

# FEEDWATER HEATERS and DEAERATOR

KOREA Midland Power - Shinboryeong Thermal Plant Power Unit #1 and Unit #2

Shinboryeong Units #1 and #2 are each producing a minimum net electrical output of 1000MW.



Feedwater Heaters are inevitably required to promote the energy efficiency of electric power generation cycle.

Owners and operators are anxious to look for the most efficient and cost saving feedwater heater to assure a long life operation without trouble and a good performance.

To meet these client's needs, special and innovative design features have been introduced to ENERGYEN's feedwater heater.

ENERGYEN designs and manufactures both low pressure and high pressure feedwater heaters which may be installed either vertically or horizontally, depending on the plant design requirements.

The physical and thermal characteristics are vastly different between high and low pressure feedwater heaters.

Low pressure feedwater heaters range under 50kg/cm<sup>2</sup>G and high pressure feedwater heaters to 370kg/cm<sup>2</sup>G.

ENERGYEN offers the highly refined condensing, desuperheating and drain cooling zone designs to contend with severe operations, such as extreme superheat, abnormal flow conditions or dissipation of high energy fluids.

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

The system are composed of the following equipments :

Equipment	Data	D.P/D.T (kgf/cm <sup>2</sup> .G/°C)		Tubesheet Th'K
		Shell Side	Tube Side	
LP FWH #2/3/4		4.0 / 152(295)	43 / 152	6.3" (165mm)
HP FWH #6/7/8 A/B		100 / 320(461)	397 / 320	19.3" (490mm)
Equipment	Data	D.P/D.T (Bar.G/°C)		Capacity (Ton/Hr.)
Deaerator / Tank		15 & F.V / 344		3,055.3

## FEEDWATER HEATER



Inspection Drilling of 21.5"(545mm) tubesheet



DSH & DC Shroud



BTA Drilling Machine of 40"(1016mm) Tubesheet

Feedwater heaters are classified as low and high pressure heaters with one heater.

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



Assembled Shroud

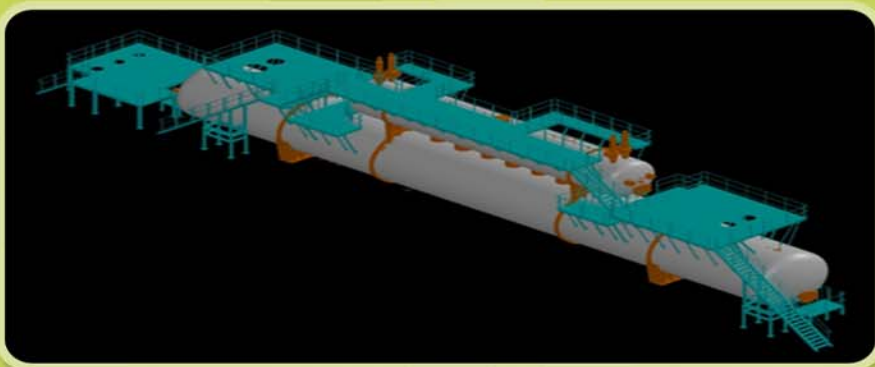


Strength Welding of Tube to tubesheet

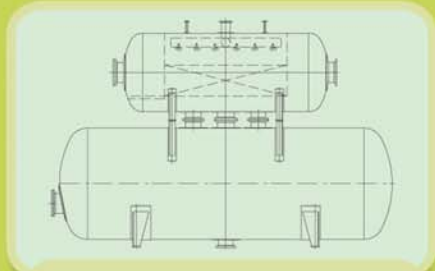


Hydraulic Expanding

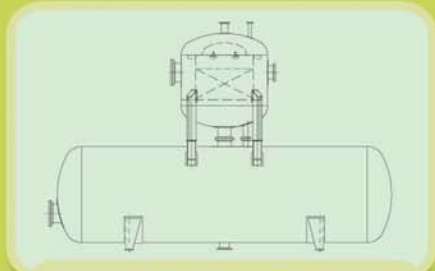
## DEAERATOR



The equipment extends life expectancies 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.



Separated Horizontal



Separated Vertical

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