



# 公司简介 Company Presentation

友奇环境工程（上海）有限公司  
SHANGHAI UPRO MARINE SYSTEM

Oct,2022



# 公司概况

## COMPANY PROFILE

友奇环境工程（上海）有限公司是一家专注于低温气体在船舶及海洋工程领域应用技术的专业工程公司。公司位于上海市浦东新区沪南路2218号中环BHC中心大厦18层。目前公司在LNG动力船双燃料供给系统（简称“FGSS”），LPG、LNG液化气船的液货系统（简称“CHS”）以及船用低温液货维护系统（简称“CCS”）的EPCS总承包工程方面处于国内领先地位。

同时UPRO积极布局氨燃料，氨运输，碳捕捉等环保碳控技术，为下一代市场应用做好了技术储备。



# 公司概况

## COMPANY PROFILE

SHANGHAI UPRO MARINE SYSTEM CO.,LTD. is dedicate EPCS(Engineering, Procurement and Construction Supervision) company for cryogenic gas application on marine field. We are expert of providing the tailor-made cargo handling systems and tanks for gas carriers such as LNG,LPG, LEG/Ethane carrier and LNG bunker vesse.UPRO also design and supply the complete fuel supply system (LNG,LPG,NH3,Methonal as fuel).



# 优势与亮点

## ADVANTAGES AND HIGHLIGHTS

### 专业的技术团队 Expert team

团队经验丰富，13年专注于油气行业，熟悉石油天然气产业链。  
Expert team with 13 years experience on gas, rich experience on gas carrier and fuel gas system.

对低温气体在船舶的应用有充分的认识和理解。  
Years experience on Marine and offshore, in-house automation engineering capability for cryogenic gas application.

专业的计算机设计和先进的供气系统模拟设计计算。  
Advance software engineering tool application and computer simulation.

RINA AIP Certificate for LNG FGSS



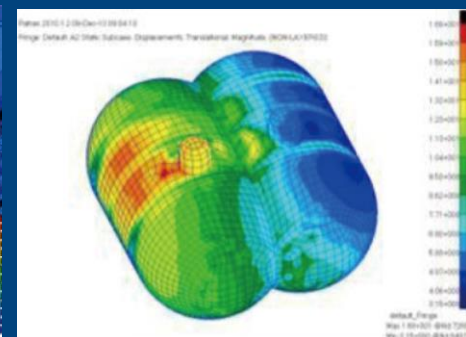
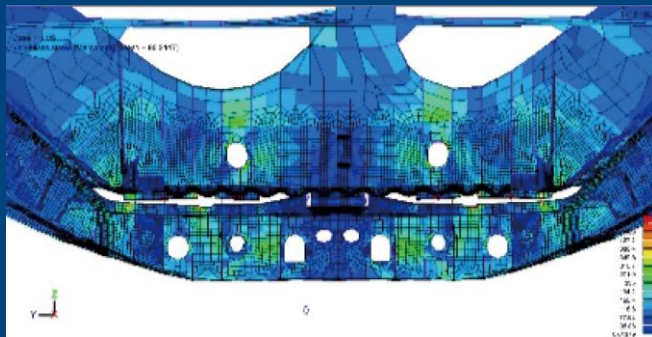
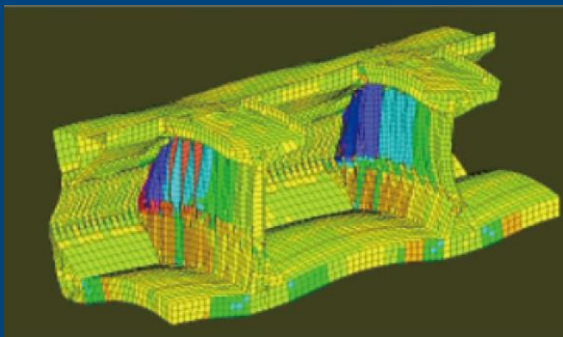
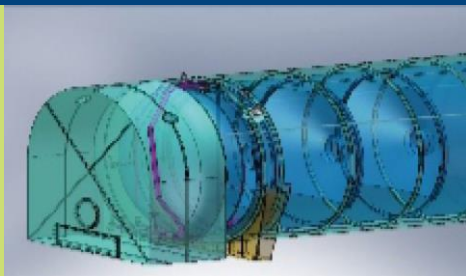
ABS ISO 9001 Certificate for Engineering of GHS

# 优势与亮点

## ADVANTAGES AND HIGHLIGHTS

基于CAD\_CAM的对压力容器设计和结构设计全流程数字化工程经验。  
CAD\_CAM based digital tools for complete project implement for pressure vessels and structure.

二维和三维图纸可以与船厂的数字造船系统无缝对接。  
2D/3D documents can be provided to Yard for clients' digital production platform.

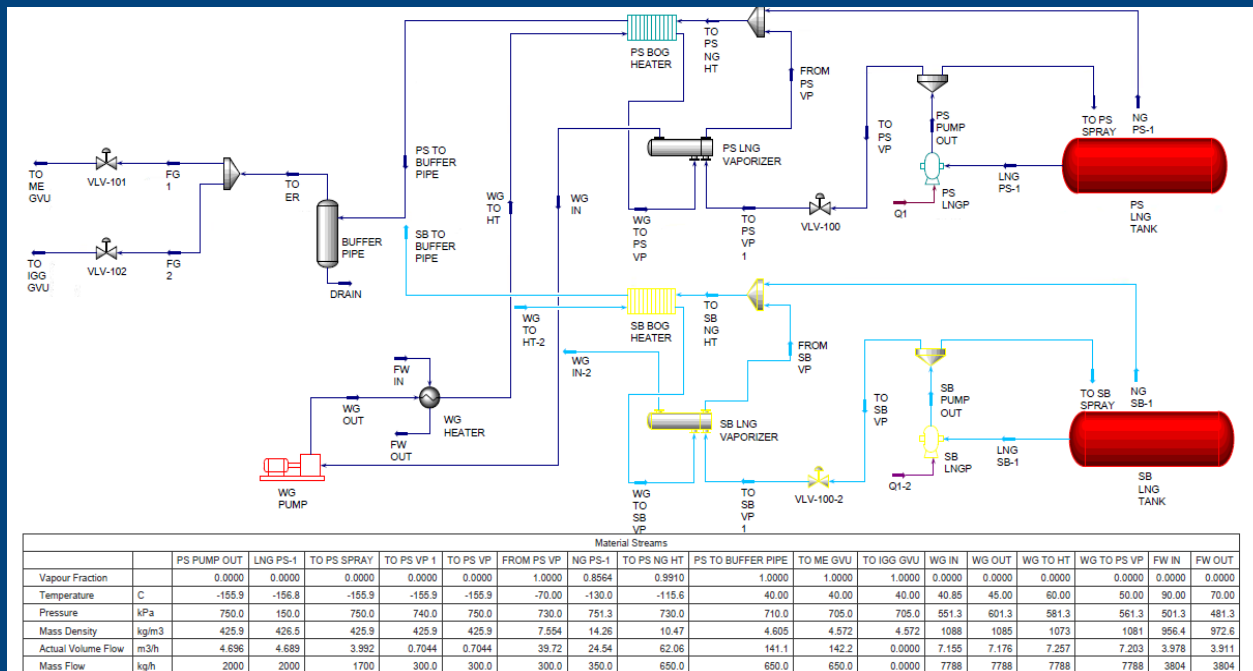


# 优势与亮点

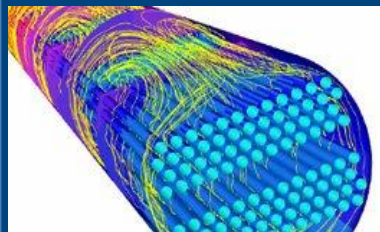
## ADVANTAGES AND HIGHLIGHTS

先进的流体系统仿真设计

Powerful computational fluid dynamics



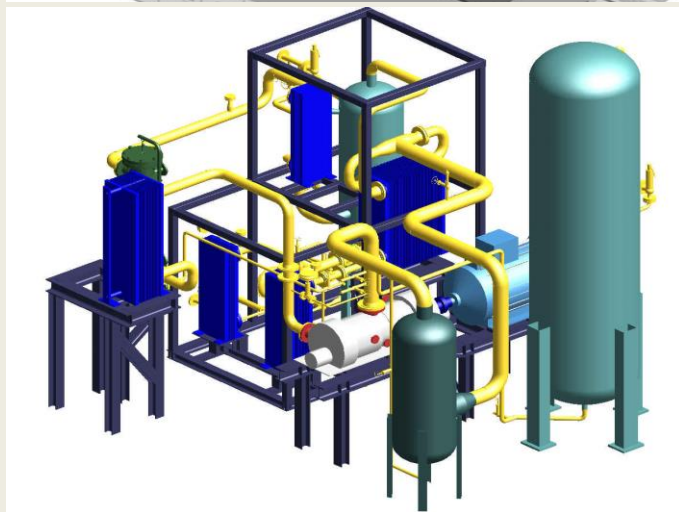
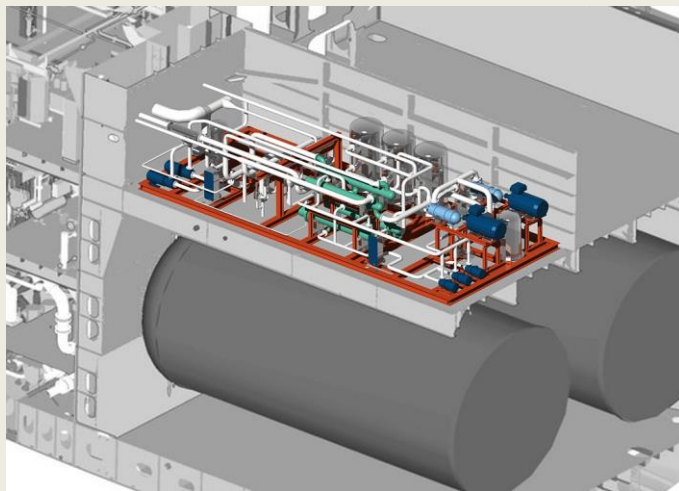
- 基于先进的HYSYS/ANSYS等先进的流体模拟系统，为供气系统设计的准确性和可靠性提供了基础。
- Ugas has the Engineering Expert Team with powerful FEA/CFD tools, the dedicated team can excute directive load calculation, entire system FEA/CFD, vibration, fatigue, sloshing, thermal distribution, etc



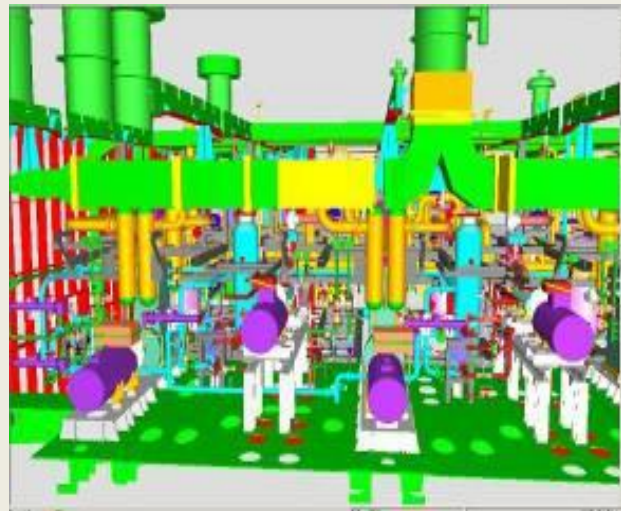


丰富的模块/系统设计建造经验

Rich experience of module fabrication reference

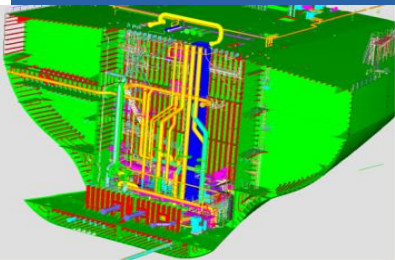


- UPRO 丰富的模块设计经验，可以让系统的安装及造船周期显著缩短。
- UPRO has experience and reference of module fabrication, to support shipyard shorten the delivery of the FGS and the complete ship.
- 专业的模块设计考虑了系统操作及日常维护的便利。
- The profession module design take the fabrication, operation and maintenance into account.



丰富的数字化造船经验

Extensive onsite  
experience  
Of ship fabrication



- 丰富的管路（包含低温管路）设计建造经验，可以有效缩短船厂的施工周期，降低成本。
- Extensive experience piping (including cryogenic piping system) fabrication record, low cost and reliable quality.

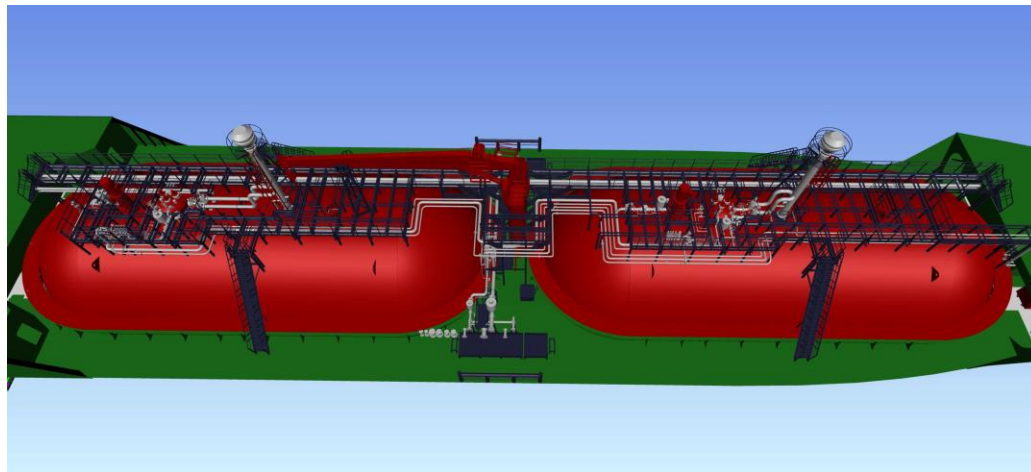


### UPRO提供:

- 包含货罐在内的完整的货物系统的或者子系统工程服务, 适用于:
- 全压式LPG运输船(0°C)
- 半冷半压式LPG/液氨运输船(-48°C)
- LEG运输船(-104°C)
- LNG加注/LNG运输船(-163°C)

UPRO provides the EPCS service of complete cargo handling system (GHS) including cargo tanks for cryogenic gas carriers:

- ◆ Fully pressurized LPG carrier
- ◆ Semi-ref LPG/Ammonia carrier
- ◆ LEG carrier
- ◆ LNG bunker vessel
- ◆ LNG carrier



### Upro 提供:

- 完整的供气系统的工程设计, 包括
  - 系统基本设计
  - 系统二维布置设计
  - 系统三维设计及详细设计
- 整个供气系统含子系统质量控制, 采购, 和建造监理服务
- 现场调试服务及交付气试服务
- 售后服务

UPRO provides the EPCS service of cargo handling system for cryogenic gas carriers:

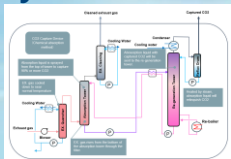
- Engineering of gas handling system, including:
  - ◆ System concept design and process design
  - ◆ 2D arrangement design
  - ◆ 3D design/detail design
- Delivery the complete system including QC, Procurement, Construction and Supervision
- Start-up and gas trial
- After-sales service



# 新业务领域

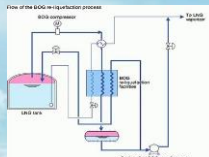
NEWTECH DEVELOPMENT

## 碳捕捉技术 Carbon capture system



Pre-design

## LNG 再液化系统 LNG reliquefaction system



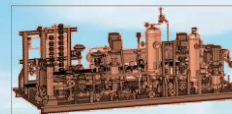
Prototype model  
under developing

## Type B型液货舱 Type B tank



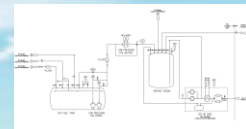
FEED&Pre-design

## 甲醇燃料系统 Methanol FGSS



Class AIP approved

## 氨燃料供气系统 NH3 FGSS



Project ongoing

### 氨燃料供气系统预研 船级社AIP认可的资料

AIP document list for FGSS(NH3) supplier - R1

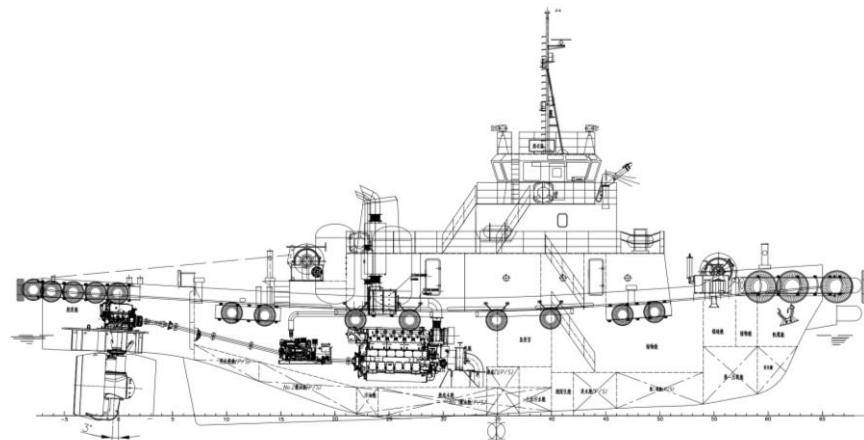
No	A/I	Title	Descriptions	Remark
1	I	Technical Specification	As a basis of design, it should include at least but not limited to: 1. The purpose and background of this system. 2. The intended function of this system to be achieved, such as the gas consumers and basis ship. 3. Detail configuration of this system with main technical data.	
2	A	Arrangement Drawing	1. Fuel gas tank, including foundation. 2. Tank connection space. 3. Fuel preparation room, if not combined with TCS. 4. Bunker station 5. Gas vent mast	
3	A	PFID	Process flow diagram of gas fuel piping system, include gas tank PRV venting system. Utility flow diagram of auxiliary system, such as :	
4	I	UFD	1. Heating medium supply. 2. Cooling medium, if necessary. 3. Inert gas for tank and gas piping purging. 4. Control source, such as instrument air and/or hydraulic. 5. Dry air, if necessary for fuel gas tank and tank hold space.	
5	A	Safety System	Safety system related FGSS operation, such as : 1. Gas leakage detection system. 2. Cold leakage detection system. 3. Drainage and bilge system. 4. Ventilation system. 5. Fire fighting system. 6. ESD system.	
6	I	HMB	Heat and mass balance calculation, including all typical operation cases.	
7	A	Tank Pressure Control	BOR study and BOG management plan, including all typical operation cases.	
8	I	ECBD	Electric and control block diagram, including power supply and control framework.	
9	I	Control Philosophy	Description of control logic of the system , including all typical operation cases	
10	I	Risk Assessment	Risk assessment related to fuel gas system as IGF code section 4.2. and RINA rule involved.	
11	I	Operation Procedure	General description of operation procedure, including all typical operation cases.	

Note 1: A = to be submitted for approval, I = to be submitted for information.

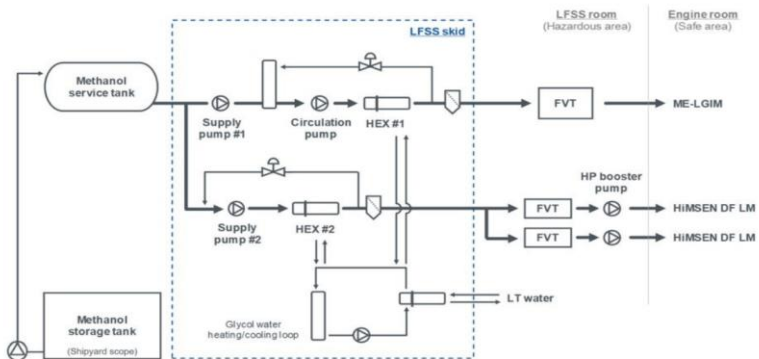
Note 2: Above mentioned documents to be treated as necessary documents to verify the safety operation of fuel gas supply system onboard a ship with right functions as intended.

Note 3: Fuel gas tank design will be verified during detail design phase for specific ship on which the system will be installed.

- 6500HP 氨燃料供气系统 (在执行)
- 6,500HP Ammonia fueled tug boat(delivery to be mid/end of 2023 )

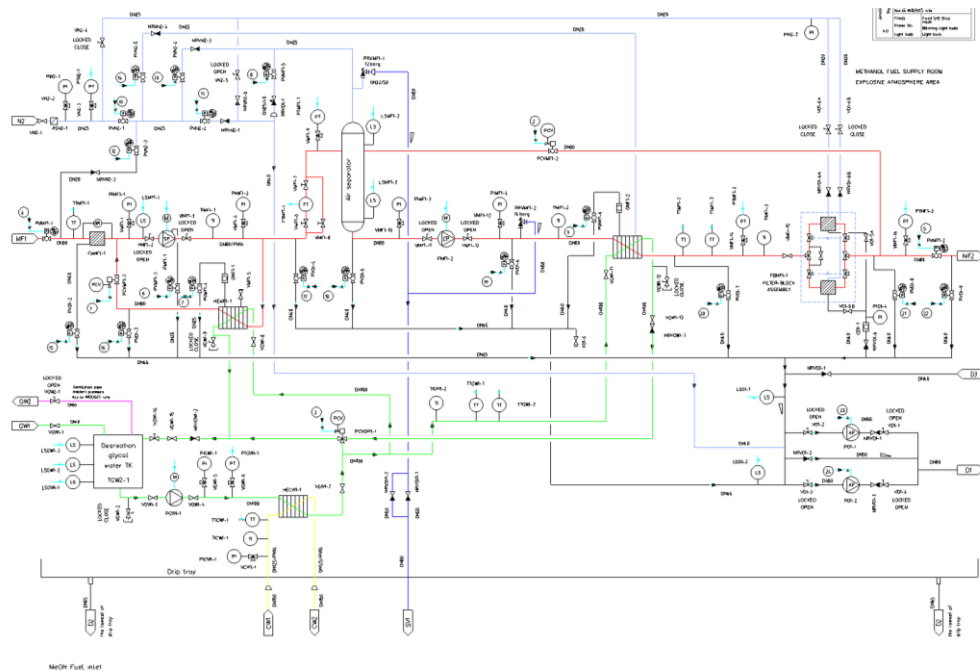


### 甲醇燃料供应系统



- 燃料供应系统设计依据IGF
- Design concept as per IGF
- 考虑到甲醇物性/毒性的安全设计：焊接管路，通风，气体探测，透气系统
- Safety concept (Human Toxicity, fire, etc.): welded piping system, gas detection, venting & ventilation system
- 甲醇系统整体布置的特殊要素：燃料舱、安全隔舱、辅助系统
- Methanol tank: Storage tank, tank access, cofferdam, safety system

已获得船级社AIP  
Class AIP approved



## 中国国内气体项目业绩

### Reference and order book in China market (gas project)



CSSC JiangNan shipyard: LNG Fuel Gas system test bed (Design and BOG compression system)

江南造船 LNG供气系统 样机 BOG供气压缩机单元

Merchant Nanjing Tanker: 2x24000DWT Crude oil tanker: LNG FGS design

武船重工/招商南油2X2.4万吨油轮LNG供气系统设计

CSSC Wenchongshipyard:2+2X5000cbm LPG carrier (Complete cargo handling system)

西南航运/文冲船厂2X5000方液化气船液货系统

CSSC Wenchong shipyard:1x9500cbm LNG/LPG/LEG carrier (LNG cargo Tanks+ LNG bunkering system)

西南航运/文冲船厂1X9500方LNG运输加注船LNG货罐及加注系统

HLINE /GSI:4x7000CEU PCTC (complete LNG Fuel Gas Tank/TCS design)

HLINE/广船国际4x7000车PCTC供气系统LNG储罐及TCS设计

CNOOC/GSI Wenchong:1x30,000cbm LNG carrier retrofit LNG bunker (LNG bunkering/cargo handling system)

中海油/文船修造 3万方LNG运输/加注船加注系统

## 中国国内项目业绩

### Reference and order book in China market (gas project)

COSCO Dalian: 1x6500HP NH<sub>3</sub>-fuelled tug

中远/1x6500马力氨燃料拖轮氨燃料系统

SINO GAS/COSCO HI Guangzhou: 2+2x85000cbm VLGC LPG-FGSS retrofit

SINO GAS/中远重工广州2+2X85KVLGC LPG燃料供气系统

#### 非整包项目:

NanJing Tanker/Merchant Dingheng 1x3300cbm LPGC

南京油运/招商鼎衡 1x3300方全压式液化气运输船 (CMYZ0098)

ShenZhenLongpeng /Merchant Dingheng 2x5500cbm LPGC

深圳中远龙鹏/招商鼎衡 1x5500方全压式液化气运输船 (CMYZ0115/0116)

ShenZhen HaiHong/ Merchant Dingheng 1X6300cbm LPGC

深圳海鸿/招商鼎衡 1x6300方全压式液化气运输船 (CMYZ0118)



## 主要客户

## Major partner&clients





[www.uxgas.com](http://www.uxgas.com)

SHANGHA UPRO MARINE SYSTEM CO.LTD.

**THANKS !**

