

# TRACTEBEL

ENGIE

## Green Hydrogen Carbon-neutral solutions



### Green Hydrogen is scaling-up rapidly. And so are we!

For us, green hydrogen is a key enabler to decarbonize industry and transport and a massive energy carrier to manage the intermittency of renewable sources.

We have been providing for several years green hydrogen solutions to industries, utilities and project developers to help them in the execution of their carbon neutral projects: from production through renewable energy to its final use. Whether it be for energy storage, mobility, industry or as raw material for the production of e-fuels such as ammonia, methane or methanol.

#### Our approach

Optimization of energetic solution in function of regional renewables specificities, electrical grid characteristics, energy/molecule demand profile on client side and best available technologies (batteries, gas storage, heat storage, hydrogen, ...)

Full engineering support from project inception, feasibility, tendering to realization based on multi-disciplinary teams with specific green H<sub>2</sub> expertise

#### Client benefits

- Minimum Levelized Cost of Hydrogen
- Independent assessment with experience with all electrolyzer manufacturers
- Strong support from experts and references globally covering all building blocks from kW to GW scale

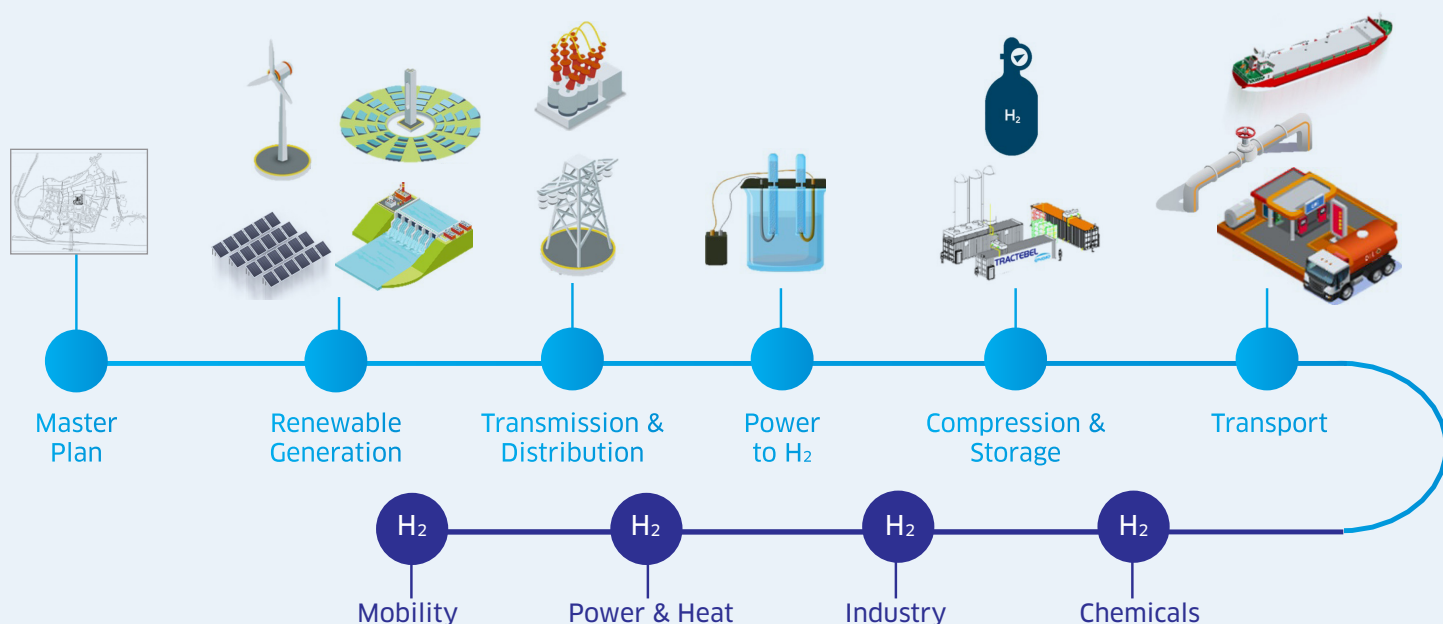
#### Our added value

- Holistic approach in close collaboration with client with profound knowledge in H<sub>2</sub> and energy in general
- State-of-the-art software for optimizing energy flows and zero carbon solution
- Actively contributing to project economical feasibility
- Demonstrated experience with several projects developed by us reaching FID and some already COD
- Special focus on H&S in design



# Developing green hydrogen projects with best available emerging H<sub>2</sub> technology combined with proven energy solutions

Our approach allows us to deliver solutions with minimum Levelized Cost of Hydrogen. We valorize our first mover green hydrogen experience with our renewable, gas, power/heat, water and urban in-house world-wide experience. Our imaginative experts actively contribute to boost game-changing green hydrogen solutions.



## SOME REFERENCES HYDROGEN

### MOBILITY

**Belgium - Revive\***, Program manager for 8 cities and 8 industrial partners for H<sub>2</sub> refuse truck operating trial

**France - Zero Emission Valley**, EPCM mission for 20 H<sub>2</sub> refueling stations for various kind of vehicles

**Germany - Frankfurt MH<sub>2</sub> Regio**, Development studies for a regional H<sub>2</sub> mobility Waste to Wheels strategy

### POWER & HEAT

**Chile - H<sub>2</sub> for Carbon Impact Reduction**, Assessment of carbon reduction for cement industry 130MWth rotary kilns

**Western Europe - H<sub>2</sub> blending in gas network**, Assessment of H<sub>2</sub> blending on turbines, engines and compressors

### INDUSTRY

**The Netherlands - HyNetherlands**, Green H<sub>2</sub>, Feasibility study and Tendering for the development of a future 100MW green H<sub>2</sub> production at Eemshaven

**South Africa - Rhyno Mining Operations Decarbonization**, EPCM mission for a proof of concept of the H<sub>2</sub> supply chain and one retro-fitted truck before scaling up the whole fleet of 40 trucks support

**Green Production for Ammonia Plant**, Feasibility study for the development of a continuous green H<sub>2</sub> supply via on-site electrolysis

### STORAGE AND TRANSPORT

**World - H<sub>2</sub> export and import**, Techno-economic study for large H<sub>2</sub> transport by ship

### CHEMICALS

**Australia - Yuri Green Ammonia**, Feasibility study for the development of a continuous green H<sub>2</sub> supply via on-site electrolysis

**France - Masshyla Green H<sub>2</sub> Site for Biorefinery**, Feasibility and Advanced Engineering Studies of continuous green H<sub>2</sub> supply via on site electrolysis for largest H<sub>2</sub> site in France

### OFFSHORE HYDROGEN

**United Kingdom - Dolhryn Floating Hydrogen**, Conceptual design and Feasibility for large scale decentralized offshore floating H<sub>2</sub> production

**Europe - Fixed Offshore Hydrogen**, R&D for sizeable large scale centralized offshore fixed H<sub>2</sub> production