



25
YEARS



CRYOGENIC TANK

Liquefied Hydrogen (LH₂)

PT. LINTECH DUTA PRATAMA

DELIVER HIGH QUALITY EPFC PROJECT SAFELY

Business fields:

**MINING, INDUSTRIAL AND CHEMICAL PLANT, OIL AND GAS PLANT
ONSHORE AND OFFSHORE, MARINE AND SHIP REPAIR**

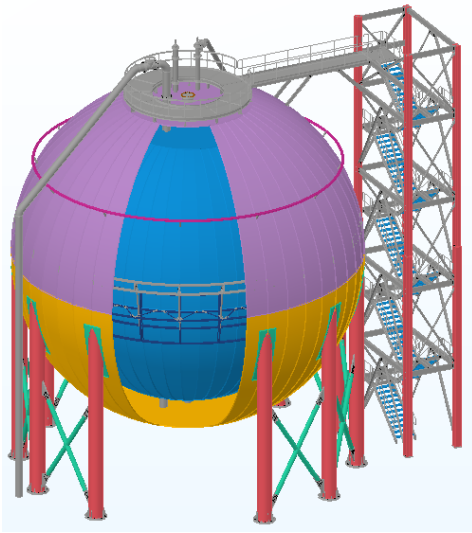
Office/Workshop : Wira Jatim Industrial Estate, Mastrip 70, Karangpilang, Surabaya, Indonesia 60221

Lintech Seaside Facility: Daendels Street, Paciran Cape Lamongan , 74 km from Surabaya, Indonesia

Phone: +62-31-7666 891 Fax: +62-31-7664 604

E-MAIL : admin@lintech.co.id WEBSITE: <http://www.lintech.co.id>; <http://www.lsf.co.id>

LIQUEFIED HYDROGEN – SPHERICAL TANK



Liquefied Hydrogen is a clean future energy source that is expected to be widely used in the future. It is abundant, versatile, and has a potential carbon-free footprint. In line with the goal and realization to contribute to a better future, Lintech provides liquefied hydrogen spherical storage tanks to support this vision. Liquefied Hydrogen Spherical storage tank is also widely used in Petrochemical, Chemical and Oil and Gas industries to store Hydrogen in enormous volume.

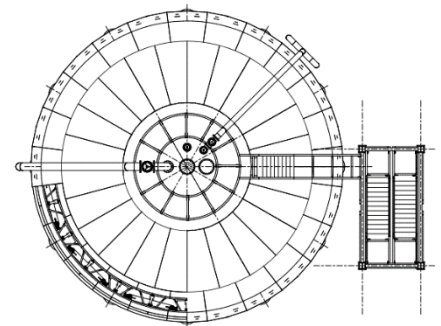
The advantages of spherical storage are

- Less stress concentration and uniform stress distribution under internal pressure resulting in pressurized storage
- Thinner required wall thickness compared to cylindrical shell for holding the same pressure which means more economical
- Smaller surface area compared to a cylindrical tank of the same volume. It means that the quantity of heat transferred from warmer surroundings to the liquid in the sphere, will be less than cylindrical or rectangular storage vessels

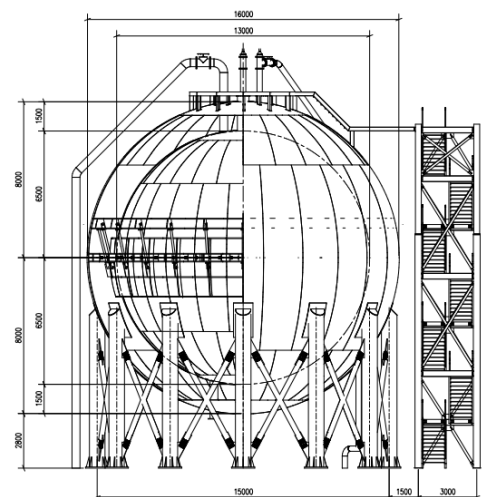
The Liquefied Hydrogen spherical storage tank is designed to comprise an inner tank and an outer tank with a vacuum-sealed insulation layer in between to prevent heat ingress from the ambient temperature to the containment temperature. This design to minimize boil-off gas and reduces energy consumption to reliquify the vapor produced since Liquefied Hydrogen is more susceptible to vaporize compared to other cryogenic liquids such as liquefied natural gas due to its lower latent heat.

The safety considerations for hydrogen, which highly flammable, are of paramount importance. Even a small leak can pose significant risks. Hence, the tank is designed adhere to relevant regulations, codes, and safety standards to ensure compliance with safety requirement.

Our tanks are adaptable to specific client requirements and are manufactured and processed in line with our quality standard. We are committed to providing reliable and safe storage solutions for liquefied hydrogen, contributing to the global efforts in decarbonization and the adoption of sustainable energy sources.



TOP VIEW



ELEVATION VIEW

Service	Liquefied Hydrogen
Density	~ 70 kg/m ³
Design Condition (Inner)	
- Design Temp.	-253 to 38 °C
- Design Pressure	FV to 6.2 barg
Density	~ 70 kg/m ³
Filling Capacity	93 % (Max)
Fluid Heel	5%
Liquid Capacity	Custom
Insulation Material	MLI / Glass Bubble

PT. LINTECH DUTA PRATAMA provide engineering design service, fabrication and repair of spherical tank in accordance with respective codes and standards and customer specifications.

Scope of Supply

- Design and Detailed Engineering
- Procurement, Fabrication, Testing and Inspection
- Field Installation
- Civil Works
- Electrical and Instruments Works
- Safety equipment such as safety valve, excess flow valve, Internal valve, etc as required
- PWHT at site (if required)

Material

- Shell
 - Outer : SA516 Gr.70 / SA537 Cl.1 or 2
 - Inner : SA240-304
- Support steel : CS
- Platforms, Stairway, : CS
Handrails, Ladders
- Nozzles : same grade as inner shell

Design and Codes

The design, material, fabrication, Inspection and testing are according to standard codes such as ASME Section VIII Div.1 or 2, ANSI/CGA G-5, H-5, NFPA-2 and other standards.

Technical Specification

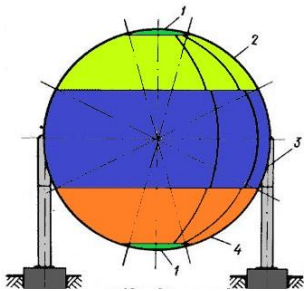
- Diameter : ≥ 13 m or custom
- Stairway : Independent Stairtower / Spiral stairway / Combine
- Access inside : Ladder
Int. Platform (if req'd)
- Manhole : 1 at Top
- Safety Valve : As per code
- Coating : See table

Surface Preparation and Coating

Parts	Surface Preparation	Painting
Outer Shell (CS)	SSPC-SP10 / as per Spec.	Fire Resistance
Inner Shell (SS)	None	None
Support Steel	SSPC-SP10 / as per Spec.	Fire Resistance
Stairs, Ladders, Platforms & Handrail	SSPC-SP10 / as per Spec.	Fire Resistance

Note: above specifications can be adjusted according to customer request or specification

Installation Method



Spherical tank is installed at site with high precision and high quality of weld seams to ensure safe operation and reliable storage. Tanks is constructed from pre-fabricated sheets with desired size. Generally, sphere tank is divided into three zone sheets assembly

1. Cup (Top and Bottom)
2. Upper zone
3. Equatorial belt
4. Lower belt

- Install all supporting columns and braces
- Install a equatorial sheet equipped with mounting bracket to a mounting base of supporting column. Sheet should be fixed by three braces, which also allow to adjust its position
- Insert a sheet (2nd) between two columns then connecting them and joint the mounting brackets
- Once equatorial belt of outer shell is complete, install the lower belt of inner shell per sheet with temporary columns until complete
- Install the rod supports between inner and outer shell
- install lower belt of outer shell the install the equator belt of inner shell until complete
- Install the upper zone of inner shell then outer shell
- Install upper cup
- Install the lower cup

