



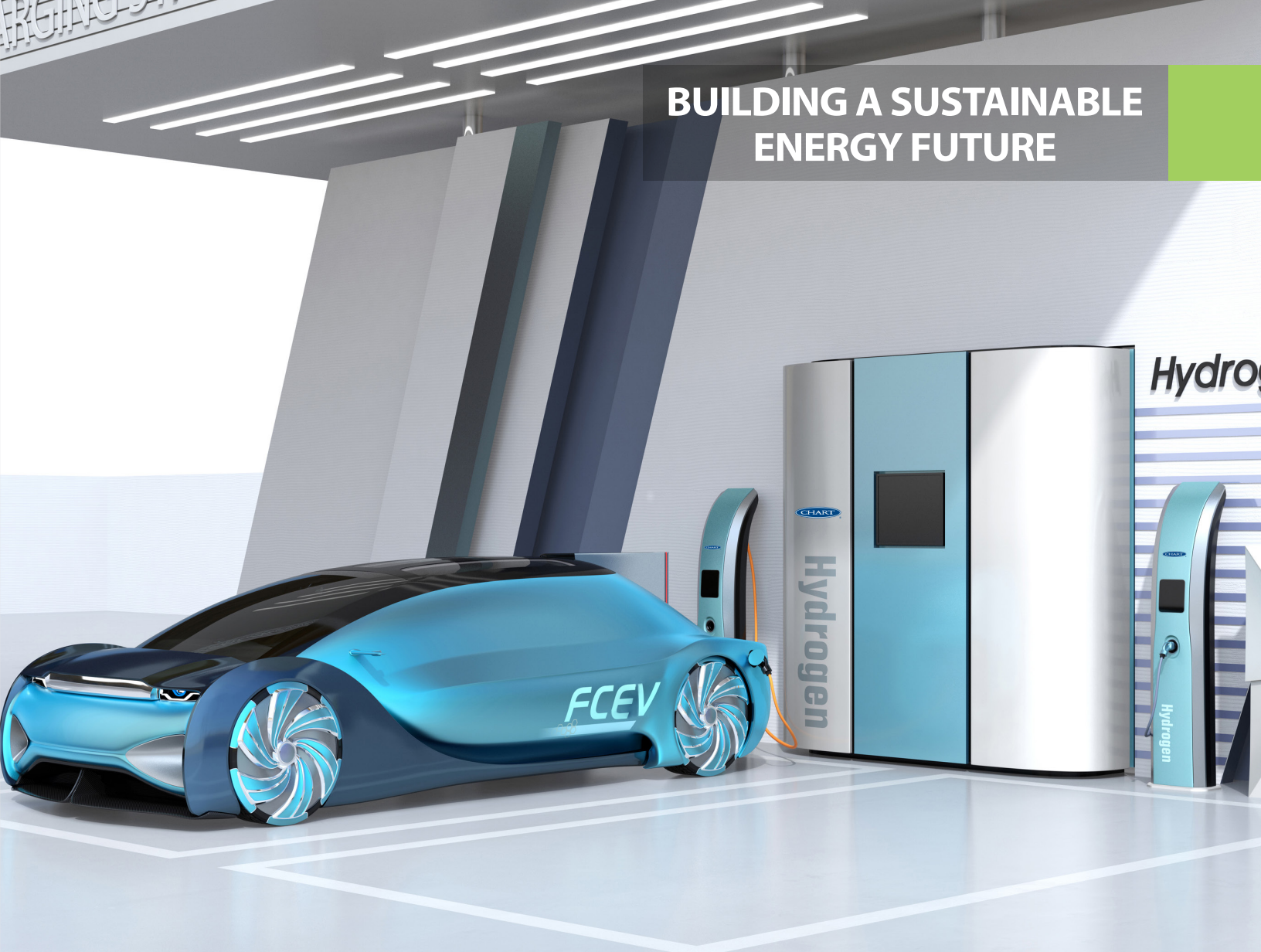
# Hydrogen Liquefiers

Where Green is the new Blue

DESIGN | ENGINEERING | MANUFACTURING | PROJECT MANAGEMENT | INSTALL | COMMISSIONING | TRAINING | LIFECYCLE MAINTENANCE



## BUILDING A SUSTAINABLE ENERGY FUTURE



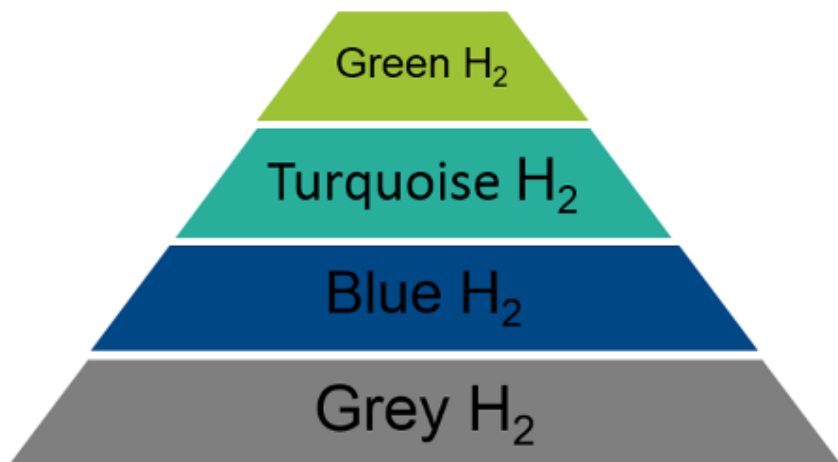
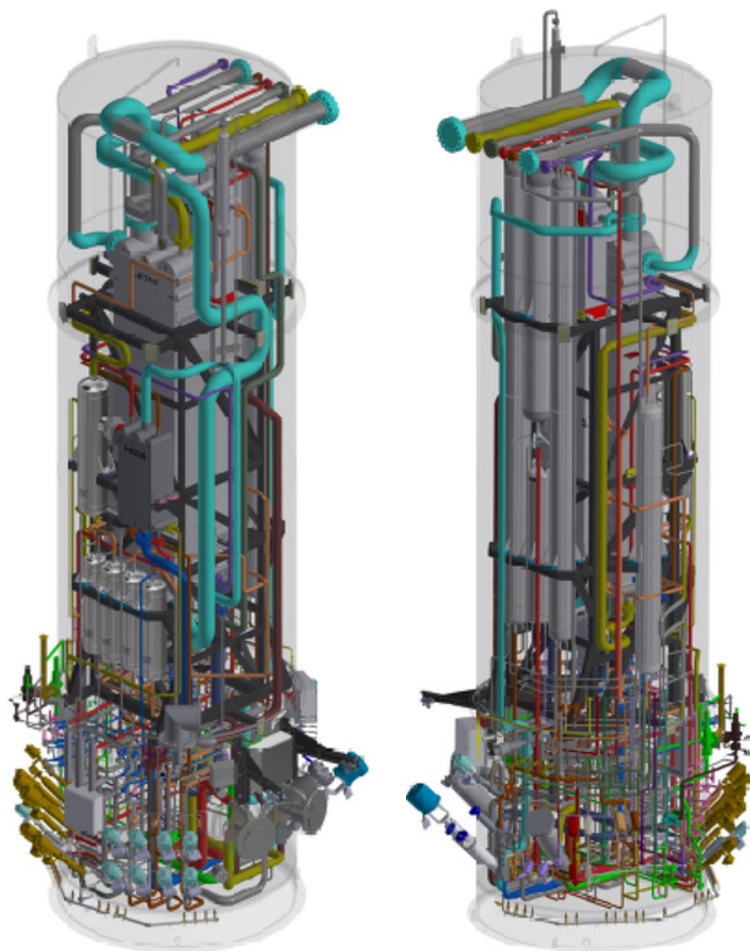
[www.ChartIndustries.com/Hydrogen](http://www.ChartIndustries.com/Hydrogen)

# Make operations safe, easy and reliable

Through our deep cryogenic expertise and proven track record of delivering solutions for a large range of liquefied gases, Chart is uniquely positioned to address the entire liquid hydrogen value chain.

## Standard Liquefaction Plant Solutions

- Standardized plant designs with liquefaction capacities of 5, 9, 12, 15 and 30 tonnes per day (tpd)
- Larger and custom sizes available upon request
- Options for trailer loading and trailer clean-out systems, and storage volumes
- Key equipment, including heat exchangers, vacuum-jacketed piping, cold box and cryogenic storage tanks, is designed and manufactured in-house
- Chart's hydrogen liquefaction processes use state of the art pre-cooling, refrigeration cycles and rotating equipment for optimized CAPEX based on power costs
- Modular component construction and shop fabrication, minimizing field construction
- Ability to manufacture multiple cold boxes in Chart's dedicated plants
- Minimized risk through proven technology and off the shelf components
- If required, Chart can incorporate front-end hydrogen purification processes from trusted partners to cater for a large range of inlet specifications
- Chart expertise includes process technology and plant designs



Liquefying and delivering all colors of hydrogen as a secure, clean, safe and affordable alternative to fossil fuels.

## Incorporating Chart's In-house Cryogenic Expertise

**Heat Exchange:** Chart superior plate fin heat exchangers are your guarantee of the most energy efficient and compact heat exchange solution.



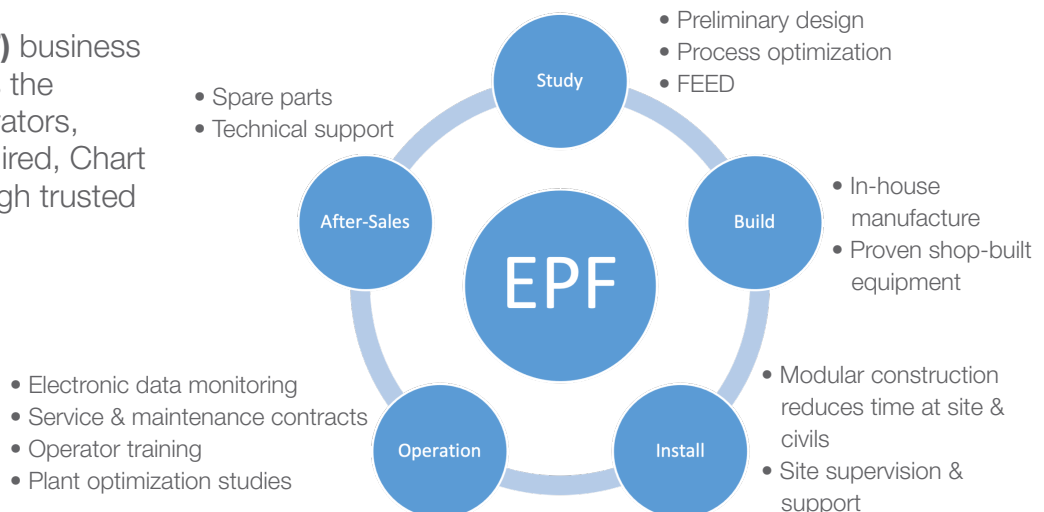
**Storage:** Chart is the undisputed leader in cryogenic liquid hydrogen storage with hundreds of tanks in service around the world.



**Chart Vacuum Technology<sup>®</sup>** is at the core of why Chart is recognized around the world as the premier supplier of cryogenic equipment. Our total scope incorporates in-house engineered and built vacuum jacketed pipework vaporizers and other equipment essential for the storage and transfer of liquid gases.

## Full Support Throughout the Complete Project Lifecycle

Focused, flexible **Engineering, Procurement, Fabrication (EPF)** business model perfectly positions Chart as the partner of choice for owners, operators, end-users and contractors. If required, Chart can deliver a full EPC scope through trusted partners.



# Positioned to Address the Entire Hydrogen Value Chain



**LIQUEFACTION**



**DISTRIBUTION**



**STORAGE**



**END-USE**



Engineered for Efficiency – Built to Last

Member of:



Strategic Partner: **McPhy**



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