations	25+ Leading proprietary technologies	~15,000 Employees in 34 countries

A diversified provider of projects, technologies, products and services



Projects Delivery

- Engineering and project management expertise
- Technology integration on complex projects
- Balanced portfolio. Diversified contract models and commercial selectivity.



Technology, Products & Services

- Technology and proprietary products
- Concept, feasibility, FEED, studies and licensing
- Advisory and consultancy accelerated by digital

Energy transition is our business

Applying our core capabilities to today and tomorrow's key energy challenges



LNG

Onshore and offshore liquefaction



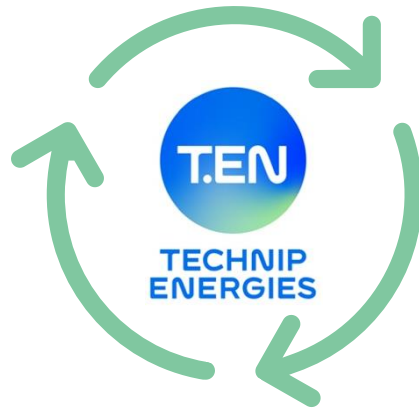
Sustainable chemistry

Biofuels, biochemicals, circular economy



Carbon-free energy solutions

Green hydrogen, offshore wind, nuclear



Decarbonization

Energy efficiency, blue hydrogen, CCUS¹

Strategic flexibility – 'architect mindset' meeting customer needs from energy source to end-use

- **Feedstock agnostic** – outstanding energy molecule transformation capabilities
- **Technology-driven** – integrate complex technologies, including proprietary, to meet project specificities and economic hurdles

Exceptional execution – proven operating model, highly applicable to sustainable energy solutions

Standardize and Digitalize Project Execution practice to drive efficiency and transform Client experience

Refining – A transitioning industry

We are a 60+ year world-class industry partner with standout integration capabilities

Developing real solutions ▾

30

Grass-roots refineries
with capacities
up to 400,000 BPD

>110

Major expansion or
revamp projects

>75

Countries

Supporting the industry in its transformation ▾

With leading solutions from strategic planning through technologies
to full project delivery and beyond



Regulatory
policies and fuels
specifications



Expansion,
modernization,
bottom-of-the
barrel conversion



Conversion
to petrochemicals



Energy
transition journey

> Refining needs to continue evolving towards greater sustainability :
lowering its GHG emissions and adapting to evolving markets (lower-carbon fuels and chemicals)

The road to renewable carbon

Today



Conventional

Better products,
Better processes: monomer and energy efficiency
Upstream downstream integration

Decarbonisation

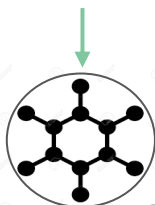
Tomorrow



Biomass



Recycling



Carbon for
Chemicals



Chemicals
and
Plastics

Circular Economy

Chemical
clusters

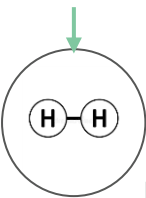
The day after



Carbon dioxide



Renewable electricity



Hydrogen

conversion

Power to methanol,
Power to synthetic NG,
Power to liquids (RWGS, FT)

Renewable carbon

Decarbonizing Refining Operations

Solutions for the reduction of Scope 1 Emissions

Equipment-related

- Process and energy efficiency improvements
- Heat exchanger technologies
- Low grade heat recovery
- Flue gas heat recovery
- Equipment electrification
- Use of H₂ as fuel in burners

Process Technologies

- Fluid Catalytic Cracking
- Crude Distillation and Fractionation systems
- Blue Hydrogen **BlueH₂**[™] by TEN²
- Flue Gas CO₂ Capture
- Green Hydrogen
- 3rd Party technologies

Integration

- Heat Recovery and pinch analysis
- Hydrogen management
- Steam and Power optimization
- Flare-recovery system / zero-flaring
- Low-carbon energy sources
- Process controls

From the definition of decarbonization strategies till project implementation

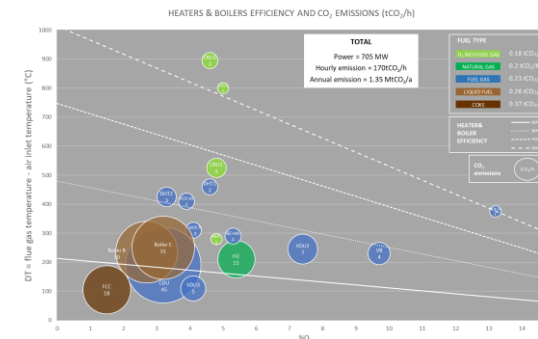
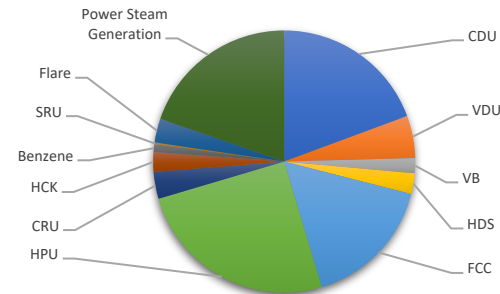
Modelling & Mapping

Benchmarking

Solution Screening

DeCO₂ roadmap

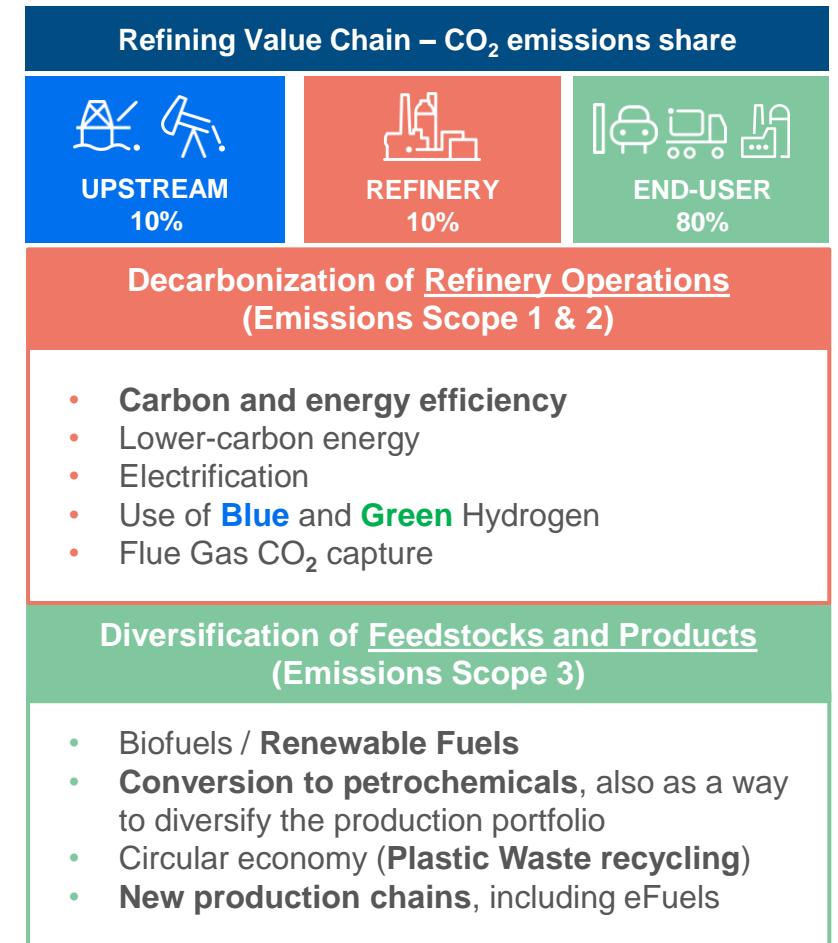
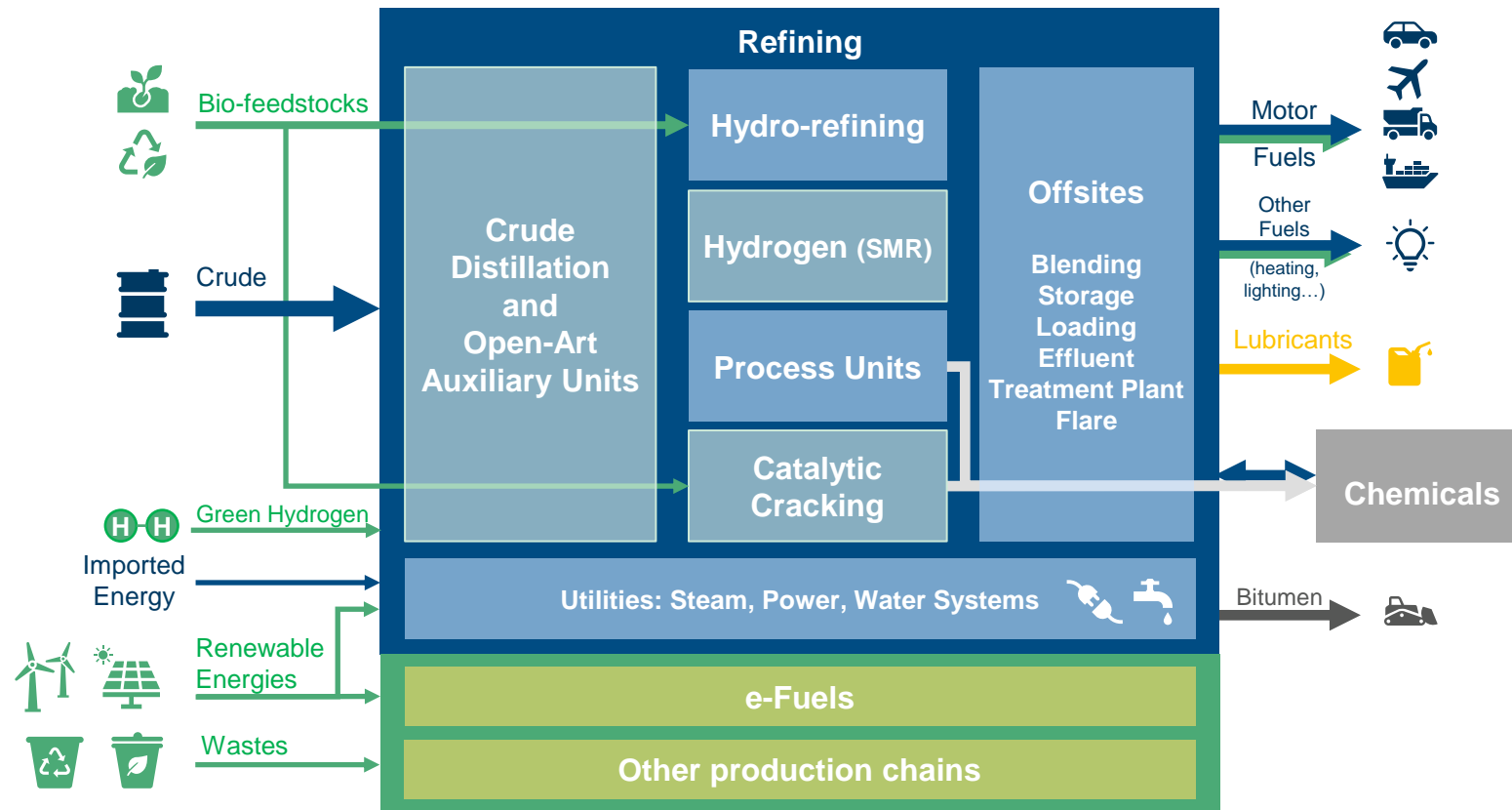
Projects implementation



> Achieving strategic vision towards CO₂ reduction targets and near-zero in operations

Decarbonize the future – What this means for Refining

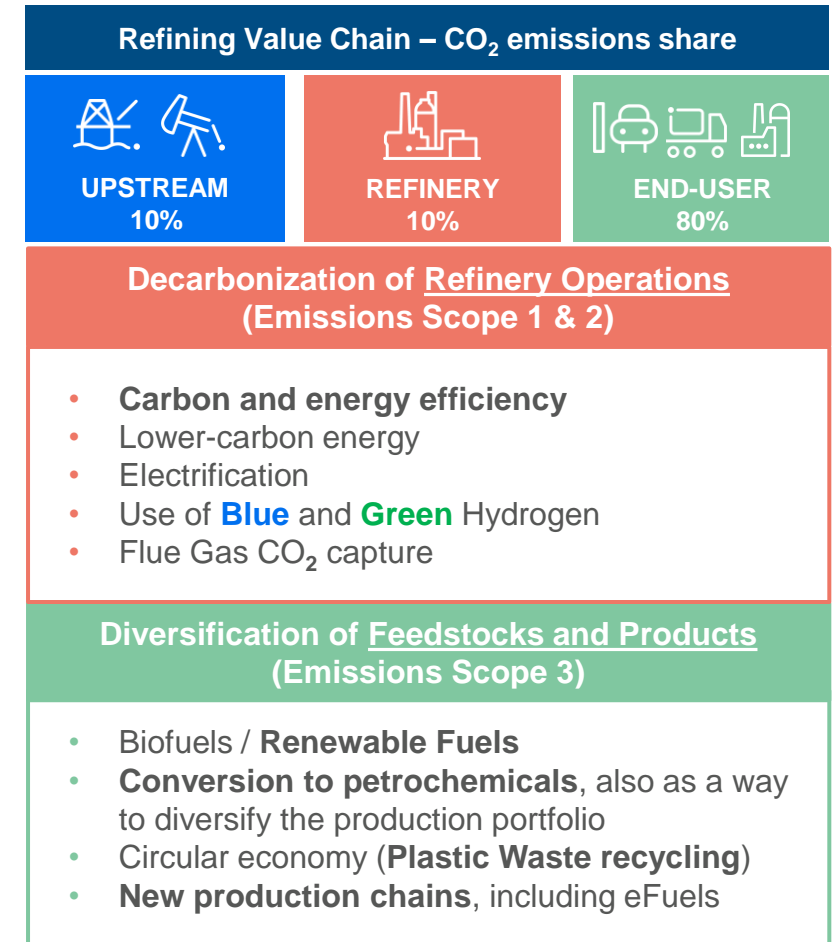
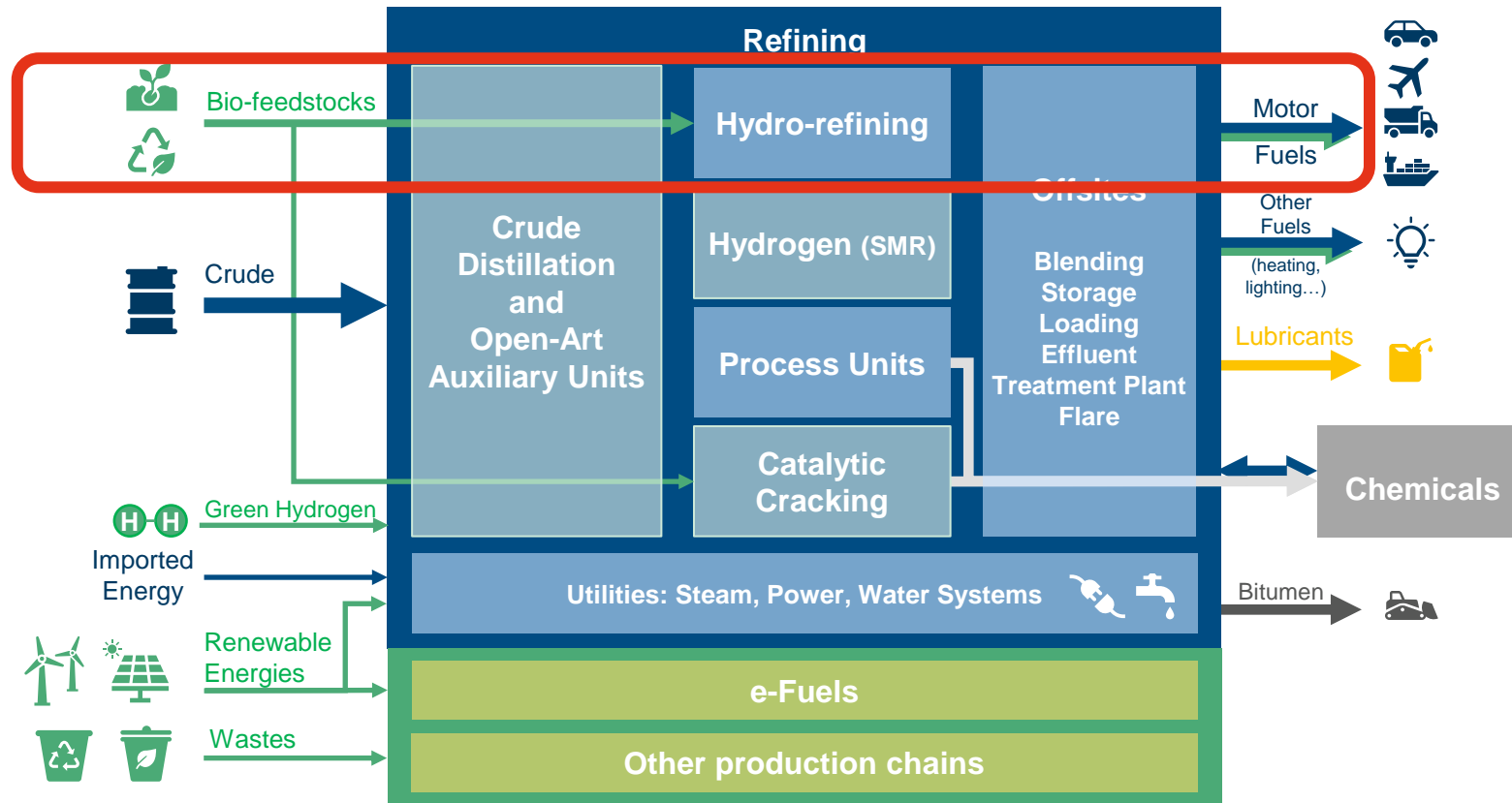
An industry having a dual role to play



➤ Multiple options and solutions for the refining industry to decarbonize

Decarbonize the future – What this means for Refining

An industry having a dual role to play



➤ Multiple options and solutions for the refining industry to decarbonize

Neste NExBTL

One of the largest HVO renewable fuels plant in the world

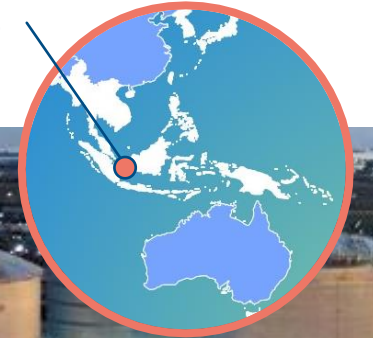
Contract: EPCm
Award: 2008/2018
Delivery: 2010/2022
Client: Neste Oil
Location: Singapore

Key figures

Production: 800,000 t/yr + 500,000t/yr



**Biofuels
Project**



Technip Energies delivered a plant which was integrated into the existing industrial infrastructure area, and makes use of local site utilities, port and storage services. Singapore plant extension to 1,3 MTA has been awarded to Technip Energies in December 2018.

TotalEnergies Phoenix Project

The first biorefinery in France from vegetable and used cooked oils to renewable oils



Contract: EPsCm

Award: 2016

Delivery: 2019

Client: TotalEnergies

Location: France

Key figures

Reconversion of refinery in La Mède, the first biorefinery in France from vegetable and used cooked oils to renewable oils to produce 500 KTA of hydrotreated vegetable oil (HVO) with feedstock constituted by crude palm oil (CPO), used cooking oil (UCO), animal fat and palm fatty acids distillates (PFAD)



Production of 500 KTA of hydrotreated vegetable oil

Galp New HVO

New HVO (Biofuel) Unit

Contract: FEED

Award: 2021

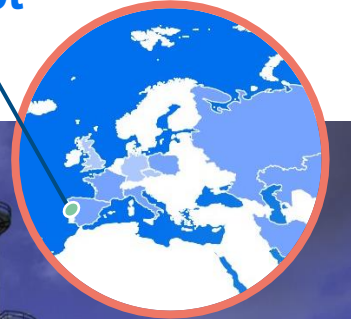
Delivery: 2022

Client: Galp

Location: Portugal

Key figures

New HVO Unit (Biofuels) to produce 270kTPA bio-diesel and bio-jet based on renewable feedstock (animal fat, vegetable oils, etc.) in Galp's Sines refinery



New HVO Unit (Biofuels) to produce 270kTPA bio-diesel and bio-jet based on renewable feedstock (animal fat, vegetable oils, etc.) in Galp's Sines refinery

TotalEnergies Galaxie Biojet

The first biorefinery in France from Animal Fat and used cooking oils to renewable fuels



Contract: EPsCa

Award: 2022

Delivery: 2025

Client: TotalEnergies

Location: France

Key figures

- Capacity: HVO 210 kTA Biojet & 51 kTA biodiesel
- HEFA Licensor: UOP
- Package providers: PTT Desmet Ballestra and Callidus for Thermal Oxidizer



The first biorefinery in France from Animal Fat and used cooking oils to renewable fuels

BP Energía Bio-Logistic Project

Project for the use of vegetable oil production as feedstock in the Castellón Refinery, Spain



Contract: FEED, EPCM

Award: 2020

Delivery: 2022

Client: BP Energía España

Location: Castellón, Spain

Key figures

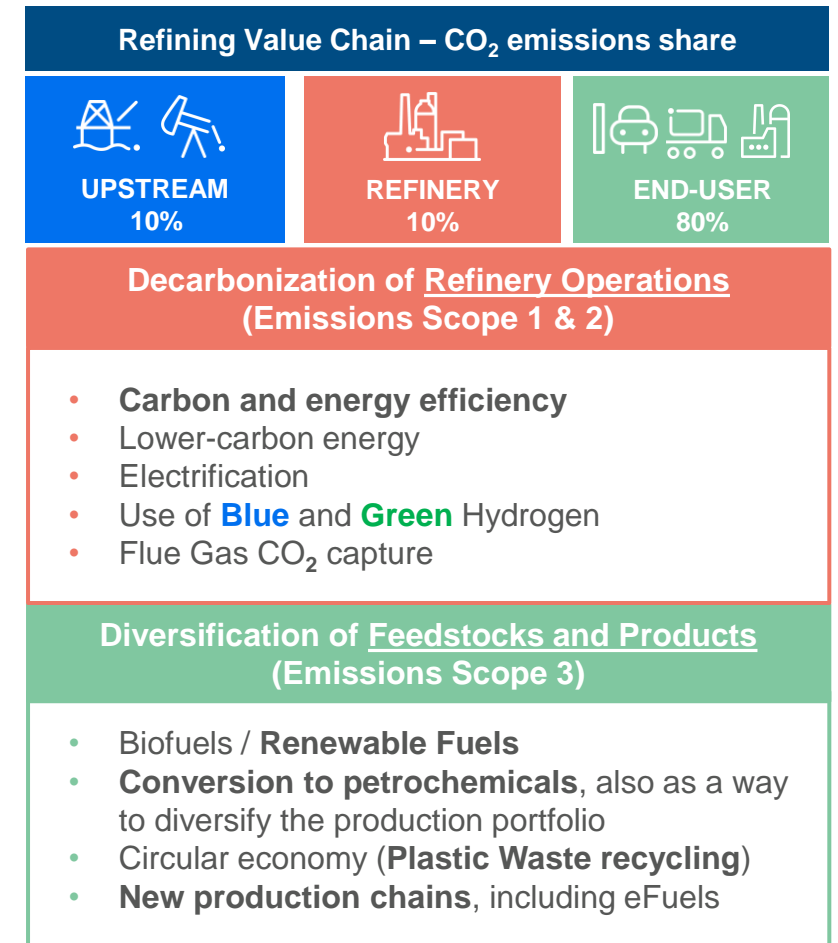
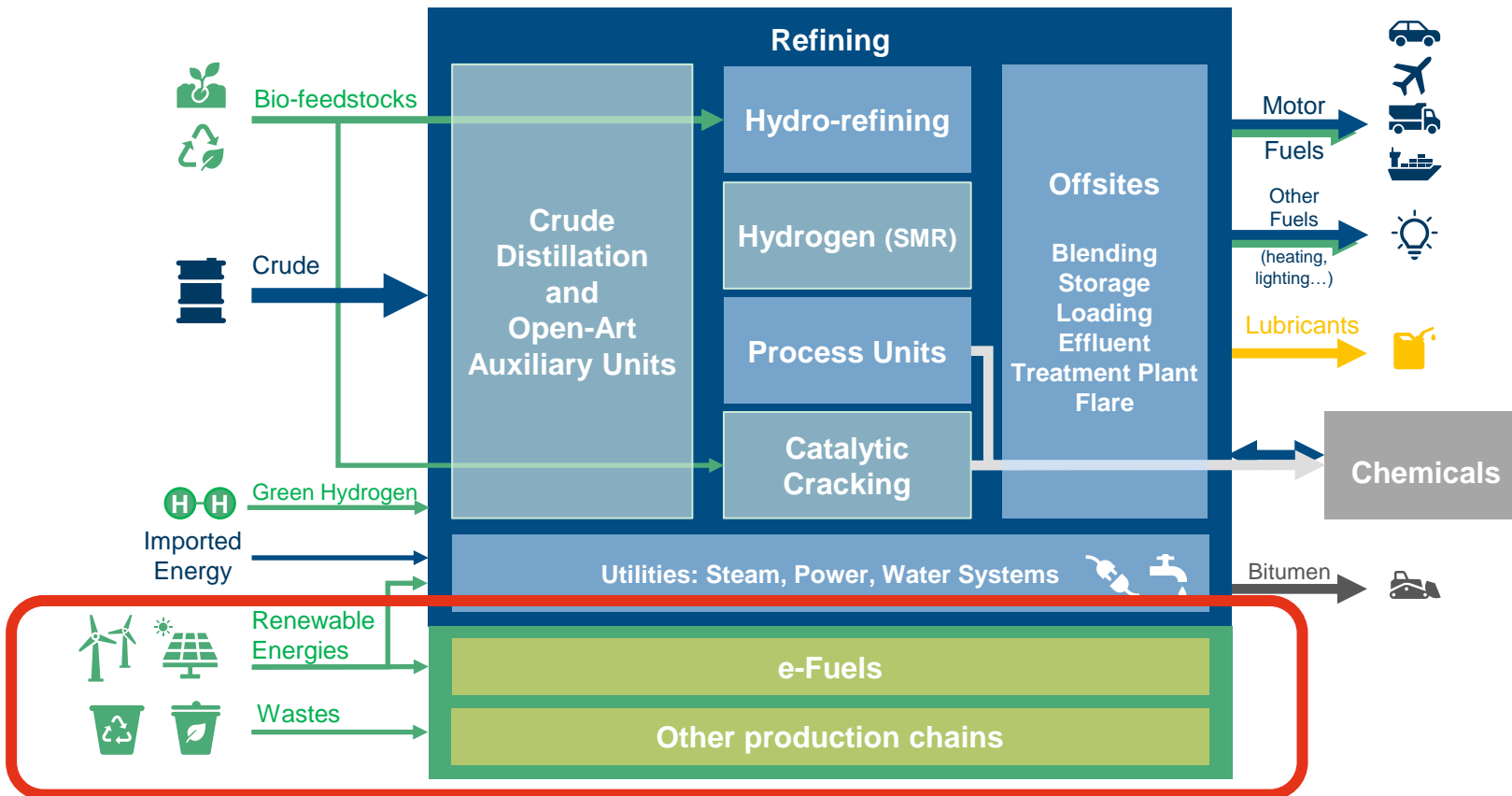
BIO. Facilities at the port to allow the use of vegetable oil as feedstock for the refinery



Project for the use of vegetable oil production as feedstock for the refinery

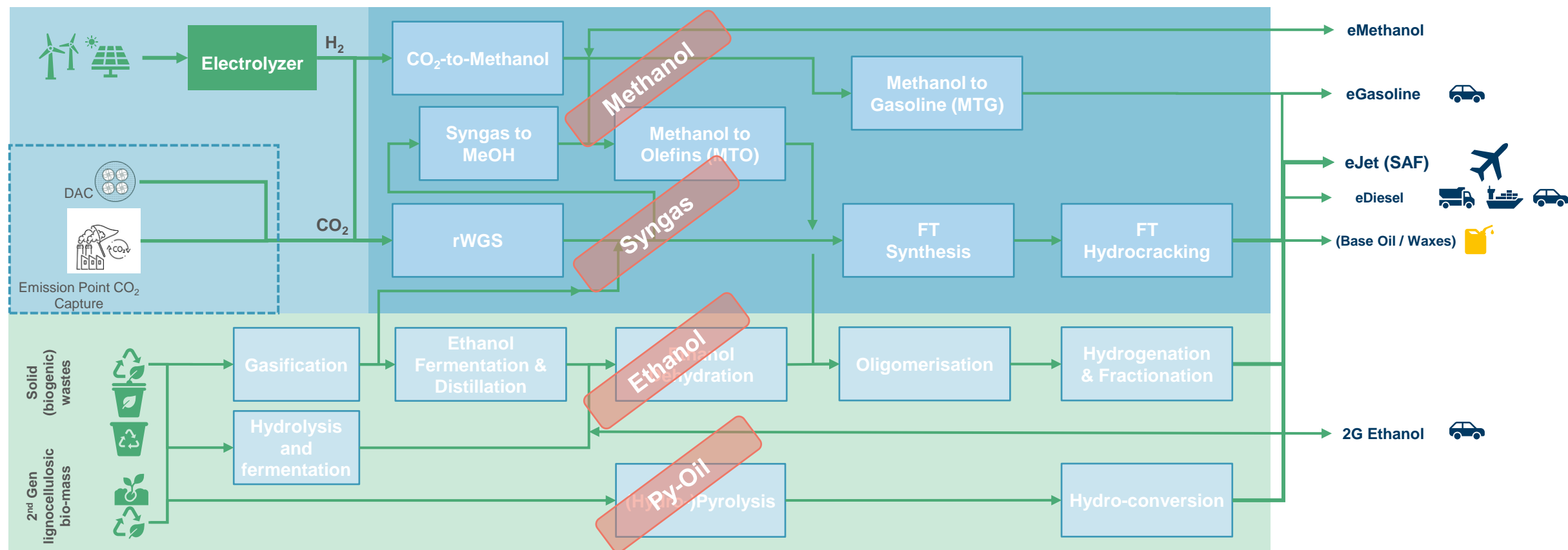
Decarbonize the future – What this means for Refining

An industry having a dual role to play

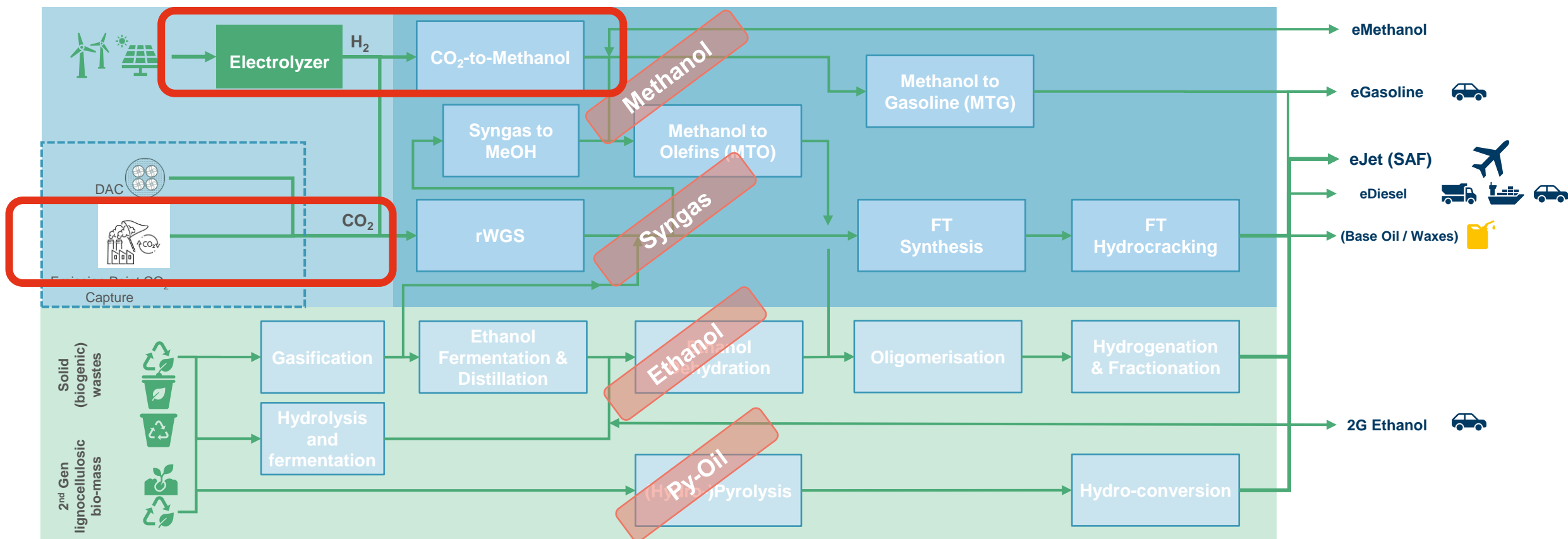


➤ Multiple options and solutions for the refining industry to decarbonize

A variety of potential routes for Sustainable Fuels production



A variety of potential routes for Sustainable Fuels production



E-Methanol Project

Contract: FS

Award: 2021

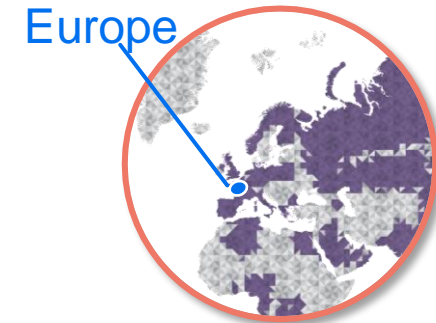
Delivery: 2022

Client: Confidential

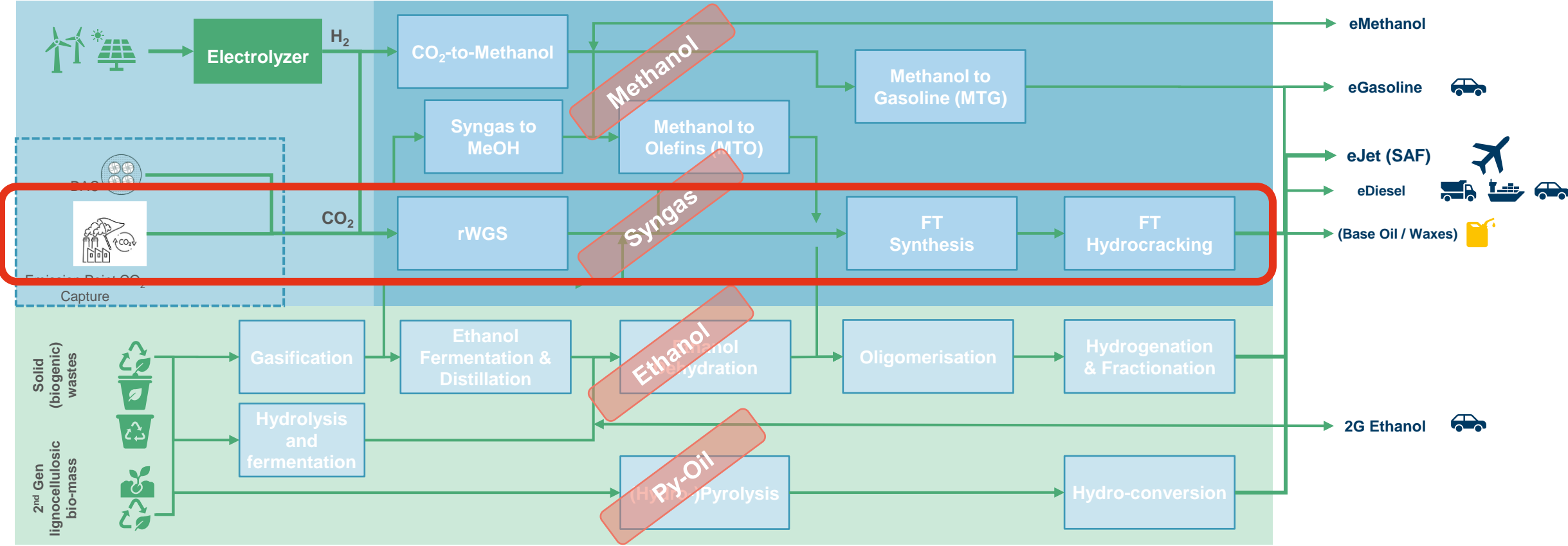
Location: Europe

Key figures

- CO2 capture, Green H2 and Methanol Synthesis



A variety of potential routes for Sustainable Fuels production



Arcadia e-Fuels Endor FEED Project

Sasol-TEN-Topsoe collaboration creating a unique proposition for Power to Liquid

Contract: FEED

Award: 2022

Completion: 2023

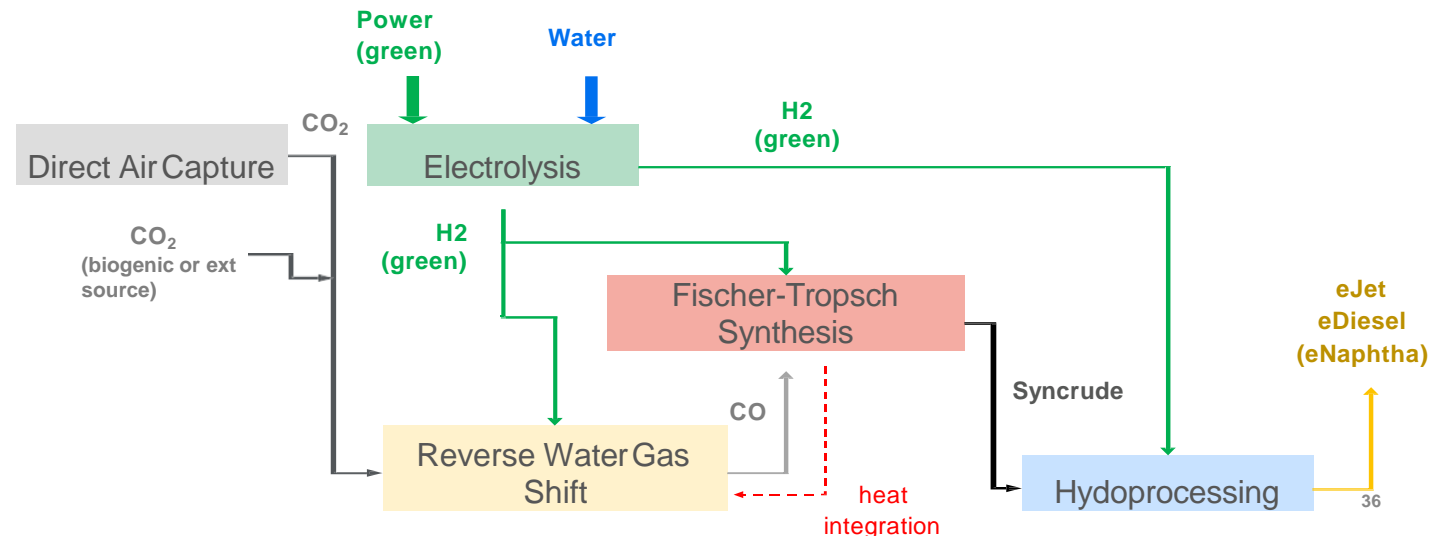
Client: Arcadia e-Fuels ApS

Location: Vordingborg, Denmark



Key figures

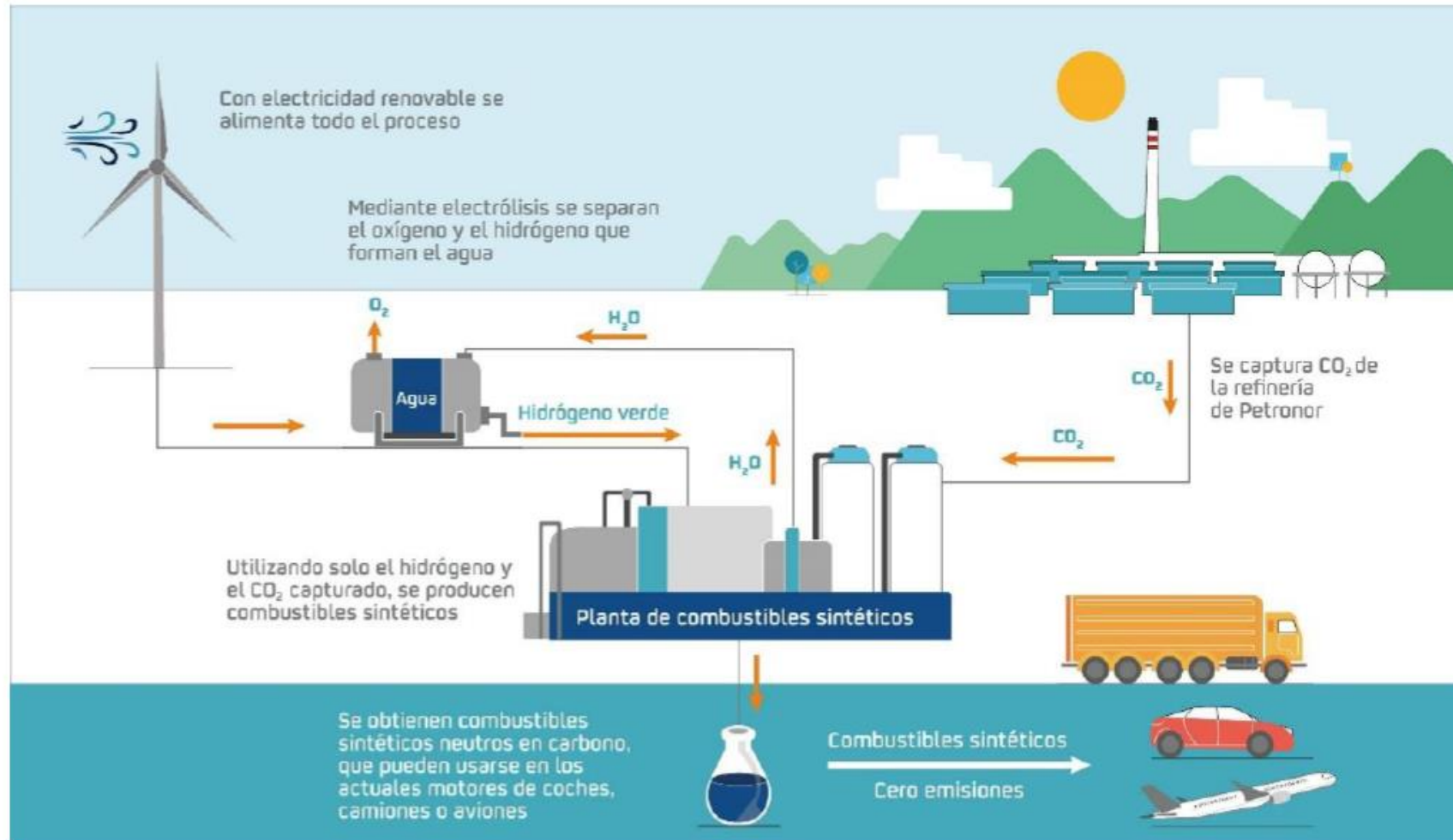
- 2kbpd of equivalent FT products (eJet and eDiesel will be produced)
- ~250MW Electrolyzer capacity



Repsol e-Fuels

Petronor

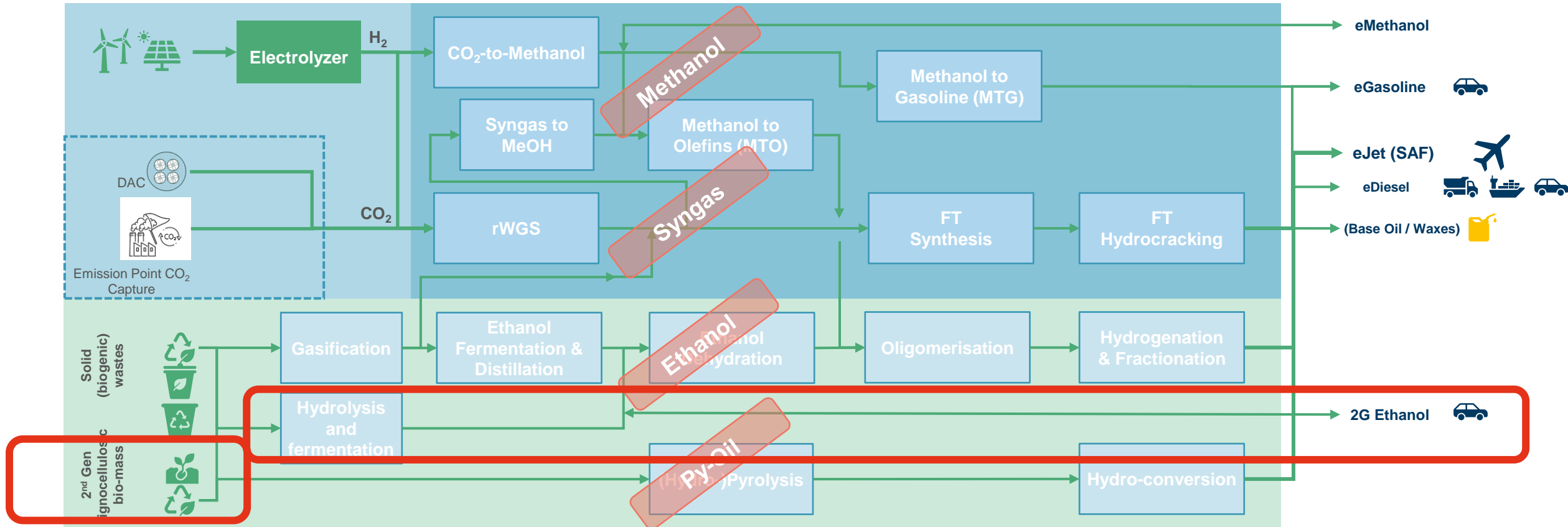
50 bpd e-fuel



“ LA PRODUCCIÓN DE **E-FUELS**, PERMITE EL **ALMACENAMIENTO** DE **ENERGÍA RENOVABLE** EN GRANDES VOLÚMENES, APORTANDO FLEXIBILIDAD AL SISTEMA ”

Source: Repsol

A variety of potential routes for Sustainable Fuels production



Clariant: 2G Bioethanol

2G Bioethanol using Sunliquid® Technology

Contract: BEDP

Award: 2019

Delivery: 2020

Client: Clariant

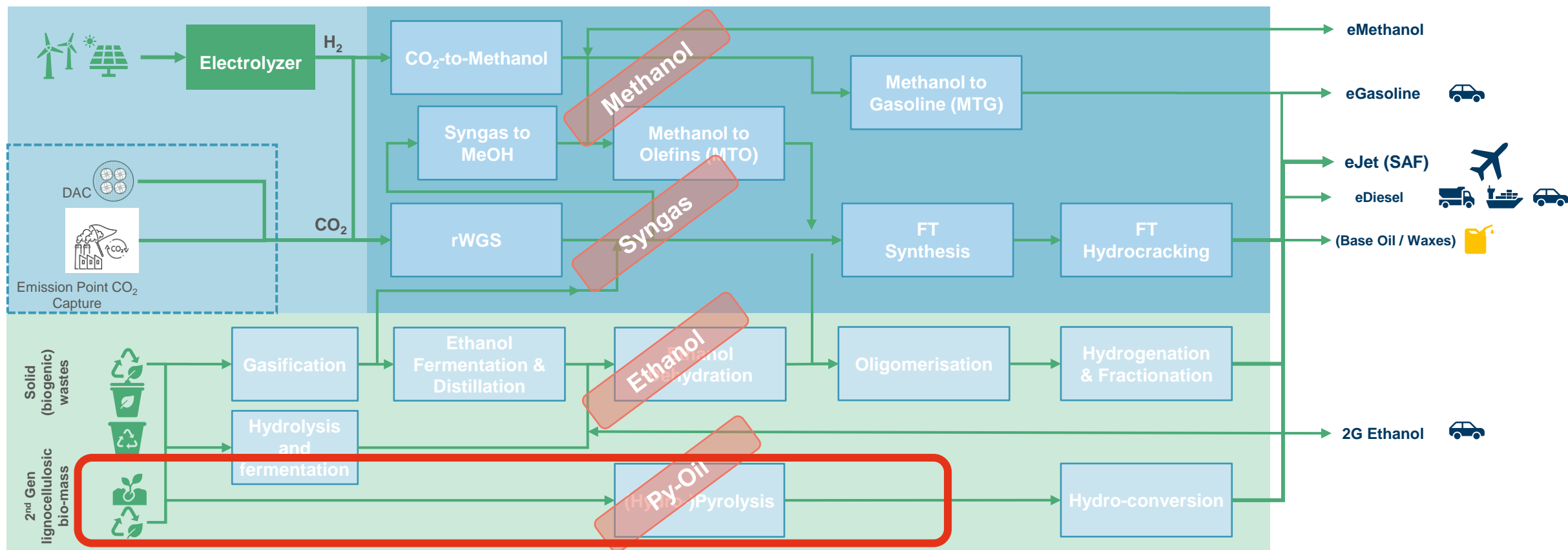
Location Poland & Bulgaria

Key figures

- Capacity: 25 Kt/y & 50 Kt/y



A variety of potential routes for Sustainable Fuels production



Commercial Fast Pyrolysis Bio Oil production

2019: 2 LS EPC contracts for plants in Sweden and Finland

Green Fuel Nordic Oy – Finland (on-stream Q4 2020)

- Plant under construction in Lieksa, Finland next to sawmill
- Client has 2 locations with permits and space for 4 plants on each location
- FPBO will replace light and heavy fuel oil for heating purposes
- **24,000 tons CO₂ savings per year**



Pyrocell – Sweden (on-stream Q4 2021)

- Pyrocell is a JV between Wood Producer **Setra** and refiner **Preem**
- Plant to be constructed on **Setra's** sawmill plot using sawdust as feedstock
- FPBO will be used by **Preem** in their refinery to produce **Advanced Biofuels**
- The technology allows **Preem** to meet the new Renewable Energy Directive
- **15,000 cars will drive on Swedish sawdust**



Finland first for Dutch pyrolysis technology developers

By Biomenergy International · Biofuels & Oils · April 2, 2019

Finland is set to invest up to EUR 100 million in bio-oil production facilities using pyrolysis technology developed in the Netherlands and sawmill residues. An initial investment of EUR 25 million will be used for the purchase of a single production facility, but the client intends to purchase three more such facilities, bringing the total order to EUR 100 million.



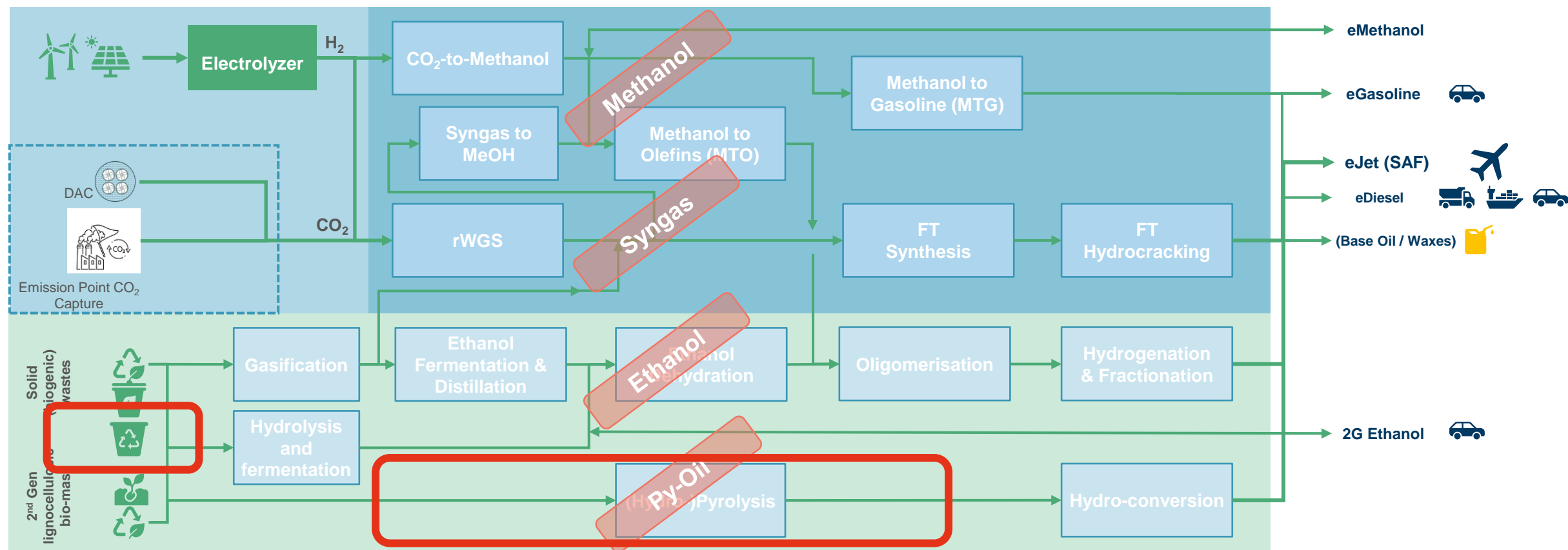
Pyrocell selects TechnipFMC and BTG-BTL to build Swedish bio-oil plant

By Alan Sherrard · Technology & Suppliers · September 16, 2019

In Sweden, Pyrocell AB has announced that it has selected the Dutch companies TechnipFMC and BTG BioLiquids (BTG-BTL) to design and build a production facility in which sawmill residues from Setra Group's Kastet sawmill will be converted into bio-oil. It will be the first plant in the world where 'green fuel' will be produced and further processed into road transportation fuels at an oil refinery – Preem's Lysekil refinery.



A variety of potential routes for Sustainable Fuels production



Indian Institute of Petroleum

From Plastic To Diesel

Contrat: CE, BDEP & Modularization, EPC

Start: 2017

Delivery: 2019

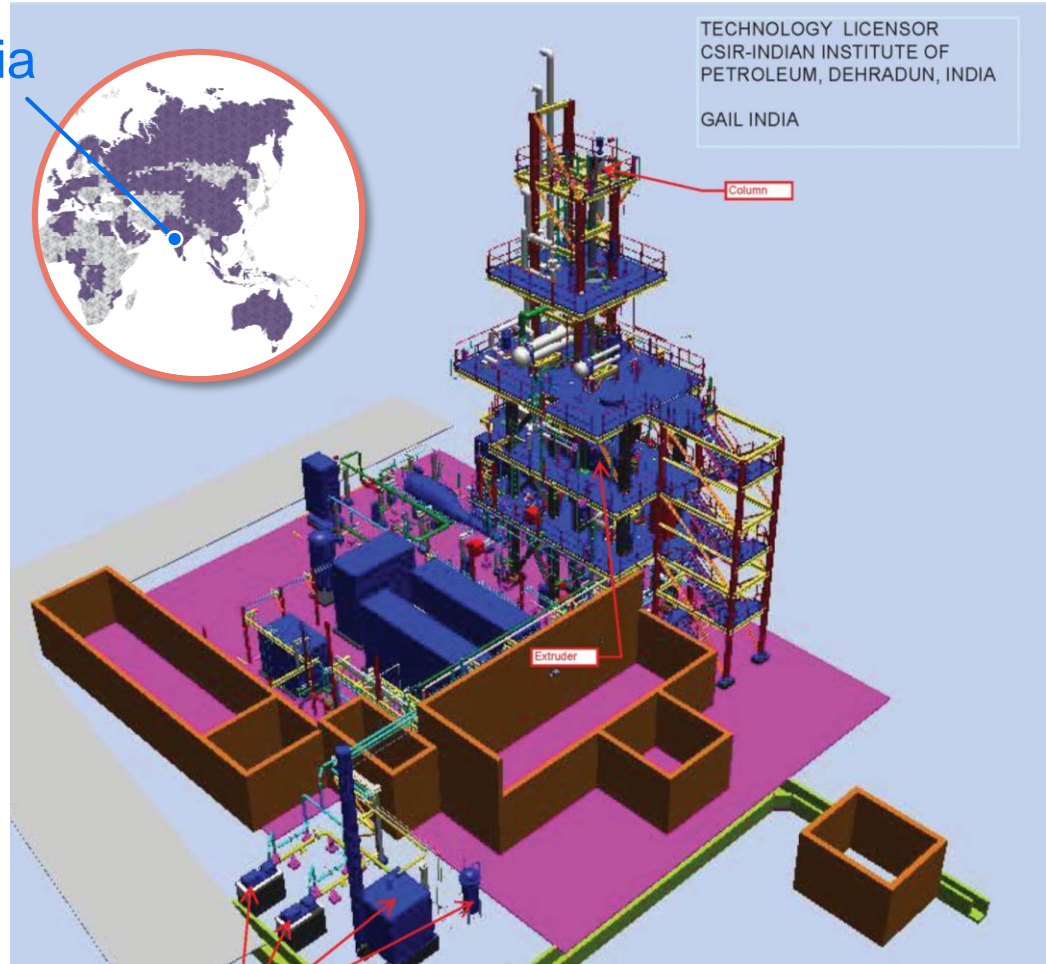
Client: Indian Institute of Petroleum

Location: India

Key Figures

Plastic Pyrolysis using selective catalysts to convert Waste Plastic to Diesel

India



Plastic Energy

New end-of-life plastic waste chemical recycling plant



Contract: FEED, EPCm

Award: 2021

Delivery: 2022

Client: Plastic Energy

Location: France

Key figures

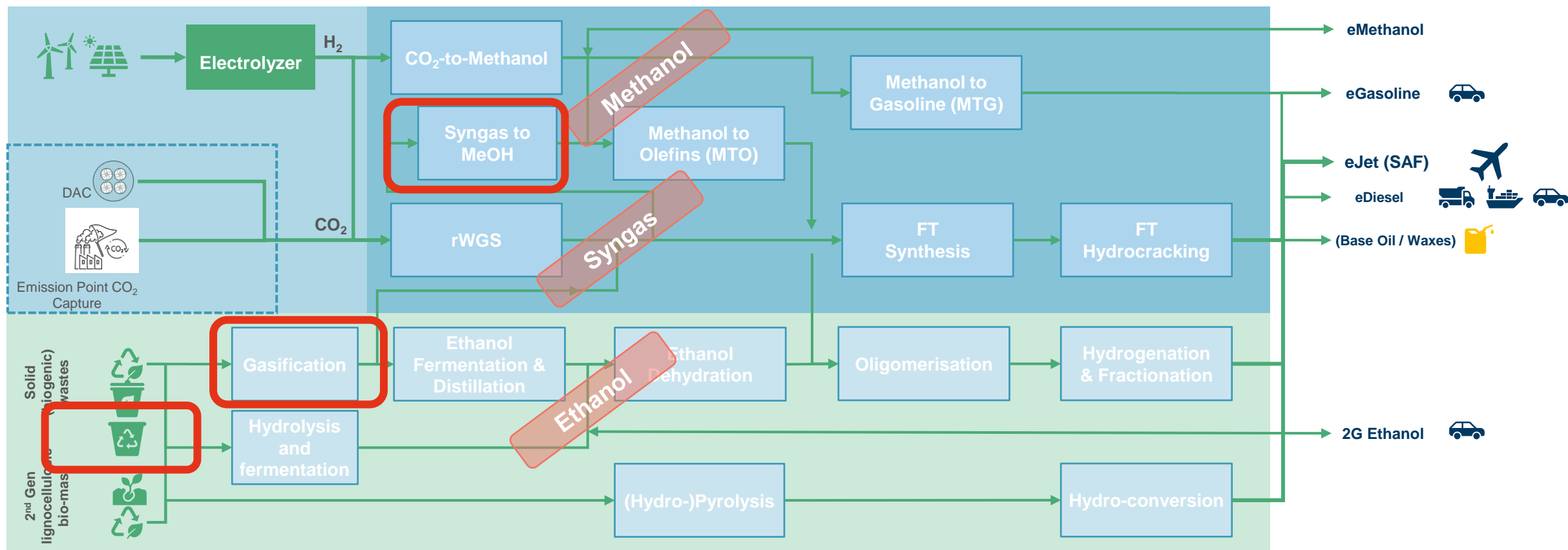
Chemical Recycling Plant to process
25.000 Tn/a Plastic Wastes

TAC™ process for liquid TACOIL.



New end-of-life plastic waste chemical recycling plant to process
25,000 Tn/y of plastic waste

A variety of potential routes for Sustainable Fuels production



Enerkem

Ecoplant waste gasification unit for methanol production

Contract: FEED

Award: 2021

Delivery: 2022

Client: Enerkem

Location: Tarragona, Spain

Key figures

New Ecoplanta with a waste pretreatment and advanced gasification plant to recycle refuse-derived fuel (RDF) and biomass waste into bio and circular methanol using Enerkem's technology



Project



New Ecoplanta with a waste pretreatment and advanced gasification plant to recycle refuse-derived fuel (RDF) and biomass waste into bio and circular methanol

Key takeaways

Breaking boundaries together to engineer a sustainable future

- Leverage a pioneering mindset and continue to innovate towards hydrogen, sustainable fuels and chemistry and low-carbon infrastructures
- Differentiate with full-cycle energy transformation offering from proprietary technologies to project deliveries and beyond
- Decarbonize the future, join forces and bridge expertise across industries.



¡MUCHAS GRACIAS!

CONTACTOS



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