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中太能源 SINOTECH ENERGY

SINOTECH ENERGY
General Introduction

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EMAIL:echo.liu@sinotechm.com
TEL/WHATSAPP:+86 158 1064 9631

2026.04

SINOTECH ENERGY Milestones

2020.05
Based on "Dual Carbon" Strategy & Green Shipping Action Plan Sinotech Energy Established

2021.05
OCCS 1.0 (SC1000) R&D Completed

2021.09
Pilot Liquid Hydrogen /Helium Mock-up

2021.12
Entered into a JDP with SINOPEC

2022.02
Entered into a JDP with CNPC for Liquid Hydrogen Membrane Tank

2022.04
Launched the Construction of a 1,000 m³ Membrane Tank

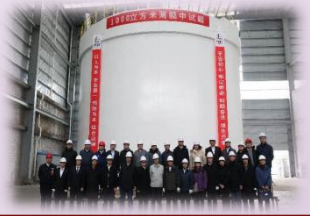
2022.10
Collaborate with University Lab to Develop Amine Solvent

2022.02
OCCS AiP Certificate from LR/NK/BV

2022.01
Sinotech CCS Established

2023.09
20,000 m³ Membrane-type LNG BV obtained BV AiP Certificate

2023.12
Completed 1,000 m³ Liquid NitrogenTest and obtained the certificates from LR, CCS, BV



2024.01
World's First Bulk Carrier Fitted with OCCS Delivery (95KBC)

2024.06
OCCS AiP Certificate for 210,000 KBC from LR

2024.06
Signed Contracts of EGCS+OCCS Ready for 6 Bulk Carrier (82KBC)

2024.12
Cryogenic System BD Established

2024.09
174,000 m³ Membrane-type LNGC obtained the LR AiP

2024.11
SINOPEC 300,000 m³ Membrane LNG Tank Process Package passed group review

2025.01
Collaborate with HMM on LCO2 Offloading & Utilization

2025.02
OCCS 2.0 Delivery with Successful Sea-trial

2025.07
Re-Liquefaction System R&D Completed

2025.10
Breakthrough on OCCS Deep Purification, meeting NL Sequestration Requirement

2025.08
Signed the EPC contract for the 20,000 m³ LNG Bunkering Vessel

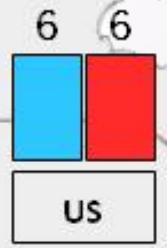
2025.12
Mock-up completed and obtained CCS/BV/RS Certificates

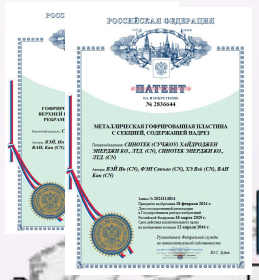
2025.11
Approval of ISO Standard leading by SE

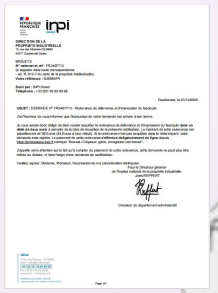
2026.01
Signed Contract with COSCO to launch Pilot Project of OCCS on Tanker in China

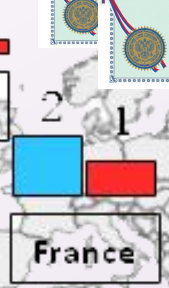
2026.03
ARC LNG carrier project under review and approval by the Ministry of Industry and Information Technology

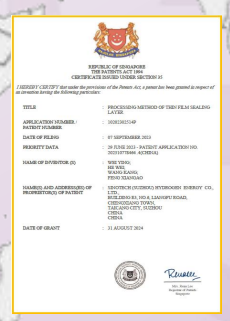
Global Intellectual Property Layout

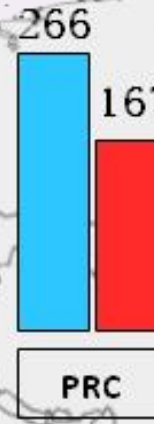


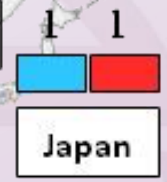












Invention Application

Invention Authorization

397/21

Patents applied

257

Authorized

181/14

Invention patents

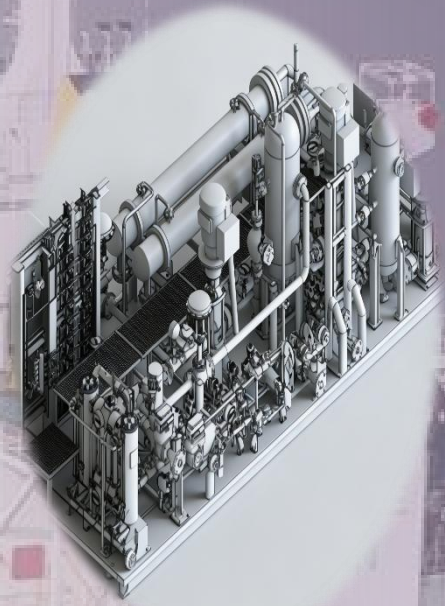
SINOTECH ENERGY

Clean Energy System Solution

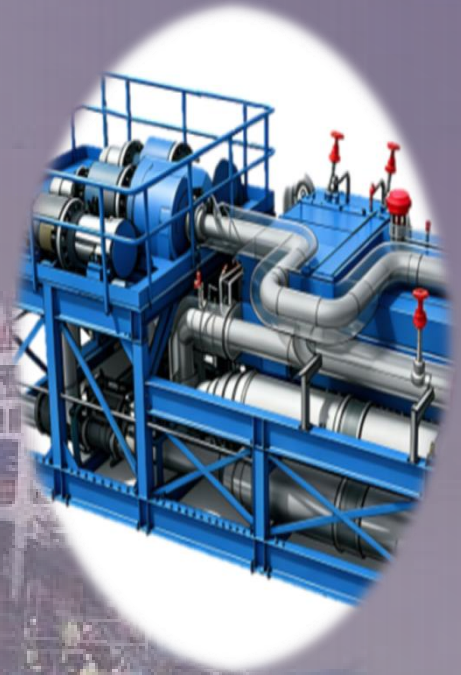
EGCS
（Exhaust Gas Cleaning System）

OCCS
(Onboard Carbon Capture System)

CHS
(Cargo Handling System)



FS
(Fuel System)



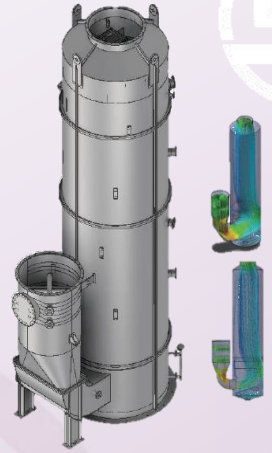
RLS
(Re-Liquefaction System)

Green Shipping Transformation

EGCS

- IMO sulfur restriction order from Jan.1, 2020
- Installing EGCS remains the most economical
- ROI < 1.5 years

Strengths of SINOTECH EGCS



- Modular installation with short engineering time

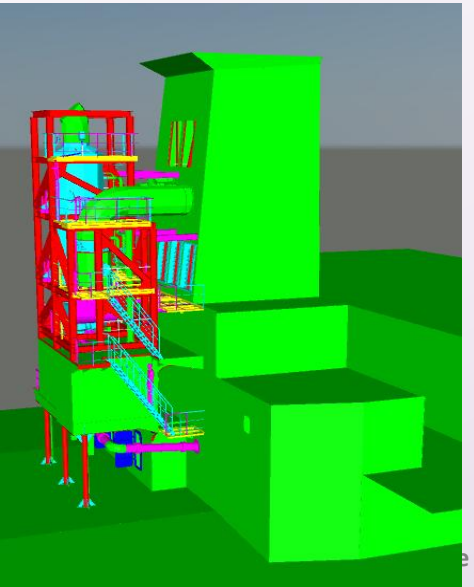
  Open Loop: 15 days, Closed/ Hybrid Loop: 25 days

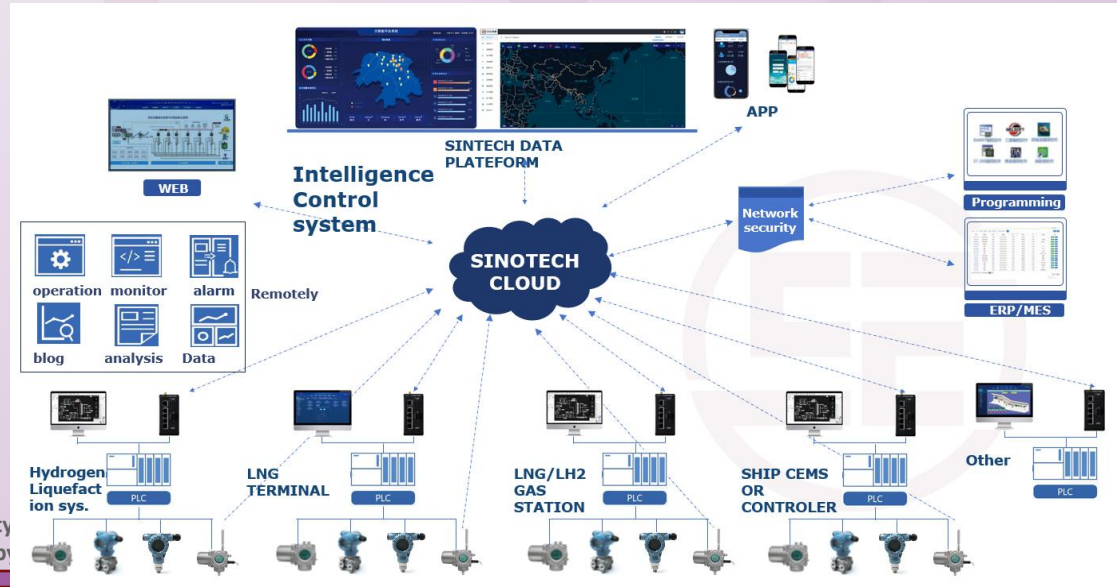
- Empty tower smaller in size and lighter in weight

  Weight Reduction >40% compared to other manufacturers

- Electricity saving >10% compared to other manufacturers

  Cloud Data value-added services

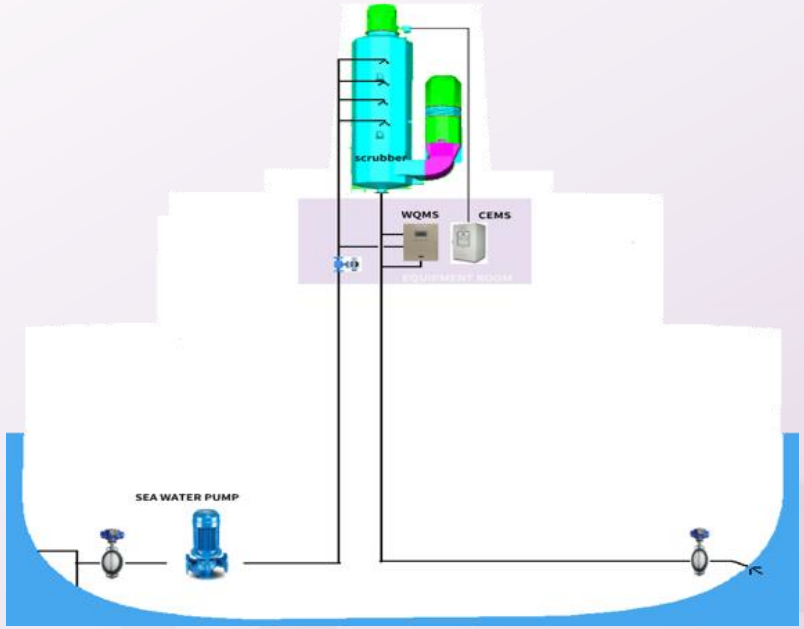




Open Loop & Hybrid Loop EGCS

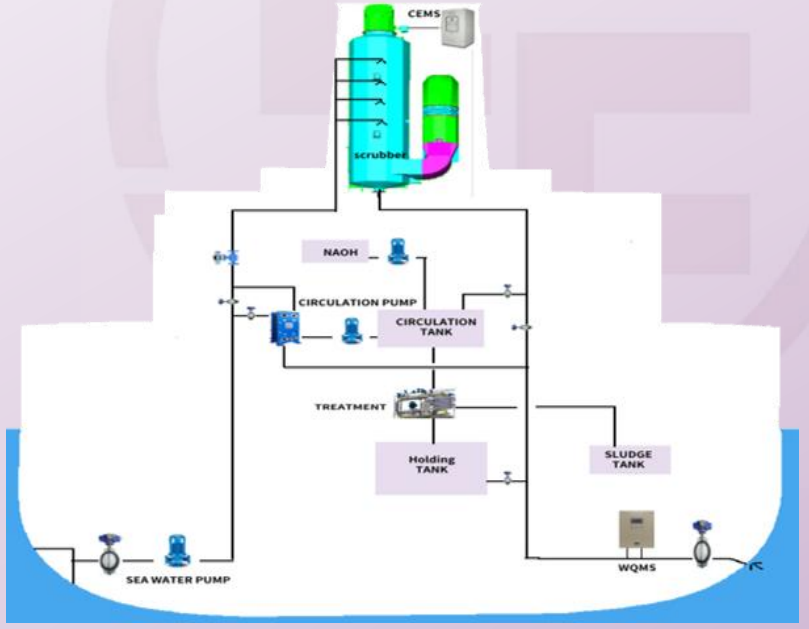
Open Loop EGCS

- Principle
  - Seawater Utilization
  - Meeting IMO Requirements
- Application Scope
  - Outside of ECA
  - Open Sea & 200 nml from Land

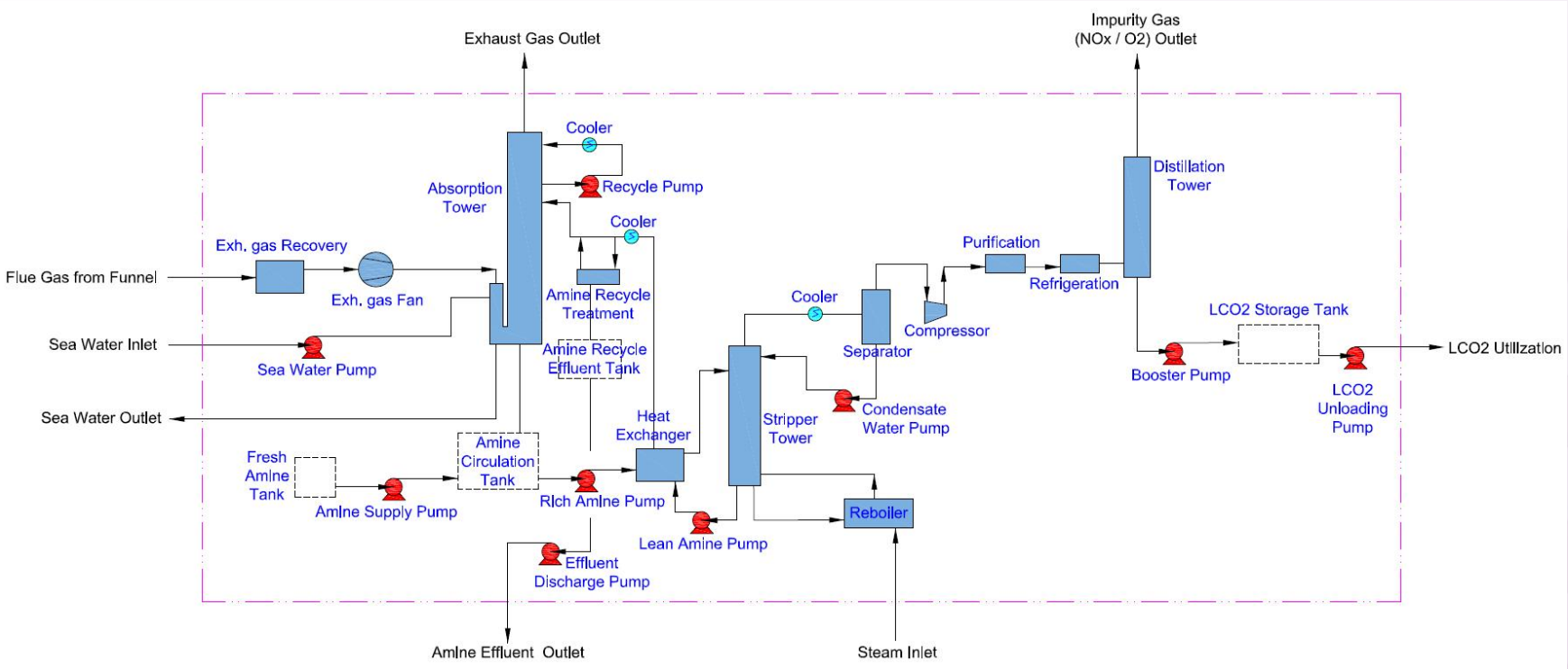


Hybrid Loop EGCS

- Principle
  - Alkaline Circulating Water
  - Meeting Zero-emission Requirement
  - Lower Power
- Application Scope
  - Inside of ECA
  - Low-alkalinity & Inland Water Areas



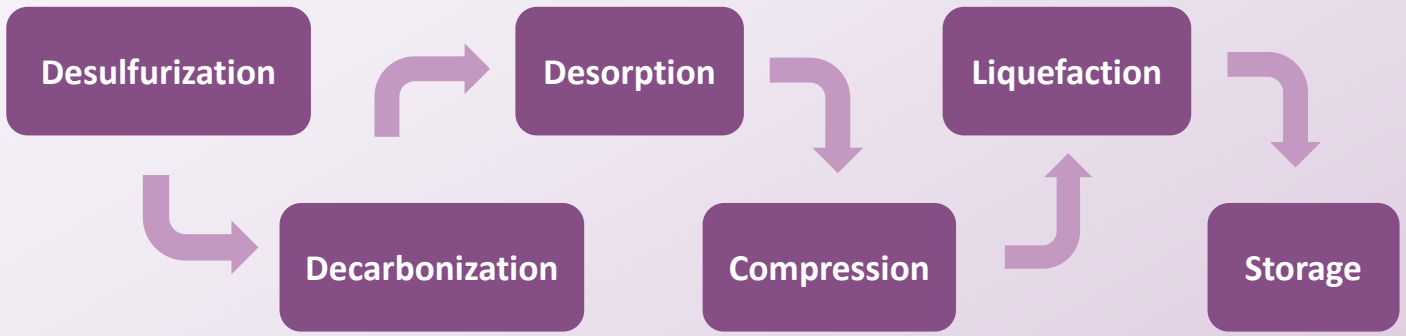
Amine-based Carbon Capture Technology



SINOTECH OCCS Heat Energy Consumption≤2.4 GJ/t CO2

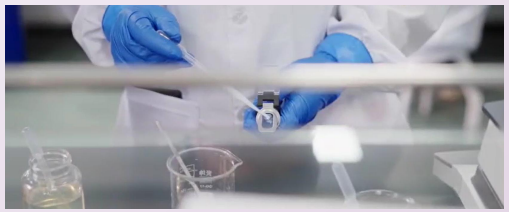
- ***High-Efficient Absorbent***
- ***High-Performance Packing***
- ***Water Washing Section***

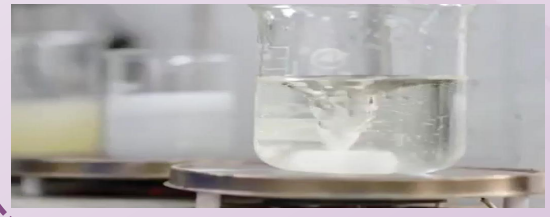
OCCS OCCS AIP of LR/NK/BV

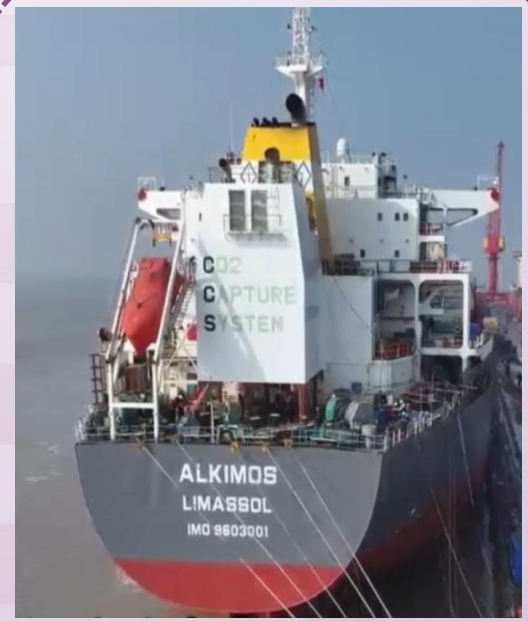


Core Amine Solvent Independent Development

Lab R&D → Processing & Synthesis → Testing Platform → Ship Application







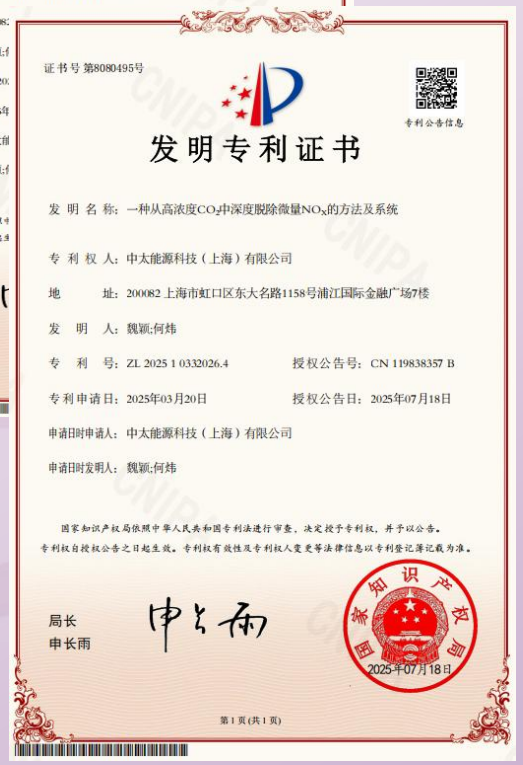
CO_2 Deep Purification—NOx Removal Technology

Northern Lights

NOx after Deep Purification System ≤1.5ppm (NL Requirement)
Sinotech Testing Result ≤1.4ppm

Liquid CO_2 (LCO2) Quality Specifications		
Component	**Unit**	**Limit for CO_2 Cargo within Reference Conditions[1]**
Carbon Dioxide (CO_2)	mol-%	Balance (Minimum 99.81%)
Water (H_2O)	ppm-mol	≤ 30
Oxygen (O_2)	ppm-mol	≤ 10
Sulphur Oxides (SO_x)	ppm-mol	≤ 10
Nitrogen Oxides (NOx)	ppm-mol	≤ 1.5
Hydrogen Sulfide (H_2S)	ppm-mol	≤ 9
Amine	ppm-mol	≤ 10
Ammonia (NH_3)	ppm-mol	≤ 10

NOx concentration (ppb) measured on pilot site



Upgrade & Optimization of OCCS

◆ OCCS 1.0

◆ OCCS 2.0

◆ **EGCS+OCCS**

ALKIMOS IMO NO. 9603001

◆ **EGCS+OCCS Ready**

COSMAR IMO NO. 9710593

EVMAR IMO NO. 9738026

ALMA IMO NO. 9706530

AXIOS IMO NO. 9706542

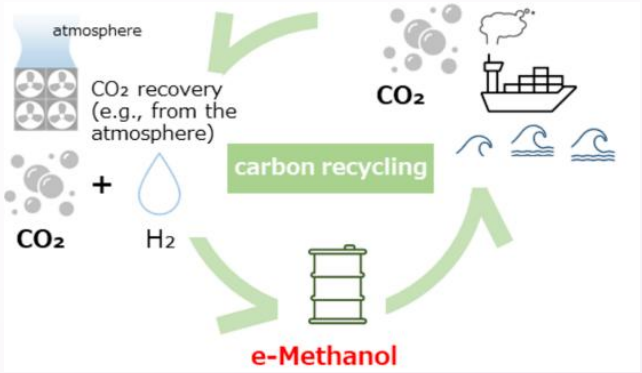
APOLLON IMO NO. 9828924

ARCHON IMO NO. 9828948

◆ OCCS 2.0 successfully delivered on COSMAR/EVMAR/ALMAR from VICTORIA STEAM SHIP on Feb. 10th/Mar.13th/Oct. 25th, 2025.

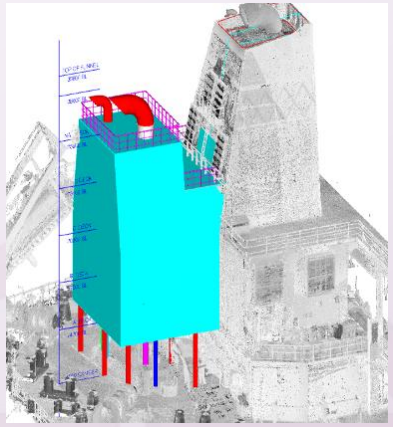
◆ Breakthrough improvement of OCCS 2.0: Weight loss: 40%, energy consumption reduction: 10%, cost optimization: 15%

SINOTECH Provides the Circular Carbon Value Chain Solution



A "circular carbon" solution aimed at avoiding the release of "additional" CO2 into the atmosphere.

Based in Zhoushan or alternative ports in China and overseas



CAPEX/OPEX/ROI/CII/Avoided IMO GFI Penalty/Offloading/Utilisation

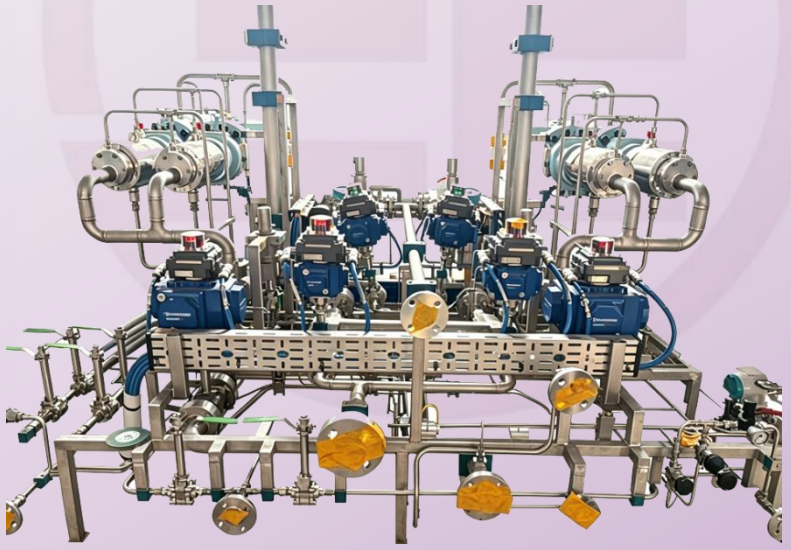
Engineer
Design
Equipment
Supply
Installation
Commission
Trainning
Maintainess

SE Strength on CHS & Fuel System

- Flexible Cooperation Models
- Strong technical capabilities, highly integrated modular system equipment
- With own manufacture base, modular units can be independently constructed
- With self-developed Membrane Containment System, the cargo/ fuel tank strengths:

  low BOR, less weight, short cooling time, good compatibility

- **Composition**
  - Cargo Containment System
  - Cargo Transfer System
  - BOG Handing System
  - Fuel Gas Supply System
  - Safety & Control System
  - Auxiliary System

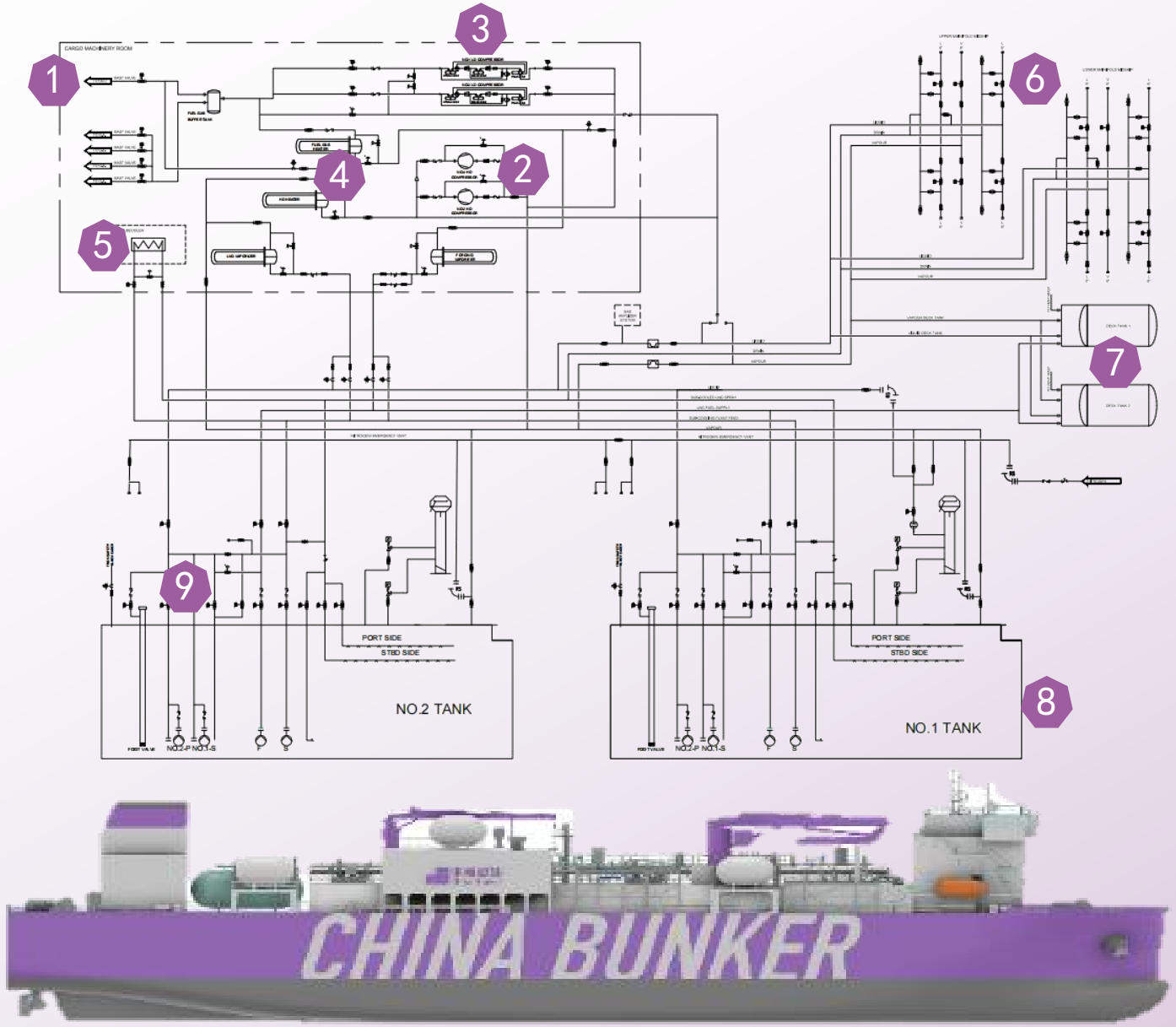


Fuel Tank/Cargo Tank Design

Through SINOTECH membrane technology, the supply chain can be ensured to be self-reliant and controllable, with the cost of a single vessel reduced by approximately 25%. Taking a 20,000 m³ membrane bunkering vessel as an example, the overall construction cost can be reduced by about 200 million RMB (inclusive of taxes).

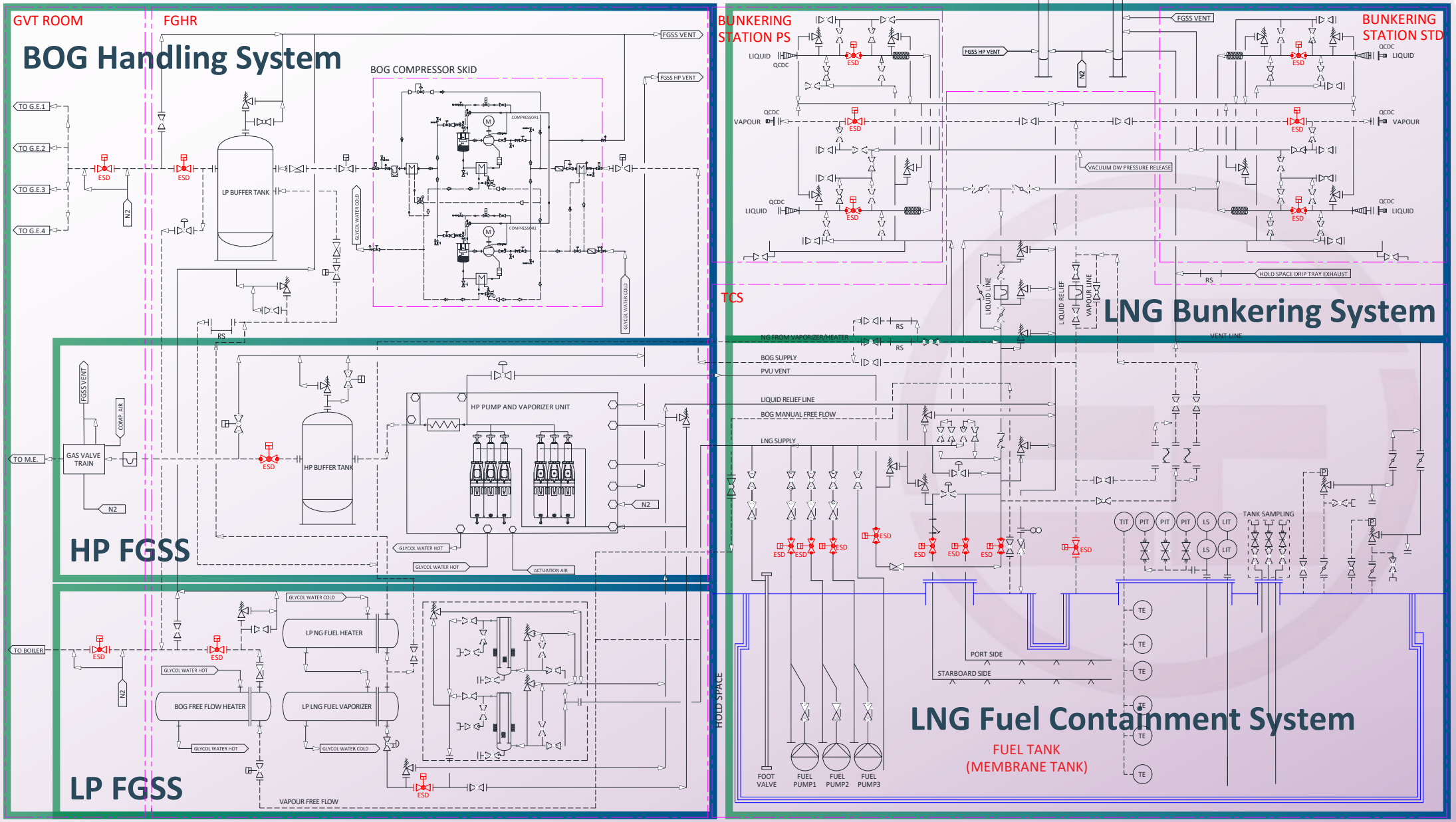
	Comparison vessel Type	Design of SINOTECH	Comparison
BV Type	20000 m³	20000 m³	
Tank Selection	Type C Tank	Membrane Tank	
Vessel Length	159.79 m	138 m	21.79 meters shorter (14%), more flexible
Steel Weight of Containment System	~2000 tons	~200 tons	Reduced by 90%
BOR	0.25%	0.15%	Reduced by 40%
Cooling Time	24 h	10 h	Reduced by 60%
Bunkering Time	Long	Short	
Safety	High	Higher	
Maintenance Cost	High	Low	
Compatibility with Liquid Ammonia	9% Nickel Steel, not compatible	304L Stainless Steel, compatible	Can be retrofitted for liquid ammonia bunkering in the future

CHS Process

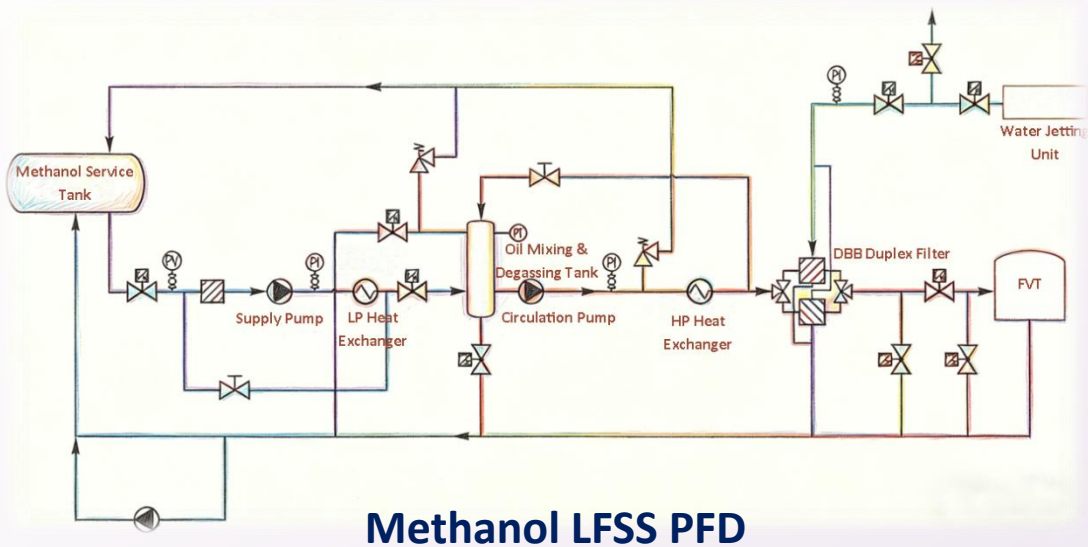


No.	Item	Function
①	GCU	Excessive Combustion of BOG
②	HD Compressor	Ensuring LT Bunkering Process
③	LD Compressor	Control Pressure & FG Supply
④	Forced Vaporizer	Forced Vaporize Liquid Fuel
⑤	Sub-cooler	Control Pressure/Maintain LT
⑥	Hose Bunkering Station	Fuel Bunkering
⑦	Deck Tank	Supply LN_2/Fuel
⑧	SE1 Membrane Containment System	Liquid Cargo Storage
⑨	Pump Column	Multi-pump Integration

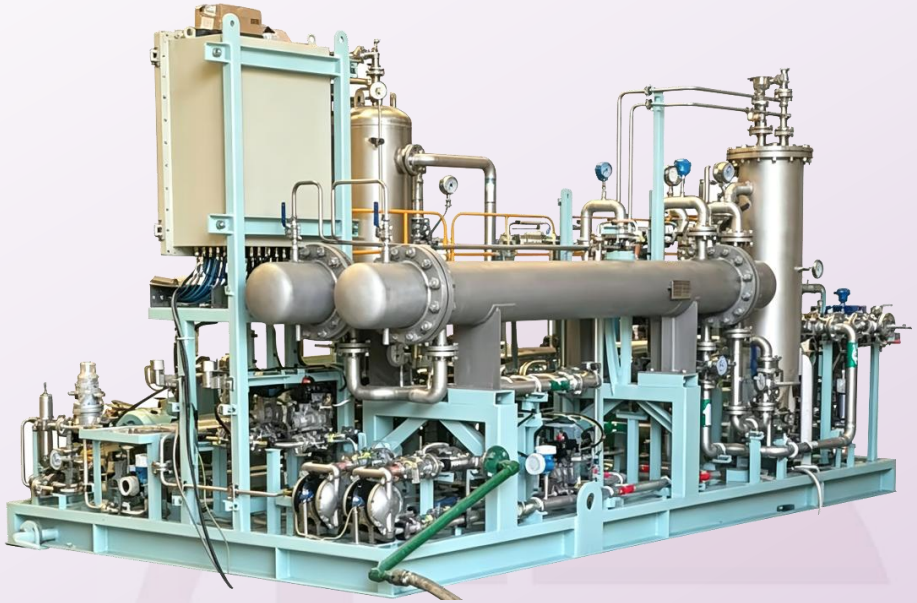
LNG FGSS PFD

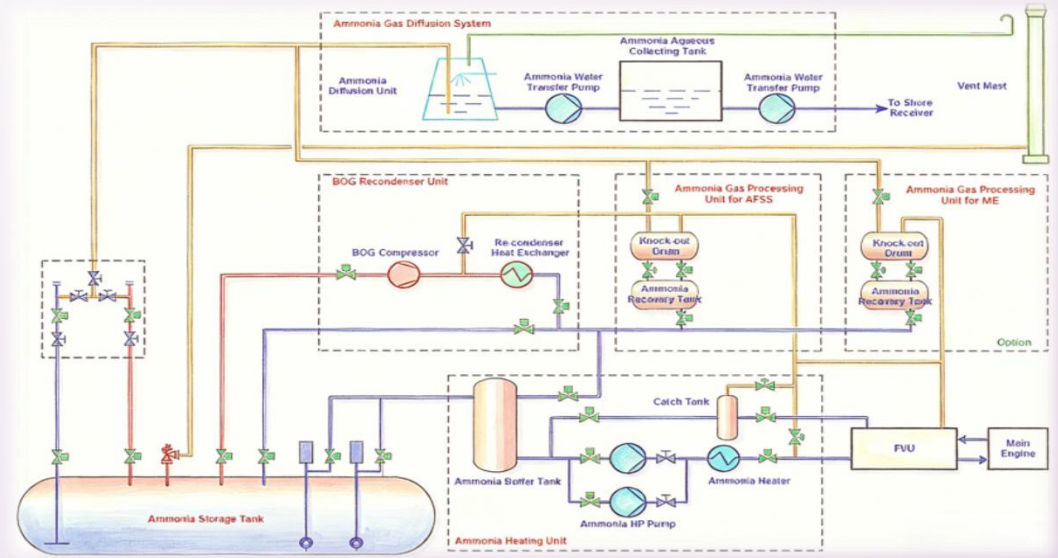


Green Fuel Supply System PFD

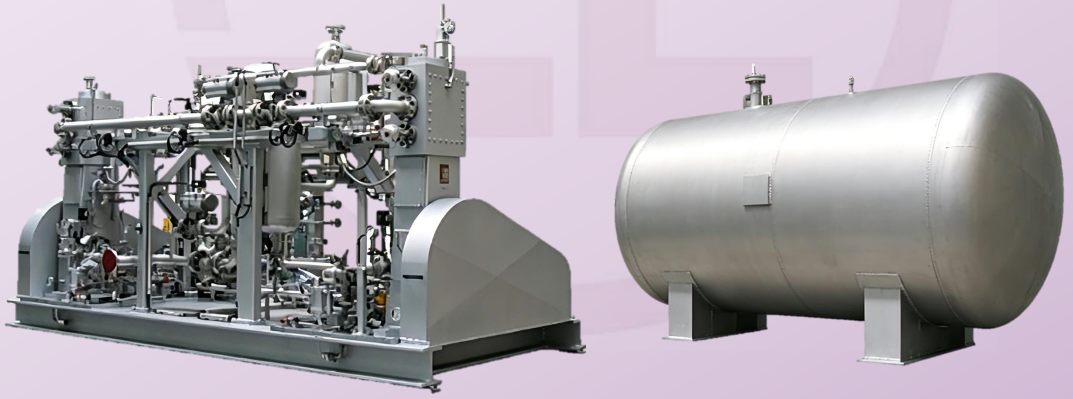


Methanol LFSS PFD



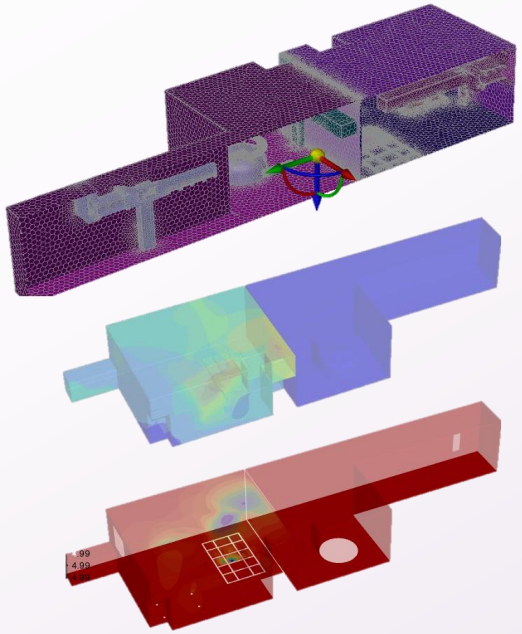


Ammonia AFSS PFD

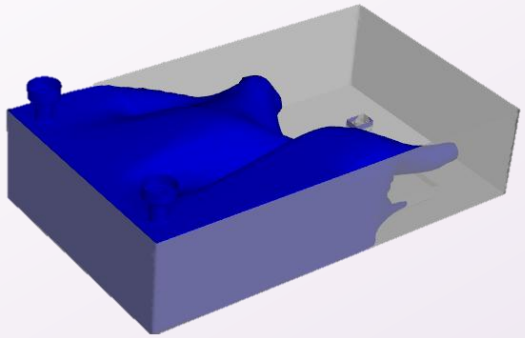


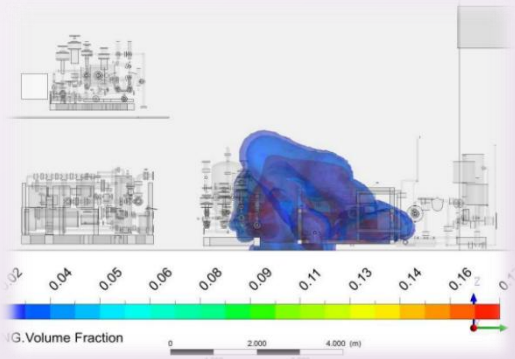
Diffusion Simulation & Stress Calculation & Process Simulation

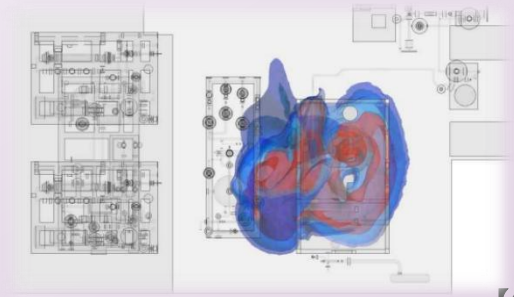
Simulation of LNG Leakage & Dispersion in Room



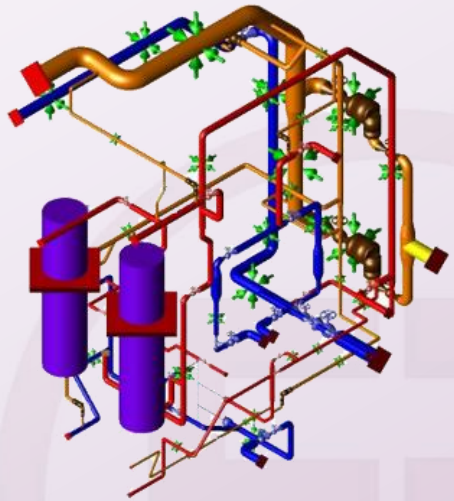
Evaluation of Gas Detection Layout in Room

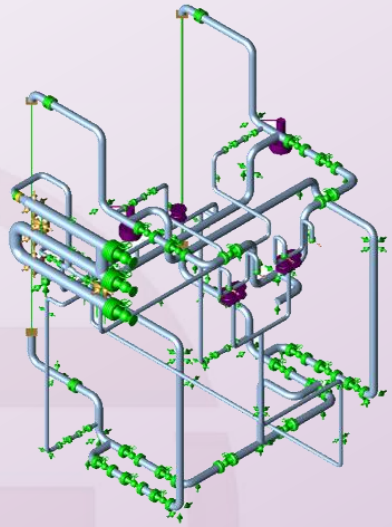




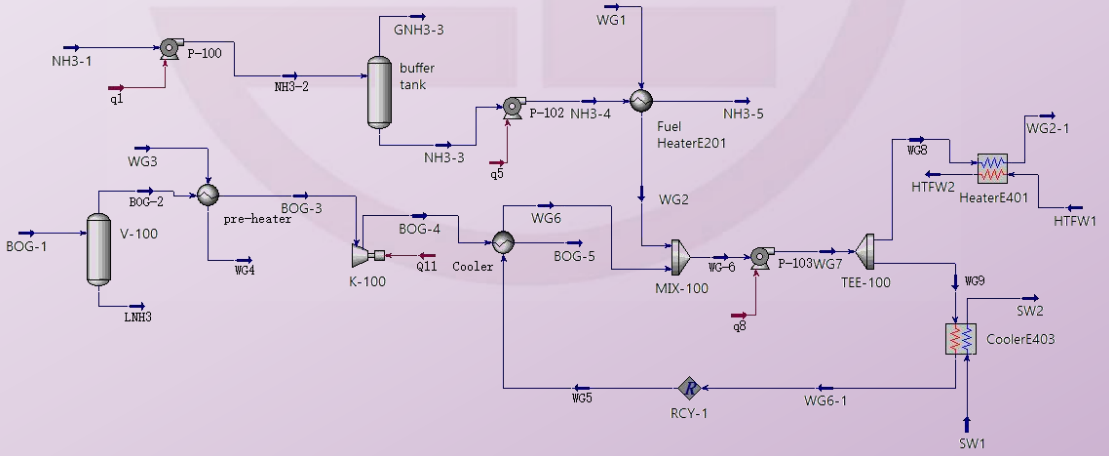


Piping Design & Stress Calculation

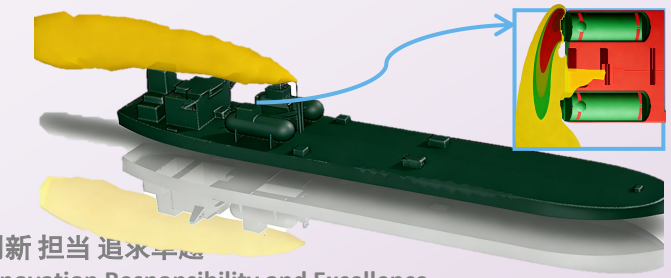




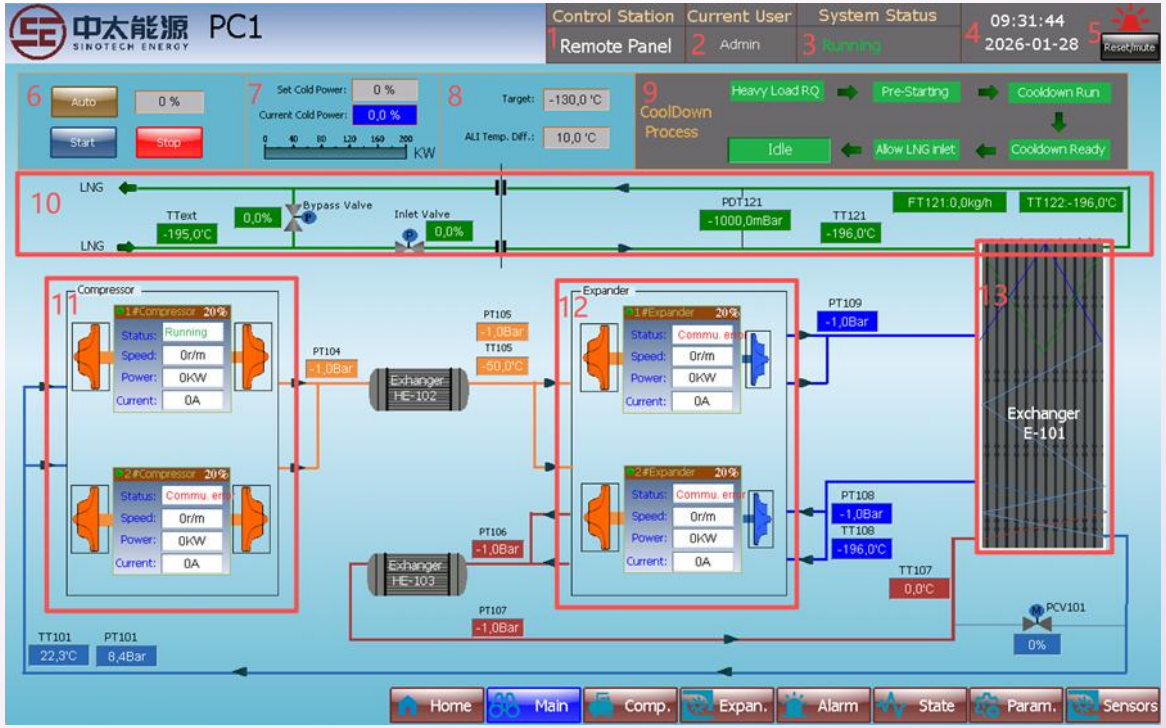
Process Simulation



Ventilation Mast Discharge Verification of Toxic Area (LNG/Ammonia)

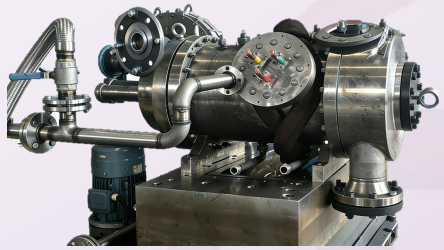


Sub-Cooler

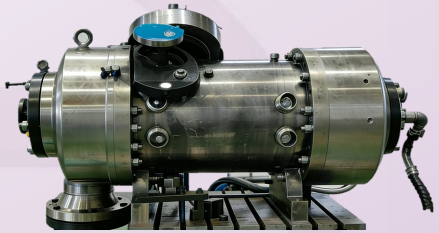


Control Interface

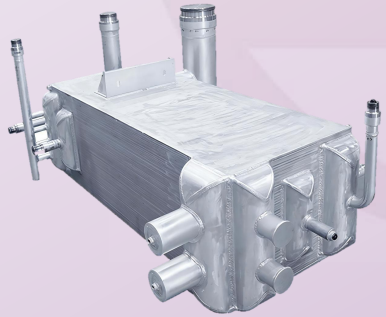
Sub-cooler Skid



Magnetic Levitation Extrusion Unit



Magnetic Levitation Compressor



Aluminum Plate-fin Heat Exchanger

Shell & Tube Cooler

Worldwide After-Sales Service Network

- **Countries & Regions Covered** 40+
  - Spare Parts Available
  - Technical Guidance
  - 24-Hour Engineer Response

- Tel: +86 15022432257
- Email: qualitycontrol.ccs@sinotechm.com
- Web: www.sinotechm.com

中太能源
SINOTECH ENERGY

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LNG Bunkering Vessel

LNG Carrier

With SE Membrane System

Membrane type of 20K LNG bunkering vessel

- In July 2025, Sinotech Energy signed contract for the membrane tank system and cargo handling system of a 20,000 m³ LNG bunkering vessel with DSOC.
- The project is jointly developed by Sinotech Energy in collaboration with CNOOC, DSOC, MARIC of CSSC, Schulte Group, and China Classification Society (CCS).
- The LNG bunkering vessel equipped with the SEG membrane containment system is scheduled for delivery in December 2027.
- As the first real-ship construction project for the SEG membrane containment system, the 20,000 m³ LNG bunkering vessel also serves as a pilot platform for applications in large-scale LNG carriers. It is of great significance in promoting the large-scale industrial application of domestically developed independent membrane technology.

General parameters

MAIN PARTICULARS

Length over all	abt. 138.0 m
Length between perp.	134.5 m
Breadth	24.8 m
Depth to main deck	16.2 m
Draught, design	6.85 m
Draught, scantling	7.20 m
Deadweight on Td	apprx. 9,400 MT
Deadweight on Ts	apprx. 10,500 MT
Service Speed (at design draught, SPP, including 15% SM)	apprx. 12.0 kts

CLASS

CCS ★CSA LNG Carrier; LNG Bunkering Ship; Type 2G; Membrane Tank; Max. Vapour Pressure 0.07Mpa; Minimum Cargo Temperature -165°C; PSPC(B); In-Water Survey; G-ECO(CDx); Loading Computer (S, I, D); Gas Trial Service(D, I, C); Cyber Security(P[SL0])
★CSM AUT-0; IGS; DFD

TANK CAPACITIES

Cargo tanks	apprx.	20,000 m^3
Deck tanks	apprx.	2 x 200 m^3
MGO	apprx.	500 m^3
Lubricating oil	apprx.	30 m^3
Fresh water	apprx.	400 m^3
Ballast water	apprx.	8,500 m^3

CARGO SYSTEM

Tank type	SE Membrane Containment System
Boil-off rate	not greater than 0.16%/day
Max. tank pressure	0.07MPa
Min. tank temperature	-165deg.C
Max. cargo density	0.5t/m^3
Cargo pump	500m^3/h x 4sets
High duty compressor	6,000m^3/h x 2sets
Low duty compressor	1.0t/h x 2sets
Sub-cooling system	1.2t/h, 1set
Gas combustion unit	1.0t/h, 1set
Nitrogen generator(PSA)	3000Nm3/h (99%purity)

PROPULSION SYSTEM

Azimuth thruster	2 sets
Maximum Propulsion Power (MPP)	2 x 2,000 kW
Service Propulsion Power(SPP)	2 x 1,850 kW

POWER SUPPLY

Dual Fuel generators	4 x 1,490 kWe
Emergency generator	1 x 250 kWe

BOW THRUSTER

1 x 850 kW

BUNKERING SYSTEM

Loading/unloading manifold	Mid x 1 + Fwd x 1
Cargo hose crane	Knuckle x 1 + Single x 1
Devit launched fender	4sets
Crane launched fender	1set

COMPLEMENT

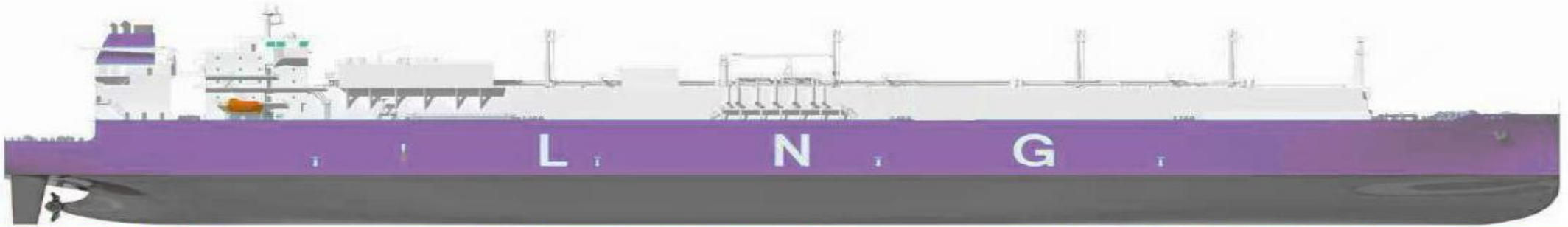
Crew of 24 P

Rev.A, 2025-7

Notation:
★CSA LNG Carrier; LNG Bunkering Ship; Type 2G; Membrane Tank; Max. Vapour Pressure 0.07Mpa; Minimum Cargo Temperature -165°C; PSPC(B); In-Water Survey; G-ECO(CDx); Loading Computer (S, I, D); Gas Trial Service(D, I, C); Cyber Security(P[SL0]), ICE CLASS B
★CSM AUT-0; IGS; DFD

175,000 m3 LNG carrier pocket plan

175,000m³ LNG CARRIER (Sinotech Engergy Membrane Technology)



MAIN PARTICULARS

Length over all	abt. 297.0 m
Breadth	46.0 m
Depth to Upper deck	26.5 m
Draught, design	11.5 m
Draught, scantling	12.5 m
Deadweight on Td	apprx. 81,500 MT
Deadweight on Ts	apprx. 92,800 MT
Service Speed (at design draught, CSR)	apprx. 19.5 kts

CLASSIFICATION

CCS
★CSA LNG Carrier; Type 2G; Membrane Tank; Max. Cargo Density 500kg/m³; Max.Vapour Pressure 0.035MPa; Minimum Cargo Temperature -163°C; FL(WW,40); PSPC(B); CM; Loading Computer (S,I,D); In-Water Survey; G-EP(GPR); ESA; Cyber Security(P[SL0])
★CSM AUT-0; SCM; G-ECO(BWM(T)); BDE-1; IGS; DFD
or other equivalent.

COMPLEMENT

36 Persons + 6 Suez workers

PROPULSION SYSTEM

Main Engine	5X72DF-2.2 x 2 sets, iCER diesel
MCR	13,000 kW / 79.0 rpm
Propeller	FPP, 4 blades, 2 sets

FUEL CONSUMPTION

Diesel mode (LHV MDO 42,700kJ/kg),:	
DFOC at CSR, Tier II/III	82.3/82.7 MT/day
Gas mode (LHV Gas 50,000kJ/kg):	
DGC at CSR, TierIII	68.4 MT/day
DPOC at CSR, TierIII	0.4 MT/day

GENERATORS

Dual Fuel Generators	2 x 3,680 + 2 x 2,760 kW
Emergency Generator	1 x 850 kW

TANK CAPACITIES

Cargo tanks	apprx.175,000 m³
VLS Fuel oil	apprx. 4,500 m³
MGO	apprx. 1,200 m³
Fresh water	apprx. 400 m³
Ballast water tanks	apprx. 65,000 m³

BALLAST SYSTEM

Ballast water pump	3 x 3,000 m³/h
Ballast water treatment	2 x 3,000 m³/h

CARGO CONTAINMENT SYSTEM

Type	Sinotech Energy Membrane Tank
Boil-off rate	not greater than 0.085%/day

CARGO HANDLING EQUIPMENT

Cargo pump	8 x 1,850 m³/h x 165 mlc
Spray/Stripping pump	4 x 60 m³/h x 150 mlc
High Duty Compressor	2 x 32,000 m³/h
Low Duty Compressor	2 x 2,900 m³/h
Gas Combustion Unit	1 x 100% NBOG
Reliquefaction system (sub-cooling)	1 x 1.5 t/h

NAVIGATION EQUIPMENT

Radars	2 sets
DGPS	2 sets
ECDIS	2 sets
Gyro Compass	2 sets
Speed log	2 sets
Echo sounder	1 set

OPTION

Shaft Generator
Air Lubrication System
Onboard Carbon Capture System
Wind Assisted Propulsion System
Smart Navigation System

SE Membrane system general description

◆ **Primary/Secondary barrier - membrane sheet**

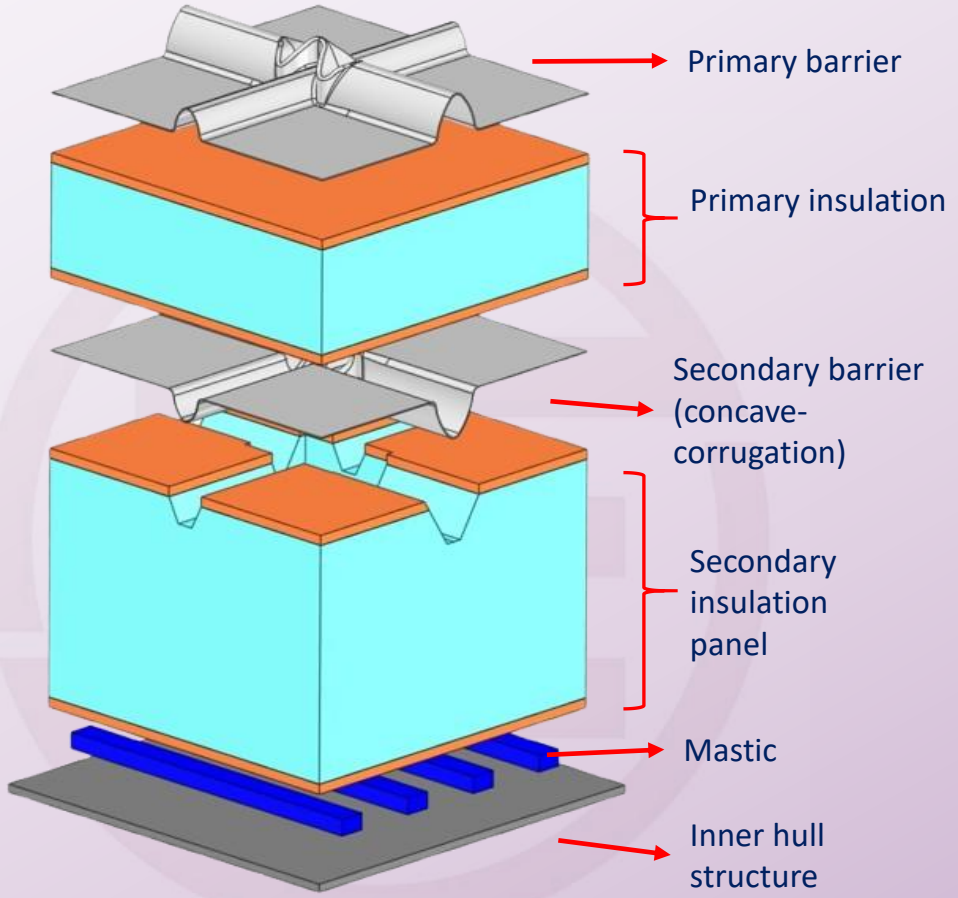
- **Material: SUS304L, 1.2mm thickness**
- **Dimensions: 1.2m*2.4m with 18 corrugations**
- **Structure detail: double metallic barrier shell, convex corrugation for primary barrier, and concave corrugation for secondary barrier**

◆ **Primary/Secondary insulation - insulation panal**

- **Material: plywood + Reinforced PUF + plywood**
- **Thickness: total is 400mm (150mm + 250mm)**
- **Dimensions: 1.2m*1.2m**
- **Structure detail: sandwich structure, and bonded in hull structure**

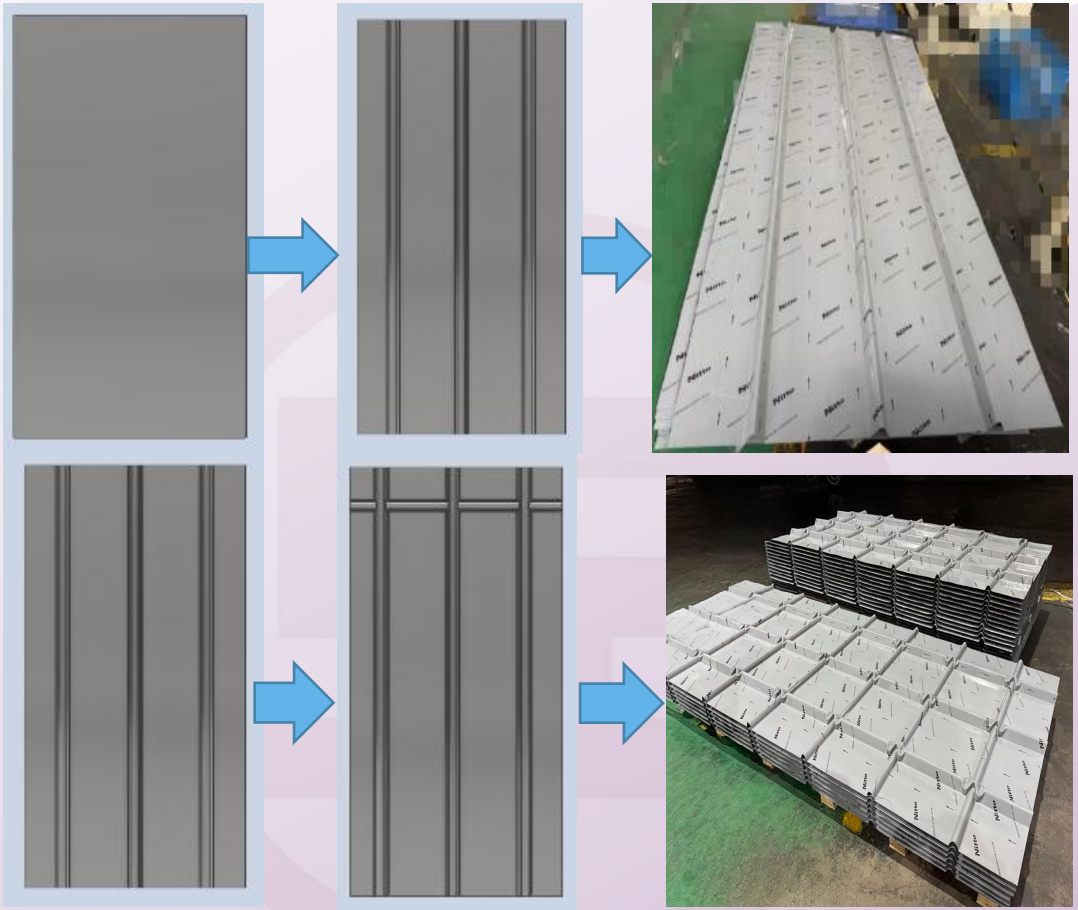
◆ **Load bearing mastic rope**

- **Material: mastic + hardener**
- **Function: adjusting the flatness, bearing the cargo load, and bonding the insulation panel**



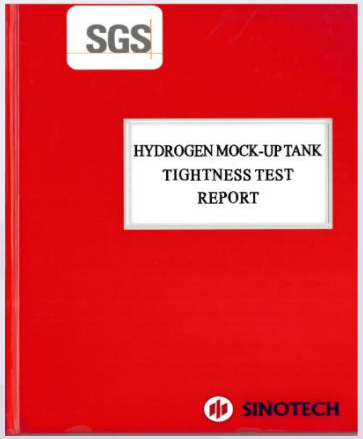
- ✓ **Self developed containment system**
- ✓ **100% China domestic supply chain**
- ✓ **LR/CCS/BV/RS AIP certificated**

Membrane manufacturing Equipment of SINOTECH



- **Membrane manufacturing equipment:** Heavy-duty hydraulic press, automated Storage System.etc.,
- **Membrane manufacturing process:** LC forming---SC forming(with corrugation)---Conforming---Chamfer & Joggling

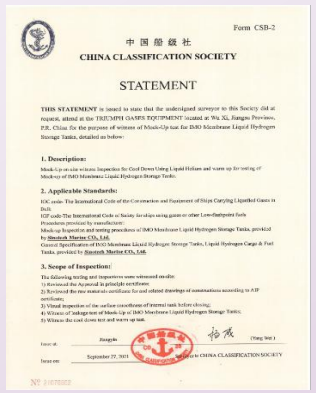
Pilot Membrane-type Liquid Helium/Liquid Hydrogen tank



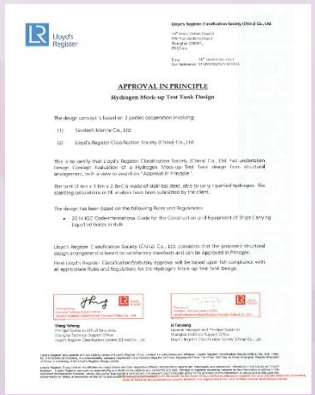
Low temperature liquid nitrogen test: -196 ℃ / 77K
Low temperature liquid helium test: -269 ℃ / 4K

SGS Group (Swiss General Notarial firm) certified the whole process of manufacturing and testing


CHINA CLASSIFICATION SOCIETY
CERTIFICATE OF APPROVAL IN PRINCIPLE
Sinotech Marine Co., Ltd
Hydrogen Mock-up Test Tank Design


CHINA CLASSIFICATION SOCIETY
STATEMENT

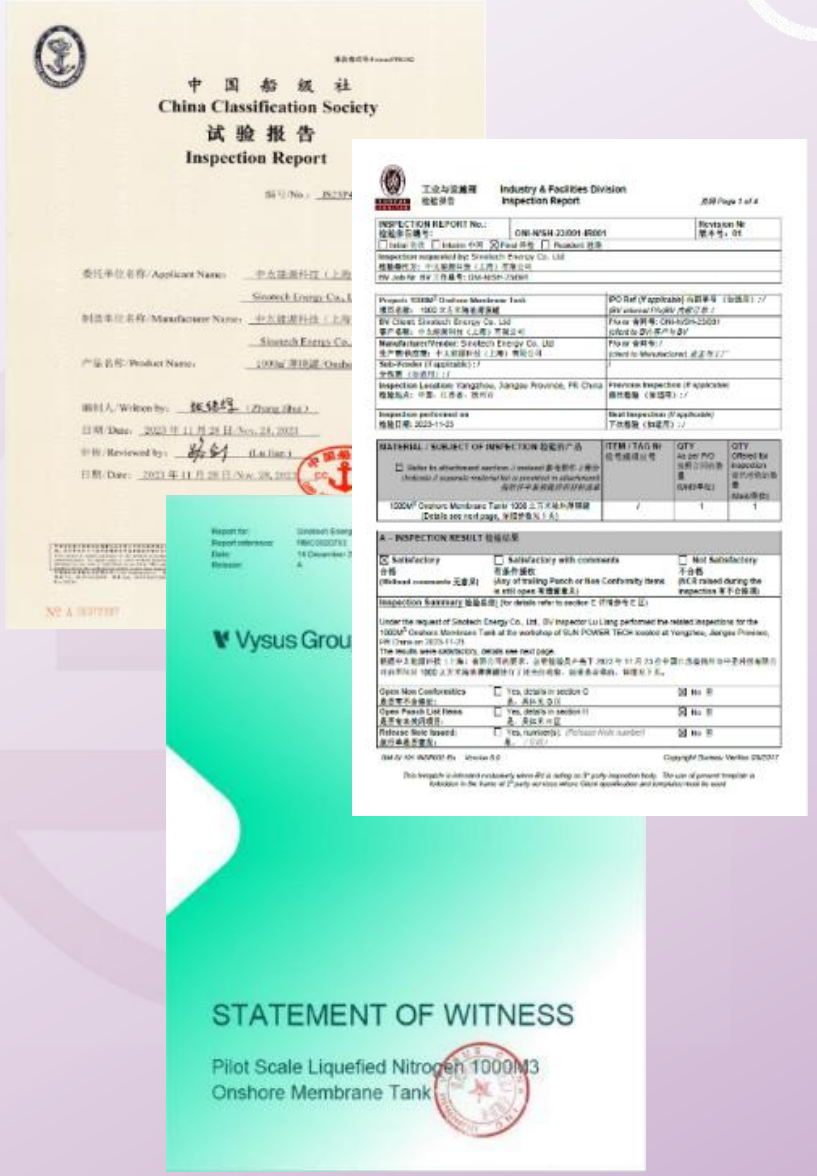

Factual Statement for Mock-up Test of IMO Membrane Liquid Hydrogen Storage Tank


APPROVAL IN PRINCIPLE
Hydrogen Mock-up Test Tank Design

LR and CCS issued the AiP certificate and the test completion certificate

1,000m³ onshore Membrane Tank

- **LR, CCS, and BV** issued test certificates of conformity.
- The core materials for the membrane containment system have achieved 100% domestication, with some forming proprietary material systems.
- Model development, supply chain certification support, engineering design, installation guidance, and testing guidance; **full-process technical support and services**.



Membrane Technology AiP Certificate

APPROVAL IN PRINCIPLE
LEVEL 1
CPO/JDP/23016 - September 23

At the request of:

SINOTECH MARINE CO., LTD.

BUREAU VERITAS MARINE & OFFSHORE (hereinafter referred to as the "Society"), acting within the scope of the Bureau Veritas Marine & Offshore General Conditions ("), declares hereunder that the design of:

20K M3 LNG BUNKER CARRIER

is **Approved in Principle**, with respect of the aim of the classification as defined in Part A, Chapter I of the latest edition of our Rules and in the conditions stated in Annex 1. The present Approval in Principle (hereinafter referred as "AiP") is referring to the general options chosen by the designer, as described in the documents listed in Annex 2.

The validity of this AiP may have to be reconsidered, in case of any major modification likely to invalidate the principles shown on the documents listed in Annex 2. This AiP would become null and void should **BUREAU VERITAS MARINE & OFFSHORE** not be kept informed of such modifications.

This AiP is an opinion given by the Society at its sole discretion on a design or any technical element that would 'in principle' be acceptable to the Society. This shall not presume on the final issuance of any Certificate or on its content in the event of the actual issuance of a Certificate. This AiP shall only be an estimate given by the Society which shall not be held liable for it.

Issued at Shanghai, on 25/09/23

Alex Fang
CPO Deputy Manager for Technical

Tribin Chen
CPO Department Manager

☐ see overleaf

Lloyd's Register Classification Society (China) Co., Ltd.
12th Floor, Chang Ling Finance Centre,
No. 288 Nanjing West Road,
Shanghai 200003,
P.R. China

Date: 09 September 2024
Our Reference: STS/NCPT/LYW/STS 20240901

APPROVAL IN PRINCIPLE

174,000 m3 LNG Carrier Design

The design concept is based on 2 parties cooperation involving:

(1) Sinotech Energy Co. Ltd

(2) Lloyd's Register Classification Society (China) Co., Ltd.

This is to certify that Lloyd's Register Classification Society (China) Co., Ltd. has undertaken Design Concept evaluation of the 174,000 m3 LNG Carrier design, with a view to award an "Approval in Principle". The evaluation included an overall examination of fundamental aspects of the design in accordance with the below LR Class notations:

⊕100A1 Liquefied Gas Tanker, Ship Type 2G, Methane(LNG) in Membrane Tanks, Maximum Vapour Pressure 0.025 MPa, Minimum Cargo Temperature Minus 163°C, ShipRight(SDA, FDA Plus(10, NA), CM, ACS(B)), ⊕WS, LI, Ice Class 1D, Winterization G(20),

⊕LMC, UMS, BWTS, NAV1, ESS, MCM, LFFF (GC, NG),

With descriptive Notes: "ShipRight(DWM(S,T), IIM, SCM, SCA(ISS-4, L, VDR), SERS), CTA"

The design has been based on the following Rules and Regulations:

- Rules and Regulations for the Classification of Ships (Ship Rules) July 2024 Edition, plus relevant rule change notices;
- Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquefied Gases in bulk (Gas Ship Rules) July 2024 Edition, plus relevant rule change notices;

Lloyd's Register Classification Society (China) Co. Ltd. considers that the proposed design concept is based on satisfactory standards and can be Approved In Principle. The cargo containment system is not covered in this design appraisal, which is to be submitted for approval by the cargo containment system designer separately.

Final Lloyd's Register Classification/Statutory approval will be based upon full compliance with all appropriate Rules and Regulations relating to the recommended Class Notations for the 174,000 m3 LNG Carrier design.

Yang Lin
Greater China New Construction & Strategy Project Portfolio Manager
Global Technical Support Office
Lloyd's Register Classification Society (China) Co., Ltd.

Hu Zongzheng
Global New Construction Portfolio Manager
Global Technical Support Office
Lloyd's Register Classification Society (China) Co., Ltd.

中国船级社
CHINA CLASSIFICATION SOCIETY
No. SP22SGP00047
CERTIFICATE OF APPROVAL IN PRINCIPLE

THIS IS TO CERTIFY that at the request by:

SINOTECH ENERGY CO ., LTd .
中太能源科技（上海）有限公司

CCS has reviewed the drawings and documentations as per CCS Rules and Procedures for:

SE1 Membrane System
SE1 薄膜围护系统

and found the technical information provided therein to have no objection to the intent of the following Rules subject to the comments by this society:

1. 《钢质海船入级规范》（2024）及其修改通报
   RULES FOR CLASSIFICATION OF SEA-GOING STEEL SHIPS (2024),AS AMENDED
2. 《散装液化气体船舶构造与设备规范》（2022）及其修改通报
   RULES FOR CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES IN BULK (2022),AS AMENDED
3. 《材料与焊接规范》（2023）及其修改通报
   RULES FOR MATERIALS AND WELDING (2023),AS AMENDED

The design has been approved in principle.

Place: Shanghai

Date: 18-August-2025

CCS Shanghai Rules & Research Institute

Notes:
1. This Society provides service based on the agreement. In no case shall this Society be liable for any loss of any party who has no direct contractual relations with this Society.
2. Any significant changes to the aforementioned product not agreed by CCS will result in this certificate becoming invalid. CCS does not undertake any legal and economic liabilities arising from excepting this Society's certificate without prior permission from this society.
3. The laws of People's Republic of China applies.

◆ **The 20,000 m³ LNG bunkering vessel has obtained the BV AiP Certificate.**

◆ **The 174,000 m³ LNG carrier has obtained the LR AiP Certificate.**

◆ **Membrane Technology has received AiP approval from CCS.**

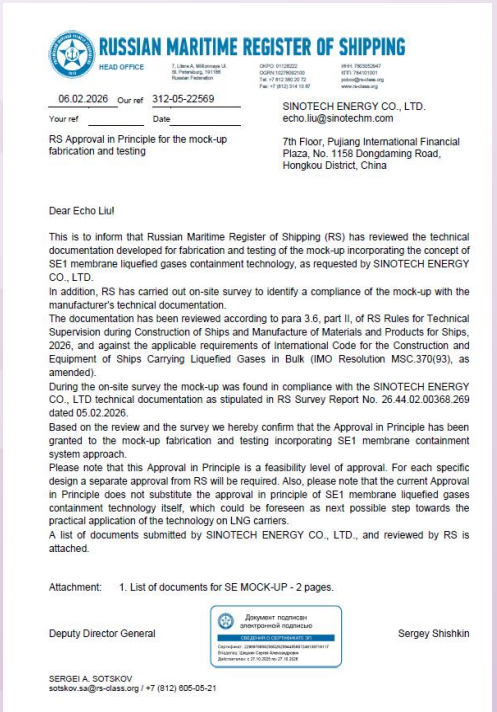
Latest Mock-up Liquid Nitrogen Test

ATTESTATION

Witness Certificate BV

STATEMENT OF GENERAL DESIGN APPROVAL

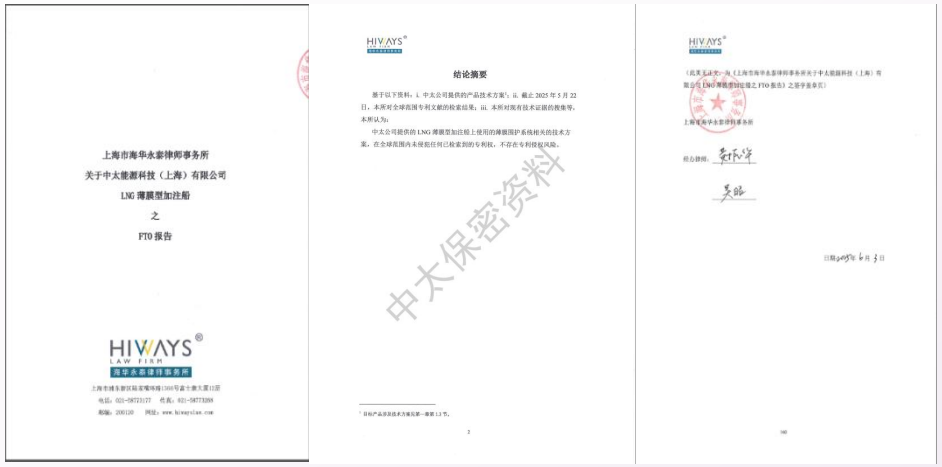
CCS Approval Statement



RUSSIAN MARITIME REGISTER OF SHIPPING

AiP from RS

FTO analyses to avoid any possibility of infringement

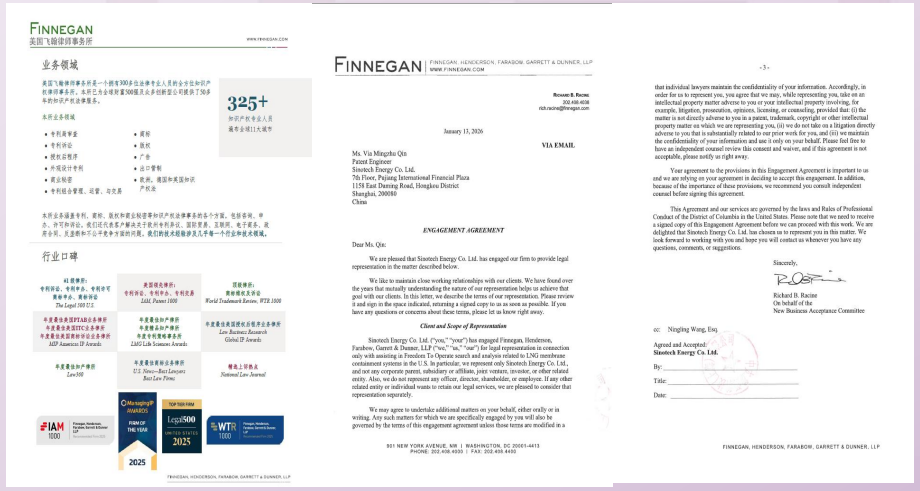


Shanghai Haihua Yongtai
FTO Report

Beijing Tianyuan
FTO Report

German Law Firm GULDE & PARTNER

Conducting specialized FTO report preparation for Europe and the global scope



U.S. Leading Law Firm FINNEGAN

Conducting specialized FTO report preparation for US and the global scope

SE Reference List

Carbon Capture System

No.	Client	Project	Qty.	Scope	Delivery Date	Class	Shipyard	Responsibility
1	Victory Steamship (UK)	ALKIMOS 95K Bulk Carrier	1	EGCS & OCC	Jan. 2024	LR	Watts Energy (WE)	EPC/Commissioning/Sea Trial/Training
2	Victory Steamship (UK)	COSMAR 82K Bulk Carrier	1	EGCS & OCCS Ready	Feb. 2025	LR	Watts Energy (WE)	EP/Commissioning/Training
3	Victory Steamship (UK)	EVMAR 62.5K Bulk Carrier	1	EGCS & OCCS Ready	March 2025	LR	Watts Energy (WE)	EP/Commissioning/Training
4	Victory Steamship (UK)	ALMA 62.5K Bulk Carrier	1	EGCS & OCCS Ready	Oct. 2025	LR	Watts Energy (WE)	EP/Commissioning/Training
5	Victory Steamship (UK)	AXIOS 62.5K Bulk Carrier	1	EGCS & OCCS Ready	April 2026	LR	Watts Energy (WE)	EP/Commissioning/Training
6	Victory Steamship (UK)	APOLLON 62.5K Bulk Carrier	1	EGCS & OCCS Ready	Jun. 2026	LR	Watts Energy (WE)	EP/Commissioning/Training
7	Victory Steamship (UK)	ARCHON 62K Bulk Carrier	1	EGCS & OCCS Ready	Sept. 2026	LR	Watts Energy (WE)	EP/Commissioning/Training
8	China Petroleum Pipeline Bureau	CPP Hebei Langfang Onshore CCUS Experimental Platform	1	Onshore CCS	Estimate Jun. 2026	N/A	China Petroleum Pipeline (CPP)	EP/Commissioning/Training
9	HMM/PANASIA	MONGOLA Container Ship	Long Term	OCCS LCO2 Offloading and Utilization	Jan. and May 2025	KR	N/A	Project Management and Operation
10	COSCO Shipping Energy Transportation	307.6K VLCC	1	OCCS Life Cycle Solution Demonstration Project	On Jan. 2026 JDP cooperation agreement signed , Estimate April. 2027 delivery	CCS	TBD	(1) EPC/Commissioning/Sea Trial/Training (2) Offloading and Utilization (3) Verification

SE Reference List

Cargo Containment System

No.	Client	Project	Qty.	Scope	Delivery Date	Class	Shipyard/Builder	Responsibility
1	SINOPEC	Pilot Membrane-type Liquid Helium/Liquid Hydrogen tank	1	Membrane Tank	Q4 2021	CCS/LR	SINOTECH	Mock up tank with LHe test
2	SINOPEC	1,000m³ onshore LNG Membrane Tank	1	Membrane Tank	Q2 2023	CCS/LR/BV	SINOTECH	EPC
3	CNPC	50,000m³ onshore LH2 Membrane Tank Reaserch	1	Membrane Tank	Q4 2023	/	CNPC	FEED
4	SINOPEC	50m³ Underground LNG Membrane Tank	1	Membrane Tank	Q4 2023	/	SINOTECH	EPC
5	SINOTECH	20 m³ Ship Membrane Tank	1	Membrane Tank	Q4 2023	CCS	SINOTECH	Mock up tank
6	China Bunker/CNOOC	20,000m³ LNG Bunkering Vessel	1	Membrane Tank	Q3 2027	CCS	DSOC	EPC/Commissioning/Sea Trial/Training (in progress)
7	CNPC	220,000m³ onshore NH3 Membrane Tank Reaserch	1	Membrane Tank	Q3 2026	/	/	FEED (in progress)
8	SINOPEC	300,000m³ onshore LNG Membrane Tank	1	Membrane Tank	Q4 2028	/	SINOPEC	Basic design (in progress)
9	Jiangxing Gas Group	15,000m³ onshore LNG Membrane Tank	1	Membrane Tank	Q4 2028	/	CNPC	Basic design (in progress)
10	/	174,000m³ LNG Membrane Carrier	1	Membrane Tank	Q4 2030	/	Wuhu shipyard	FEED (in progress)

Cryogenic System (CHS/FGSS/RLS)

No.	Client	Project	Qty.	Scope	Delivery Date	Class	Shipyard	Responsibility
1	China Bunker	20K LNG Bunkering Vessel	1	CHS with Membrane Containment System/RLS	Q3 2027	CCS	DSOC	EPC/Commissioning/Sea Trial/Training

Experience in SE Technical Teams

Fuel Gas Supply System

No.	Client	Project	Qty.	Scope	Delivery Date	Class	Shipyard/Builder	Responsibility
1	Seaspan	7000 TEU CV	15	HP FGSS	2023.10	/	YZJ	EP/Commissioning/Training
2	COSCO	7000 CEU PCTC	2	HP FGSS	2024	CCS/NK	GSI	EP/Commissioning/Training
3	BYD	7000 CEU PCTC	2	HP FGSS	2025	CCS/DNV	GSI	EP/Commissioning/Training
4	Northern Lights	7500 CBM LCO2C	4	HP FGSS	2024	DNV	DSIC	EP/Commissioning/Training
5	Chery Automobile Corporation	7000 CEU PCTC	4	LP FGSS	2024	DNV/CCS/ BV	WUHU	EP/Commissioning/Training
6	Seaspan	16000 TEU CV FGSS	5	HP FGSS	Under Construction	ABS	NTS	EP/Commissioning/Training
7	Essberg	6K Chemical Tanker	4	LP FGSS	2024.12	BV	CMHI Dingheng	EP/Commissioning/Training
8	Terntank	15K Product Oil Chemical Tanker	2	LP FGSS	2021.12	BV	CMHI Dingheng	EP/Commissioning/Training

感谢聆听

Thank you for listening!

使命：让能源更安全 让地球更健康
Mission: Safer Energy Healthier Planet

愿景：做清洁能源解决方案的先行者和引领者
Vision: Be the Pioneer and Leader in clean energy

价值观：创新 担当 追求卓越
Values: Innovation Responsibility and Excellence