

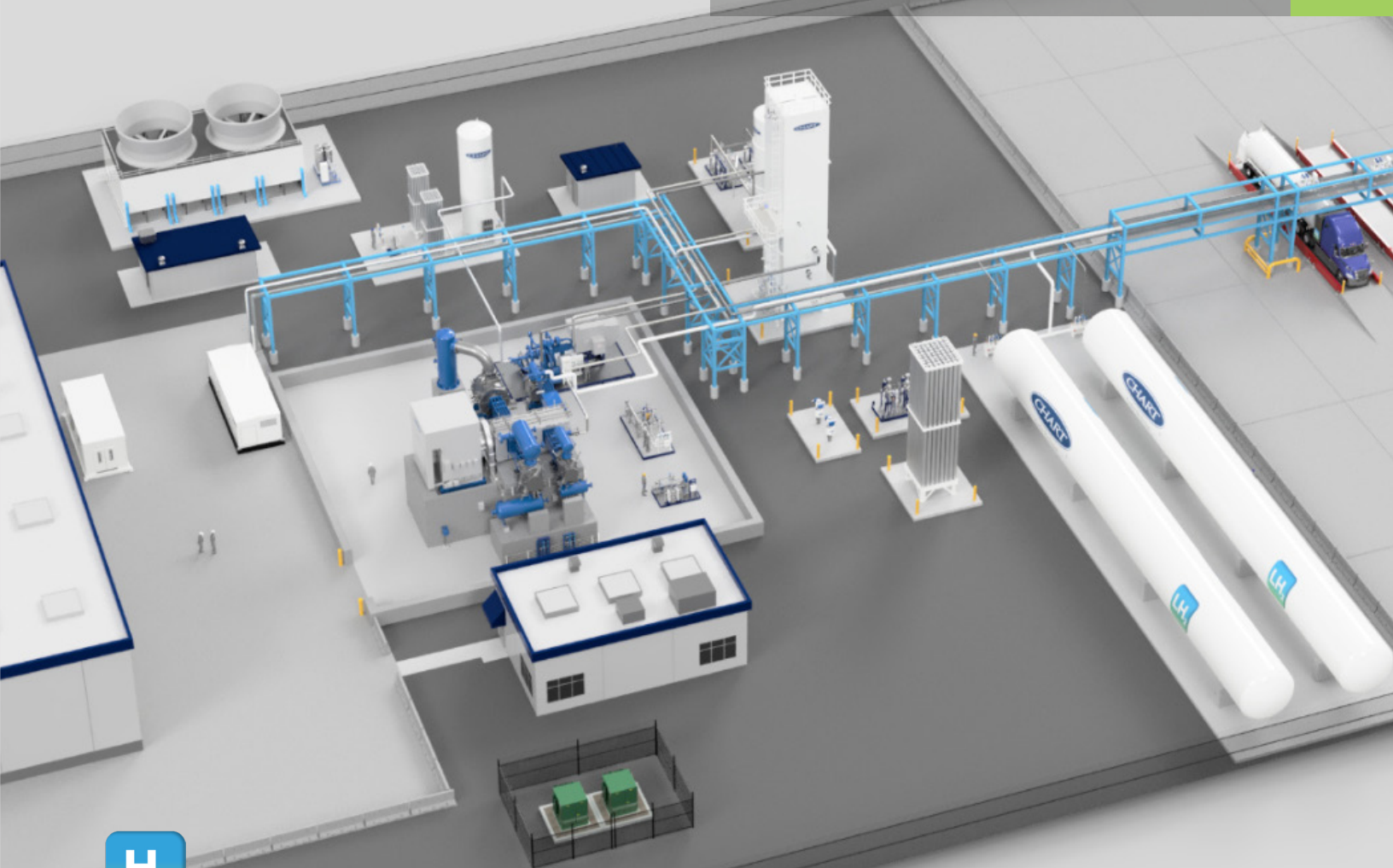


Hydrogen Liquefiers

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



**BUILDING A SUSTAINABLE
ENERGY FUTURE**

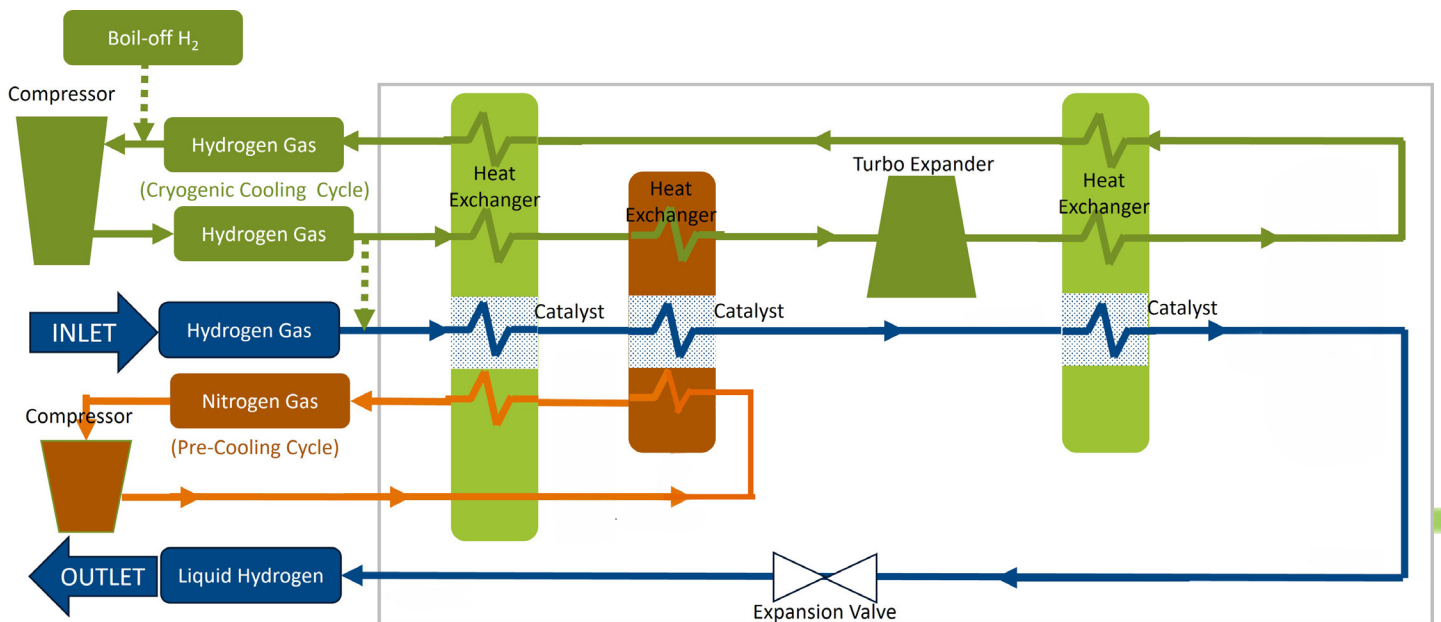


Total equipment solution with proven experience

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, 10, 15, 30 and 150 tonnes per day (tpd), and larger
- Larger and custom sizes available upon request
- Options for trailer loading and trailer clean-out systems, and liquid storage volumes
- Key equipment, including compression, turboexpanders, 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 and OPEX
- Modular component construction and shop fabrication, minimizing field construction
- Ability to manufacture multiple cold boxes at a time 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 the process technology and plant designs in addition to the equipment
- Boil-off gas recycle is included
- Supply of stabilized H₂ (o-p conversion integrated)
- Serviceable elements at ground level (no working at height/ platforms)



Major equipment designed and built in-house

Heat Exchangers: Chart superior plate fin heat exchangers provide the most energy efficient and compact heat exchange solution and are the heart of essentially all liquefiers in North America.



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



Compressors: Howden compressors for feed gas compression and hydrogen refrigeration offer highest efficiency, product purity, maximum uptime and proven reliability.

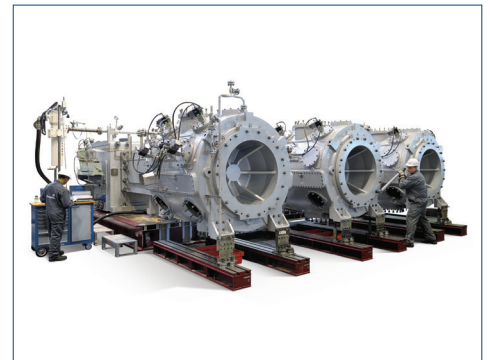


Chart Vacuum Technology® is at the core of why Chart is recognized around the world as the premier supplier of cryogenic equipment. Our total scope incorporates in-house engineered and built vacuum jacketed pipework vaporizers and other equipment essential for the storage and transfer of liquid gases.

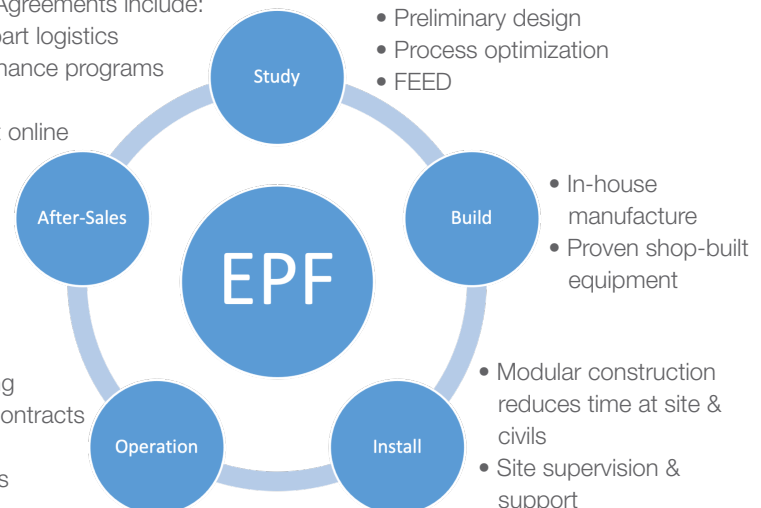
Full Support Throughout the Complete Project Lifecycle

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.

Long Term Service Agreements include:

- Optimized spare part logistics
- Preventive maintenance programs (including uptime)
- Operation support online
- Operator training

- Electronic data monitoring
- Service & maintenance contracts
- Operator training
- Plant optimization studies



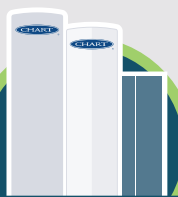
Positioned to Address the Entire Hydrogen Value Chain



LIQUEFACTION



DISTRIBUTION



STORAGE



END-USE



Engineered for Efficiency – Built to Last

Compressors and Expanders:

Chart provides a complete range of reciprocating, diaphragm, centrifugal and screw compressors and turboexpanders for hydrogen service across the value chain.

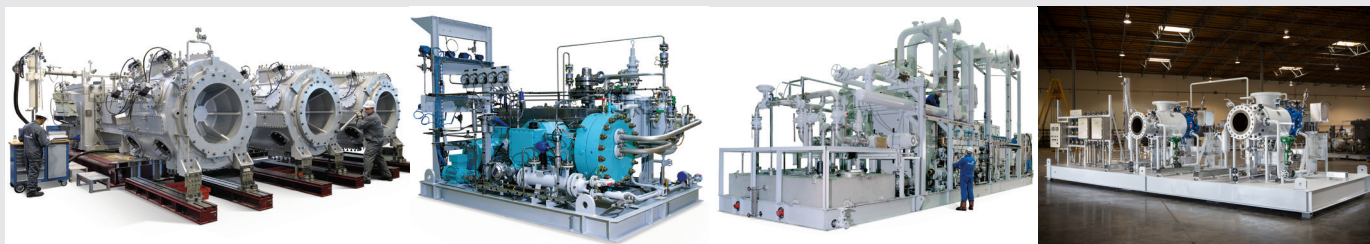


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