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www.energen.co.kr



E N E R G Y E N

- Nuclear & Thermal Power Industry
- Petrochemical & LNG Industry
- Fabrication and Machining

GLOBAL INNOVATION



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Your Reliable Partner *

ENERGYEN, founded in 1995, is a specialized company with differentiated product competitiveness that produces power-generating equipment for global companies as well as domestic power plants.

ENERGYEN was awarded for export achievement of 30 million dollars in 2009 while moving forward as a superb company by implementing cutting-edge technologies. Our customer management oriented to customer value system effectively produces and delivers products to satisfy customer needs.

Moreover, **ENERGYEN** is enhancing its company capability in the overseas market as a hub of industry by diversifying its sales and building partnerships with leading global companies such as: GE Vernova, Arabelle Solutions, Rosatom, Siemens, MHPS, Toshiba and JGC.

ENERGYEN strives to be an environmental friendly plant manufacturer through the development of new technology and commitment to pioneer in the overseas market. By investing over 5% of annual turnover in technology development, **ENERGYEN** has been maintaining its identity as a distinctive research and development oriented company.

ENERGYEN constantly adds competitive human resources and enhances its core competency in all organization including R&D Center.

It will promote adoptability, applicability, and integration in our current power generating plants in particular. It will also extend such high quality to nuclear and renewable power plants. By making the top effort to prevent global warming, it will also put our best effort to support global warming prevention program by providing world-class power plants equipment.

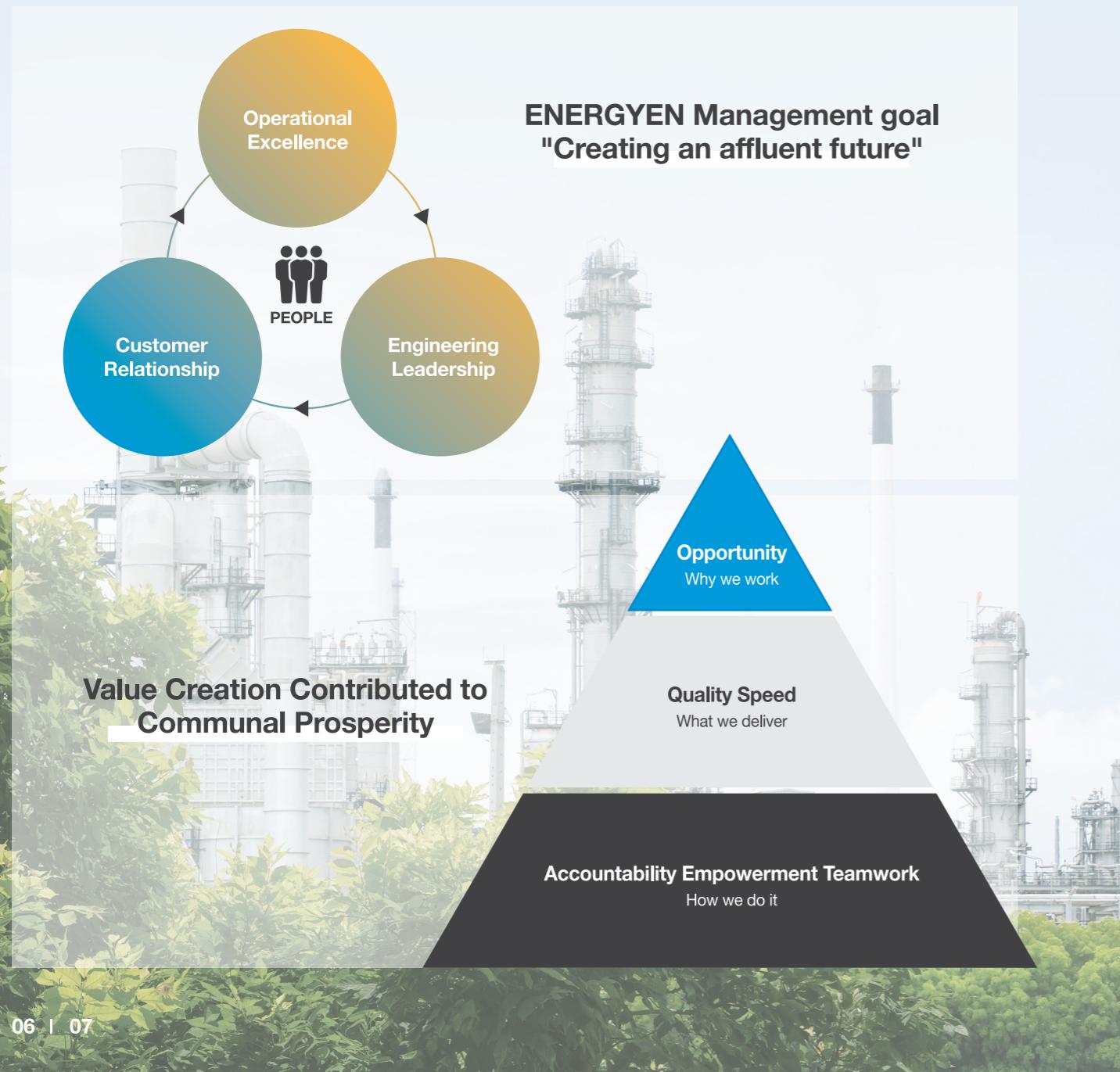
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**Technology-driven company
of global competitiveness in
Nuclear & Thermal Power Industry**



Mission Statement* and Operating Strategy

- Ensure our customers' success by providing enabling engineering services and product that deliver the best performance at economic value
- Achieve and maintain engineering leadership in our business
- Maintain stable financial results through the business cycle to generate values for stakeholders



HISTORY

1995 OCT	Established under the name of Seoul Precision & Industry Co., Ltd.
2000 MAY	Approved by GE Power as a supplier for Turbine and Generator components by qualification of End Shields
2001 SEP	Registered in KHPN(Korea Hydro Nuclear Power) as a BOP Components Supplier
2009 APR	Changed the name of company to ENERGYEN Corporation
2012 OCT	Expanded Gunsan factory for large steel fabrication and full automated ACC bundle facility
2014 NOV	Delivered high pressure Feedwater Heater for 1,000MW Ultra Super Critical Coal Fired Power Plant
2016 JUL	Launched ERP and e-Shop system for shop flow control system to manage execution progress
2018 OCT	Awarded GE Overall Partnership Trophy
2018 NOV	Acquired ASME N3(Nuclear Fuel Storage Tank), NPT(Nuclear Partials)
2020 JUL, DEC	Awarded BOP Equipment Contract for Akkuyu Project
2020 JUL	Partnership of KHPN'S shared growth company
2021 NOV	Acquired ASME N (Nuclear Components)
2021 DEC	Best Partnership Supplier Award from KHPN Ship Out Akkuyu Turbine Condenser Unit 2
2022 JUL, OCT	Ship Out Akkuyu LP Outer Casing and Deaerator & FWST Unit 1
2023 JUL	Appreciation Award from GE Vernova
2023 DEC	Acquired KEPIC-MN
2024 APR	Awarded BOP Equipment Contract for El Dabaa Project
2025 MAR	Supplier qualification for Q Class equipment to KHPN



QUALITY

Safety and Environmental Management System

Quality Policy

- Understanding customer requirement
- Taking actions to achieve customer's needs timely
- Involving employees to continual improving process
- Creating a culture to promote values and safety

Requirements

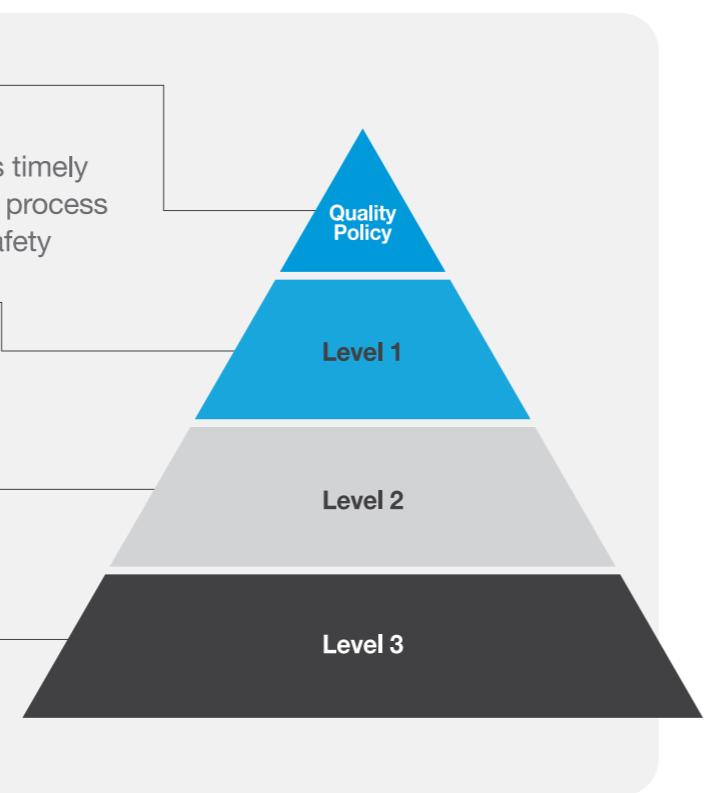
- ISO 9001 Quality Manual
- ISO 14001 / ISO 45001
- ASME Section VIII Appendix 10

Requirements

- Quality Control Procedure
- ASME Section I & VIII Appendix 10

Requirements

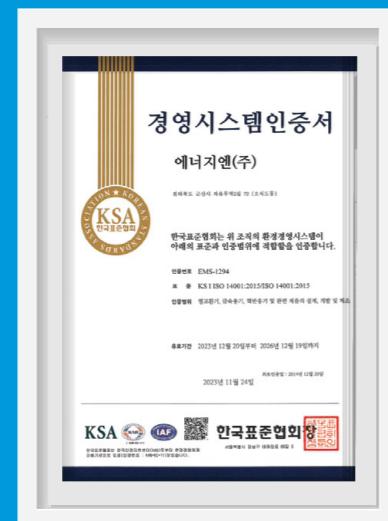
- MPP/Working Instructions
- Check sheet



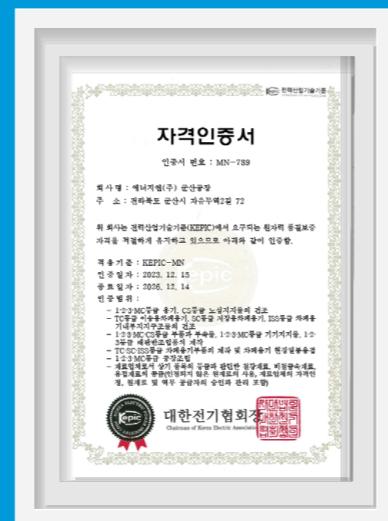
Quality Certification



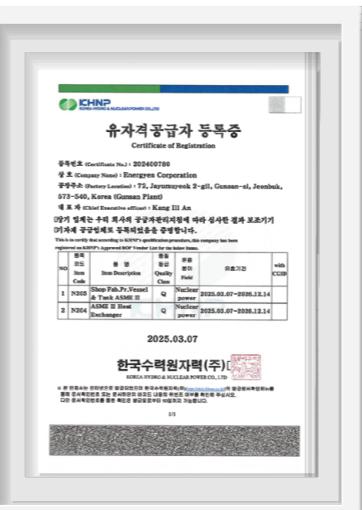
ISO 9001 : 2015 with 3834-2



ISO 14001, ISO 45001



KEPIC MN



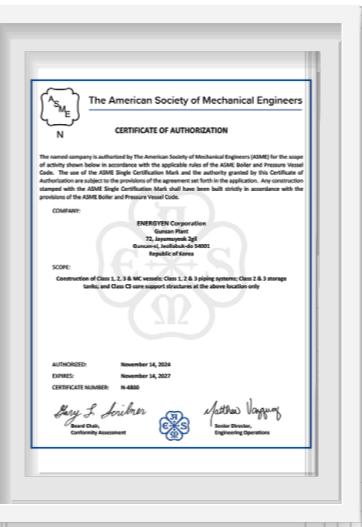
KHNP 'Q' Class



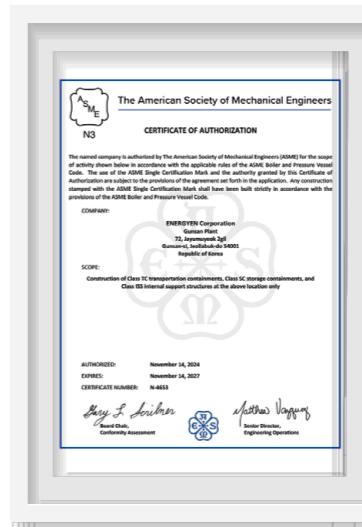
METI 2019



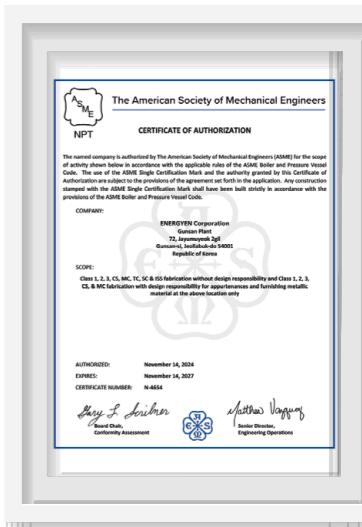
National Board 'R'



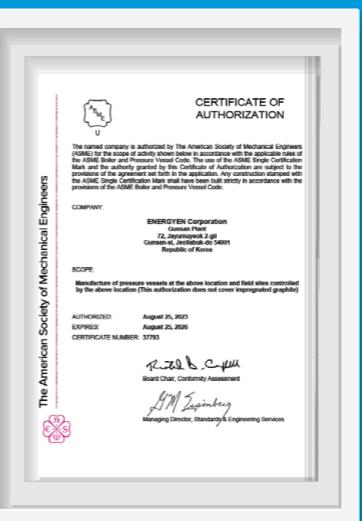
ASME 'N'



ASME 'N3'



ASME 'NPT'



ASME 'U'



ASME 'U2'



ASME 'S'

Nuclear & Thermal

Power Industry



1-1 | Surface Condenser



A condenser is a large heat exchanger of the shell and tube type. The main function of the condenser is to condense the steam coming from the steam turbine.

The auxiliary functions of the condenser are as follows:

- Re-use of condensate as boiler water.
- Vacuum maintenance of the rear end of the turbine blade.
- Removal of air from the non-condensable gas and system
- Recycle of vent and drain from the system.



ENERGYEN can design and manufacture Steam Surface Condenser with Vertical or Axial, Rectangular or Circular type condensers and provide the performance features.

- Uniform steam distribution over the tube bundle
- Minimizing the pressure drop by providing steam lane and reducing obstruction in steam path with high velocity
- Optimizing the condensate reheating and deaeration
- Effective removal of non-condensable gas
- Suitable protection of high energy fluid
- Minimizing the tube vibration damage and tube leakage
- Easy field assembly and maintenance



1-2 | Feedwater Heater



- Client : Korea Hydro Nuclear Power Co., Ltd / Rosatom
- Project: Shinkori Nuclear Power Plant (1,000MW) / El Dabaa Nuclear Power Plant (1,200MW)

Plentiful Manufacturing Experiences for Feedwater Heater in 1,000MW Project!

This item is installed to improve power generator efficiency by heating supplied water and reducing breakage due to heat stress from temperature differences in boiler tube.

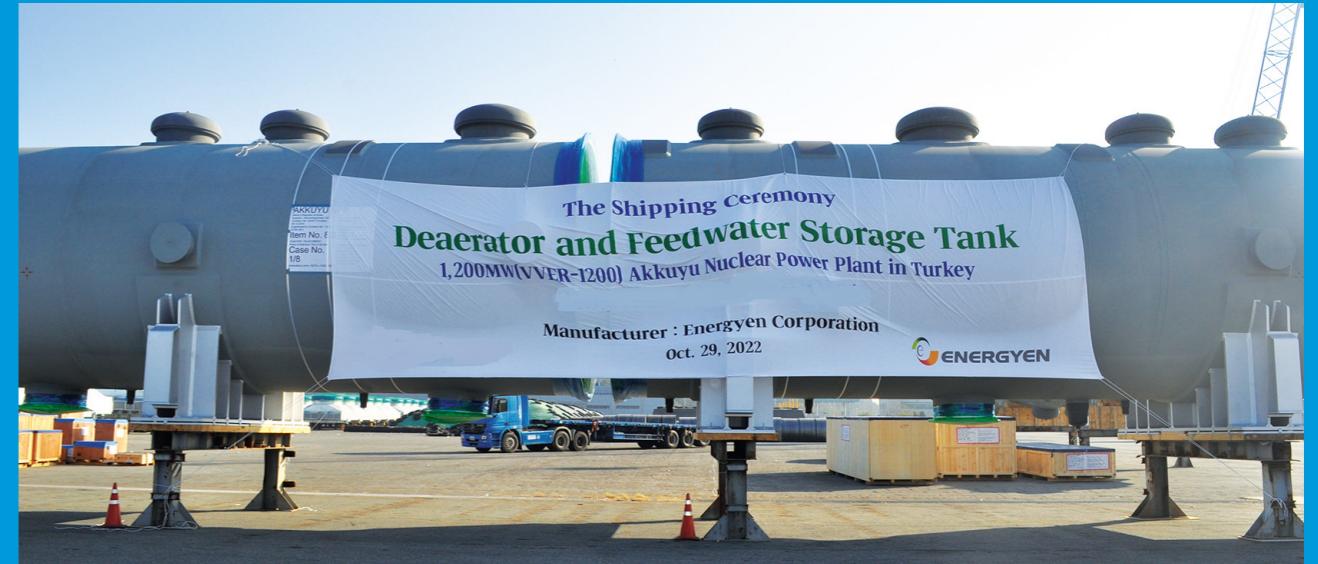
Because a single heater consists of cooling areas, condensing areas, and desuper-heating areas, this item requires thoughtful engineering and production.

ENERGYEN has superior technology and competitiveness for basic and detailed design of LP&HP Feedwater Heaters which are installed in thermoelectric, nuclear power plant etc. of domestic or overseas.

Also, ENERGYEN carries out the vibration, stress analysis and fatigue analysis to provide customer with improved quality and confidence.



1-3 | Degaerator & Storage Tank



- Client : Rosatom
- Project: Akkuyu Nuclear Power Plant (1,200MW)

This equipment extends life cycle of equipment by removing corrosive gases like dissolved oxygen and carbon dioxide in the water supply of a power plant or industrial plant. It is designed and produced in vertical, horizontal, and single body forms, depending on the capacity of water supply.



ENERGYEN's Degaerator type incorporates many special design features that assure the efficient and reliable deaeration and offer the cost saving and easy maintenance.

With over 20 years of know-how and technology, ENERGYEN has supplied over than 500 sets including 1000 MW in the Domestic/Overseas thermal power plant.

Through continuous research and development, ENERGYEN can guarantee to remove dissolved oxygen by 5ppb and carbon dioxide by 100%.

Through many experience, we have a solution to trouble shooting which has occurred frequently, and through continuous design improvement, we have technological competitiveness differentiated from other engineering companies.

Designs / manufactures / provides optimal deaerator in accordance with international relevant standards such as ASME, PED, JIS, KS, METI, DOSH, MIGAS etc.



1-4 | Closed Cooling Water Heat Exchanger



■ Client: Rosatom ■ Project : Akkuyu Nuclear Power Plant (1,200MW)
 ■ Size: OD2,500 x 12,140L ■ Weight: 61,720 kg

Closed Cooling Water Heat Exchanger is designed to cool water in the closed system.
The cooled water is supplied to various cooler such as pump.

The closed cooling water flows toward the shell of the heat exchanger and it is cooled by seawater or service water that flows toward the tube of the heat exchanger.

ENERGYEN has superior technology and competitiveness for basic and detailed design of Closed Cooling Water Heat Exchangers, which are installed in domestic and overseas thermoelectric and nuclear power plants.

Also, ENERGYEN carries out the vibration, stress analysis and fatigue analysis to provide customer with improved quality and confidence.

ENERGYEN can carry out the welding between tube and tubesheet with stainless, titanium, copper-nickel with latest equipment such as orbital welding machine.

Especially, we can apply rubber lining, ceramic coating and glass flake coating on channel inside to prevent corrosion from sea water.



1-5 | Low Pressure Turbine Outer Casing



■ Client: Rosatom ■ Project : Akkuyu Nuclear Power Plant (1,200MW)

1-6 | Steam Pipelines



■ Client : Rosatom ■ Project: Akkuyu Nuclear Power Plant (1,200MW)

1-8 | Steam Drum



— Client : Nooter Eriksen — Project: Turakurgan — Size: 114T x ID1,879 x 13,411L — Weight: 114,000 kg

A steam drum is a reservoir of water/steam at the top end of the boiler.

The drum stores the steam generated in the water tubes and acts as a phase-separator for the steam/water mixture.

Based on considerable manufacturing experience, ENERGYEN has excellent welding technology and qualified welders related to special materials such as titanium, low alloy steels, etc.

Through systematic quality verification, ENERGYEN ensures quality and provides high reliability for our customers.



1-9 | District Heater



— Client : Siemens — Project: Wirye Combined Heat and Power Plant — Size: ID1,910/2,270mm x 9,000L — Weight: 30 ton

The district heating system consists of DH heater. The DH heaters are connected to steam heaters where district heating steam is introduced from the IP turbine exhaust and from the bypass valve.

During normal operation, IP exhaust steam is led to DH heaters for DH supply.

In case of start-up/shut-down, steam turbine trip, and peak, the DH supply bypass steam from main steam line(HRH/LP) and shall be separately led to DH heaters through the bypass valves.

ENERGYEN is capable of thermal and fabrication design and has a proven track record for both domestic and overseas projects of DH heaters.



1-10

Replacement for Nuclear Power Plant



Choose our Replacement Business services for reliable, customized solutions that meet regulatory standards and improve a nuclear power plant's efficiency.



Track Record

With our extensive track record in the replacement industry, ENERGYEN delivers reliable and effective replacement solutions.

Tailored Approach

ENERGYEN's solutions are customized to meet the unique requirements of each nuclear power plant.

Compliance

ENERGYEN ensures adherence to strict regulatory standards through the replacement process.

Efficiency

ENERGYEN's solutions are designed to enhance the overall plant performance, minimize disruptions, and reduce costs.

1-11

Reactor and Module Fabrication for SMR system



SMR is an advanced and scalable nuclear power solution designed for clean, reliable, and flexible electricity generation. With its compact design and innovative features, it offers a game-changing approach to meet the growing energy demands of the modern world.

ENERGYEN offers qualified Reactor and Module Fabrication service for SMR systems leveraging superior welding and modularization technology.

ENERGYEN has a proven track record for Skid/Module fabrication.

ENERGYEN specializes in the assembly of skids for small modular reactors. We ensure precise fabrication, seamless integration, and effective deployment for optimal performance.

Petrochemical * & LNG Industry



2-1 | Reactor



Due to low price of natural gas, gas based process are now very popular.

A chemical reactor is an enclosed volume in which a chemical reaction takes place. In chemical engineering, it is generally understood to be a process vessel used to carry out a chemical reaction, which is one of the classic unit operations in chemical process analysis. The design of a chemical reactor deals with multiple aspects of chemical engineering.

Project	Golden Pass LNG
End User	Exxon Mobil
Customer	CCZJV
Size	W1,613 x L9,449(mm)
Major Material	A516-70
Weight	65.5 Tons
Location	Texas, USA
Delivery Date	2020



2-2 | Column and Vessel



A pressure vessel is a closed container designed to hold gases or liquids at a pressure substantially different from the ambient pressure. In the Petrochemical industry, a pressure vessel is used as a recipient in which physical and chemical processes take place, often at elevated temperatures and pressures.

Project	HPC
End User	Hyundai Chemical
Customer	Hyundai Engineering
Size	W5,500 x L9,200(mm)
Major Material	SA516-70
Weight	167 Tons
Location	Daesan, Korea
Delivery Date	2020

2-3 | Shell & Tube Heat Exchanger



A shell and tube heat exchanger is a class of heat exchanger designs. It is the most common type of heat exchanger in oil refineries and other large chemical processes, and is suited for higher-pressure applications. There can be many variations on the shell and tube design. Typically, the ends of each tube are connected to plenums (sometimes called water boxes) through holes in tubesheets. The tubes may be straight or bent in the shape of a U, called U-tubes.

Project	Gas Train 5 at MAA Refinery
End User	KNPC
Customer	Tecnicas Reunidas
Size	W2,794 x L13,475(mm)
Major Material	SA516-70N/SA240-316L
Weight	132.6 Tons
Location	Kuwait
Delivery Date	2017



2-4 | Evaporator



Evaporators turn waste into clean water that can be reused or stored for ongoing industrial or drilling operations.

Evaporators are designed to help plants meet stringent discharge regulations by recycling untreated waters back into their processes. This allows industry to reduce the need to draw fresh water from lakes, rivers, or aquifers.

Project	UZBEKISTAN GAS TO LIQUID PROJECT
End User	OLTIN YO'L GTL
Customer	SUEZ
Size	W3,330 x L12,190(mm)
Major Material	SB338 Gr.12, SA240-S31803
Weight	85 Tons
Location	Uzbekistan
Delivery Date	2019

2-5 | LNG Vaporizer

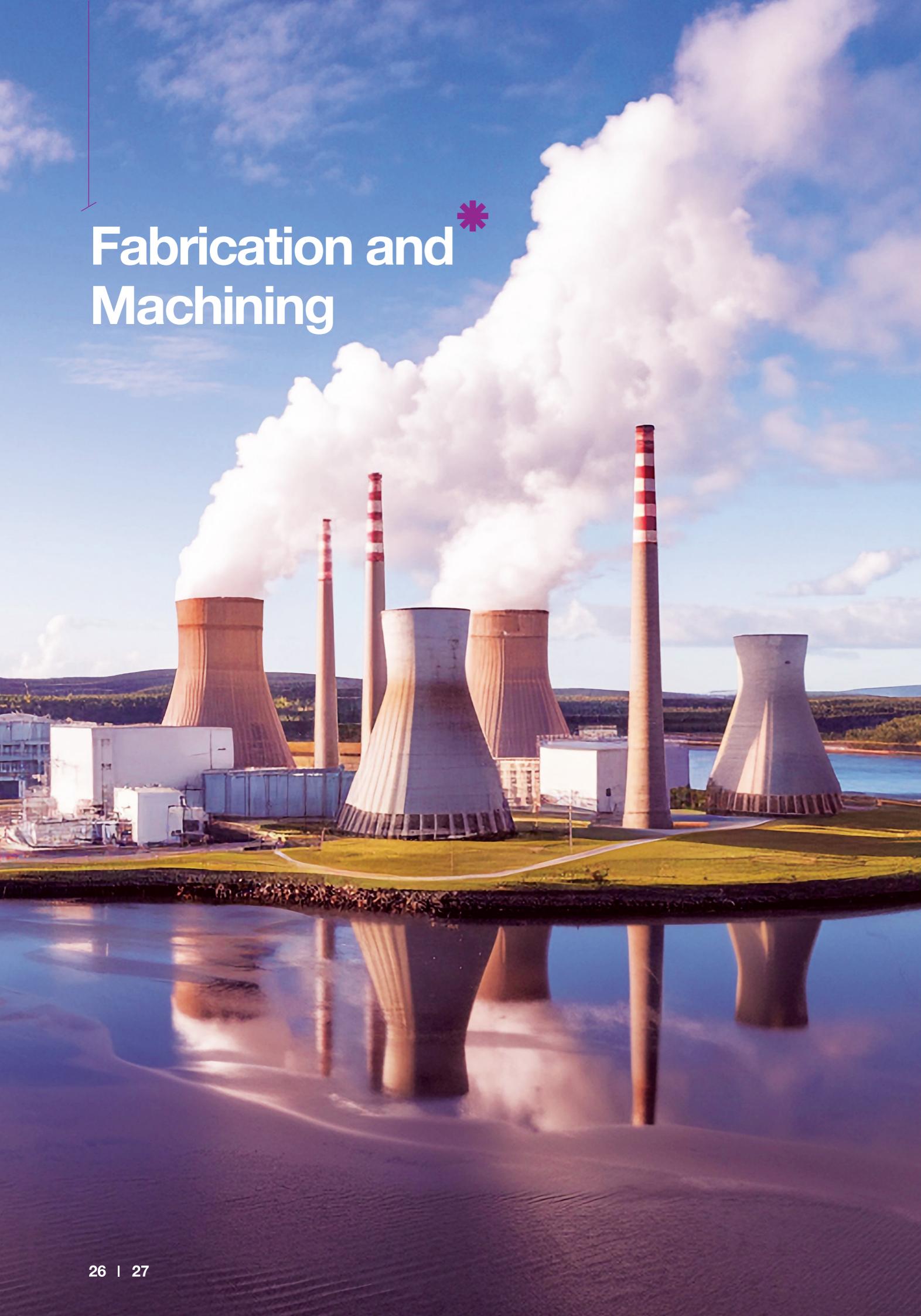


Core Components in today's Oil & Gas Industries

Shell & Tube Vaporizers offer significant advantages, when compared to competing designs, for LNG regasification applications - onshore and FSRU

Project	PTTLNG NONG FAB LNG RECEIVING TERMINAL PROJECT
End User	PTT LNG
Customer	KOBELCO
Size	W2,750 x L10,500 (mm)
Major Material	SA213M TP304, SA240M Gr.304
Weight	34.9 Tons
Location	Thailand
Delivery Date	2020

Fabrication and



3-1 | **Tension Ring / Diverter**



Tension Ring is a part attached to telescopic joint forming termination point between riser system and tensioning system, which is used to provide better stability to riser string.



The Diverter is used on floating drilling rigs to divert shallow gas overboard prior to installation of the BOP.

The diverter consists of the diverter insert and the diverter support housing, which is used on platforms and jack-up rigs to protect against shallow gas kicks during drilling operations.

3-2 | Stator Frame



This is a cylindrical cell positioned inside the power generator, internally equipped with a stator, rotor, coils, radial shaped rings and spring bar.

As a part of power generator that requires precise machining, it is accurately produced to withstand abrupt load variation in a power generator, 3-phase short circuits, and hydrogen gas explosion.



3-3 | End Shields / Bearing Brackets



These covers are mounted at both ends of a cylindrical power generator to support the power generator rotor bearing and equipped with an oil deflector and a hydrogen seal casing to prevent leakage.

These products require the accurate machining and specific tests to guarantee proper functioning.



Facility*



Horizontal Boring Machine

X-Axis : 12,000 mm Y-Axis : 5,000 mm
 Z-Axis : 1,400 mm Ram 800
 Rotary Table Size: W4,000 x L4,000



Drill Master

X-Axis: 6,900 mm Y-Axis: 5,500 mm
 Z-Axis: 1,200 mm Cutting Capacity: ø16~ø60
 End Milling: ø30 x DP10 Face Milling: ø150 x DP3



CNC Vertical Turning Lathe

Max. Cutting Dia. : OD 4,300 mm
 Max. Height 3,000 mm



CNC Planer Milling Machine

X-Axis : 4,200 mm Y-Axis : 3,850 mm
 Z-Axis: 2,750 mm Table Size: W2,000 x L4,000
 Max. Size for Machining: L6,000 x W2,700 x H3,500

Customer*

OVERSEAS Customers

GE Vernova
 Arabelle Solutions
 Rosatom
 Siemens Energy
 Ansaldo Nucleare
 Black & Veatch
 Mitsubishi Power
 Fuji Electric
 Toshiba Corporation
 Kobe Steel., Ltd
 Kiewit
 Veolia Water Technology
 John Cockerill
 Nooter Eriksen
 Chiyoda Corporation
 JGC Corporation

Korean Customers

KHNP (Korea Hydro Nuclear Power)
 Korea District Heating Corporation (KDHC)
 Hyundai Engineering & Construction Co., Ltd.
 Hyundai Engineering Co., Ltd.
 Hyundai Heavy Industries Co., Ltd. Samsung Engineering Co., Ltd.
 Samsung Engineering & Construction Daewoo Engineering & Construction Co., Ltd.
 Doosan Heavy Industries & Const. Co., Ltd.
 GS Engineering & Construction Corporation
 GS-Caltex Oil Corporation
 SK Engineering & Construction Co., Ltd.
 LOTTE Engineering & Construction Co., Ltd.