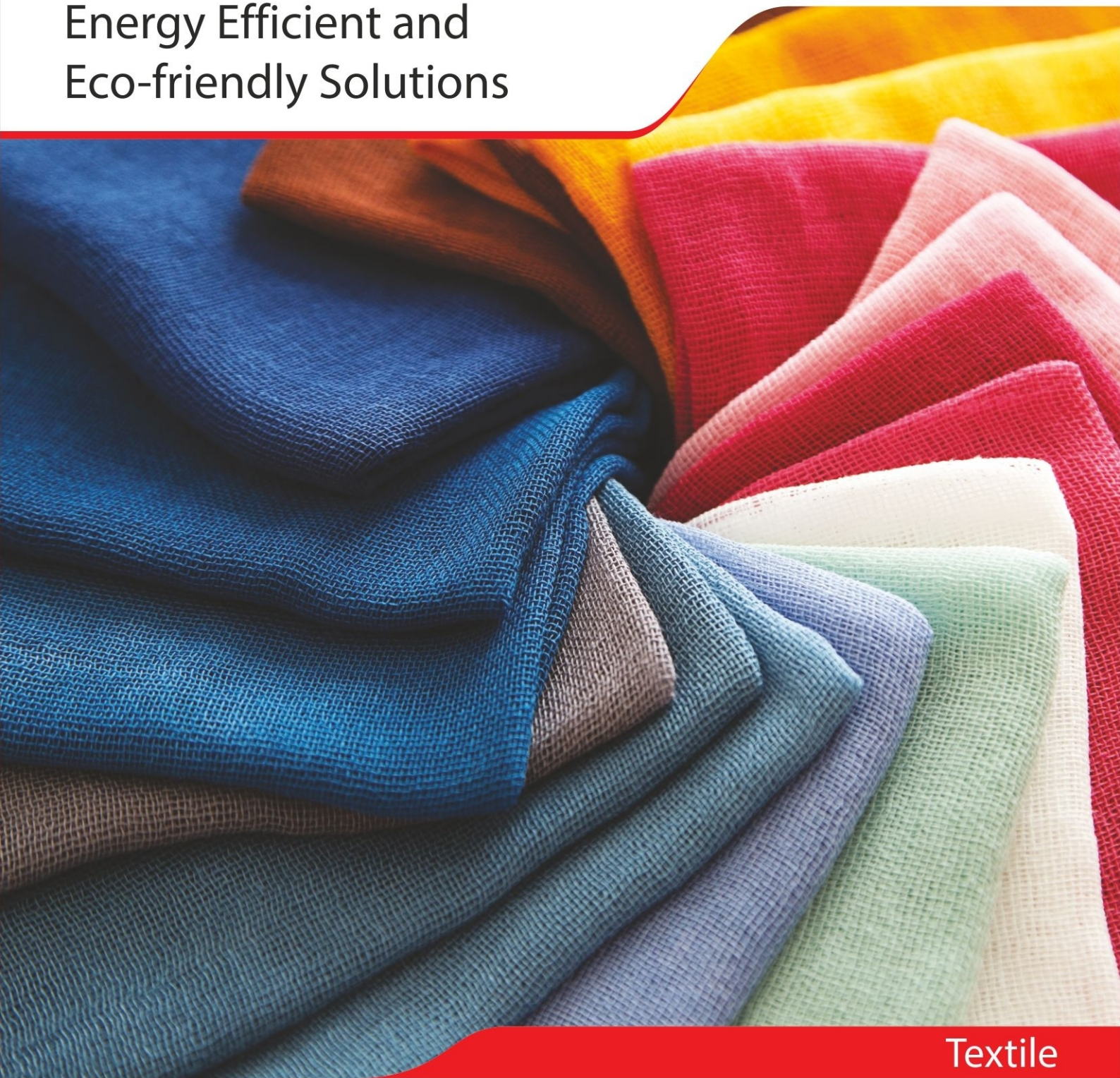


Energy Efficient and Eco-friendly Solutions



Textile

Conserving resources. Preserving the future.

Thermax provides systems and solutions in the critical domains of energy and environment. The products and services developed by Thermax help industries achieve better resource productivity and improved bottom lines, while maintaining a cleaner environment. The company's vision for the future is firmly anchored in the belief that, to stay competitive business houses need to adopt sustainable practices.

Thermax's product portfolio covers heating, cooling, water and waste management, and speciality chemicals. The company also designs, builds and commissions large boilers for steam and power generation, turnkey power plants, waste-to-energy systems and air pollution control projects.

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



Boilers



Heaters



Absorption Cooling



Air Pollution Control Equipment



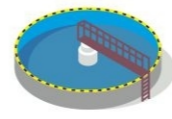
Chemicals



Solar



Power Generation

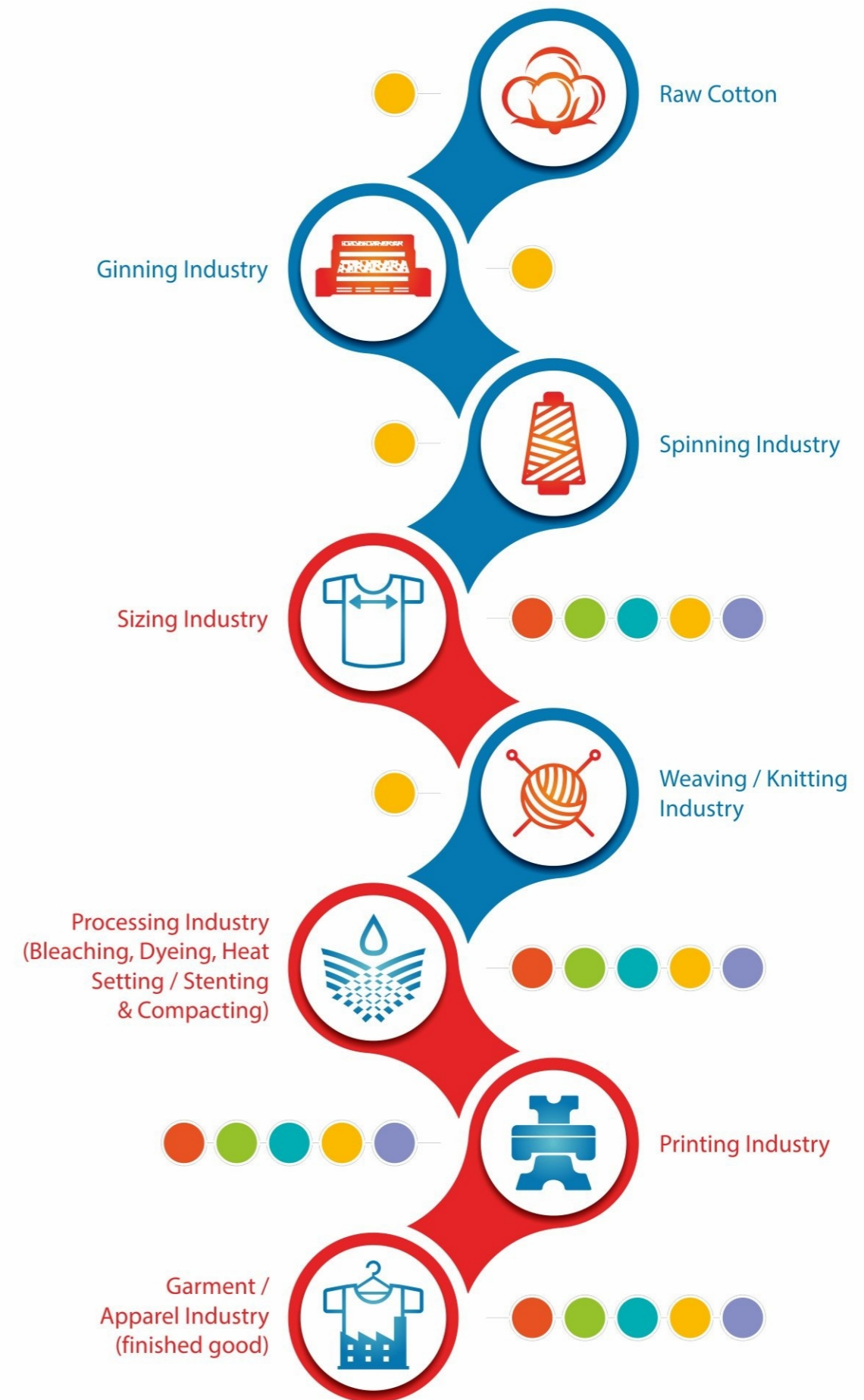


Water & Waste Solutions

Global presence

Thermax's solutions reach clients in 86 countries across Asia Pacific, Africa, Middle East, Europe, CIS countries, USA and South America. Its business operations are supported by 27 international offices, sales and service teams, a network of Thermax Channel Associates, a robust and innovative R&D setup, and 14 state-of-the-art manufacturing facilities - eight in India, two in Denmark and the rest in Germany, Poland and Indonesia - that manufacture to stringent international codes.

One-stop solution for all utilities in your process



Heating Solution: Thermax offers steam boilers and heaters with multi-fuel flexibility, ease of operation and minimal total cost of ownership.



Thermeon

- Completely paneled and ultra compact design with multi-fuel flexibility
- Integrated heat recovery unit ensuring high fuel efficiency
- Large access ports for fuel charging and ash removal designed to reduce operator fatigue
- Balanced draft system ensuring; no back firing and complete combustion

Fuel - Coal, wood and biomass briquettes

Standard Design Pressure - 7 & 10.54 kg/cm² (g)

Capacity Range - 0.3 to 1.5 TPH



COMBLOC™

- Compact, skid mounted and modular construction - up to 40% reduction in foot print
- Easy ash removal and better accessibility for maintenance
- Multi-pass hybrid construction with high combustion volume - better efficiency
- Quick startup and better response to load fluctuations
- Flexibility of fuels (biomass / fossil) and combusters
- Pre-insulated and factory assembled - up to 80% reduction in site work

Fuels - Biomass pellets / briquettes, wood logs, wood chips, coal, pet coke and rice husk

Standard Design Pressure - 10.54 & 17.5 kg/cm² (g)

Capacity Range - 1.5 to 8 TPH



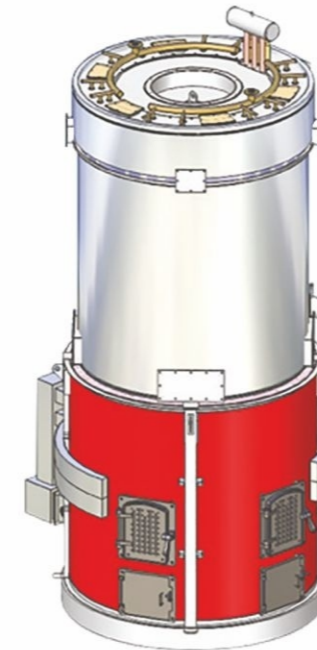
COMBIPAC®

- Best suited to burn fine particles
- Multi-fuel fired hybrid smoke and water tube design with fluidised bed combustion technology
- Semi-automatic operation ensures minimal intervention
- Rapid response to fluctuating loads
- Uniform heat flux ensuring longer refractory life
- Best suited design for burning fine particles

Fuel - Coal, lignite, rice husk

Standard Design Pressure - 10.54 & 17.5 kg/cm² (g)

Capacity Range - 4 to 16 TPH



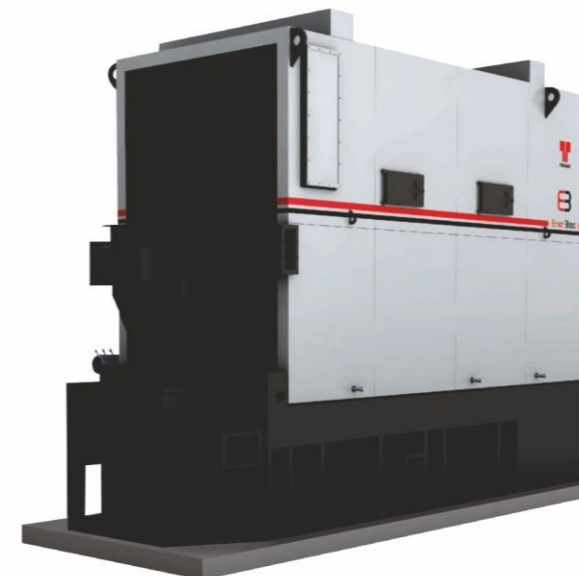
THERMOPAC® VTcy

- Compact design and layout of furnace with minimum footprint
- Better efficiency due to circular furnace construction and cycloidal air injection system
- Improved heat transfer due to special designed air pre-heater and automatic soot blowing system
- Upto 70% reduction in civil construction for coil mounting which leads to savings in cement, steel & time

Fuel - Coal, wood & briquettes

Max. T.F. O/L Temperature (Std.) - 280°C

Capacity Range - 0.1 to 2.5 Mkcal/hr



ENERBLOC®

- Combuster with fuel flexibility
- Ergonomic design with world class aesthetics
- 60% refractory saving compared to conventional heater
- 25% footprint and 50% height reduction as compared to conventional heater
- Easy ash removal and better accessibility for maintenance

Fuel - Coal, lignite, wood logs and biomass briquettes

Max. T.F. O/L Temperature (Std.) - 280°C

Capacity Range - 0.1 to 2.5 Mkcal/hr

Steam Engineering Solution: Thermax offers a wide range of steam accessories and solutions which improve operational performance and minimize downtime.

Pressure Reducing Station



- Pressure reduction of
 - 10.5 kg/cm² - 3.5 kg/cm²
 - 17.5 kg/cm² - 8 kg/cm²
- Operates even on low flows
- Maintenance free; ready to install
- Both IBR and non-IBR models available

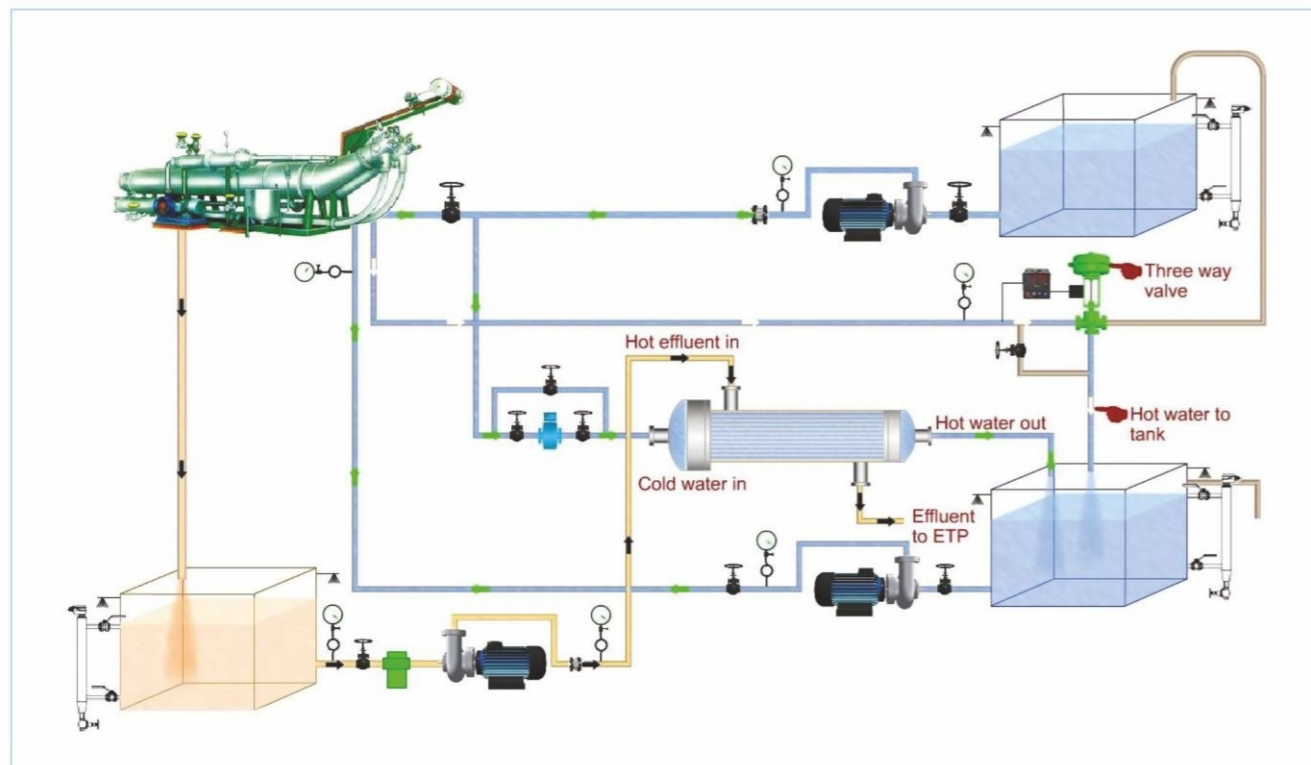


Steam Line Accessories

- Saturated as well as superheated steam applications
- Accessories includes bellow seal valve, control valve and disc check valve
- All types of traps; ball flow trap and bimetallic trap
- Strainers and vacuum breakers
- Steam flow meter, etc.

Dye Liquor Heat Recovery System

- Heat recovery system that recovers waste heat from dye
- Increases overall efficiency by reducing specific heat consumption



Condensate Recovery System: Condensate Pump (TACTS)

- Zero moving part ensures high reliability, low wear and tear, low maintenance and low downtime
- High discharge per stroke
- Microprocessor based control with flow totaliser
- Weatherproof with IP65 protection - suitable for outdoor installation
- Packaged pump - easy to install
- Components designed for high cycle life
- Designed as per ASME Section VIII Div 1 - conformance to international standard ensures quality design and longer life

Capacity Range - Condensate pumping capacity upto 16500 kg/hr.



Condensate Recovery System: Flash Vessel (TAFS)

- Generates low pressure flash steam
- Adequately sized to minimize pressure drop
- Designed with optimum separation velocity to get good quality steam
- Suitable for high pressure steam condensate

Capacity Range -
Flash Steam - 200 - 1150 kg/hr
Condensate - 850 - 7000 kg/hr



Condensate Recovery System: Deaerator Head with Immersion Tube (TADIT)

- SS de-aerator head with SS immersion tube prevents corrosion
- Efficient removal of dissolved oxygen and other gases from boiler feed water by thermal de-aeration
- Suitable for thermal de-aeration of boiler feed water

Capacity Range -
Design Pressure - 5 kg/cm²
Design Temperature - 185°C

Water Solutions - Thermax offers a wide range of water treatment plants with versatility in flow, flexibility in resin quantities and ease in operation.



Klarimax

- Used for removal of suspended solids from surface water
- Lower power consumption
- Requires less space
- Minimal civil works (only foundation)
- Standardized, hence quicker delivery

Capacity Range - 0.1- 64 m³/hr



Demineralisation (DM) Plants

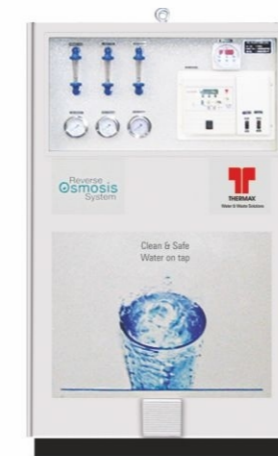
- Resins with high resistance, longer life, high exchange capacities & lower chemical consumption
- Low maintenance & easy installation
- Cost effective standard models
- Advanced software used for optimal selection and configuration

Capacity Range - 0.1 to 70 m³/hr

Purismart

- Fully automatic skid mounted filter & softener plant
- Available in FRP / GRP vessels up to 42" diameter
- Sleek MS design with single-valve operation
- Rugged packed bed design in up-flow operation
- Flexibility in resin volumes

Capacity Range - Up to 2000 LPH



LoFlo RO

- Compact & modular
- Easy installation, operation and servicing
- Online product water quality monitoring
- Automation options available

Capacity Range - 200 to 3000 LPH



SIRO

- Online product water quality monitoring
- Compact and modular
- Multistage centrifugal pump with appropriate MOC
- Membrane and pump protection system

Capacity Range - 1- 200 m³/hr



Filters

- Easy operation and maintenance
- Simple distribution and collection system
- Specially designed to remove iron from water
- Different types of filters available as per need

Capacity Range - up to 300 m³/hr



Softeners

- Available in FRP/ GRP vessels upto 42" diameter
- Sleek design in MS with single-valve operation
- Rugged packed bed design in up-flow operation
- Flexibility in resin volumes

Capacity Range - 0.1 to 500 m³/hr

Waste Water Solutions: Thermax's extensive range of waste water treatment solutions treat a variety of effluents & help in resource optimization in industries.



Terminator

- Specially designed for textile industry
- Needs less space
- Removes 100% color
- Minimal civil work (only foundation)
- Standardized, hence faster delivery and installation
- Lower power requirement & capital investment

Capacity Range - 1.5 to 42 m³/hr



Zero Liquid Discharge

- Thermax offers costs-effective and highly efficient ZLD systems
- ZLD reduces dependency on fresh water supply
- In-house treatment facility ensures continuous water supply
- High purity treated water can be recycled and reused in different process systems
- Saves waste water disposal cost
- Helps in sustainable growth of industry while meeting the most stringent regulatory norms

Capacity Range - 10 KLD and above

Air Pollution Control Equipment - Air pollution equipments that help customers to meet stringent pollution norms and protect the environment

Pulse Jet Bag Filter



- Patented pulsing system
- Remote monitoring and control
- Low compressed air consumption
- Low range of operating pressure
- Varied bag length available, from 1 to 12 meters
- Suit to site design
- Low initial set-up cost
- Multiple collection point de-dusting system
- Can handle critical dust; explosive / non-explosive, abrasive, hygroscopic, corrosive, sticky, coarse / fine

Capacity Range - 1000 m³/hr, onwards

ESP - Electrostatic Precipitator



- Continuous operation with minimal maintenance requirement
- Fully automatic DSP based controller with power optimization
- On-line maintenance
- Double spiked discharge electrodes
- Strong rolled profile of collecting electrodes
- Rapping system; Top Rapping (Thermax Impulse Gravity Impact – TIGI) system, tumbling hammer-type design
- High efficiency and reliability
- Lower operating cost

Capacity Range - 10,000 m³/hr, onwards

Chemical Solutions: Thermax offers a wide range of specialty chemicals and ion exchange resins for utilities, water and waste water treatment to increase process efficiency and reduce cost.

Cooling Water Treatment Chemicals



- Successfully addresses initial conditioning, scale, fouling and corrosion control
- Scale & corrosion inhibitors
- Dispersants
- Range of biocides
- Corrosion inhibitors for closed loop system

Polyelectrolytes



- Meets required standards for raw water clarification and effluent treatment
- Meet ANSI / NSF standards
- Coagulants
- Flocculants

Boiler Water Treatment Chemicals & Fuel Additives



- Thermax also offers fuel additives for solid and liquid fuel fired boilers and IC engines.
- Range of scale & corrosion inhibitors
- pH boosters
- Oxygen scavengers

Reverse Osmosis Chemicals



- Effective solution for optimum RO performance by removing scaling, fouling, biological growth, etc.
- Meet ANSI / NSF Standards
- Scale inhibitors
- Cleaning chemicals
- Range of biocides

Tulsion® Ion Exchange Resins



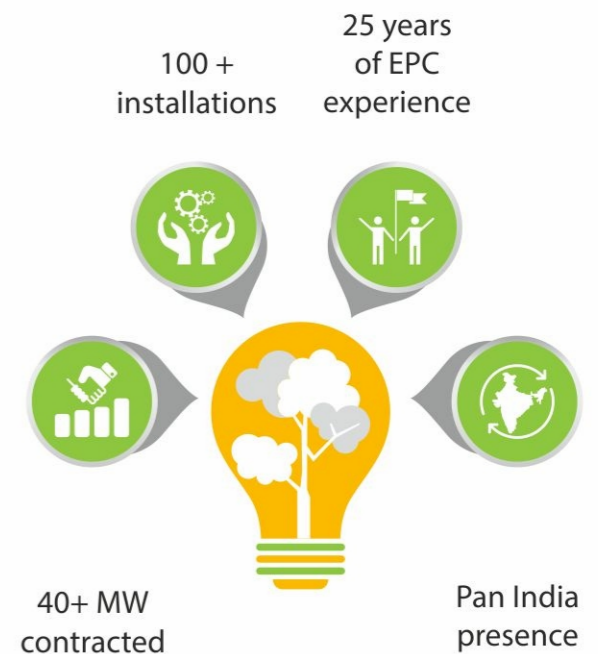
- Adsorbent resins to remove 95 % of color from effluents
- Highly selective to inorganic colorants in the effluent
- High porosity with good reactive surface area
- Highly selective chelating resins to remove heavy metals from textile dyes
- Excellent reaction kinetics
- Easily regenerable resins

Solar Solutions: Thermax can help you save power cost and 'go green' by installing a solar PV plant on a turnkey basis.

Solar Power

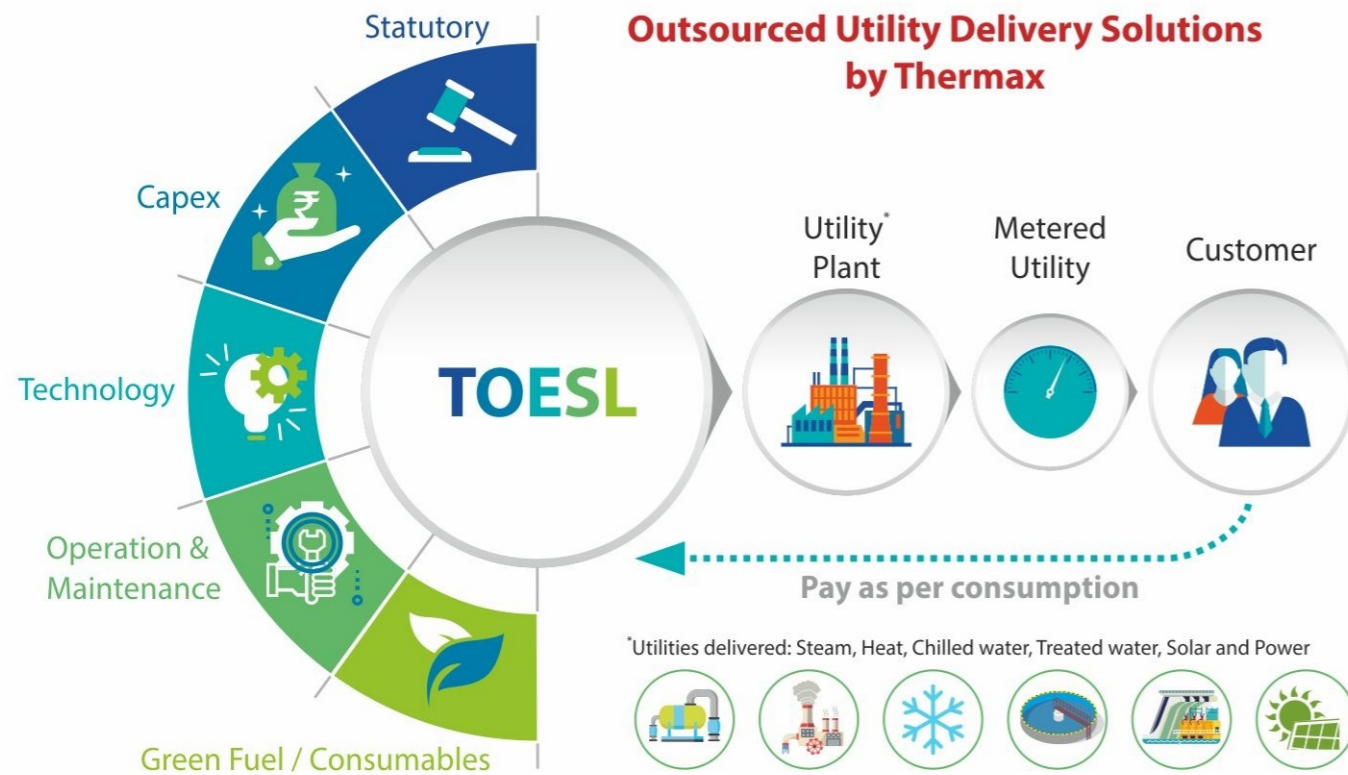


End to end support to customers - concept to commissioning, and O&M support thereafter.



TOESL: Thermax Onsite Energy Solutions Limited (TOESL), a wholly owned subsidiary of Thermax Ltd. offers sustainable solutions for outsourcing of utilities.

Build-Own-Operate (BOO/T) Business Model



TOESL invests, installs and operates a utility plant in the customer's premises and undertakes its comprehensive operation & maintenance along with the supply chain management of all consumables including biomass fuels. The customers are relieved from the burden of owning and running the utilities and hence, are enabled to focus on their core manufacturing processes.

About Thermax Onsite:

- Over 25 boilers / heaters in operation
- Installed base in excess of 200 Tons/hr
- Biomass fuel handled daily - 600 TPD
- Backward integration - Captive biomass briquette / pellet plants
- All sites OHSAS 18001 certified by DNV
- Direct / indirect employment - 400 people

Benefits to Customers:



Low investment



Cost effective



Performance guarantee



Green

Maintenance Made Easier

Reliable support for maximum value - Thermax has dedicated service units attached to core energy and environment business to take care of spare parts, preventive and breakdown maintenance services. We also support our customers with specialized services like energy audits, O&M, retrofits and upgrade, and much more.

Procurement of genuine parts from Thermax ensures

- Assurance of quality
- Assurance of correct specifications and compatibility to original equipment
- Guaranteed performance
- Reduced risk of failure of parts leading to plant downtime and monetary losses
- Recommendation from the OEM towards performance enhancement with change-over-kits
- Thermax support in the entire process from procurement to re-commissioning



Specialized products and solutions



Operation and maintenance



Energy audit services



Genuine spares for enhanced uptime



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Thermax Business Portfolio

-  Heating
-  Cooling
-  Power
-  Air Pollution Control
-  Chemicals
-  Water and Waste Water 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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