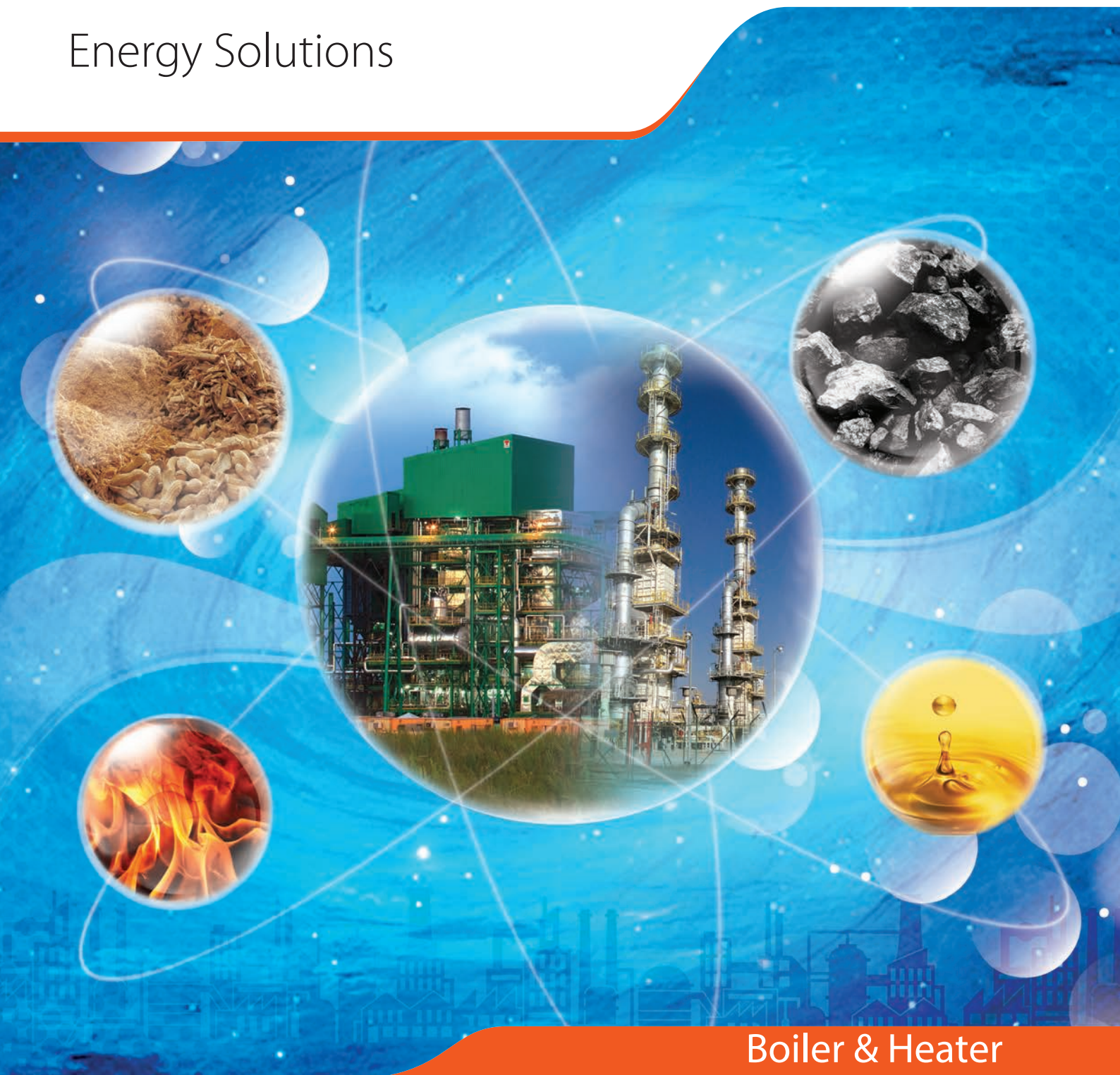


Energy Solutions



Boiler & Heater

Sustainable Solutions in Energy & Environment

Thermax is an engineering company that helps business enterprises perform competitively and sustainably in global markets. In over 86 countries, clients make use of Thermax's products and solutions for energy efficient and eco-friendly operations: heating equipment and power plants that use a wide variety of fuels including solar energy; absorption chillers that use heat in place of electricity; waste heat recovery units; water & waste water management, air pollution control systems; performance improving chemicals.

The company provides its customers value added services – audits of energy and water, system modifications for optimal use of resources, annual maintenance contracts, energy rentals and O&M of power and water installations.

Thermax operations are supported by innovative R&D and partnerships with global technology majors. It has an international sales & service network spread over 27 countries and state-of-the art facilities (in India, Denmark and China) that manufacture to international standards.

Thermax Babcock & Wilcox Energy Solutions (TBWES)

TBWES (wholly owned subsidiary of Thermax Limited) provides equipment and solutions for generating steam for process and power through combustion of various solid, liquid and gaseous fuels, as well as through heat recovery from turbine/engine exhaust and (waste) heat recovery from industrial processes. TBWES also offers heaters for various applications in the chemical, petrochemical and refinery segments.

Its services arm offers renovation and modernization solutions for old boilers and heaters.

The major industry segments served in india and across the world are steel, refinery, petrochemical, power, cement, sugar, distillery, fertilizer, paper, chemical, non ferrous metal and textile.

Thermax has always kept its primary focus on customer satisfaction through constant upgradation of technologies and an in-depth understanding of market needs.



Thermax Today

Global operation with 33 International offices, 12 Sales & Service offices & 11 manufacturing facilities - 7 in India and 4 overseas

Our presence spans 80+ countries across Asia Pacific, Africa and the Middle East, CIS countries, Europe, USA and South America

R&D Centre with focus on Combustion & Heat Transfer, Biotechnology, Material Science and Solar Thermal

Thermax's energy efficient and eco-friendly portfolio of technologies includes:

- ISO 9001: 2015 accredited
- ISO 14001: 2015 certified plant
- OHSAS 18001: 2007 certified plants
- Manufacturing facility spread over 100 acres at Shirwal & over 27 acres at Chinchwad near Pune in Western India
- Manufacturing facility spread over 100 acres at Savli near Vadodara Western India
- Assembly facility near Mundra Port region on Western Coast of India
- Manufactures to international standards-ASME, EN, TRCU, BS, DIN, UDT, IBR, PED etc.



Boilers



Heaters



Absorption Cooling



Air Pollution Control Equipment



Chemicals



Solar



Power Generation



Water & Waste Solutions

Our Installations in 50+ countries



THERMAX VISION

To be a globally respected high performance organisation offering sustainable solutions in energy and environment.



PROPRIETARY PRODUCT SECTION

06

SOLID FUELS, AGRO-WASTES, BIOMASS

- Bagasse & Biomass Fired Boiler



07

OIL AND GAS

- Single-Drum High Capacity Radiant Boiler
- Thermax D-Type Boiler (Thermstar)



08

LEAN GAS FIRED BOILER

- Blast Furnace Gas / Lean Gas Fired Boilers
- Waste Gas Fired Boiler (CO/H₂)



11

WASTE HEAT RECOVERY BOILER

- Exhaust Gas Boiler (EGB)
- Waste Heat Recovery Units(WHRU)
- WHRB in Sponge Iron Plant
- WHRB in Non-Ferrous Industry
- WHRB in Coke Oven/Coke Dry Quenching
- WHRB for Coal Gasification



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WASTE HEAT RECOVERY BOILER

- WHRB for Coke Calcination
- WHRB in Refinery & Petrochemical
- WHRB in Cement Plant
- WHRB in Chemical Plant
- WHRB in Sulphur Recovery Plant
- WHRB in Hydrogen Plant



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WASTE TO ENERGY

- Spent Wash Fired Boiler
- Waste to Energy Boilers



25

FIRED HEATER

- Fired Heater in Chemical & Petrochemical Plant
- Fired Heater in an Oil Refining or Refinery Plant



LICENSED PRODUCT SECTION

27

SOLID FUELS, AGRO-WASTES, BIOMASS

- Atmospheric Fluidized Bed Combustion (AFBC)
- Circulating Fluidized Bed Combustion (CFBC)



29

OIL AND GAS

- Bi-Drum Packaged/Site Erected Boiler (FM/HCFM/PFM)
- Heat Recovery Steam Generator (HRSG)



31

UTILITY BOILER TECHNOLOGY - SOLID, OIL AND GAS

- Subcritical Radiant Boilers
- Supercritical Boilers



SERVICES & SPECIAL SOLUTIONS

33

SERVICES

- Services Business
- Modularization - The Next Big Opportunity



Bagasse & Biomass Fired Boiler

Product Features

- Continues ash discharge
- Grate driven by hydraulic / planetary gear with VFD
- Catenary Design
- Fine control on grate speed variation
- Overlapping grate design prevents air leakages
- Overfire air system provides turbulence and thorough mixing of volatile gases, thus assuring complete combustion
- Online maintenance of grate
- Three / two stage superheater with inter stage feed water spray attenuator
- Tall furnace for complete combustion
- Pinhole or Pusher Grate offered for specific applications

Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.

Operating Range

- Capacity : Upto 300 TPH
- Pressure : Upto 150 kg/cm²(g)
- Temperature : Upto 550°C
- Fuels : Biomass, bagasse, wood chips, coconut shell, saw dust, rice husk, corn cob, cane leaves, king grass, napier grass, paper sludge, coal, roasted chaffs, DOB, palm waste, red gram stems, ground nut shell, rice straws, tapioca stem, mustard husk, cotton stalk, julia flora, coco husk, maize stalk, EFB, palm kernel shell, palm fibre etc

Manufactured as per Technology developed by Thermax



Major Clients

Sugar

- ♦ Mitr Phol Bio-Power, Thailand
- ♦ Korach Industry Company Ltd., Thailand
- ♦ Kamuna Sugar Ltd. UP, India
- ♦ Victorias Milling Company Inc., Philippines
- ♦ Zuker SA DE CV, Mexico
- ♦ Ambalika Sugar Pvt Ltd., India
- ♦ India Cane Sugar Ltd, India
- ♦ Bannari Amman Sugars Ltd. , India
- ♦ Dhampur Sugars Ltd. India
- ♦ Sri Chamundeshwari Sugars, India
- ♦ Ambalika Sugar Pvt Ltd. India
- ♦ URC Sonedco Sugar Corporation, Philippines
- ♦ Thip Kamphaengphet Bio Energy Co. Ltd.
- ♦ San Pedro Bio-energy, Dominican Republic
- ♦ PT Rejoso Manis Indo, Indonesia



1 unit of 140 TPH, 82 kg/cm²(g), 520°C bagasse, coal, king grass fired travelling grate boiler



Single-Drum High Capacity Boiler

Product Features

- Fully drainable, horizontal and convective superheater for longer life and high reliability
- Front wall firing for a variety of liquid and gaseous fuels (independently or in combination)
- Steam drum outside the flue gas path permits quick startup and load
- Large furnace size and volume ramp up
- Leak proof membrane wall design
- Steam cooled superheater supports for increased reliability
- Low refractory and thus reduced maintenance

Operating Range

- Capacity : Upto 500 TPH
- Pressure : Upto 160 kg/cm²(g)
- Temperature : Upto 560°C
- Fuels : Liquid fuels such as natural gas, purge gas, coke oven gas, #2 oil, #6 oil, heavy fuel oil, residue oil, HSD, naphtha, hydrogen gas, biogas, waste gas

Manufactured as per Technology developed by Thermax



1 unit of 175 TPH, 115 kg/cm²(g), 510°C natural gas, diesel fired boiler

Major Clients

Fertiliser

- ♦ L&T for Tata Fertilizer
- ♦ Oswal Chemicals & Fertilizers Ltd. (KRIBHCO)
- ♦ Madras Fertilizers Ltd.
- ♦ Chambal Chemicals & Fertilizers Ltd.
- ♦ Hindustan Fertilizer Corporation Ltd., Dibrugarh
- ♦ Egypt Fertilizer Co. Egypt
- ♦ Southern Petrochemicals Ind. Corp.
- ♦ Matix Fertilizers & Chemicals Ltd.
- ♦ Gujarat Narmada Valley Fertilizer Co.

Refinery & Petrochemical

- ♦ Arabian Petrochemical Co.
- ♦ Reliance Petroleum Ltd.
- ♦ Gas Authority of India Ltd.



Thermax D-Type Boiler (Thermstar)

Product Features

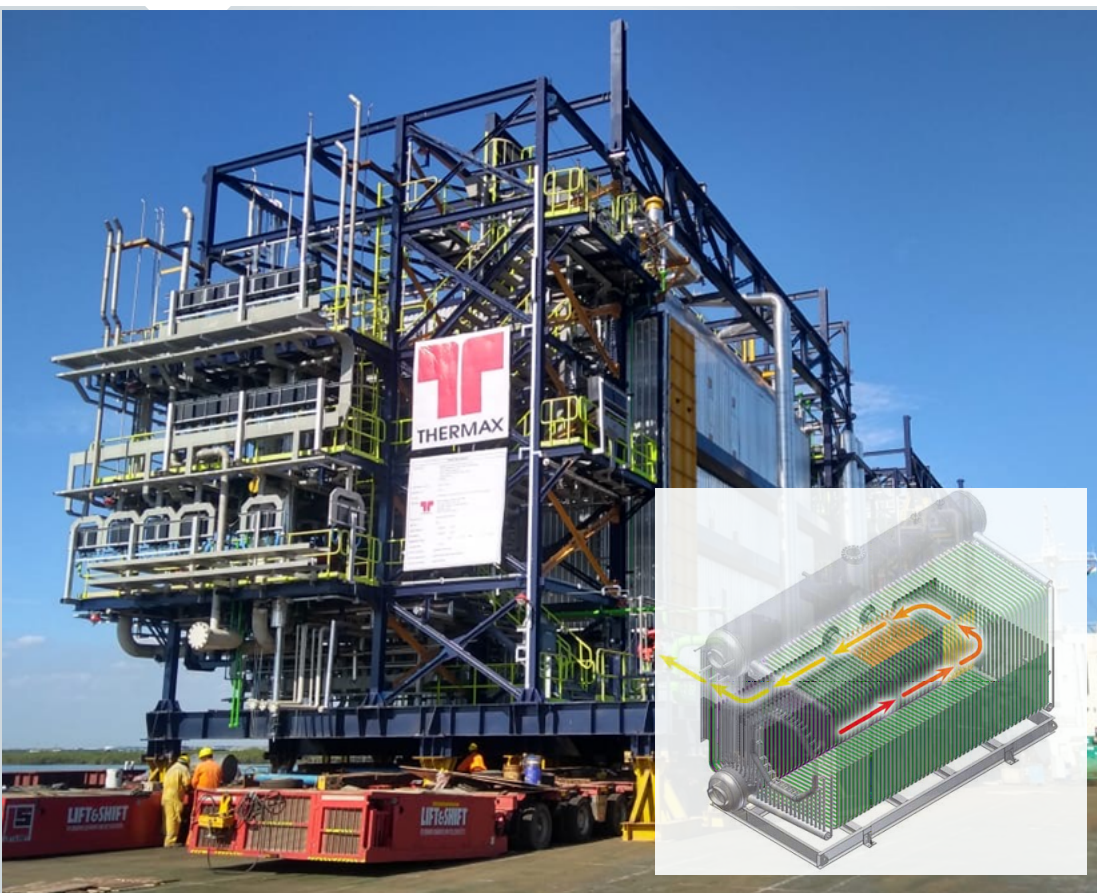
- Leak proof and Fully packaged Boilers with Modular construction
- High Quality fully automated membrane panel construction
- Demister Pads to ensure high steam purity
- Higher turndown ratio offered for better operational flexibility
- Convenient Burner Cleaning with steam purging if applicable
- Higher thermal efficiency by incorporating bare / fin tubes
- Conservative heat release rates for reliable operation and longer life
- Convective type superheaters with complete draining provision
- Accepts wide range of Oil and Gas fuels
- Available in field erected/modular/plug & play variants depending on site transportable limits

Manufactured as per Technology developed by Thermax



Operating Range

- Capacity : Upto 500 TPH
- Pressure : Upto 110 kg/cm²(g)
- Temperature : Upto 538°C



Major Clients

- ♦ Dangote Oil Refining Company, Nigeria
- ♦ National Mineral Development Corporation (NMDC), India
- ♦ JSW Steel, India

4 units of 400 TPH, 107 kg/cm²(g), 520°C Natural Gas fired D-type boiler



Blast Furnace Gas / Lean Gas Fired Boilers

Product Features

- Reliable design for combustion of low calorific value
- Auto switch over to oil firing in case of interruption in BFG supply
- Safe operation of boiler under varying load conditions
- Low volumetric heat release rate with larger boiler furnace
- Scroll burner for high mixing energy of air and BFG for efficient combustion
- Safety interlocks to ensure proper burning of BFG without support fuel
- Burners licensed by Babcock & Wilcox

Operating Range

- Capacity : Upto 500 TPH
- Pressure : Upto 100 kg/cm²(g)
- Temperature : Upto 560°C
- Fuels : Blast furnace gas, coke oven gas, Corex gas, LD gas & other lean gases

Manufactured as per Technology developed by Thermax



Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.



Major Clients

Steel

- ♦ Tata Iron & Steel Co. Ltd.
- ♦ Jindal Vijaynagar Steels Ltd., Bellary
- ♦ Kalyani Steels Ltd., Hospet
- ♦ Nagpur Alloys and Castings Ltd., Raipur
- ♦ Kirloskar Ferrous Industries Ltd., Hospet
- ♦ Steel Authority of India Ltd., Rourkela
- ♦ National Mineral Dev. Corp. Ltd.
- ♦ Bhushan Power & Steel Ltd.
- ♦ Rashtriya Ispat Nigam Ltd.

3 units of 220 TPH, 109 kg/cm²(g), 540°C syngas, natural gas fired BFG, COG, LDG, LDO fired blast furnace gas boilers





Waste Gas Fired Boiler (CO/H₂)

Waste gas fired boilers are designed to burn waste gas / tail gases to generate steam for process or power. Typical systems include:

- Carbon Black Plants (CO Gas)
- Ferro Alloy Plants (CO Gas)
- Caustic Soda Plants (H₂ Gas)

Salient Features

- Natural circulation design
- Fire tube or water tube boilers
- Special refractory lined combustor for burning lean gas
- Adequately sized combustor for proper residence time to ensure complete burning of gas
- Membrane wall water tube construction to minimize refractory and increase radiant heat transfer
- Control systems to ensure complete combustion of lean gas

Operating Range

- Capacity : Upto 250 TPH
- Pressure : Upto 100 kg/cm²(g)
- Temperature : Upto 540°C

Manufactured as per Technology developed by Thermax



Major Clients

Chemical

- ♦ Hi-Tech Carbon Ltd.
- ♦ Philips Carbon Black Ltd.
- ♦ Continental Carbon
- ♦ Cabot Corporation
- ♦ Thai Carbon Black
- ♦ Birla Carbon
- ♦ BA Energy, Canada
- ♦ Himadri Chemicals & Industries Ltd.
- ♦ Goodluck Carbon Pvt. Ltd.

Refinery & Petrochemical

- ♦ Abu Dhabi Oil Refining Company (Takreer)
- ♦ Saudi Elastomers Project



1 unit of 100 TPH, 46 kg/cm²(g), 375°C CO fired waste gas boiler



Exhaust Gas Boiler (EGB)

Salient Features

An exhaust gas boiler recovers heat from the flue gases of genset to produce steam, hot water or thermic fluid for various heating / cooling applications.

Key features of our offering:

- Enhance system efficiency in genset based power plants upto 10%
- Available in configurations of water tube and smoke tube type
- Expertise to integrate with all makes of engines

Manufactured as per Technology developed by Thermax



Applications

- Auxiliary oil heating, tank farm heating, line tracing
- Process heating
- Combined cycle
- Steam / hot water for industrial chilling
- Power generation

Operating Range

- EGB installed on 0.5 MW to 50 MW genset installations
- 2 stroke and 4 stroke engines
- Light oil, heavy oil and gas fired engines



Major Clients

Steel

- ♦ Abul Khair Steel & Power - 9.6 mw
- ♦ Ispat Metallics Ltd.
- ♦ Jindal Alloy & Steel Company Ltd.
- ♦ Bhushan Steel Ltd.

Textile

- ♦ Alok Industries Ltd.
- ♦ Garden Silk Mills Ltd.
- ♦ Jindal Polyester Ltd.
- ♦ Indian Rayon Corp. Ltd.
- ♦ National Rayon Corporation Ltd.
- ♦ Rajasthan Spinning & Weaving Mills Ltd.
- ♦ Rajshree Polyfils td.
- ♦ Recron Synthetics Ltd.
- ♦ Indorama Synthetics Ltd.
- ♦ SRF Ltd.



21 units of 7.5 TPH, 18 kg/cm2(g), 310°C



Waste Heat Recovery Units (WHRU)

WHRUs are engineered to recover waste heat from the exhaust of gas turbines or reciprocating engines, heating media could be water glycol mixture or thermal oil or water depending on the application. These units are installed on

- Offshore platforms.
- Floating Production Storage and Offloading Vessels (FPSO's).
- LNG tanker
- Onshore terminals and gas processing plants.

There are over 100 installations for the upstream oil & gas segment. These units are working in very diverse locations such as Sakhalin island, Asian offshore waters, North Sea, Africa offshore & the Americas.

Manufactured as per Technology developed by Thermax



This offers special features such as:

- Compact space saving design
- Integral bypass facility
- Online isolation of WHRU
- Single stack option
- Removable tube bundle
- Optimum gas side pressure loss
- Supplementary fired units - with FAF
- without FAF



Major Clients

FPSO

- ♦ Bumi Armada, Malaysia A/c ENI, Italy-Block 15/6 FPSO, Angola
- ♦ Nigerian National Petroleum Corporation (NNPC)- Chevron, Agbami FPSO, Nigeria
- ♦ Petrobras America Inc., P43, P48, P51 & P52, Brazil
- ♦ MODEC Inc., Singapore A/c Petrobras America Inc, MV 27 Carioica, Brazil
- ♦ BP Exploration , BP / KBR Block
- ♦ Maersk-- Husky Oil Co.
- ♦ Shell Bonga
- ♦ BW Offshore, Norway A/c Petrobras America Inc, Chinook & Cascade, Brazil offshore

Offshore

- ♦ Unocal Thailand Ltd. Pailin Offshore Thailand
- ♦ PTT Thailand, Offshore, Bongot, Thailand
- ♦ Essar Offshore A/c ONGC, Neelam Heera Platform, India
- ♦ B.P Exploration, Offshore UK North Sea
- ♦ Samsung A/c CTOC Cakerawala Project Offshore Thailand/Malaysia
- ♦ NPCC Technip A/c ADMA OPCO- Umm Al Lulu Offshore Abu Dhabi

Onshore

- ♦ Siemens, UK A/c Burullus Gas Co. Egypt
- ♦ Petrofac A/c Hayan Petroleum Company, Jihar Onshore Syria
- ♦ Hyundai A/c Abu Dhabi Marine Operating Company (ADMA-OPCO) Satah Al Razboot (SARB), UAE



5 units of 36.19 mw waste heat recovery unit



WHRB in Sponge Iron Plant

Thermax is pioneer in supplying waste heat recovery boilers for sponge iron plants and has around 471 installations. The boilers are designed to handle large amounts of dust from the flue gas generated in the rotary kilns. The steam generated from these boilers is typically used for power generation.

- Pioneer in waste heat recovery in sponge iron plant
- More than 150 installations
- Design considers high dust in gases
- Horizontal design on 100 TPD DRI kiln for greater operational comfort
- Vertical design for 100 TPD, 200 TPD 350 TPD, 500 TPD and 650 TPD

Manufactured as per Technology developed by Thermax



Salient Features

- Natural circulation water tube design
- Gas tight side wall of water wall construction

Operating Range

WHRB on 100 TPD, 200 TPD, 350 TPD, 500 TPD, 650 TPD

- Pressure : From 44 kg/cm²(g) up to 115 kg/cm²(g)
- Temperature : Upto 540°C

Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.



Major Clients

Steel

- ♦ Jindal Steel & Power Ltd.
- ♦ Bhushan Power & Steel Ltd.
- ♦ Bhushan Steel & Strips Ltd.
- ♦ Tata Sponge Iron Ltd.
- ♦ Rashmi Metallica
- ♦ Ispat Godavari Ltd.
- ♦ Shree Metallica Ltd.
- ♦ Singhal Enterprises
- ♦ Janaki Corporation Ltd.
- ♦ Tata Metallica
- ♦ Super Smelters
- ♦ Gallant Ispat
- ♦ Rungta Mines Ltd.
- ♦ BMM Ispat
- ♦ Shakambhari Ispat & Power Ltd.



5 units x 32 TPH at 35 kg/cm²(g), 380°C WHRB in Sponge Iron Plant



WHRB in Non-Ferrous Industry

- Waste heat boiler on **zinc pyrite roasters**
- Waste heat boiler on **copper smelters**
- Waste heat boiler on the **copper convertors**

In non-ferrous industry it is common practice to have a boiler operating at high pressure but without superheat. This facilitates the operation of the boiler well above the dew point of the gases.

Manufactured as per Technology developed by Thermax



Salient Features

- Forced circulation water tube design
- Gas tight side wall of water wall design
- Wide pitched in-line geometry to prevent choking
- On-line hammering system
- Baffles to prevent channeling of gases
- Provision of cavity followed by variable pitch convection coils

Operating Range

- Capacity : 10 TPH to 100 TPH
- Pressure : 45 -60 kg/cm²(g)
- Temperature : Upto 400°C



Major Clients

Non Ferrous

- ♦ Birla Copper
- ♦ Cominco Binani Zinc Ltd.
- ♦ Hindustan Copper Ltd.
- ♦ Pyrites Phosphates & Chemicals Ltd.



WHRB for 300 TPD Copper Converter Unit to produce 21 TPH of steam at 45 kg/cm²(g) at saturation temperature



WHRB in Coke Oven / Coke Dry Quenching Plant

- Pioneer in waste heat recovery in coke oven plant
- Water wall panel construction in 1st / 2nd pass
- Site / port assembly with modularized construction
- Horizontal / vertical design
- Optional blast furnace firing capability
- Natural / forced circulation design for coke dry quenching plant

Operating Range

- Capacity : Upto 150 TPH
- Pressure : Upto 120 kg/cm²(g)
- Temperature : Upto 540°C

Application

- Non recovery coke oven plant
- Recovery type coke dry quenching plant

Manufactured as per Technology developed by Thermax



Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.



Major Clients

Steel

- ♦ Hooghly Met coke & Iron Ltd. (Tata Power)
- ♦ Jindal Steel & Power Ltd.
- ♦ Bhushan Power & Steel Ltd.
- ♦ Konark Met coke Ltd. (Neelanchal Ispat Ltd.)
- ♦ Electrosteel Casting Ltd.
- ♦ Global Coke Ltd.
- ♦ Lanco Industries Ltd.
- ♦ Tata Steel Ltd.
- ♦ Steel Authority of India Ltd.
- ♦ National Mineral Dev. Corp. Ltd.
- ♦ Sesa Goa Ltd.
- ♦ Global Coke Ltd.
- ♦ Electrosteel Casting

Refinery & Petrochem

- ♦ Petroleum Development Oman (PDO)



12 units of 24.5 TPH,
96 kg/cm²(g), 540°C WHRB in
coke oven plant

3 units of 25TPH, 66 kg/cm²(g),
500°C WHRB in coke dry quenching
plant



WHRB for Coal Gasification

Thermax is a leading manufacturer in the field of waste heat recovery boilers for coal gasification. The steam generated from these boilers is typically used either for power generation or process.

Product Features

- Pioneer in waste heat recovery in coal gasification plant
- Hammering arrangement for effective cleaning of heat transfer surface
- Water wall panel construction
- Site / port assembly with modularized constructions
- Horizontal design
- Natural circulation design

Manufactured as per Technology developed by Thermax



Operating Range

- Capacity : Upto 200 TPH
- Pressure : Upto 130 Kg/cm²(g)
- Temperature : Saturated to 540°C



Major Clients

- ♦ Jindal Steel & Power Ltd, Barbil



2 units of 15 TPH, 60 kg /cm²(g) 500°C WHRB in coal gasification



WHRB for Coke Calcination

Thermax is a leading manufacturer in the field of waste heat recovery boilers for coke calcination plants. The steam generated from these boilers is typically used either for power generation or process.

Product Features

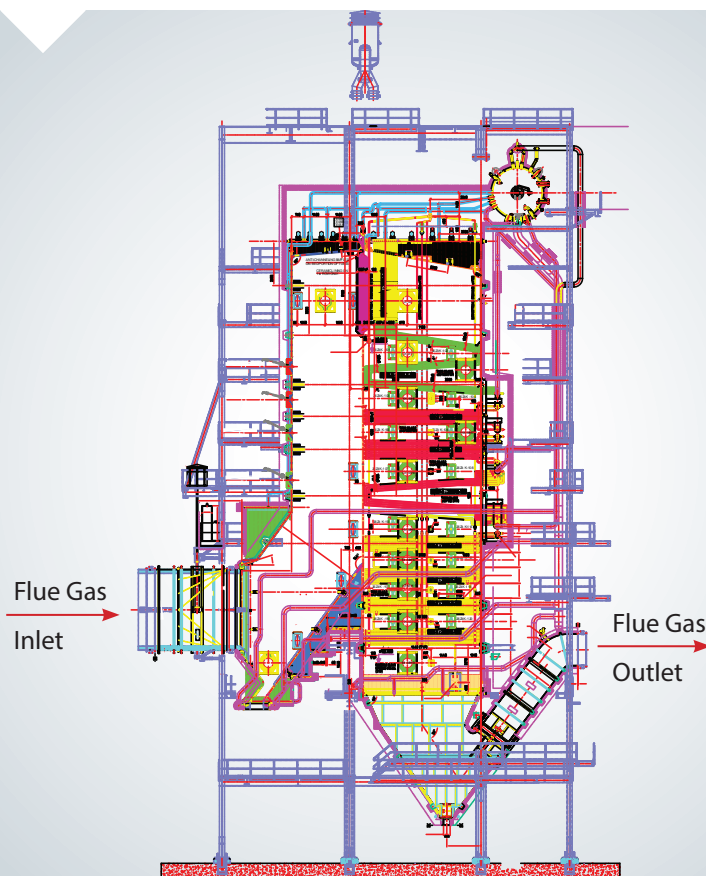
- Pioneer in waste heat recovery in coke calcination plant
- Soot blowing arrangement for proper operation
- Water wall panel construction in 1st / 2nd pass
- Site / port assembly with modularized constructions
- Horizontal / vertical design

Manufactured as per Technology developed by Thermax



Operating Range

- Capacity : Upto 200 TPH
- Pressure : Upto 130 Kg/cm²(g)
- Temperature : Saturated to 540°C



Major Clients

- ♦ One of the esteemed installation in UAE



2 units of 94.12 TPH, 42.1 kg/cm²(g), 381° C WHRB in coke calcination



WHRB in Refinery & Petrochemical Plant

Fluid Catalytic Cracking Unit (FCCU)

- Waste heat recovery boiler downstream of FCCU
- One of the world's largest WHRB designed and supplied to Dangote Oil Refinery Company
- Experience in handling very large volume of flue gases e.g. normal operating conditions of 515,000 Nm³/hr at 731°C containing catalytic dust
- Two different technologies are available
 - Directly downstream of FCCU
 - 'CO' gas boiler downstream of FCCU

Manufactured as per Technology developed by Thermax

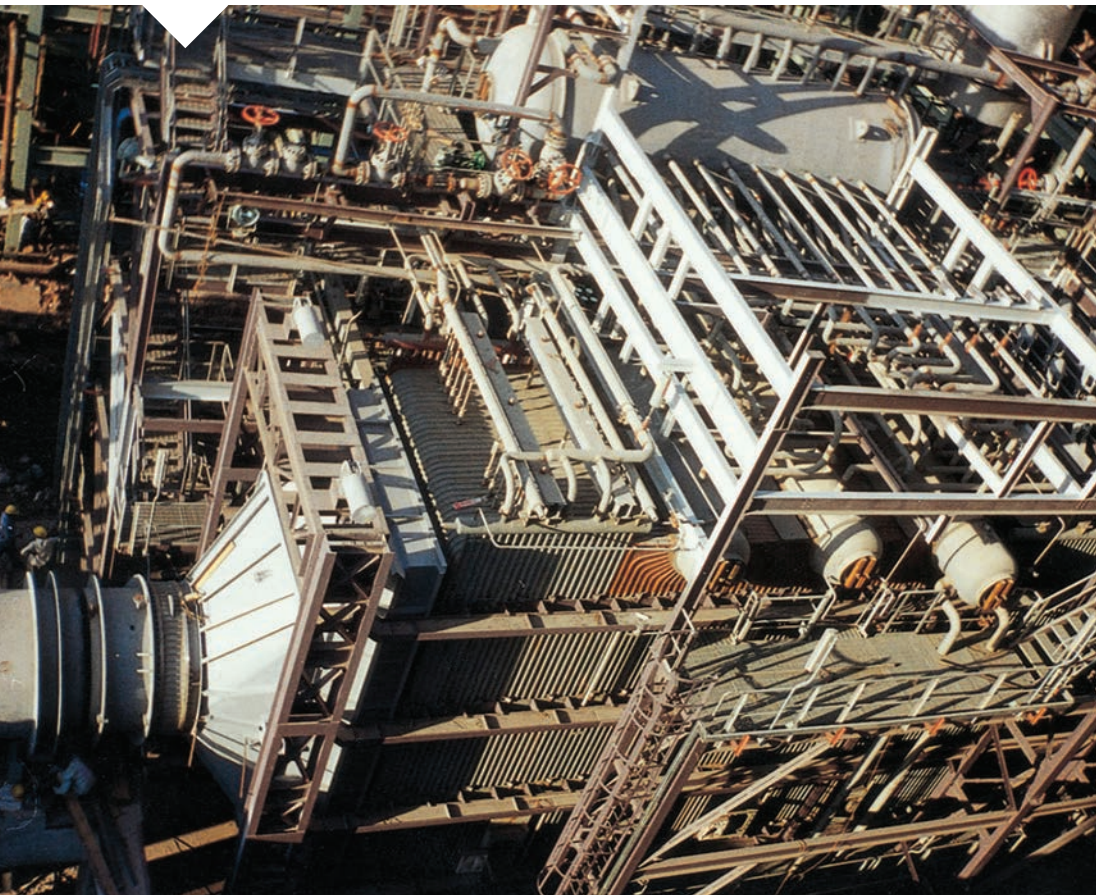


Salient Features

- Designed to take care of carry-over catalytic dust
- Complete membrane panel construction to take care of sulphur dew point
- Soot blowers at suitable locations to take care of dust laden gases
- Natural circulation design
- Fully drainable design of superheater
- Co-current and drainable economizer

Operating Range

- Capacity : Upto 400 TPH
- Pressure : Upto 100 kg/cm²(g)
- Temperature : Upto 540°C



Major Clients

Refinery & Petrochemical Plant

- ♦ Reliance Industries Ltd.
- ♦ Indian Oil Corporation Ltd.
- ♦ Hindustan Petroleum Corporation Ltd.
- ♦ Mangalore Refinery & Petrochemicals Ltd.
- ♦ HPCL - Mittal Energy Ltd. (HMEL)
- ♦ Algiers Refinery, Algeria
- ♦ Saudi Aramco Mobil Refinery Limited (SAMREF), Saudi Arabia
- ♦ Bharat Petroleum Corporation Ltd.
- ♦ Dangote Oil Refining Company, Nigeria



1 unit of 103 TPH, 43 kg/cm²(g), 400° C WHRB in Refinery & Petrochemical Plant



WHRB in Cement Plant

Cement manufacturing is a highly energy-intensive process. Given the fragile and dynamic nature of the fuel and power situation faced by cement plants today, it makes sense for them to adopt waste heat recovery based solution for the following reasons:

- Greater energy security (helps meet upto 35% of power requirement)
- Improved competitive positioning
- Regulatory push (Policies mandating use of minimum 5-10% renewable/WHR energy are already in place in several states)

Operating Range

- Capacity : 1,800 TPD to 10,000 TPD of clinker production

Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.

Salient Features

a. Waste heat recovery boiler for pre-heater and calciner

- Vertical/horizontal boiler with natural / forced circulation
- Inline/Staggered heat transfer area
- Fully field proven de-dusting hammering mechanism

b. Waste heat recovery boiler for clinker cooler (with and without center tap off)

- Vertical boiler with horizontal tubes
- Proven design for highly abrasive AQC gases
- Natural circulation boilers

Manufactured as per Technology developed by Thermax



Major Clients

Cement

- ♦ Dhar Cement Ltd.
- ♦ JK Cement Ltd.
- ♦ JK Lakshmi Cement Ltd.
- ♦ Wonder Cement Ltd.
- ♦ Rain Cement Ltd. (Priya Cement)
- ♦ Gujarat Sidhee Cement Ltd.
- ♦ Ultra Tech Cement Ltd.
- ♦ Reliance Cement Company Pvt Ltd.
- ♦ Nuvoco Vistas Corp. Ltd.



Generating 72 TPH at 17 kg/cm² (g), 325°C WHRB in Cement Plant



WHRB in Chemical Plant

Sulphuric Acid Plant

- Can be offered as fire tube / water tube construction
- Experience in offering flexible / fired tube sheet design for fire tube boilers
- Experience in handling high gas side operating pressures upto 6000 mmWC (special construction of economizer and superheater is provided)
- Cast iron gilled ring economiser to prevent sulphur corrosion
- Equipment - boiler, superheater, economiser
- Gas outlet temperature control at every equipment is required for efficient conversion of acid gas

Manufactured as per Technology developed by Thermax



Nitric Acid / Caprolactum Plants

- Nitric Acid Plants are either low pressure or high-pressure systems
- The type of boiler used is either
 - Natural circulation fire tube
 - Forced circulation water tube
- The NH₃ burner is normally included as a part of the unit
- Gas tight construction with stainless steel material
- Heating coils to prevent dew point corrosion
- Wall cooling coils to protect the shell
- Lamont nozzles for uniform distribution of water in the coils

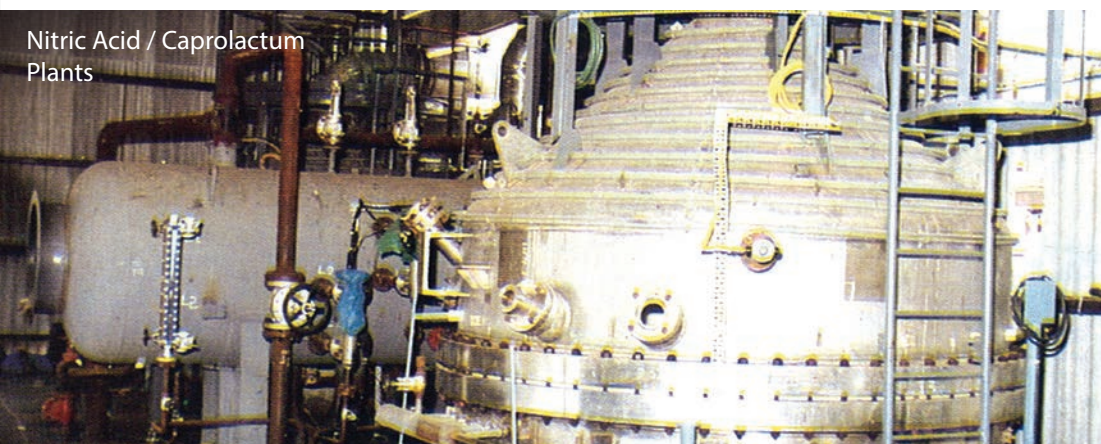
Operating Range

- Capacity : 20 TPD to 5000 TPD sulfuric acid production

Sulphuric Acid Plant



Nitric Acid / Caprolactum Plants



Major Clients

Chemical

- ♦ Hitachi Zosen
- ♦ Mitsui Engg. & Shipbuilding Co.
- ♦ Sterlite Industries Ltd.
- ♦ Hindustan Heavy Chemicals
- ♦ Birla Copper
- ♦ Indian Explosives Ltd.
- ♦ PT. South Pacific Viscose
- ♦ Shree Sulphuric Acid Ltd.
- ♦ Southern Petrochemical Industries Corp. Ltd.

Fertiliser

- ♦ Gujarat State Fertiliser
- ♦ Bagfas Fertilizer Co., Turkey
- ♦ Shivalik Fertilisers Chemicals Ltd.
- ♦ Bharat Fertilisers Ltd.
- ♦ FACT
- ♦ Gujarat State Fertiliser Corp.

Others

- ♦ Saudi Arabian Mining Company (Ma'aden)
- ♦ Andhra Sugars Ltd.
- ♦ Anil Starch Products Ltd.
- ♦ Metazinc Ltd.



3 units of 261 TPH,
68 kg/cm²(g), 500° C WHRB in
Sulphuric Acid Plant

Ammonia burner with waste heat boiler
in Nitric Acid / Caprolactum Plants



WHRB in Sulphur Recovery Plant

Main Reaction Furnace

- WHB downstream of main reaction furnace
- Fire tube boiler
- Experience in designing and supply of boiler where gas inlet temperature is around 1300°C - 1400°C
- Multipass arrangement in same shell of boiler or separate shell with common steam drum
- Steam heated sulphur drains at outlet / intermediate gas chambers
- Experience in design and supply of flexible / fired tube sheet

Tail Gas Incinerator

- WHB downstream of tail gas incinerator
- Water tube / fire tube design
- Modularised construction
- Experience in supplying superheater made of T22, T91, Incoloy material

Manufactured as per Technology developed by Thermax



Major Clients

Refinery & Petrochem

- ♦ Reliance Petroleum Ltd.
- ♦ Cochin Refineries Ltd.
- ♦ Indian Oil Corporation Ltd.
- ♦ Hindustan Petroleum Ltd.
- ♦ Bharat Petroleum Corp. Ltd.
- ♦ Bahrain Petroleum Co.
- ♦ Dolphin Energy Ltd., Qatar
- ♦ HMEL -HPCL Mittal Energy Ltd.
- ♦ Mangalore Refinery & Petrochemicals Ltd.

3 units of 45 TPH at 38 kg/cm² (g) WHRB in Sulphur Recovery Plant





WHRB in Hydrogen Plant

Reformed Gas / Process Gas Boiler

- Fire tube boiler configuration
- Flexible tube sheet design
- Alloy steel tubes to overcome metal dusting (such as T11, T22, etc.)
- Internal bypass provided with liner to control the gas outlet temperature
- Incoloy ferrules anchored in the inlet tube sheet refractory
- Separate steam drum connected by risers and downcomers
- Heat sensitive paint on the inlet box
- High gas side operating pressures (around 30 Kg/cm²g)

Manufactured as per Technology developed by Thermax



- Gas rich in H₂ / CO / CH₄
- Common steam drum for reformed gas boiler and flue gas boiler

Flue Gas Boiler / Convection Section of Hydrogen Reformer

- Water tube / fire tube type design
- Designed to handle heating of different liquids
- Capacity to design and manufacture high capacity boilers

Operating Range

- Capacity : 30 TPD to 5000 TPD Hydrogen Production



Major Clients

Chemical

- ♦ Gujarat Godrej Innovative Chemicals Ltd.
- ♦ National Peroxide Ltd.
- ♦ Hindustan Petroleum Corporation Ltd.



WHRB in Hydrogen Reformer at HPCL Mumbai

Spent Wash Fired Boiler

“Distillery Waste to Energy”

- Effective solution for power and process steam requirements of distillery
- To meet the zero liquid discharge statutory norm
- Continuous operation of boilers as much as you want without cleaning
- Can fire spentwash with less than 48% solid concentration
- First to introduce concept of 3 pass boiler design
- Potash rich fly ash generates good revenue & eliminates disposal problem
- Cost optimised design to cater to micro distillery capacity of less than 30 klpd
- Highest number of operating boilers

Manufactured as per Technology developed by Thermax



Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.



Major Clients

Sugar

- ♦ Bannari Amman Sugars Ltd.
- ♦ Nirani Sugars Ltd.
- ♦ Indian Sugar Manufacturing Co. Ltd.
- ♦ Nandi Sahakari Sakkare Karkhane
- ♦ EID Parry Ltd.
- ♦ Shivshakti Sugars Ltd.
- ♦ Sar Senapati Santaji Ghorpade Sugar Factory Pvt. Ltd.
- ♦ Daund Sugar Ltd.
- ♦ Shri Ambalika Sugar Pvt. Ltd.
- ♦ Godavari Biorefineries Ltd.
- ♦ Sai Priya Sugars Ltd.
- ♦ Satish Sugars Ltd.
- ♦ Athani Sugars Ltd.
- ♦ Krantiagrani Dr. G.D. Bapu Lad SSK
- ♦ Kunjir Bioenergy India LLP
- ♦ Jaywant Sugars Ltd.
- ♦ Venkateshwara Power Project Ltd.
- ♦ Karmaveer Shankarrao Kale SSK Ltd.



2 units of 33 TPH, 44 Kg/cm²(g), 400°C spent wash fired boilers

Waste to Energy Solutions

Designed and Engineered for Excellence

- Based on our rich experience in firing difficult fuels, we offer solutions for fuels like agriculture waste, spent wash, paper sludge, Non-Recyclable Solid Waste, Refuse Derived Fuel, segregated Municipal Solid Waste & other Industrial process wastes.
- Special inclined Reciprocating Grate technology with better controllability and efficient combustion.
- Hydraulic Ram feeders for feeding large size fuel
- Multi pass boiler for ensuring enough residence time and effective heat transfer
- Suitable pressure part arrangement & metallurgy for corrosion protection
- Integrated with Gas Cleaning Plant to meet local emission norms.

Our Solutions

- Reciprocating Grate Multi pass WTE boiler
- Heat Recovery WTE boiler downstream of Gasifiers, Stokers or Rotary Kilns
- Interface Engineering

Operating Range

- Single line capacity 50 - 600 TPD
- Pressure - Upto 67 kg/cm²(g)
- Temperature - Upto 430 °C

Manufactured as per Technology developed by Thermax



Major Clients

- ♦ Shalivahana (MSW) Green Energy Ltd.
- ♦ Mehali Papers Private Limited
- ♦ Jurong Engineering Limited
- ♦ Vital Energi Utilities



Biomass IPP, 1 X 400 TPD RDF cofired unit



Fired Heater in Chemical & Petrochemical Plant

The Fired Heaters in the Chemical and Petrochemical plants are for

- Heating process fluid
- Thermal cracking

Two types of designs can be offered depending on the application

- Vertical cylindrical
- Box type furnace

Application

Liquid phase heaters for

- Mineral oils / synthetic oils
- Molten salt heaters

Vapour phase heaters for

- Synthetic oil / mineral oil vaporisers
- Hydrocarbon vaporisers

Process industry heaters

- Steam superheaters
- Charge heaters
- Start-up heaters

Crackers

- Ethylene di chloride cracker
- Acetic acid cracker
- Gas cracker

Thermax offers high efficiency heaters by incorporating outboard or onboard steam generators / air pre-heaters

Manufactured as per Technology developed by Thermax



Operating Range

- Capacity : Upto 150 MMKcal/hr (Single unit)



2 units of 6.34 MMKcal/hr hot oil heaters



1 unit of 13.5 TPH, 30.5 kg/cm²g, 280°C, out board steam generator on cracking furnace

Major Clients

Refinery & Petrochem

- ♦ Chennai Petroleum Corporation Ltd.
- ♦ Haldia Petrochemicals Ltd.
- ♦ Indian Petroleum Corporation Ltd.
- ♦ Southern Petrochemicals Industries Corp.

Chemical

- ♦ Mangalore Chemicals & Fertilisers Ltd.
- ♦ Egyptian Propylene & Polypropylene Company (EPPC)
- ♦ Chemplast Sanmar Ltd.
- ♦ Finolex Industries Ltd.
- ♦ National Peroxide Ltd.
- ♦ Pyrites Phosphates & Chemicals Ltd.
- ♦ Sudarshan Chemicals Industries
- ♦ Tamilnadu Petroproducts Ltd.

Others

- ♦ Cominco Binani Zinc Ltd.
- ♦ Nirma Ltd.

Textile

- ♦ India Polyfibres Ltd.
- ♦ Orissa Synthetics
- ♦ Gas Authority of India Ltd.
- ♦ Farabi Petrochemicals Ltd, Saudi
- ♦ Arabia



Fired Heater for Crude Oil Refinery Plant

The Fired Heaters in the Chemical and Petrochemical plants are for

- Heating process fluid
- Thermal cracking

Two types of designs can be offered depending on the application

- Vertical cylindrical
- Box type furnace

Manufactured as per Technology developed by Thermax



Application

- Crude distillation unit
- Vacuum distillation unit
- Delayed coker unit
- Fluid catalytic cracker unit (FCCU)
- Diesel hydro desulfurization treatment (DHDT) plants
- Naphtha vaporizers in hydrogen
- Motor spirits quality (MSQ) heaters
- Naphtha splitter unit (NSU)

Operating Range

- Capacity : Upto 150 MMKcal/hr (Single unit)



Major Clients

Refinery & Petrochem

- ♦ Reliance Industries Ltd.
- ♦ Indian Oil Corporation Ltd.
- ♦ Bharat Petroleum Corporation Ltd.
- ♦ Qatar Petroleum
- ♦ Bharat Oman Refinery Ltd.
- ♦ Shell Inc., Gabon (West Africa)
- ♦ Mangalore Refinery & Petrochemicals Ltd.
- ♦ HPCL Mittal Energy Ltd.
- ♦ PDO, Lekhwar Project, Oman
- ♦ Hindustan Petroleum Corporation Ltd. ♦ Lekhwar Project, PDO Oman
- ♦ Kuwait Oil Corporation
- ♦ Gas Authority of India Ltd.
- ♦ Dangote Oil Refining Company, Nigeria

1 unit of 50 MMKcal/hr Heater for Delayed Coker Unit (DCU)

Atmospheric Fluidized Bed Combustion Boiler (AFBC)

Product Features

- Multifuel firing
- Optimum combustion with staged secondary air system
- Machine welded membrane panel
- Better steam purity
- Bed evaporator design for higher reliability
- Pin studs welded on inbed surfaces
- Overbed as well as underbed feed system offered

Operating Range

- Capacity : Upto 300 TPH
- Pressure : Upto 160 kg/cm²(g)
- Temperature : Upto 540°C
- Fuels : Coal, lignite, rice husk, pet coke, spent coffee ground, washery rejects, low ash coal, paper sludge, roasted chaffs, DOB, bagasse, pith woodchips, biomass

Manufactured under License from Babcock & Wilcox, USA



Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.



1 unit of 25 TPH, 45 kg/cm²(g), 480° C coal fired boiler

Major Clients

Chemical

- ♦ DCW
- ♦ Chemplast

Cement

- ♦ Gujarat Ambuja
- ♦ JK Cement
- ♦ Shree Cement
- ♦ Madras Cement

Paper

- ♦ Orient Paper Mills
- ♦ West Coast Paper Mills Ltd.
- ♦ Bataan 2020
- ♦ Khanna Papers Mills Ltd.
- ♦ TNPL
- ♦ Naini Tissues

Steel

- ♦ Bhushan Ltd.
- ♦ Nav Bharat Ferro Alloys Ltd.
- ♦ JSW Energy Ltd.
- ♦ Usha Martin, Jamshedpur
- ♦ KJS Steel Ltd.

Others

- ♦ Nestle
- ♦ Birla Tyres
- ♦ Eco oils Sdn Bhd
- ♦ Ruchi soya oil Industries Ltd.

Circulating Fluidised Bed Combustion Boiler (CFBC)

Product Features

- Compact, economical design and construction
- Impact separation with 'U-beam' particle separators
- Best-in-class compliance with environmental norms
- Low auxiliary consumption
- Minimum refractory
- Bottom-ash cooler

Operating Range

- Capacity : Upto 1000 TPH
- Pressure : Upto 200 kg/cm²(g)
- Temperature : Upto 560°C
- Fuels : High ash/ low ash coal, pet coke, sludge, oil pitches, biomass, high-sulphur coal, petcoke, washery rejects, mill rejects, agro wastes

Manufactured under License from Babcock & Wilcox, USA



Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.



Major Clients

Chemical

- ♦ Kanoria Chemical
- ♦ GHCL Ltd.
- ♦ Vinachem DAP-2 Project
- ♦ RSPL

Cement

- ♦ Ultratech Cement Ltd.
- ♦ Saurashtra Cement
- ♦ ACC Ltd.
- ♦ Jaiprakash Associates Ltd.
- ♦ Sagar Cement
- ♦ Sharjah Cement

Refinery

- ♦ Reliance Utilities & Power Pvt. Ltd.

Paper

- ♦ Ballarpur Industries Ltd.
- ♦ ITC Ltd.

Steel

- ♦ Suryadev Alloys & Power Pvt. Ltd.
- ♦ IMFA Ltd.
- ♦ Kamachi Sponge & Power Corpn. Ltd.

Textile

- ♦ Grasim Industries Ltd.
- ♦ Indian Rayon & Inds. Ltd.
- ♦ Welspun Captive Power Generation Ltd.

Sugar

- ♦ Bajaj Infrastructure Development Company Ltd.



5 units of 500 TPH, 125 kg/cm²(g), 535°C Indonesian coal, Indian coal, petcoke fired boilers



Bi-Drum Packaged/ Site Erected Boiler (FM/HCFM/PFM)

Product Features

- Package boiler completely pre-engineered with packaged design
- Special design of drum internals for high steam purity
- Membrane / studded wall water-cooled furnace construction
- Fully drainable convective superheater
- Fine combustion control and high turndown ratios

Operating Range

- Capacity : Upto 275 TPH
- Pressure : Upto 125 kg/cm²(g)
- Temperature : Upto 538°C
- Fuels : All liquid and gaseous fuels, waste fuels, tar, hydrogen, refinery gases

Manufactured under License from Babcock & Wilcox, USA



1 unit of 273 TPH, 65 kg/cm²(g), 500° C Arabian light crude oil & natural gas fired PFM boiler

Major Clients

Chemical

- ♦ Qatar Vinyl Company Ltd., Qatar
- ♦ Trust Chemicals Industries LLC, Egypt
- ♦ TCI Sanmar Chemicals
- ♦ Egyptian Propylene & Polypropylene Company
- ♦ Saudi Basic Industries Corporation (SABIC)

Fertiliser

- ♦ Galaxy Project FZCO for Burrup Fertilizers Pty. Ltd., Australia
- ♦ Indorama Eleme Fert & Chem.Ltd.
- ♦ Gujarat Narmada Valley Fertilizers Co Ltd.

Mining

- ♦ Saudi Arabian Mining Company (Ma'aden)

Refinery & Petrochemical

- ♦ Buzzichelli Maroc - Sonara Limbe Refinery Project
- ♦ Reliance Utilities & Power Pvt. Ltd.
- ♦ Sabic Petrokemya, Saudi Arabia
- ♦ Lurgi Aktiengesellschaft Ein Unternehmen der for PDH AlfaseL, Saudi Arabia
- ♦ KBR for Chevron Energy, Nigeria
- ♦ Dangote Oil Refining Company
- ♦ Cairn Energy India Pvt. Ltd. for Northern Area Development Mangala And Rageshwari Fields, Rajasthan
- ♦ Hindustan Petroleum Corporation Ltd.
- ♦ National Petrochemical Industrial Co. (NatPet)
- ♦ ONGC Mangalore Petrochemicals Ltd.



Heat Recovery Steam Generator (HRSG)

Product Features

- Proven design with more than 90 installations
 - Natural circulation design for higher reliability
 - Tripple pressure with two stage firing
 - Fully welded construction for quicker start-ups and shutdowns
 - Special drum internals which ensure high steam purity
 - Gas tight internally insulated ducting and casing
 - Fully drainable superheater for higher reliability
 - Strategic soot blowing for oil firing
 - Firing gases and #2 oil in the duct burner
 - Modular construction
 - Highest reliability despite slow burning
- Manufactured under License from Babcock & Wilcox, USA



Operating Range

- Capacity : Gas turbine size of 320 MW
- Pressure : Upto 160 kg/cm²(g)
- Temperature : Upto 566°C
- Fuels : Natural gas/ naphtha / HSD / kerosene / refinery fuel gas etc.

Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.



1 unit of 405 TPH, 83 kg/cm²(g), 310°C natural gas, associated gas + FAF fired boiler

Major Clients

Chemical

- ♦ BASF PETRONAS Chemicals Sdn Bhd, Malaysia
- ♦ Rashtriya Chemicals and Fertilizers Ltd., (RCF)

Fertiliser

- ♦ Oswal Chemicals & Fertilizers Ltd. (KRIBHCO)
- ♦ Chambal Fertilisers and Chemicals Ltd., India

Power

- ♦ Aban Power Ltd.
- ♦ Internusa A/c Bekasi Power, Indonesia
- ♦ Essar Power A/c Vadinar Power Co. Ltd., India
- ♦ Lanco Infratech Ltd, India, Kondapalli, Andhra Pradesh

Refinery & Petrochemical

- ♦ Daelim for Numaligarh Refinery
- ♦ Reliance Petrochemicals Ltd.
- ♦ Emirates National Oil Company (ENOC), Dubai
- ♦ Dangote Oil Refining Company, Nigeria
- ♦ Abener for Hassi R'mel project, Algeria
- ♦ Jacobs Netherlands BV For Schoonebeek Oilfield redevelopment Project, Netherlands
- ♦ Bharat Petroleum Corporation Ltd.
- ♦ ONGC Mangalore Petrochemicals Ltd.

Subcritical Radiant Boilers

Radiant Boiler - Carolina Type (RBC)

- Horizontal convection pass, vertical pendant type heat transfer surfaces
- RBC is designed to fire pulverized coal and/or fuel oil and/or natural gas or any combination thereof.

Operating Range

- Capacity : Upto 3175 TPH
- Pressure : Upto 168 kg/cm²(g)
- Temperature : Upto 585 °C

Radiant Boiler - El Paso Type (RBE)

- Compact design which includes up flow and down flow horizontal convection passes
- RBC is designed to fire fuel oil and/or natural gas or any combination thereof.

Operating Range

- Capacity : Upto 3175 TPH
- Pressure : Upto 168 kg/cm²(g)
- Temperature : Upto 585 °C

Manufactured under License from Babcock & Wilcox, USA

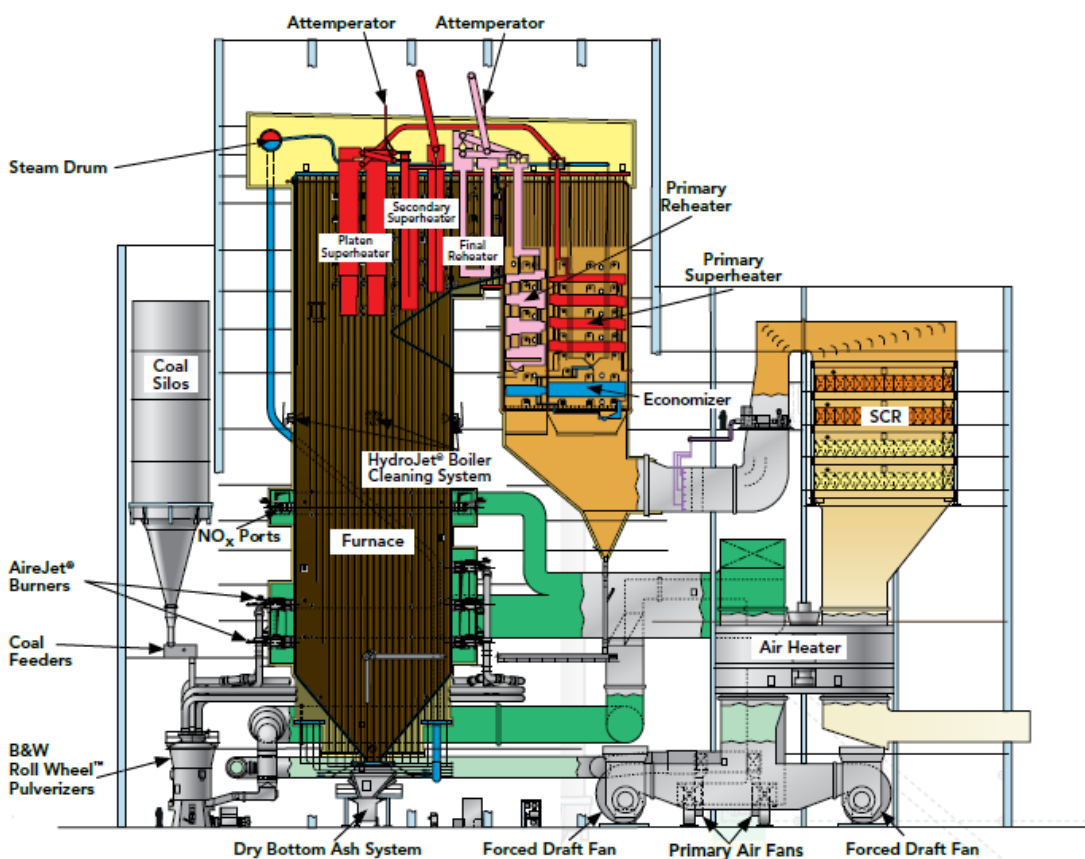


Low NOx Combustion Systems

- DRB XCL Burner - Low NOx PC Fired burner
- XCL-S - Low NOx Oil and Gas Burner
- Dual Airzone NOx port - Overfire Air System
- Low NOx combustion systems offer advanced design and rugged construction for proven performance and superior reliability.

Major Clients

- ♦ JSW, India



Our licensor B&W has extensive worldwide experience in designing, manufacturing, installing and servicing 700+ Utility Radiant Boilers upto 900 MW

Supercritical Boiler

Product Features

- A once through boiler for supercritical applications
- Water cooled dry bottom furnace, superheater, reheater, economizer and air preheater.
- Designed for base load and full boiler variable pressure load cycling operation as well as on/off cycling operation.
- Spiral furnace design ensures better and uniform heat transfer and variable pressure operation.
- Split back pass design with biasing dampers to ensure zero reheater spray.
- Proven opposed wall firing for wide range of coal grades.
- Variable pressure operation down to 125 kg/cm²(g).
- Conservative design of superheater and reheater surfaces to address operational flexibility.

Boiler-Turbine-Generator (BTG) package can be offered on case-to-case basis.

Operating Range

- Capacity : Upto 4535 TPH
- Pressure : Upto 246 kg/cm²(g)
- Temperature : Upto 620°C
- Fuels : Pulverized Coal

Manufactured under License from Babcock & Wilcox, USA



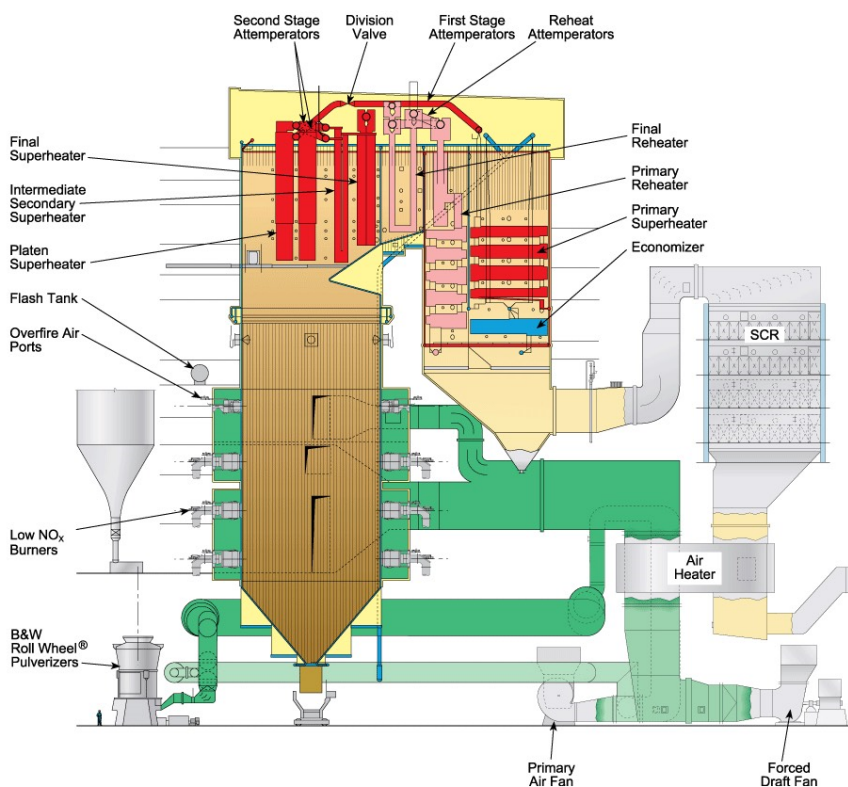
Roll Wheel Pulverizer

- Type: Vertical, air swept Roll & Race
- Capacity: 15 - 104 TPH
- Maintains fineness & capacity throughput wear life of grinding elements.
- Allows independent movement of each roller while maintaining design performance with upto 40% weight of roll wheel tires.

Spiral Wound Universal Pressure Boiler (SWUP)

Major Clients

- ♦ Babcock & Wilcox, USA for AES Masinloc, Philippines
- ♦ Babcock & Wilcox, USA for DH3, Vietnam



Our licensor B&W has extensive worldwide experience in designing, manufacturing, installing and servicing 90+ Supercritical Boilers



Services Business

A Strategic Business Unit exclusively addressing the Services Business of TBWES, has been successfully catering plant renovation & modernization concerns since the early 1990s. The R&M approach, that tail solutions for boiler users, have benefited more than 200 customers around the world. Today, these solutions are at work boosting process efficiencies across a diverse spectrum of industries that include among others, power utilities, petrochemicals, refineries, fertilizers, steel, cement, sugar and paper.

- Provides one-stop solutions to all kinds and makes of boilers and fired heaters
- Undertake performance improvement and revamping projects, engineering & feasibility studies, energy audits, annual service and maintenance contracts, spares, condition assessment & remaining life assessment studies, O&M services, etc.
- Dedicated construction management team to provide total turnkey solutions

- Having staff strength of 90 including personnel from marketing, process and detail engineering, project management, procurement, QAC, field services, commissioning and post sales services
- Country wise local partners in Middle East, South East Asia, Africa, select markets in Latin America & Europe.

Plant Improvement Projects

- Engineering studies
- Efficiency improvement
- De-Bottlenecking of boiler operation / performance
- Fuel conversion / retrofits & firing system upgrades
- Upgrades emission control / reduction
- Technology upgrades
- Plant relocation
- Services for upgrades / conversions
- Replacement in Kind / refurbishment

Certain CA , RLA technologies & Utility Boiler R&M Licensed from Babcock & Wilcox, USA



Major Clients

Chemical

- ♦ Columbia Carbon, Spain
- ♦ Alexandria Carbon Black, Egypt
- ♦ Thai Carbon, Thailand
- ♦ Egyptian Propylene & Polypropylene Co., Egypt
- ♦ Indorama Thailand

Fertiliser

- ♦ EDFU, Egypt
- ♦ Matix Fertilizers, West Bengal
- ♦ Madras Fertilizer Ltd, Chennai
- ♦ Chambal Fertilisers Ltd, Kota
- ♦ Gujarat Narmada Valley Fertilizers, Gujarat
- ♦ IFFCO, Kalol, Phulpur
- ♦ National Fertilizer Ltd, Panipat, Bathinda, Nangal
- ♦ Zuari Agro, Goa
- ♦ Deepak Fertilizers & Petrochemicals Corporation
- ♦ Rashtriya Chemicals & Fertilizers (RCF)

Others

- ♦ Maruti Udyog Ltd, Haryana
- ♦ Nestle, Thailand, Philippines and Ivory Coast
- ♦ Airliquide, Thailand
- ♦ PT Gunanusa, Indonesia
- ♦ Foster Wheeler, U.K
- ♦ URC Philippines
- ♦ Ultratech Cement Ltd, Rajasthan
- ♦ Indian Navy
- ♦ National Thermal Power Corporation



Plant Services

- Annual inspection contracts
- Annual maintenance contracts
- Proactive expert visits
- Breakdown services- tube failure analysis
- Operation & Maintenance contract of boilers
- Remote Commissioning

Spares

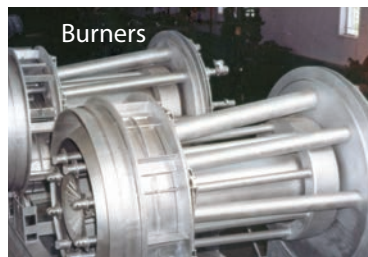
- Pressure parts
- Air Preheater – tubes & tube sheets
- Burners
- Branded / Patented fuel firing equipment like stoker, feeders, mechanical spreaders, pneumatic spreaders, bubble caps, air nozzles
- Spares for rotating equipment
- Electrical & Instrumentation items spares
- Miscellaneous spares for piping and IBR fitting , control valves, process valves, safety valves, motorized valves, dampers, bellows & supports

Condition Assessment (CA) and Remaining Life Assessment (RLA) Studies

- RLA of boiler pressure parts is undertaken to verify their present condition and find out their remaining life. RLA tool is effectively employed not only to know condition of pressure parts but correlate with boiler operation for reliability & improvement purposes.
- In RLA multiple nondestructive and metallurgical tests are done for accurate measurement of thickness, dimensions and finding any anomalies which includes erosion, corrosion, cracks, bulging etc.



Inbed evaporator



Burners



Grate

Design & Fabrication



Heat Exchangers



Combustor



Steam Drum – Process and Steam generation



Deaerators

Major Clients

Refinery & Petrochem

- ♦ Petronas Gas Berhard, Malaysia
- ♦ Petrokemya, Saudi Arabia
- ♦ Orpic - Sohar Refinery, Oman
- ♦ Gulf Petrochemicals Industries, Bahrain
- ♦ SAPREF, South Africa
- ♦ Reliance Industries Ltd, Jamnagar, Dahej, Hazira
- ♦ Reliance Industries Ltd, Vadodara, Nagothane
- ♦ Hindustan Petroleum Corporation Ltd, Mumbai
- ♦ Bharat Petroleum Corporation Ltd, Mumbai & Kochi
- ♦ Chennai Petroleum Corporation Ltd, Chennai
- ♦ Manglore Refinery & Petrochemicals Ltd, Manglore
- ♦ Indian Oil Corporation Ltd, Vadodara, Barauni & Bongaigaon
- ♦ Essar Oil, Vadinar
- ♦ Dolphin, Qatar
- ♦ Malaysia LNG Sdn Bhd
- ♦ Takreer Abu Dhabi Refinery

Sugar

- ♦ Mitrphol Thailand
- ♦ Cristalla Sugar Thailand

Steel

- ♦ Jindal Steel & Power Ltd.
- ♦ Vedanta Ltd, Goa
- ♦ Tata Steel Ltd, Jamshedpur



Modularization - The Next Big Opportunity

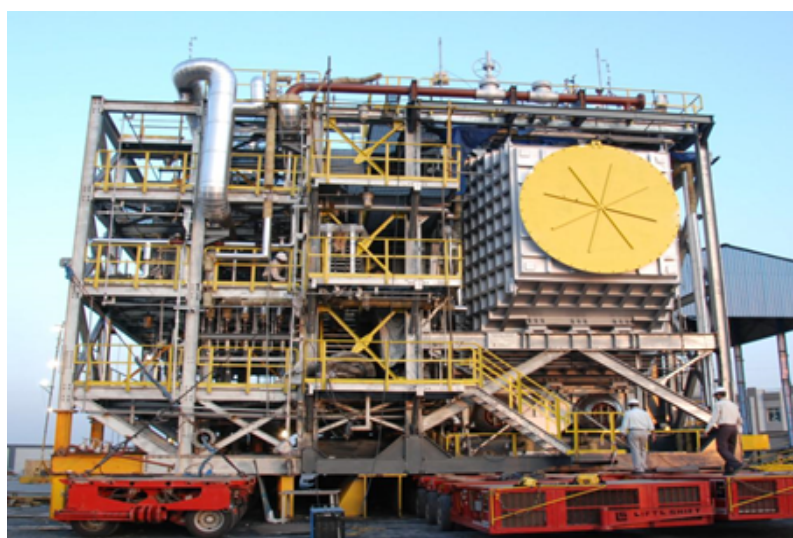


- The Mundra Assembly Yard is located just 2 miles from the port.
- The facility is 100% owned & operated by TBWES to maintain strictest control over Quality & Workmanship.
- The facility is ISO certified & ASME U stamp accredited.
- The facility is equipped to assemble up to 10 boilers simultaneously -
 - 6 Platforms that can assemble Modules weighing up to 4,000 Tons with footprint of 20 m Wide x 40 m Long
 - 4 Platforms that can assemble Modules weighing up to 1,000 Tons with footprint of 14 m Wide x 38 m Long
- Access to the port by wide roads with ability to handle cargo
- Coverage of the entire Yard by CCTV for remote monitoring
- The port is capable of both Roll On Roll Off (RoRo) or Lift On Lift Off (LoLo) type shipments

Roll On Roll Off (RoRo)



Lift On Lift Off (LoLo)



**MODULARISATION -
FASTER, EFFICIENT
AND SUSTAINABLE**



www.thermaxglobal.com

Registered Office

D-13, MIDC Industrial Area, R D Aga Road,
Chinchwad, Pune 411019, India

enquiry@thermaxglobal.com

Customer Care: 1800-209-0115



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Thermax Business Portfolio

- ☐ Heating
- ☒ Cooling
- ☐ Power
- ☐ Air Pollution Control
- ☐ Chemicals
- ☒ Water and Wastewater Solutions
- ☐ Solar
- ☐ Specialised Services



This brochure presents only some of our products and we reserve the right to amend any product details without notice. The photographs used in the brochure are indicative and may not match the actual plant.

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