



INERATEC GmbH

Innovative Chemical Reactor Technologies

Greenhouse gases transformation to renewable fuels and chemicals

Problem

We are depending on hydrocarbons made from oil and gas



Worldwide energy consumption 2035: >55% oil and gas¹

Annual CO₂ emissions: >35,000,000,000 tons¹

Solutions

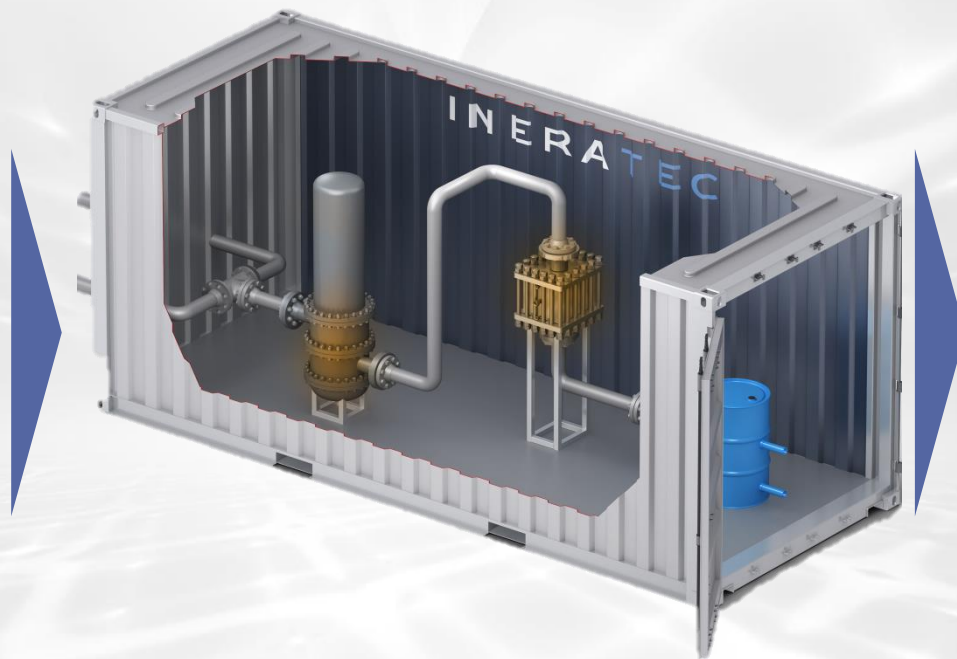
Compact chemical plants that produce renewable hydrocarbons



Power-to-X



Gas-to-X



Renewable
Fuels and Materials

Greenhouse Gas Recycling by INERATEC[®]

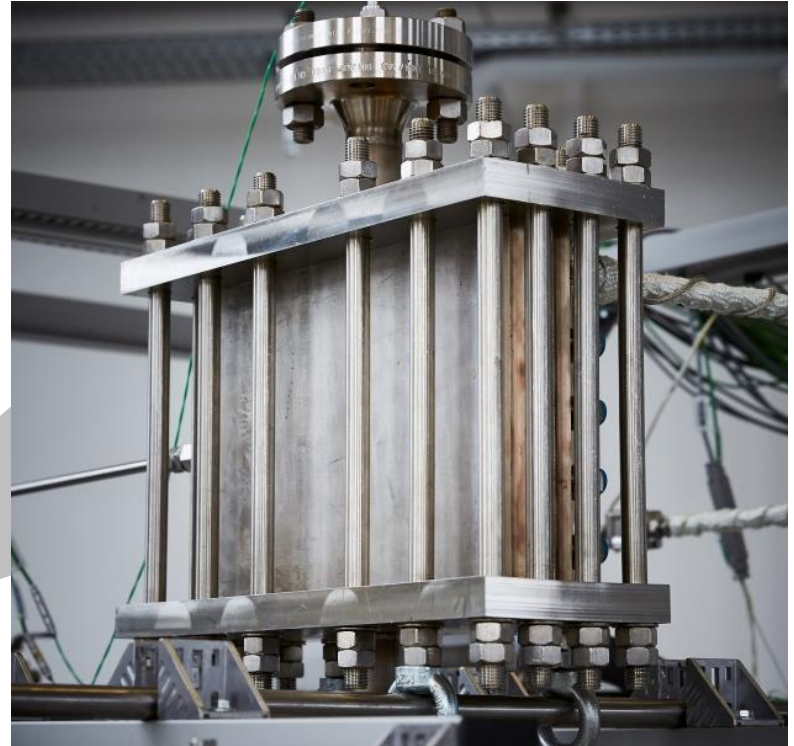
Conventional

The existing technology is not the perfect match for renewables



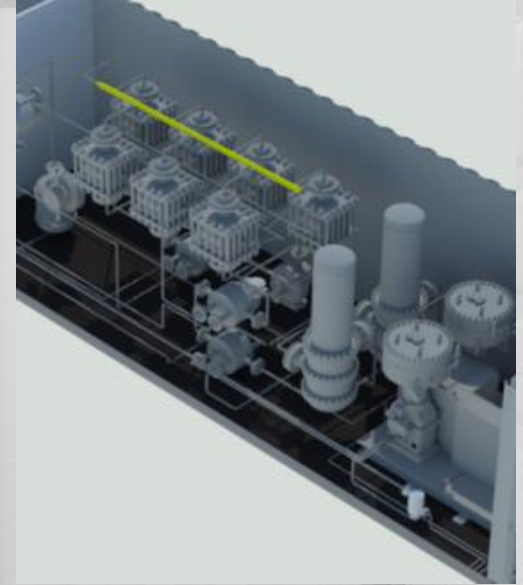
Innovation

Most compact chemical reactor technology in the world

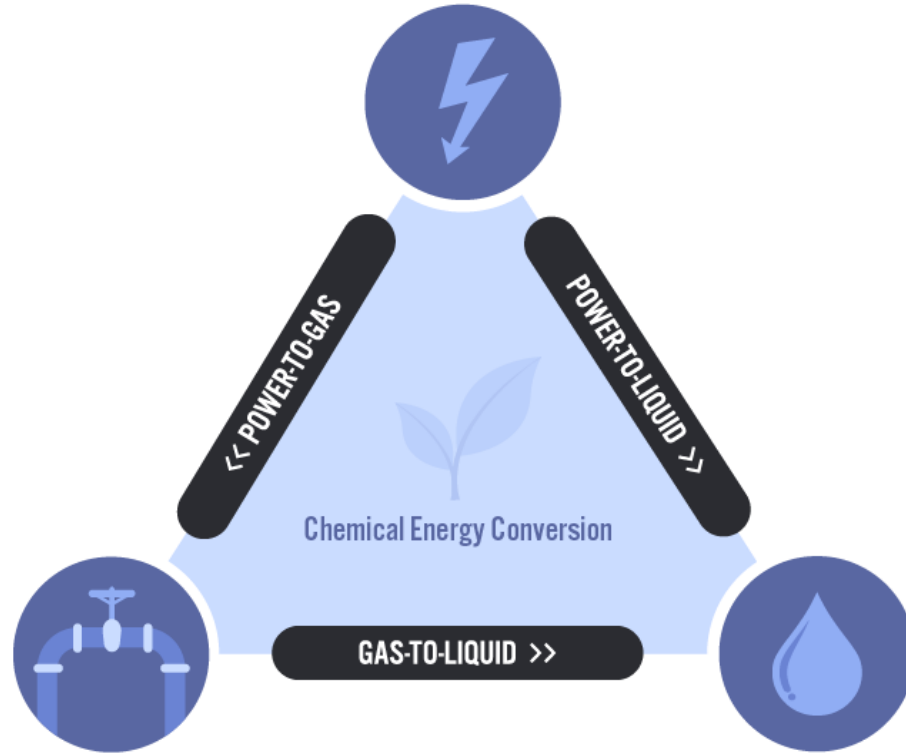


Products

Innovative compact chemical plants in containers



capacity



Activities

Engineering, manufacturing and sale of turn-key chemical plants



Engineering



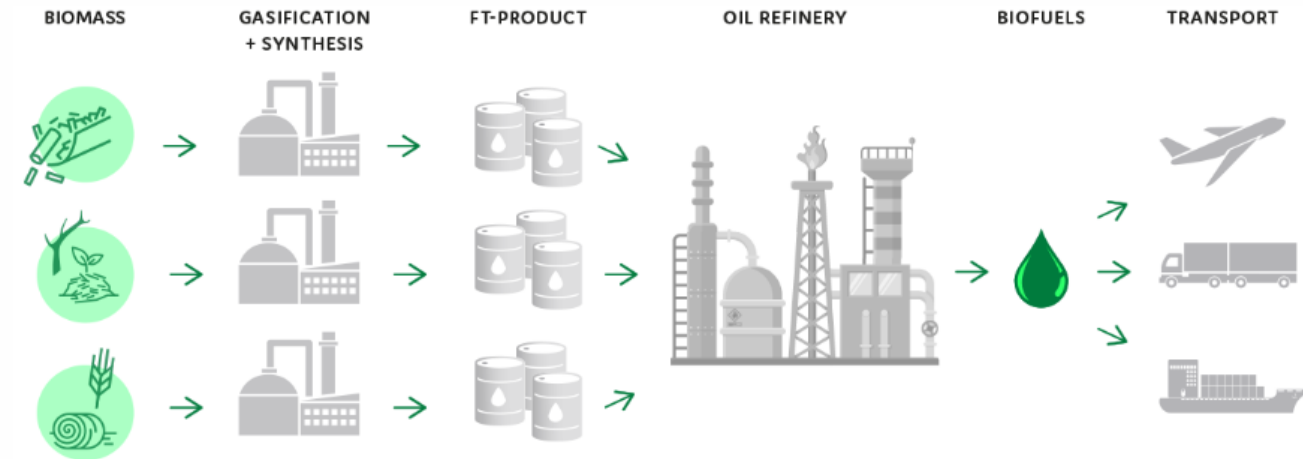
Plant construction

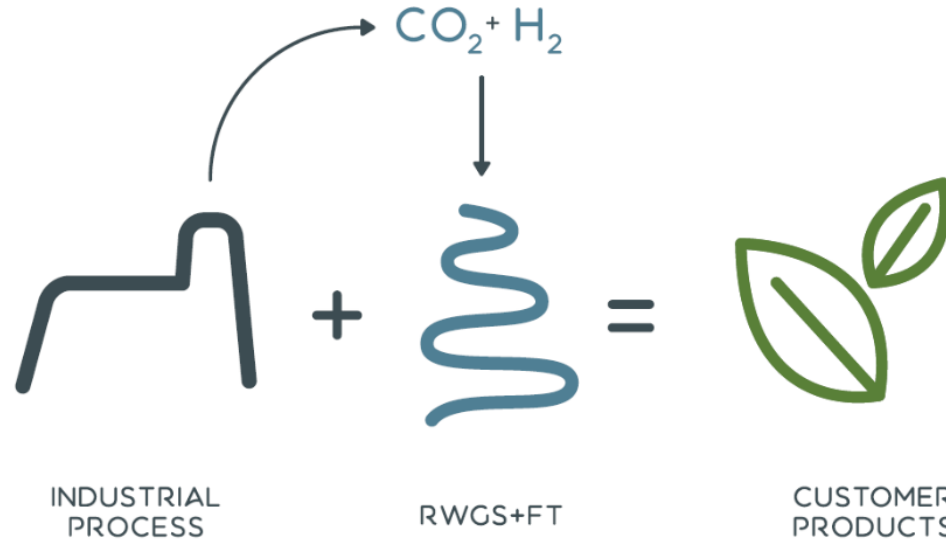


Commissioning & Services

+ Research

Compact Gasification and Synthesis process





Altana

INERATEC - Innovative
Chemical Reactor
Technologies

STANDORT. VORTEIL.

InfraserV Höchst

POLITO - Politecnico di
Torino

ProVadis Hochschule

VTT Technical Research
Centre of Finland Ltd

PtL/PtG project Pilot plant installed in Finland in 2016







PtKerosene

Compact chemical pilot plant converts solar power and CO₂



Next Steps

First industrial-scale Power-to-Liquid plant worldwide in 2018



Audi e-diesel plant Laufenburg

11/17

1. Renewable electricity

Renewable energy obtained from hydropower.



2. Electrolysis

Electrolysis splits water into hydrogen and oxygen. Oxygen dissipates into the surrounding air.



Chemical synthesis

In the first step, hydrogen and CO₂ are converted to synthesis gas in the reverse water-gas shift reactor. The Fischer-Tropsch reactor then uses this to build hydrocarbon chains.



3. Conversion

A two-step process turns CO₂ and hydrogen into hydrocarbon chains.



Heat for use in residential areas or in industry.

Renewable waxes for cosmetics, foodstuffs and chemical industries

Infrastructure compatibility

e-diesel is compatible with existing infrastructure and engine technologies. It replaces fossil fuel.

e-diesel



Almost CO₂-neutral e-diesel for mobility



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Products

Characteristics of the synthetic hydrocarbons

- CO₂-neutral production
- Sulfur-free
- 0 Aromates
- Increased burning efficiency



Wachs und Kraftstoffproben aus der INERATEC Pilotanlage



Erfolgreiche Spray-Verbrennungsversuche am DLR