Services Business

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 75 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 24 countries and state-of-the-art facilities (in India, Denmark and China) that manufacture to international standards.

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

- Boilers
- Heaters
- Absorption Cooling
- Air Pollution Control Equipment
- Chemicals
- Solar
- Power Generation
- Water & Waste Solutions

Boiler & Heater Business (B&H)

Thermax 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. B&H 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.
Services Business

Strategic Business unit exclusively addressing Services Business of Thermax Boiler & Heater group, has been successfully addressing plant renovation & modernization concerns since the early 1990s. The R&M approach, that tailors technology and experience based solutions for boiler users, have benefitted 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
- Undertakes 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.
- Having staff strength of 90 including personnel from marketing, process and detail engineering, project management, procurement, QAC, field services, commissioning and post sales services
- Manufacturing facilities of B&H at Pune, Baroda and Mundra SEZ Port facility
- Dedicated construction management team to provide total turnkey solutions
- Country wise local partners for Middle East, South East Asia, North Africa, selective markets in Latin America & Europe.

Plant Improvement Projects

Efficiency improvement

- **Causes of lower efficiency**
  - Higher exhaust gas temperature, unburnt fuel loss, high excess air
- **Study & Analysis of Efficiency drop**
  - Design shortfalls, degradation of heat transfer area, improper operation, change in operating conditions
- **Customized solutions for efficiency improvement**
  - Modifying / redesigning of combustion system
  - Addition of new / modified heating surface area
  - Performance testing & fine tuning of boiler operation
  - Defining the boiler operating range & parameters

De-Bottlenecking of boiler operation / performance

- **Identifying & analyzing the limiting factors**
- **Study the cause of operational limitation**
  - Inadequate design of heat transfer areas, auxiliaries, instrumentation
- **Customized solutions for de-bottlenecking**
  - Redesigning of heat transfer areas
  - Redesigning / refurbishment of auxiliaries

Reliability improvement

- **Root cause analysis for**
  - Frequent failures of pressure parts, operational issues in auxiliaries, failure in firing system
- **Study and analyze the root cause**
  - Improper design, improper operation
- **Customized solutions through**
  - Redesigning of pressure parts
  - Fine tuning, testing and revamping of auxiliaries
Plant Improvement Projects

Fuel Conversion / Retrofits & Firing System Upgrades

- Fuel conversion from oil to gas and vice-versa & duel firing
- Firing of byproducts like process gas, BFG, biogas, COG etc.
- Review of original design and finding out its suitability for new fuel
- Thermal design evaluation of boiler with respect to new fuel
- To suggest suitable modification in pressure parts for new fuel
- Design, engineering & supply of new fuel firing system and BMS upgrades
- Solid fuels – travagrate to fluidized bed conversion
- Opportunity fuel firing conversions like biomass, petcoke, dolachar, washery rejects etc.

Emission Control / Reduction

- Modifying the combustion system to meet required emission levels
- Providing solutions to reduce NOx - FGR system, steam injection
- SCR & SNCR system to reduce NOx emissions
- Accessing the effect on boiler performance & modification

Energy from Waste

- Groundnut Shell
- Rice Straw
- Corn Cob
- Palm Kernel Shell
- King Grass
- Wood Chips
- Cotton Stalk
- Sugarcane-Leaves
- Rice Husk
- Red Gram Stem

Engineering Services

- Process design, mechanical design, detail engineering (equipment & piping), CFD and 3D modeling etc.

Technology Upgrades

- Upgradation of combustion technologies
- Automation
- Field instrumentation upgrades
- Safety level & BMS upgrades

Services for upgrades / conversions

- Capacity enhancement

Plant Relocation

- Condition assessment / performance assessment / auditing
- Dismantling & relocation services
Renovation & Modernization Methodology

Engineering Approach
- Explore and understand the original design
- Analyzing previous operating history
- Assessment of operational drift
- Identifying available margin
- Predict the effects of the future
- Deriving the solutions for revamp / upgrade / conversion
- Predict the post conversion / upgrade performance

Boiler Life Management
- Modern tools, specialized NDT & inspection techniques
- Operating performance testing
- Assessment analysis
- Redesign / refurbishment
- Reverse engineering & alternate material / metallurgy

What can you expect from a 30 year old boiler?

Engineering the Solutions
- Modeling of existing boiler / heater based on original design data
- Input design data to validate the thermal / hydraulic design / performance
- Input current operating condition to evaluate performance deviation / drift
- Input revised (new/ proposed) operating conditions
- Derive predicted performance under revised conditions
- Generate engineering solution (at times more than one)
- Convert each solution into techno - economic feasibility
- Engineering the implementation
- Performance guarantee & testing
- Proven & established thermal performance evaluation program / KED software
- HTRI / FRNC / In-house tools

......another 30 years
Replacement in Kind / Refurbishment

- Aging
- Performance deterioration
- Refurbishment of heat transfer surfaces like furnace water walls, superheaters, reheaters, economizers etc.
Spares

Why Thermax Spares

- AMC / ASC to assist on proactive maintenance.
- Competitive advantage through Inventory management & quality manufacturing.
- Engineering capabilities of obsolete & extinct OEM spares

Spares for

- Pressure parts
- Air pre heater – 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 fittings, control valves, process valves, safety valves, motorized valves, dampers, bellows & supports
Services Offerings

• Engineering studies
• Engineering design services – boiler, accessories, piping, structures etc.
• FEED assistance – boiler and accessories / conversions
• Performance assessments – boilers and fired heaters
• On-site or remote performance monitoring / management
• Energy audits
• Project management- achieving quality output within budget and time
• Technical due diligence
• Valuations and plant relocation services
• Mishap investigation
• Failure analysis
• Operation and maintenance services
• Boiler / equipment commissioning services
• Training
• Site construction and testing services

Plant Services

• Fixed rate service contracts
• Annual inspection contracts
• Annual maintenance contracts
• Proactive expert visits
• Breakdown services- tube failure analysis
• Emergency plant support through advisory services
• Solutions for improved plant availability
• Identify inherent O&M problems
• Identify source of loss of efficiency
• Increase operational flexibility
Condition Assessment and Remaining Life Analysis (CA&RLA) Studies

- RLA is an inspection method / test techniques employed for boilers and heaters, which are in operation for prolonged service.
- RLA is a tool for preventive and predictive maintenance.
- 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 and improvement purposes.

Thermax offered CA&RLA studies

- Experienced metallurgical team offering inspection and testing with modern tools, specialization NDT and inspection techniques
  - Remote field electro magnetic testing
  - Low frequency electro magnetic testing
  - Internal rotary inspection system
  - Superheater tubes internal oxide thickness measurement
  - Profile radiography
  - In situ metallography and remote visual inspection
  - In-house tube destructive testing and failure investigation facility
  - Plant diagnostics

- In RLA multiple non-destructive and metallurgical tests are done for accurate measurement of thickness, dimensions and finding any anomalies which includes erosion, corrosion, cracks, bulging etc.
- CA&RLA comprehensive assessment and implementation of its recommendations provide reliable and trouble free operation and prevents forced outages.

Risk Based Inspection

Risk based inspection is a process that identifies, assesses and maps industrial risks (due to corrosion and stress cracking), which can compromise equipment integrity in both pressurized equipment and structural elements. RBI addresses risks that can be controlled through proper inspections and analysis. RBI can be employed in any industrial sector, including power and petrochemical sectors.

- **Methodology:** Risk based inspection is the process of developing a scheme of inspection (what, when, how to inspect) based on knowledge of the risk of failure. The essential process is a risk analysis, which is the combination of an assessment of the likelihood (probability) of failure due to flaws damage, deterioration or degradation along with an assessment of the consequences of such failure.
- **Benefits:** Industry sees RBI as a way to obtain economic benefits from extended run lengths and availability of equipment and as means of using inspection resources more effectively from the use of automated NDT or non-invasive inspection schemes.
Operation & Maintenance (O&M)

Thermax’s O&M Business Objectives

- Extend our commitments beyond EPC
- Execute O&M by effectively managing the operation and maintenance of boilers with high availability and reliability.
- Manage key operational factors like fuel consumption, water quality, steam and water balance, man management, safety management, value engineering
- Extend other expert capabilities under one roof with single source to the client for – spares, engineering studies, boiler & heater upgrades, CA & RLA, RIK, PIP design and capacity upgrades, fuel conversion, firing and instrumentation upgrades
- Handholding in implementation of SOP’s, SMP’s and safety practices.
- Training and development of operation team

Value addition by Thermax

- Achieving ZERO breakdown
- Added reliability and maintainability of boilers
- Stabilization of entire plant through trouble free operation
- Technical solutions such as generation of standard operating procedures, methods statements
- Continuous performance improvement through design revalidation
- Boiler life extension through CA & RLA program
- In house water and waste water expertise
- Chemicals for cooling water and boiler feed water treatment
- Inventory management

Our Major Customers

- Petronas Gas Berhad, Malaysia
- Petrokemya, Saudi Arabia
- Orpic - Sohar Refinery, Oman
- Airliquide, Thailand
- Alexandria Carbon Black, Egypt
- Columbia Carbon, Spain
- Dolphin, Qatar
- PT Gunanusa, Indonesia
- Gulf Petrochemicals Industries, Bahrain
- Foster Wheeler, U.K
- SAPREF, South Africa
- EDFU, Egypt
- Thai Carbon, Thailand
- Nestle, Thailand, Philippines and Ivory Coast
- Egyptian Propylene & Polypropylene Co., Egypt
- Mitrophol Thailand
- Cristalla Sugar Thailand
- Indorama Thailand
- URC Philippines
- Reliance Industries Ltd, Jamnagar, Dahej, Hazira
- Reliance Industries Ltd, Vadodara, Nagothane
- Tata Steel, Jamshedpur
- Hindustan Petroleum Corporation Ltd, Mumbai
- Bharat Petroleum Corporation Ltd, Mumbai & Kochi
- Chennai Petroleum Corporation Ltd, Chennai
- Manglore Refinery & Petrochemicals Ltd, Mangalore
- Indian Oil Corporation, Vadodara, Barauni & Bongaigaon
- Essar Oil, Vadinar
- National Fertilizer Ltd, Panipat, Bathinda, Nangal
- Gujarat Narmada Valley Fertilizers, Gujarat
- IFFCO, Kalol, Phulpur
- Maruti Udyog Ltd, Haryana
- Matix Fertilizers, West Bengal
- Madras Fertilizer Ltd, Chennai
- Chambal Fertilisers Ltd, Kota
- Vedanta Ltd, Goa
- Zuari Agro, Goa
- JSPL, Angul
- Ultratech Cement Ltd, Rajasthan
Customer Interaction Centre (CIC)

Call 1800-209-0115
Mail:
Enquiry@thermaxglobal.com
bnhenquiry@thermaxglobal.com

Customer Interaction Centre – CIC is a single point contact to register enquiries & complaints from our customers.

Contact Details

Thermax Ltd.
Boiler & Heater Group
Energy House, D II Block
Plot No 38 & 39, MIDC Chinchwad
Pune - 411 019
Tel. : (020) 66126464/ 27479111
Fax : (020) 66126612/ 6700

Performance Improvement Projects (PIP):
S Ramesh
s.ramesh@thermaxglobal.com
Tel : (020) 66126738

Services:
Yashwant Ranaware
yashwant.ranaware@thermaxglobal.com
Tel : (020) 66126560

Spares:
Uday Kumar Nair
udaykumar.nair@thermaxglobal.com
Tel : (020) 66126759

Overseas Offices

Saudi Arabia
N. G. Devdas
Mob. : +966 55 391 5403
Email : devdas.menon@thermaxglobal.com

Malaysia
Ashish Kabra
Mob. : +60-122056623
E-mail : ashish.kabra@thermaxglobal.com

Philippines
Behram Irani
Mob. : +639293262144
E-mail : behram.irani@thermaxglobal.com

Vietnam
Edward Luu Man Hieu
Mob. : +84 903953516
E-mail : edward.luu@thermaxglobal.com

Mexico
Rahul Pathak
Mob. : +52 1 55 3716 2623
E-mail : rahul.pathak@thermaxglobal.com

Thailand
Pavan Rajput
Mob. : +66988652652
E-mail : pavan.rajput@thermaxglobal.com
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.

© Thermax Limited, November 2017