



JUNGWOENE Co.,Ltd.
Marine Gas Solution

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산업통상자원부
국가핵심기술보유기업

Marine Gas Solution

JUNGWOO

ENE

LNG SYSTEM MANUFACTURING & ENGINEERING

- LNG Tank
- Bunkering Unit
- Bunkering Pipe System
- Double Wall Pipe System
- Submersible Pump, High Pressure Pump
- Vaporizer, Glycol Unit, Heat Exchanger
- Gas Valve Unit
- Explosion-proof Ventilation Fan Package
- LNG System Module
- LNG Process System
- LNG Fuel Gas Supply System Package

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CEO MESSAGE



JUNGWOO ENE Co.,Ltd.

The Jungwoo ENE Co., Ltd. could have grown because of you customers who believe and look at the Jungwoo ENE Co., Ltd. with top-level R&D investments to secure a new growth power and management innovation minds that can first predict the change in era and satisfy the market needs.

Our expertise is formed based on our know-how and technology coming from our abundant experience. We have accumulated trust through customer satisfaction in all parts of projects such as design, engineering, manufacturing and installation, and will make enough efforts continuously to provide an optimal system our customers need in the future as well.

Recently, orders for LNG transportation ships are increasing as demand for LNG rises rapidly due to each country's no-coal and no-nuclear policy in the world. In addition, industry's concerns about LNG-propelled ships are reaching the maximum level due to the IMO's environmental regulations. We exert efforts for constant product development and market exploration to expand the global market according to this energy and environmental industry trend. We promise to lead the global market by developing innovative future-related commodities while establishing a constant cooperation relationship with the related field enterprises in Korea.

HISTORY

- 09 Developed a 250A cryogenic globe valve for the first time in Korea
- 10 Certified as a professional enterprise in components and materials
- 10 Registered a patent (Storage tank including heat exchangers and a LNG fuel supply system including storage tanks)

- 06 Selected as an inno-bizz by the small and medium business administration
- 09 Manufacturing of high-pressure gas safety valves with a particular equipment manufacturing license

2010

- 02 Established the JUNGWOOENE
- 07 Manufacturing of storage tanks and pressure vessels with license in manufacturing of particular high-pressure gas equipment
- 09 Acquired an ISO9001(KGS) certificate
- 10 Applied for a patent (Coupling structure of pipes for cryogenic liquefied gas)
- 12 Applied for a practical design (Multi-valve for cryogenic liquefied gas)
- 12 Applied for a patent (Upper nozzle arrangement type of cryogenic fluid storage tank)

2011

2012

- 06 Ministry of knowledge economy : LNG fuel system for ships Selected as an insulated piping development enterprise
- 06 Ministry of knowledge economy : LNG fuel system for ships Selected as a heat exchanger development enterprise
- 08 Selected as a cryogenic storage tank development enterprise by the small and medium business administration

2013

VISION



Leading the global market of LNG products



Technology



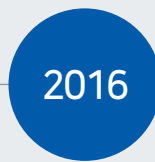
Engineering



Challenge

- 02 Received orders for cryogenic HP pumps for fuel gas systems for the first time in Korea
- 04 Received orders for LNG Gas Valve Units for ships for the first time in Korea
- 06 Certified for vacuum-insulated double piping (Korean register of shipping)

- 06 Selected as a LNG LOADING ARM localization enterprise by the ministry of industry and resources
- 07 Acquired an ASME "U" "S" "PP" STAMP certificate

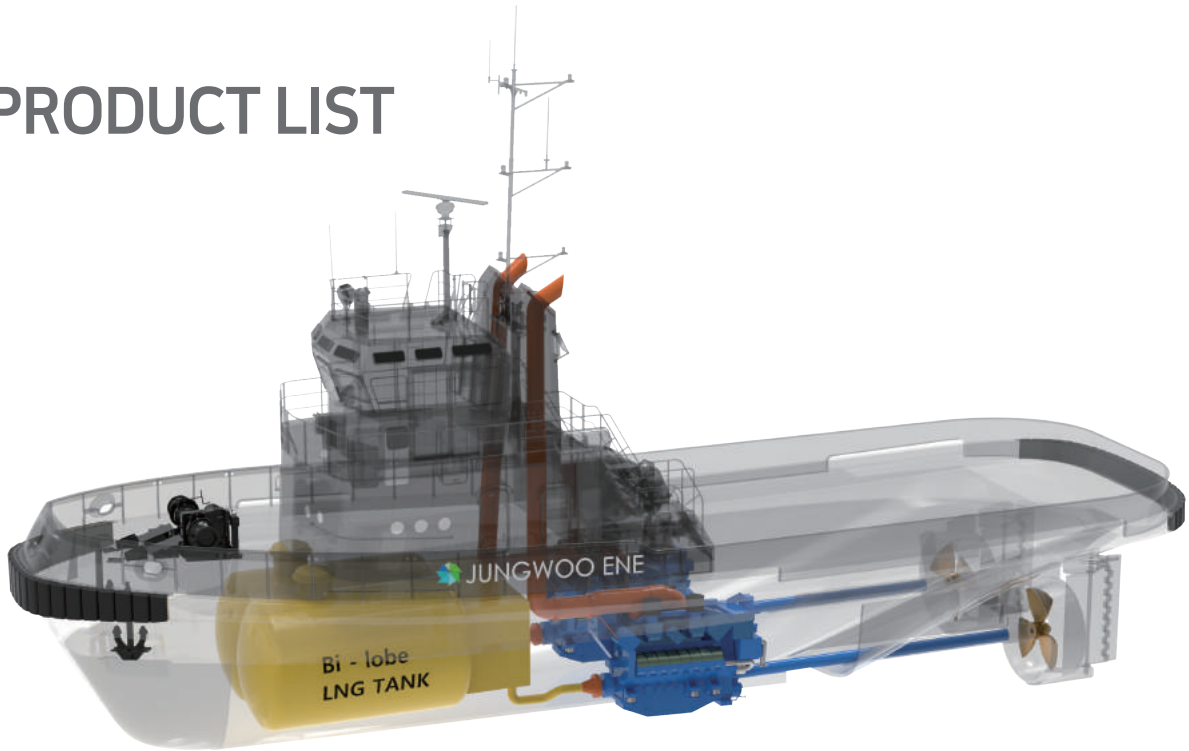


- 05 Received orders for and supplied high-pressure dual pipes for a LNG fuel ship TOTE project for the first time in the world
- 05 Selected as a gas valve unit development enterprise by the ministry of industry, commerce and resources

- 01 Selected as a Heli-flow Heat Exchanger localization enterprise by the ministry of industry and resources
- 02 Received orders for cryogenic vacuum-insulated piping for ships (for LNG) - U.K.

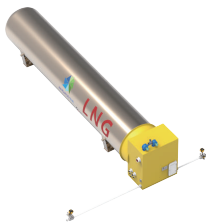
- 07 Designated as a national core technology enterprise

PRODUCT LIST



Fuel Gas Supply System

LNG Tank



Double Wall Pipe&Vacuum Insulated Pipe



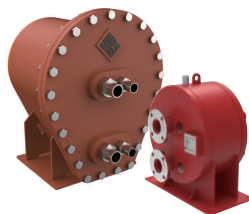
Bunkering Unit



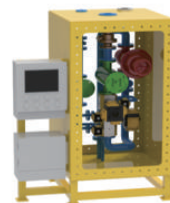
Ventilation Fan

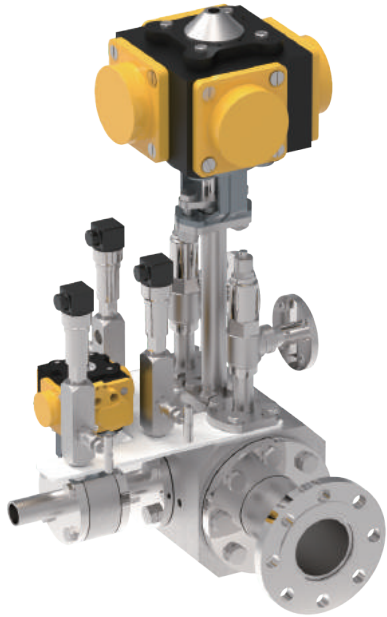


Vaporizer



Gas Value Unit

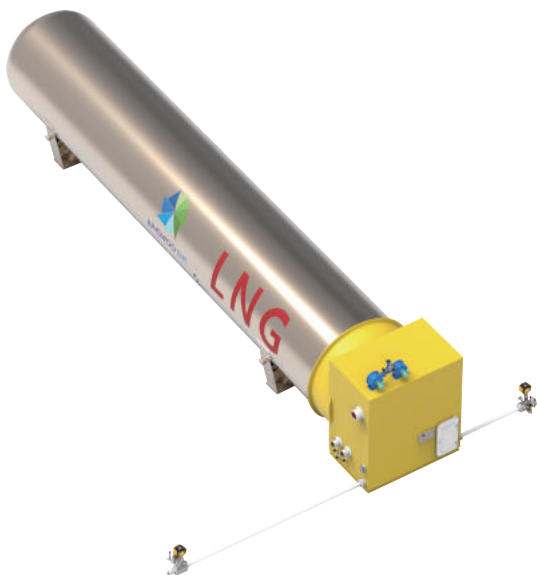




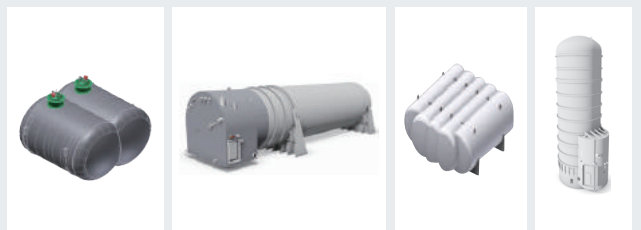
BUNKERING UNIT



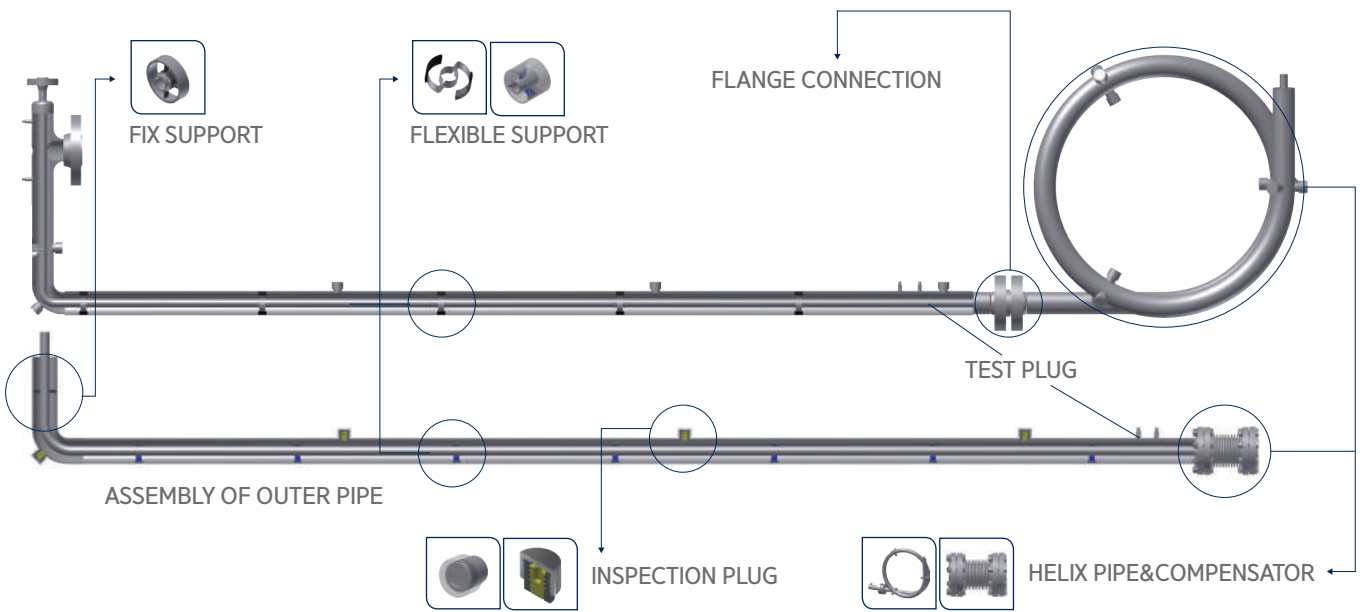
Size	Customized manufacturing available
Design Pressure	Max 30bar
Connection Type	Flange Type, Welding Type
Fluid	LNG , Other
Design Temperature	-196°C



LNG TANK



Volume	5~5,500m ³
Design Pressure	1~33Bar
Design Temperature	-196°C~40°C
Material	STS304 & SS400 , etc
Fluid	LO ₂ ,LN ₂ ,LAR,LCO ₂ ,LNG
TYPE	Vertical, Horizontal, Bi-lobe, Multi-lobe



DOUBLE WALL PIPE

■ Feature

- Composed of inner pipes and outer pipes to be a gas supply pipe used for dual fuel engines
- Gas supply pipe for ship fuel or ocean plants
- Usable for various fluids and pressures
- Designed and manufactured to be maintained safely during explosion
- Absorbing of ship vibrations and solving problems for cause of vibrations
- The inner pipe is a fuel gas supply pipe, and the outer pipe is safely designed to protect the surroundings safely and let the leaked gas be discharged to the outside if gas leaks due to generation of abnormality in the inner pipe
- Additionally interlockable with the leaked gas alarm and automatic discharge system

■ Applicable objects

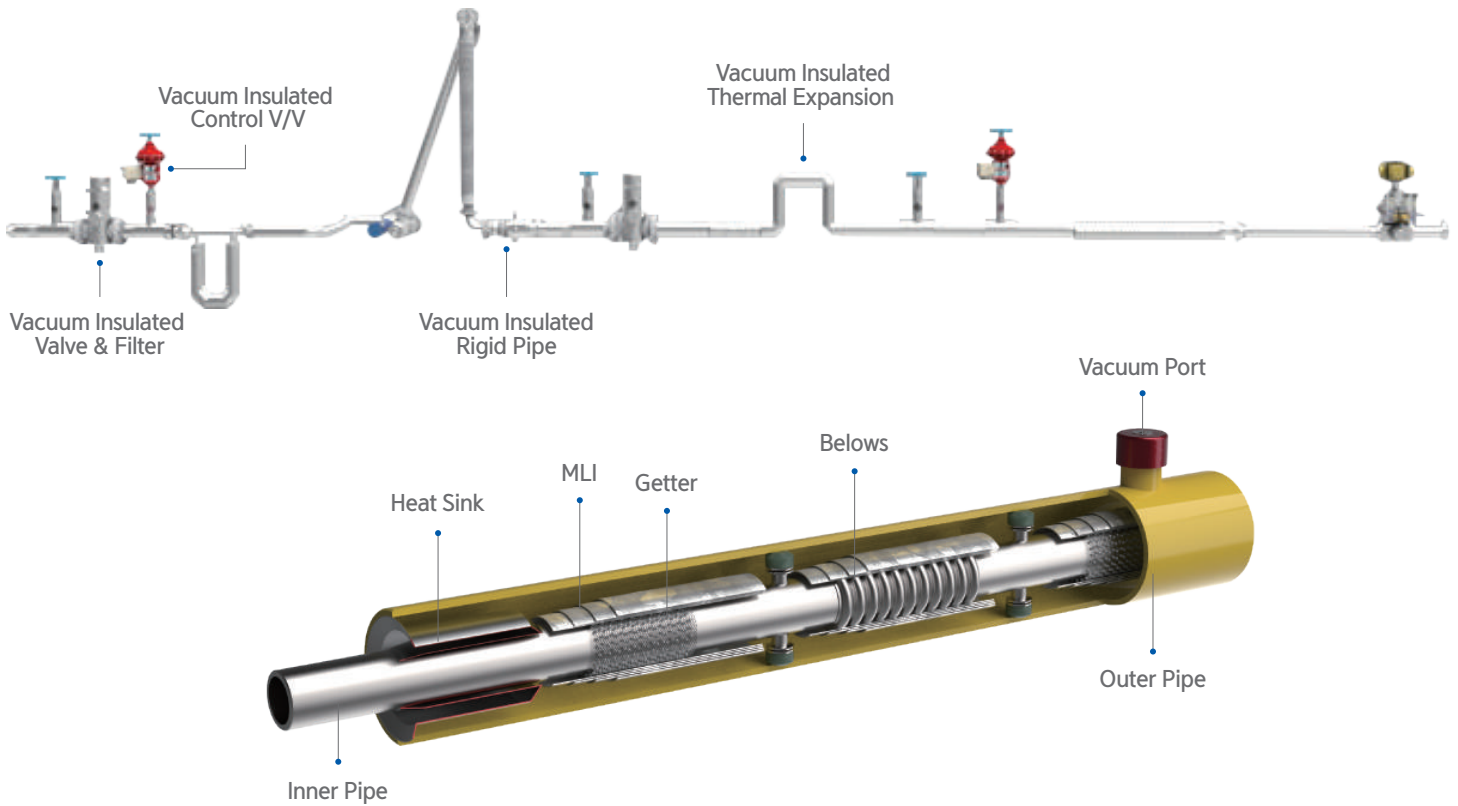
Applicable to various fields such as land/ship fuel gas piping

■ Low pressure specification

Size	Customized manufacturing available
Design Pressure	Max 20Bar
Connection Type	Flange Type, Welding Type
Fluid	Natural Gas, Other
Design Temperature	-50°C to Max 80°C

■ High pressure specification

Size	Customized manufacturing available
Design Pressure	Max 700Bar
Connection Type	Flange Type, Welding Type
Fluid	Natural Gas, Other
Design Temperature	-50°C to Max 80°C



VACUUM INSULATED PIPE

■ Feature

- Composed of inner pipes and outer pipes to maintain an insulated state
- Maintaining a vacuum state between inner pipes and outer pipes to let the inner pipes maintain an insulated performance
- Used to reduce evaporation of liquefied gas due to invasion of external heat during transportation of cryogenic liquid
- Has 40–times better efficiency than the type using an external insulation material(urethane foam)
- No need of external insulations through vacuum-insulated work
- No generation of condensation phenomena by water at a normal environmental condition with dual structure minimizing heat loss due to shielding of thermal radiation

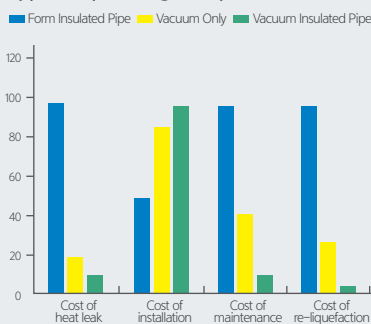
■ Applicable objects

Bunkering piping and liquefied gas transportation piping

■ specification

Size	Customized manufacturing available
Design Pressure	Max 30Bar
Vacuum	~5*10 ⁻⁵ Storr
Connection Type	Flange Type, Welding Type
Fluid	Liquid Natural Gas
Design Temperature	-196°C to N 45°C

Typical operating comparison



Feature and benefits

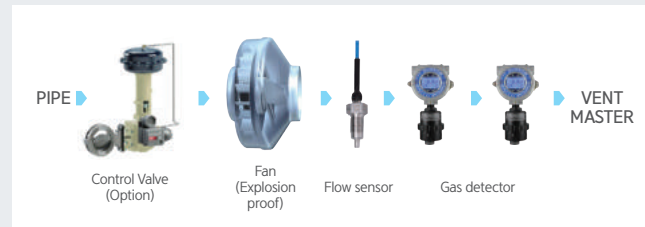
- Up to 30 times more efficient in reducing heat flow than conventional insulated pipes
- Easy extension, re-routing, dismantling and re-using of the line without affecting the vacuum of the sections
- Full stainless steel construction
- Small outer diameter is available
- Short installation period
- Maintenance free

CE-ATEX certificate



EXPLOSION PROOF VENTILATION FAN

Installed in a ship to play a role of ventilating air in the piping and machine room and to have enough durability against heat, vibration and shock



Air flow rate	710m ³ /hour(50Hz) , 840m ³ /hour(60Hz)
Air pressure	30 mbar (50Hz), 60 mbar (60Hz)
Working temperature	20°C / Max 45°C
Working fluid	AIR, NG
Certificate	CE-ATEX

VAPORIZER

Equipment to supply gas to engines by evaporating cryogenic LNG into gas in a LNG-propelled ship



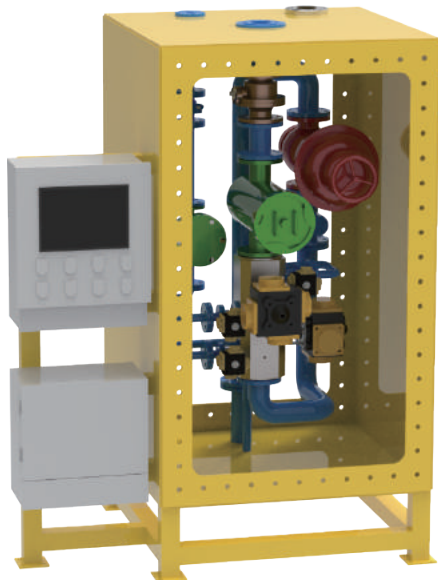
Type	Shell & Tube, Cryo-Flow
Working fluid	LNG, LN2, Other
Working pressure	10~500Bar
Design pressure	350Bar
Working flow rate	LNG basis 30m ³ /hr
Working temperature	-196°C~40°C

GAS VALVE UNIT

An accessory to control and supply the pressure and flow rate of gas safely when installed and operated at the front of the engine and power generator using gas as fuel

■ Feature

- Check if gas leaks from the gas supply line before supplying gas fuel to the engine
- A function to stably supply the flow rate and pressure of gas fuel required by the engine when the engine is working
- Urgent interception of fuel gas supply to the engine during an emergency situation
- Discharge of residual gas when fuel supply is suspended
- Automatic air ventilation of gas distribution after operation of inert gas and DF
- Purging function to maintain inert gas



Vertical type1



Vertical type2



Enclose type



Room type

CERTIFICATION



ISO 9001



ISO 9001



ISO 18001



KR-V.I.P



WPS(KR)



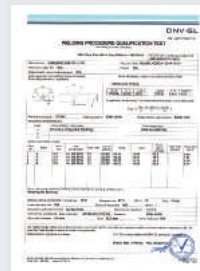
WPS(LR)



WPS(ABS)



WPS(BV)



WPS(DNV-GL)



WPS(RINA)



High pressure pump



Double wall pipe



Natural gas supply system



Tank registration



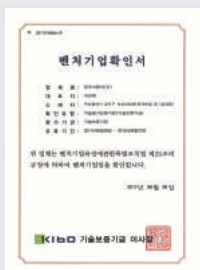
Valve registration



INNO-BIZ



Clean work place



Venture business



R&D approval



Enterprise specializing in materials&parts

PRESS RELEASE

[Interview] CEO of Jungwoo ENE Co., Ltd., Sun-Hae Lee

“설계부터 시공전까지 토달 솔루션 제공”



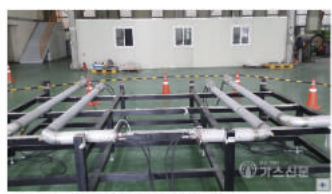
전공단위별과 성능 연한 보장 생산체계에 대한 대담한 강화

다스스틸은 ‘복합재 기체’ 소재를 전문업체들은 약 50여 종에 달하는 다양한 소재를 통해... (text continues)

이산에 임하는 장우이엔이와 중점력은 설계부터... (text continues)

Source : Gas newspaper

Jungwoo ENE Co., Ltd. verified the performance of cryogenic vacuum-insulated piping



다스스틸은 ‘복합재 기체’ 소재를 기체장치 및 탈탄류 전문설비업체인 장우이엔이(주)와 이산(해)가... (text continues)

이산에 임하는 장우이엔이와 중점력은 설계부터... (text continues)

Source : Gas newspaper

Jungwoo ENE Co., Ltd. made a contract to supply a LNG fuel supply system with Keppel in Singapore

다스스틸은 ‘복합재 기체’ 소재를... (text continues)

이산에 임하는 장우이엔이와 중점력은 설계부터... (text continues)

Source : Daily shipbuilding & offshore

Jungwoo ENE Co., Ltd. manufactured LNG tank using high manganese steel

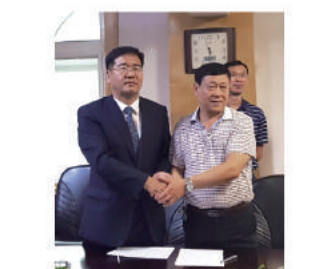
다스스틸은 ‘복합재 기체’ 소재를 기체장치 및 탈탄류 전문설비업체인 장우이엔이(주)와 이산(해)가... (text continues)

이산에 임하는 장우이엔이와 중점력은 설계부터... (text continues)



Source : Gas newspaper

Jungwoo ENE Co., Ltd. exported a LNG tank technology to China



장우이엔이와 박준형 사장은(왼쪽) CS&C의 이지우(부)사장이 협약 체결 후... (text continues)

다스스틸은 ‘복합재 기체’ 소재를 기체장치 및 탈탄류 전문설비업체인 장우이엔이(주)와 이산(해)가... (text continues)

Source : Gas newspaper

A studying small and medium enterprise, Jungwoo ENE Co., Ltd.

다스스틸은 ‘복합재 기체’ 소재를 기체장치 및 탈탄류 전문설비업체인 장우이엔이(주)와 이산(해)가... (text continues)



Source : Kookje newspaper

DC, AC SAW 용접기

- LAF 및 FAF AC Phase System
- 자동 제어 시스템 (자동 용접)
- 소형 용접용 변압기 및 파워

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