



SUSTAINABLE SOLUTIONS FOR THE
CHEMICAL
INDUSTRY



CONSERVING RESOURCES, PRESERVING THE FUTURE.



Thermax is an engineering company providing sustainable solutions in energy and the environment. The company's vision for the future is firmly anchored in the belief that to stay competitive, companies need to adopt sustainable development practices. The systems, products, and services developed by Thermax enhance resource productivity, improve bottom lines, and maintain a clean environment. Even as we convert costs to profits, we help to protect the environment through our sustainability initiatives - a win-win for the industry and the society at large.

Thermax's business portfolio offers integrated solutions for **Clean Air, Clean Energy and Clean Water.**

Business Solutions

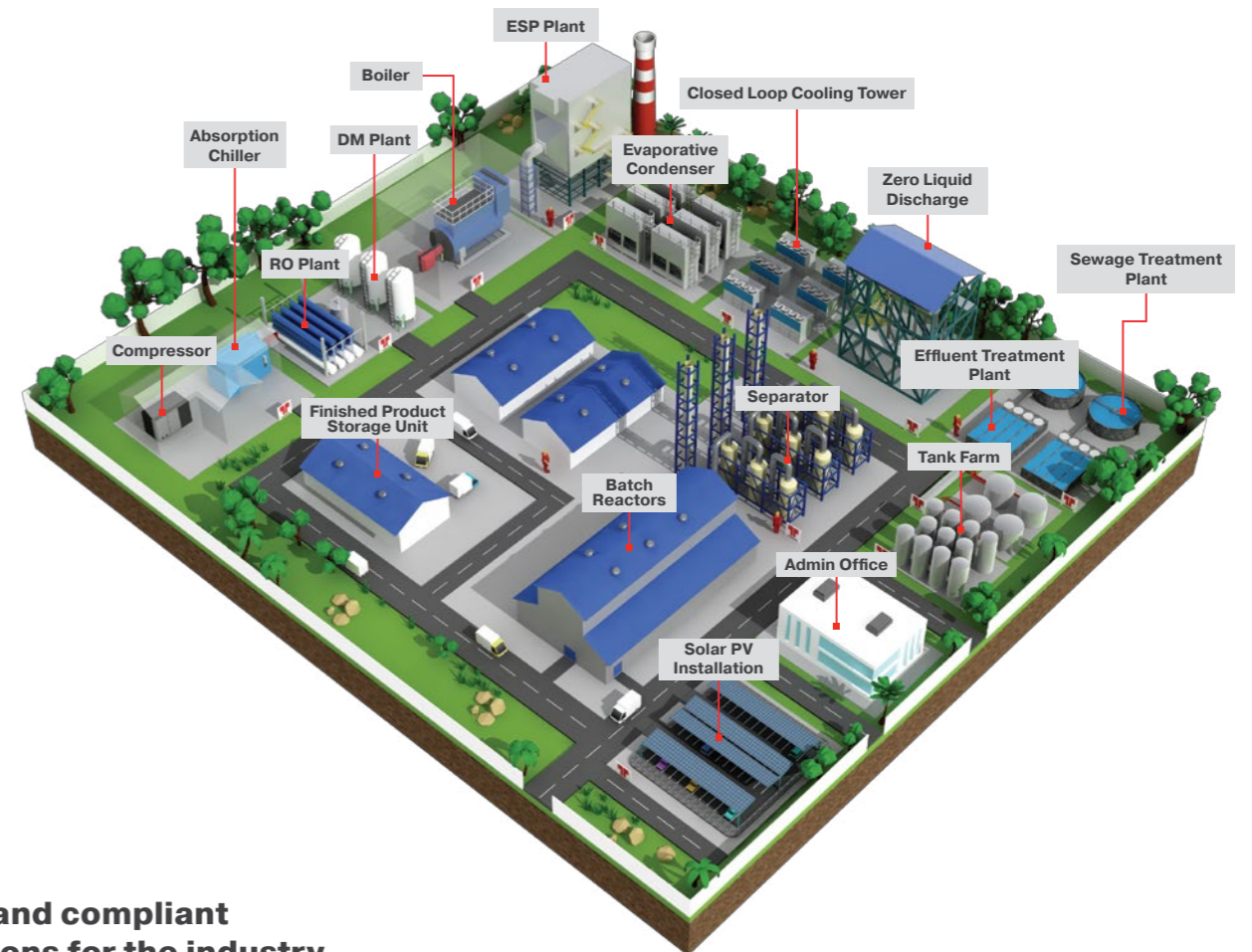


With its host of business solutions complemented with an array of specialised and digital services, Thermax is well poised to cater to the end-to-end needs of the industry.

STRIKING A PERFECT CHEMISTRY, MEETING INDUSTRY NEEDS

Thermax's solutions for the chemical industry

The chemical industry is seeing strong demand for both commodity and specialty chemicals. While the chemical industry continues to focus on building capacity and geographic expansion, there has been an emphasis on sustainability and decarbonisation in recent times, leading to an increased investment in research and development. The technological expertise in industrial applications gained over the decades has enabled Thermax to develop world-class products and solutions in globally accredited facilities, perfectly fitting the chemical industry's changing matrix. In addition to meeting the utility needs of the chemical industry players, Thermax also helps them in adhering to their sustainability goals and reducing their carbon footprint.



Safe and compliant solutions for the industry



O&M

Our experienced and trained team delivers comprehensive operation and maintenance services and deploys proprietary processes. Our services include operation and maintenance of power plants, utilities, plant improvement services, and maintenance solutions.



Digital
Solutions

To provide value-added services to its customers, Thermax has introduced Thermax Edge – an all-inclusive customer portal to address all asset lifecycle needs, and Thermax Edge Live – an asset performance enhancement solution powered with AI, ML and Thermax engineered algorithms, enabling improved plant performance, enhanced uptime and knowledge management.



Energy-efficient heating

Sustainable heating, steam generation and distribution systems

Being capital and process-driven, the chemical industry is heat intense and, therefore, needs to optimise multi-fuel sources. Thermax has a wide-ranging portfolio of eco-friendly heating solutions, specially targeted at the chemical industry.

Our heating products and steam engineering solutions help the chemical industry in complying with stringent health, safety, and environmental norms and managing several challenges such as increasing energy and water costs and operational efficiency. Our wholly-owned subsidiary, Thermax Babcock & Wilcox Energy Solutions (TBWES) provides customised large boilers and fired heaters, including waste to energy boilers, waste heat recovery units while our process heating division manufactures packaged solutions for smaller requirements up to 50 TPH.



Applications

Heating

- ▶ Indirect heat from steam utilised for heating or cooling of reactors and receiver vessels
- ▶ Indirect heat utilised for dryers and evaporators
- ▶ Direct heat utilised by injecting steam into intermediates
- ▶ Indirect heat utilised for space heating or cooling of entire plant

Steam

- ▶ Steam generation and distribution to plant processes
- ▶ Condensate recovery after the chemical processes

Thermax Offerings

Process Heating

- ▶ Solid fuel, oil & gas fired steam boilers
- ▶ Thermic fluid heaters and hot air/water heaters
- ▶ Energy plant and heat recovery boilers
- ▶ Boiler health check-up, audits, O&M and retrofit/revamp

Steam Engineering

- ▶ Pressure reducing station in boiler house
- ▶ Surface automatic blowdown control system in boiler house
- ▶ Effimonitor – an online boiler efficiency monitoring system
- ▶ Thermax Condensate Recovery Systems (TCRS)
- ▶ Steam traps and modules
- ▶ Energy audits and utility piping consultancy services

Benefits

Heating

- Operates on a wide range of fuels including coal, oil & gas, and biomass
- High efficiency: Complete range of products that offer high efficiency
- Low footprint: Compact skid mounted modular process heating solutions
- Low maintenance: Quality heating products and solutions that ensure low maintenance and downtime
- Project execution capabilities: Dedicated project management teams for different range of solutions and capacities

Steam Engineering

- Improving production output, efficiency and profitability
- Reducing energy, water consumption and maintenance downtime
- Meeting statutory rules, regulations, industry standards, health and safety requirements



Why choose Thermax solutions?

- ▶ Ease of operation: Solutions developed and improved over the last five decades that ensure ease of operation of the equipment
- ▶ In-house engineering expertise, supply chain, reach and domain knowledge of heating and cooling
- ▶ As pioneers of process heating solutions, Thermax continually utilises the experience gained to offer reliable process heating products and solutions to the users
- ▶ Thermax steam engineering offers innovative services and solutions in energy efficiency
- ▶ Plant improvement through engineering studies and remote monitoring systems

38+ countries

60+ years of expertise

150+ solid, liquid and gaseous fuel firing options

30k+ successful installations

Case Study

Case:

Based out of western part of India, a specialty chemical manufacturer, had close to 10 boilers and heaters installed at multiple locations to cater to its process heating requirements. They faced problems like low efficiency, low output and other service issues in other make boilers which they had used in the past.

Solution:

Thermax installed a 50 TPH boiler which helped the customer overcome the above challenges. On experiencing the product and services, the customer preferred Thermax heating solutions only.

Result:

Now the customer trusts Thermax's expertise gathered over the decades of its existence, for all their heating requirements.

Cooling Solutions



Assisting in cooling of chemical plants

Energy-efficient, reliable, and customised cooling solutions






Energy utilisation by the manufacturing processes and utilities make up a significant portion of a chemical company's production cost. Rising energy costs and rigid emission laws across the globe have pushed many chemical manufacturers to set sight on energy-efficient solutions for their plants. Capable of running on a variety of eco-friendly energy sources, including waste heat, vapour absorption machines provide efficient cooling and heating solutions to reduce energy usage and boost the bottom line of the industry.

Thermax cooling solutions offer various wet and dry cooling solutions to remove heat from different chemical processes. This keeps process fluids at designed temperature to increase the efficiency of production processes and operation of equipment.








Benefits

Absorption Cooling

-  Higher Return on Investment (ROI)
-  Heat recovery from engines, turbines, furnace
-  Low maintenance costs
-  Better resource productivity while maintaining a cleaner environment
-  Remote monitoring of installed units through ROSS

Process Cooling

-  Faster installation at site with our plug and play units
-  Minimises energy consumption in process fluid cooling
-  Low operating cost and negligible maintenance cost
-  Zero water wastage, occupies less space, eliminates scaling issues
-  Minimises potential contamination of the process through closed-loop water circuit



Why choose Thermax solutions?

- ▶ Low steam consumption
- ▶ No harmful refrigerants and no requirement for lithium bromide / demineralised water top-up
- ▶ Low maintenance
- ▶ Crystallisation-free design, 24x7 IIoT-based chiller monitoring
- ▶ Heat recovery from engines, turbines, furnace
- ▶ Better resource productivity while maintaining a cleaner environment

Applications

Absorption Cooling

- ▶ Temperature and humidity control / air conditioning of plant and packaging area
- ▶ Maintaining temperature of monomer and mixing tanks
- ▶ Dispersion unit cooling
- ▶ Temperature control of fluids in reactors

Process Cooling

- ▶ Refrigeration condensation
- ▶ Process fluid cooling
- ▶ Primary and secondary condenser of distillation column
- ▶ Solvent recovery

Thermax Offerings

Absorption Cooling and Heating Solutions

- ▶ Hot water driven chillers (80°C-220°C)

- ▶ Steam driven chillers (steam pressure: 0-25 bar)
- ▶ Direct fired absorption chillers (fuels - CNG, LNG, HSD, biofuels etc.)
- ▶ Multi-energy absorption chiller (steam, hot water)
- ▶ Exhaust fired absorption chiller
- ▶ Chiller-heater (only heating/only cooling/simultaneous heating and cooling)
- ▶ Ultra low-pressure vapour driven chiller
- ▶ Heat pump (60°C-220°C)

Process Cooling Solutions

- ▶ Closed loop cooling tower
- ▶ Evaporative condensers
- ▶ Adiabatic cooler
- ▶ Dry cooler

Case Study

Case:

One of the leading paint manufacturing companies in Asia was looking for a green solution to maximise their power savings.

Solution:

Thermax commissioned three steam driven absorption chillers for chilled water generation using steam as the input from the plant's process. Sand mills and dispersion units in the plant are needed to be kept at lower temperature as generated friction heat may affect the quality of paint. The chilled water from the chillers is used for this application.

Result:

Thermax helped the customer make power savings of 4,044 MWh per year. The customer made CO₂ emission savings of 2,853 tonne per year.

 **50+**
industries served

 **90+**
countries

 **100+**
applications

 **6,300+**
successful installations

Projects and Energy Solutions

Powering the chemical processes

Cost-efficient power generation solutions

As an energy-intensive industry, the chemical segment seeks a reliable and uninterrupted energy supply as the sector is dependent on captive power plants. Thermax — a synonym for cost-effective captive, cogen and trigen power plants, offers digital, and IoT-enabled solutions for a connected, seamless experience. Its energy solutions are reliable, efficient and offer high uptime.

Thermax has been a pioneer in setting up captive power plants on EPC basis along with O&M support. Our comprehensive operations and maintenance services are delivered by an experienced and trained team who deploy proprietary processes.



Applications




- ▶ Caters to power and electricity requirement of the chemical plant
- ▶ Operation and maintenance of power plant and utility blocks like boilers, WTP/ETP, compressors, electrical systems etc.

Thermax Offerings





- ▶ EPC and O&M of captive cogen plants
 - ▶ Utility operation and maintenance
- ### Efficiency Management Services
- ▶ Annual maintenance contract of mechanical, electrical and C&I
 - ▶ Shutdown and annual overhauling services for turbine, boiler, ESP, CHP, AHP, fans, pumps etc.
 - ▶ Optimised end-to-end solutions to improve energy efficiency of the plant

Benefits

EPC

-  Reliable and cheap captive power
-  Improvement in energy efficiency on the generation and consumption sides
-  24x7 availability of utilities like steam, power, treated and chilled water, compressed air, nitrogen etc.

Operations & Maintenance

-  Only O&M company with EPC background
-  High uptime, reliability, and enhanced equipment life
-  Digital and IoT-enabled solutions
-  Energy savings

Case Study

EPC

Case: A leading pigment producer in India had a requirement of two coal fired cogeneration power plants to reduce their dependency on the grid and lower the operational cost.

Solution:

Thermax commissioned a 8 MW and 7.4 MW coal fired cogeneration power plants that have been operational since 2016 and 2021 respectively. The scope of work included engineering, procurement, erection and commissioning of four atmospheric fluidised bed boilers each of 63 TPH / 67 Ata / 520°C and one steam turbine generator of 8 MW.


Result:

The customer benefitted with reliable, efficient and low cost power supply for its plant operations.




Why choose Thermax solutions?

- ▶ 25 years of EPC experience in captive cogen plants
- ▶ O&M efficient and reliable services for power plants, in a safe and compliant environment
- ▶ Experienced and qualified team provides comprehensive operation and maintenance services using unique procedures
- ▶ One-stop solution O&M of utility equipment
- ▶ Expert team ensures utilities like power, steam, compressed air, water etc. are available 24x7

 **150+** projects cumulating to over 3,500 MWe contracted on EPC basis

 **2,000+** MW cumulative O&M experience

 **100+** plants under O&M services

 **360°** approach in clean energy management



Renewable Energy Solutions

Supplying green power to chemical plants

Capex and opex-based clean energy solutions

As part of their commitment to climate change mitigation, industrial segments globally are widely adopting green energy in their pursuit of sustainability. Thermax that has provided energy solutions to the industries for more than five decades, has added renewable energy solutions to its bouquet of offerings.

The company's portfolio now includes renewable hybrid solutions based on solar hybrid farms and storage batteries. These green offerings are capable of meeting the uninterrupted power supply (UPS) demand of the chemical industry. Moreover, Thermax's green solutions are easy to adopt and contribute significantly to the chemical industries' endeavour to meet carbon reduction targets.



Benefits



Carbon footprint reduction



Customised off-grid and on-grid solutions



Innovative financing options



Enabling energy transition through capex and opex-based models



Energy manager for commercial and industrial processes



Round-the-clock renewable energy solutions



Facilitating transition from behind the meter to beyond the meter



Cost savings



Why choose Thermax solutions?

- ▶ Installation of 135+ solar PV plants on an EPC basis, cumulating to more than 65 MW of green power generation
- ▶ Industry leading performance ratio for solar power plants
- ▶ Expertise in hybridising solar with multiple energy sources optimally
- ▶ Global presence and capabilities

Applications

Solar

- ▶ Power requirement of the chemical plant
- ▶ Operation and maintenance of the solar PV plant

Thermax Offerings

- ▶ Rooftop, ground mounted, carport solutions
- ▶ Developing renewable energy power projects
- ▶ Build and operate bespoke and flexible energy assets

O & M

- ▶ OHSAS 45001: 2018 certified sites
- ▶ Dedicated O&M team and nationwide service support
- ▶ Round-the-clock power

Case Study

Case:

An insecticide major wanted to adopt a sustainable solution for its power needs at their unit in Gujarat, India.

Solution:

Thermax proposed a rooftop tin shed solar PV module of 395 Wp generating 17.83 lakh units of power that could replace their existing source of conventional power.

Result:

The installed solar PV plant has been generating green power that has helped the customer reduce 1,420 tonne of CO₂ per year i.e. equivalent of eliminating 27,400 cars from the road. This has also led to a cost reduction of Rs. 1.28 crore per year.



72+ MW capacity



150+ delighted customers across geographies



200k+ tonne of reduction in CO₂ emissions



245+ million units of electricity generated

Air Pollution Control Solutions

Green technologies to control particulate and gaseous pollutants

Helping the chemical industry meet stringent emission norms

Since 1980, the Air Pollution Control (APC) business of Thermax has been a focal point entity for enterprises concerned with the control of particulate and gaseous emissions. The APC business has superior resource capabilities to match the global quality standards and meet the ever-changing customer needs. Extensive engagement with diverse sectors and tie-ups with technology majors has empowered the group to deliver unmatched solutions to its clientele.

Our range of solutions offers multifold benefits to various industries, including chemical, helping them improve the quality of air and also comply with stipulated emission norms.



Applications

- ▶ Removal of particulate gaseous emissions from the exhaust of captive power plant boiler and utility power plant boiler
- ▶ Material handling
- ▶ De-dusting

Thermax Offerings

Electrostatic Precipitator (Dry and Wet ESP)

- ▶ Capable of capturing 100+ types of particulate matters from 1 micron to 1,000 microns

Bag Filter

- ▶ Special fabrics for stringent emission norms, hood design and duct engineering for effective dust capture

Scrubber

- ▶ High collection efficiency for small and submicronic particles and gaseous pollution abatement

Wet type Flue Gas Desulphurisation System (FGD)

- ▶ Removal of SO₂, HCl, and HF with more than 97% capture efficiency
- ▶ Wet FGD system is equipped with ALRD® technology for achieving high SO₂ removal efficiency with less power consumption

Value-added Services

- ▶ Health check-up and troubleshooting of equipment
- ▶ Annual services and maintenance contracts

Benefits

-  Complying to statutory pollution control norms
-  Operates on a wide range of fuels including coal, oil & gas, and biomass
-  On-site and remote services for all air pollution control equipment
-  Concept to commissioning solutions
-  High efficiency and longer product life
-  Product recovery can be achieved along with pollution control which is an added benefit to the customer
-  Spare parts for all air pollution control equipment irrespective of the make i.e. Thermax and non-Thermax make

Case Study

Case:

A pigment manufacturing company was looking for a single solution for SPM as well as SO₂ abatement for their calcination kiln application. The customer was exploring a suitable material of construction (MOC) which should be economical and sustainable.

Solution:

Thermax offered a caustic (NaOH) based wet flue gas desulphurisation system for capturing of SO₂ along with a venturi scrubber for the removal of SPM from the kiln. Considering the higher SO₂ in the gas, complete system (with stack) was supplied in fibre reinforced plastic (FRP) material.

Result:

The supplied system eliminated SO₂ to the extent of 99.5%.



Why choose Thermax solutions?

- ▶ Process knowledge acquired to handle variety of dust and expertise of handling various fuel firing conditions
- ▶ Retrofit/rehabilitation of existing air pollution control equipment
- ▶ Spare parts for all air pollution control equipment
- ▶ Experience in handling SO₂ abatement solutions for more than 20 years

 **25+**
industries served

 **40+**
years of expertise

 **88+**
countries

 **25k+**
successful installations



Water & Waste Solutions



Innovative solutions to reduce fresh water consumption, reuse and recycle wastewater

Aiding the chemical industry in recycling and treating wastewater

Increased industrial water consumption has prompted many industries to look at using recycled water as an alternate source. Thermax has been helping industries to recycle water as a part of their sustainability initiatives.

Thermax's comprehensive solution-centric approach helps the chemical industry to treat sewage, effluents, and wastewater in a sustainable manner. The no clogging design and integrated automated solution makes it the industry's most preferred brand.



Benefits

- Reduced dependency on fresh water
- Non-clogging design and odourless operation
- Lower operating costs
- Maximum uptime and increased lifecycle of the plant
- Integrated automation for solutions
- Removal of fluoride, heavy metal, and tough to degrade materials
- Higher water recovery
- Customised systems and solutions



Why choose Thermax solutions?

- ▶ High quality reference stations across industries and sectors
- ▶ Innovation-led play in niche applications
- ▶ End-to-end solutions in water management

Applications

- ▶ Water for boiler, cooling tower, chiller and other utilities
- ▶ Water for solvent and dilution in chemical reactors and processes
- ▶ Water for drinking, gardening and cleaning
- ▶ Firefighting and emergency in chemical industries

Thermax Offerings

- ▶ **Effluent Treatment Plant (ETP)**
Up to 95% water utilisation from purified water

Effluent Recycle and Zero Liquid Discharge Solutions

- ▶ Tailor-made solution for specific constituents to meet discharge norms

Sewage Treatment Plants

- ▶ Up to 90% water recovery from recycling

Thermax differentiated services

- ▶ Plant improvements and upgrades
- ▶ Plant automation, audits and evaluation
- ▶ Spare parts management and support
- ▶ Characterisation and treatability test
- ▶ Membrane integrity autopsy

Case Study

Case:

An agrochemicals production company in Kota, India, wanted to reduce its reliance on fresh water while maintaining an odourless, non-clogging operation.

Solution:

Thermax recommended an ultrafiltration and Reverse Osmosis (RO) membrane system, that recovers 91% of water. The RO system treats hardness and silica content in the water resulting in high-quality water having Total Dissolved Solids (TDS) less than 400 PPM. On the other hand, an advanced membrane-based UF system is used for the removal of all types of fine colloidal impurities along with organics.

Result:

The customer was able to reduce dependency on freshwater supply, while achieving a non-clogging, odourless operation.

5+ decades of knowledge expertise

600+ large and 25,000 standard plants installed

80k+ m³/hour wastewater recycled

180k+ m³/hour successful installations



Customised solutions for a variety of applications

Boosting productivity for the chemical industry

Being Asia's leading manufacturer and exporter of Tulsion® ion exchange resins, the Chemical division of Thermax manufactures and markets a wide range of specialty chemicals to help improve processes and product performance for the chemical manufacturers. Thermax's viable construction chemicals serve the industry with unique and customised solutions that have stood the test of time for over a decade.

In order to comply with environmental regulations, we also provide water and wastewater treatment chemicals specially designed to treat feed water and used water in industrial processes.



Benefits

Tulsion® Ion Exchange Resins

- Higher operating capacity and regeneration efficiency
- Superior physical stability, low leachable and colour throw
- NSF certified and food-grade products compliant to US FDA

Construction Chemicals

- CFTRI approved coating for storage areas
- Abrasion, chemical, thermal and impact resistant
- Durable and long lasting waterproof structures

Water Treatment Chemicals

- Control of corrosion, scaling and fouling of utilities
- Increase in uptime and longer life of equipment
- Reduced water footprint
- Assured technical service at doorstep within 24 hours



Why choose Thermax solutions?

- ▶ Pioneer in manufacturing Tulsion® brand of ion exchange resins
- ▶ Chemicals are manufactured from three world-class manufacturing units
- ▶ Well-maintained standardised R&D laboratories with experienced professionals and modern instruments
- ▶ Global presence backed by a strong dealer network

Applications

Chemical Processes

- ▶ Catalytic conversion
- ▶ Gelatin and MEG cycle purification
- ▶ Acidity removal for process solutions
- ▶ Softening and demineralisation
- ▶ Deionisation of process solutions

Chemical Infrastructure

- ▶ Maintaining hygienic and sterile conditions
- ▶ Joint-free, seamless flooring, protective coating solutions for walls, steel structures, water tanks, chemical proof industrial flooring and ETPs
- ▶ Waterproofing solutions

Industrial Water and Wastewater Treatment

- ▶ Treatment of feedwater used in boilers, chillers and cooling towers
- ▶ Effluent treatment and water recycling using chlorine dioxide and efficient microbes

Thermax Offerings

Tulsion® Ion Exchange Resins

- ▶ Cation and anion resins
- ▶ Mixed bed / catalyst resins
- ▶ Adsorbent / chelating / ultra-pure resins

Water Treatment Chemicals

- ▶ Boiler water / cooling water chemicals and fuel additives
- ▶ Polyelectrolytes for raw water, wastewater treatment and recycling
- ▶ RO antiscalant and cleaning chemicals
- ▶ Efficient microbes for BOD/COD reduction in effluents
- ▶ Automated dosing and online monitoring system
- ▶ Green chemicals

Construction Chemicals

- ▶ Tecfloor range of industrial flooring
- ▶ T-guard range of protective coatings
- ▶ Maxshield range of waterproofing solutions
- ▶ Maxgrout range of grouts and anchors
- ▶ Maxtite range of tile adhesives

Case Study

Case:

One of the leading specialty chemicals manufacturing companies was facing heavy slime growth in their cooling towers, despite there being no process contamination.

Solution:

Thermax recommended Maxtreat® 7960, an effective chemical treatment with a hypo at 1:4 ratio to eliminate the slime growth and improve process efficiency.

Result:

The customer was satisfied with our treatment as there was a significant reduction in the slime growth. Total bacteria count, a critical parameter, was also maintained under the prescribed limit.

40+
years of experience

30+
industries served

100+
projects commissioned globally

5,000+
customers across the globe

TOESL Build-Own-Operate Solutions

Utility delivery under the Build-Own-Operate model

Comprehensive solutions, enabling the chemical industry to focus on their core business

In a bid to optimise costs, reduce carbon footprint and freshwater consumption, and focus on their core businesses, Thermax's subsidiary company, Thermax Onsite Energy Solutions Limited (TOESL), offers outsourced utilities to various industries, including the chemical industry.

The company's utility solutions include steam, heat, chilled water, treated water, power cogeneration, and solar-based power on a Build-Own-Operate (BOO) business model. TOESL invests in and installs utility plants at the customer premises and provides comprehensive operation and maintenance, along with supply chain management of biomass fuels, chemicals, etc. This facilitates our chemical clients to focus on their core business.



Value proposition of Build-Own-Operate solution

- ▶ Green utilities supplied based on renewable, recycling and recovery solutions
- ▶ Capital investment by TOESL freeing up cash flow for core business
- ▶ Operational risk management
- ▶ Lifecycle maintenance and performance responsibility of the utility plant by TOESL
- ▶ Decarbonisation – reduce carbon footprint

Thermax Offerings

- ▶ Biomass based steam supply
- ▶ Biomass based heat supply
- ▶ Biomass based cogeneration power supply
- ▶ Treated water supply
- ▶ Recycled water supply
- ▶ Multi-utility supply

Benefits

- End-to-end utility delivery on consumption based billing
- Free up cash flow for core business
- Avail expertise related to utility equipment
- Eliminate energy and operational inefficiencies
- Decarbonisation – reduce carbon footprint
- Uninterrupted biomass fuel supply chain management
- One stop solution for all plant utilities
- Guaranteed performance and uptime of utility plant
- Achieve sustainability goals in partnership with utility OEM

Case Study

Case: Under Build-Own-Operate, Thermax had enabled an agrochemicals major in Gujarat, India, to switch from furnace oil to agro-waste biomass based steam. Thermax also approached the customer for providing all required plant utilities for a greenfield formulation plant in Dahej.

Solution: Thermax provided a multi-utility supply leveraging multi-fuel combustion technology which is optimised, highly efficient and sustainable. It also provided water treatment and recycling solutions.

Result: Complete capital expenditure of the utility plants was undertaken, freeing the cash flow for core business of the customer. This helped to achieve reduction in carbon footprint and fresh water consumption for the customer.



Why choose Thermax solutions?

- ▶ Only OEM company to provide end-to-end utility services under a decarbonisation initiative
- ▶ Partnering with 20+ large corporates and MNCs for utility supply under BOO globally
- ▶ Long-term contracts under the BOO model
- ▶ Single point responsibility of the entire utility spectrum
- ▶ Established supply chain of 1,000+ tonne of biomass fuel per day

0.58+ million tonne per annum of CO₂ equivalent reduction across all sites

35+ installations in India; first installation in Indonesia under execution

60+ assets under management across sites

0.22+ million kilo litre of total water treated



Thermax Aids India's Leading Pigment Producer Become Energy and Cost-Efficient

Introduction

With the rising raw material prices and environmental norms, energy efficiency is a high priority area for industries. In the chemical industry, where energy consumption is significantly high due to its scale and multiple processes requiring heating, cooling, and power, this need is even greater.

About the Company

Sudarshan Chemical Industries Limited, is a leading pigment manufacturer in India for over 60 years, and has a global presence. The company primarily serves the coatings, plastics,

inks, and cosmetics markets. The customer chose Thermax as their preferred partner for providing turnkey solutions for their new establishments.



Challenge

The customer had faced quite some issues in implementing their facility, including a very high cost of power generation. In addition, fluctuations in the power grid caused unwanted power tripping in the plant, which prevented smooth operations.

Another major problem was the high moisture content in coal, a major fuel used in the facility, during the monsoon season that caused a severe problem of coal jamming and load reduction in the power generation plant. Some other issues they faced included - high raw water requirement in the cogen and process plant and wastage of the return condensate from the processing plant because of its high temperature and silica.

Most of the mainline equipment used in the manufacturing process was manually operated. Handling of such heavy equipment required not only a large workforce but also left room for human error, which would be disastrous.

The customer also wanted to conduct an energy audit of the power plant to increase efficiency and decrease operational costs.



Solution

Thermax's O&M experts carried out extensive studies to identify the cause of the issues and suggest corrective measures.

To prevent the deposition of excess dump steam in the condenser, installation of an HP heater was suggested. The installation resulted in an increase in plant efficiency and caused a significant reduction in coal consumption, subsequently reducing operational costs.

Thermax also suggested some technical modifications in the coal handling plant and coal lines to make them more efficient. Various other suggestions were made such as replacing the MS structure of the plant with a more efficient SS structure, usage of the STG roof rainwater in the cooling tower for cooling the facility, installing the heat exchanger to increase the water temperature in the DM plant, and reduce the condensate temperature.

To further increase control, the silica CPU installation was recommended.

Also, other solutions for their pigment manufacturing needs were provided. They included multiple absorption chillers required for their process needs, chemicals for RO plant, cooling towers and boilers, electrostatic precipitators for reducing and maintaining the suspended particle size to $< 30 \text{ mg/Nm}^3$, RO plant with ultrafiltration to treat the water and reduce the dependency on fresh water supply. Installation of Thermopac i.e. hot oil boilers required for the pigment manufacturing process, was also advised.



Scan for more details

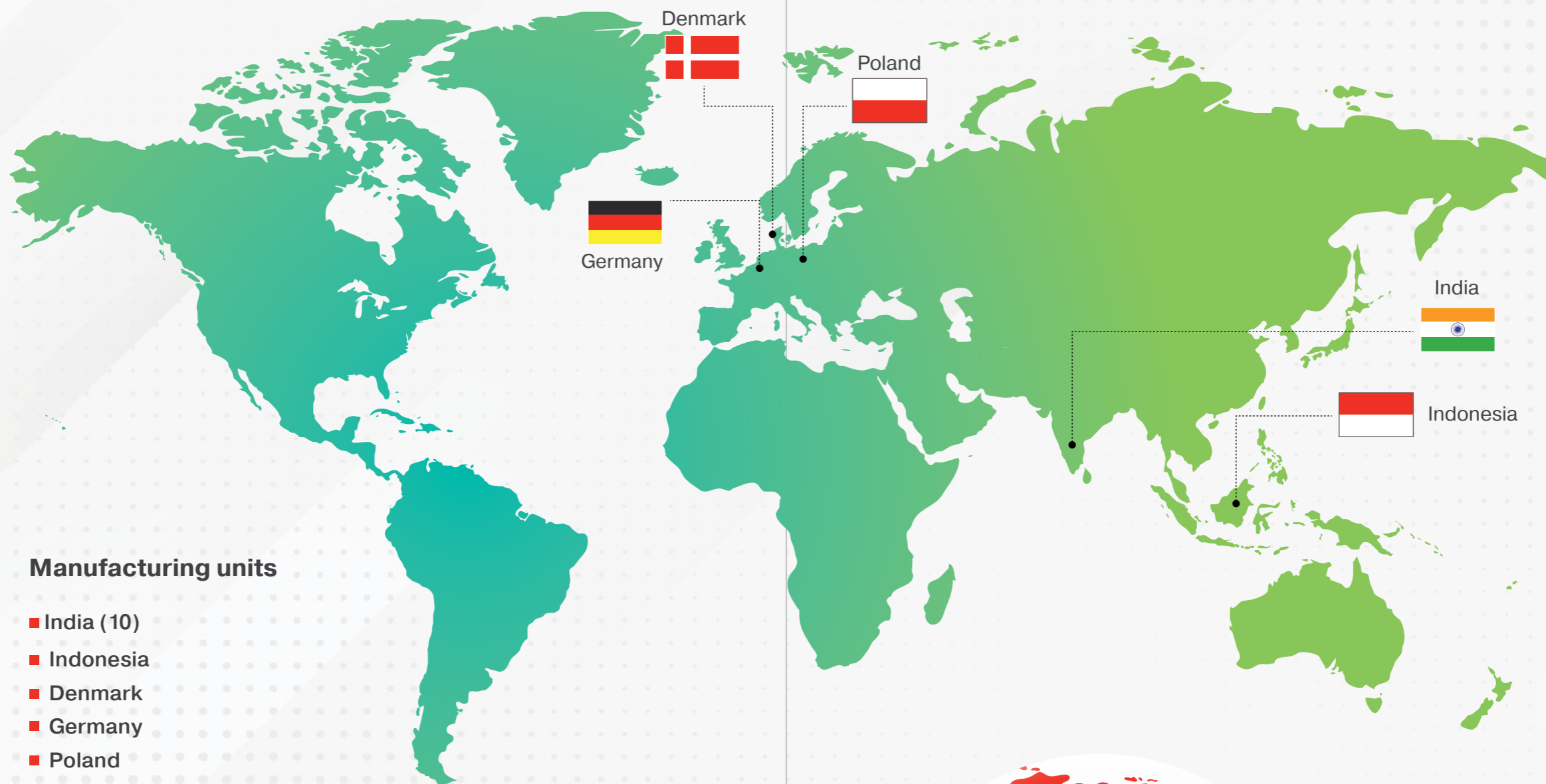
Result

After implementation of the suggested measures, the plant's unwanted tripping was controlled. The installation of Thermax's specialised HP heater led to the reduction of daily coal consumption by 7-8%. Through a novel modification in CHP processes, the significant issue of coal choking in the monsoon season was brought under control. The issue of load shedding of the process plant was also addressed as the power supply was restored.

Once the installed state-of-the-art RPMS system is operational, the customer will be able to check all the mainline equipment simultaneously and be aware of any lapses and accordingly take prompt corrective action.

Through innovation, Thermax's operations team used the excessive rainwater in the region as an inexpensive cooling solution and modified the cooling tower. The saving per day is approximately 100 m^3 . By increasing the DM temperature from 30°C to 60°C and utilising the CPU's condensate water, there has been a significant reduction in the deaerator steam consumption, leading to extra savings in the operational costs.

Coal consumption reduced significantly by 7-8% per day



Manufacturing units

- India (10)
- Indonesia
- Denmark
- Germany
- Poland

Head Office
India

International Subsidiaries, Sales & Service

- | | | | |
|--------------|---------------|----------------|-----------|
| ■ Bangladesh | ■ Kenya | ■ Russia | ■ U.K. |
| ■ Brazil | ■ Malaysia | ■ Saudi Arabia | ■ U.S.A. |
| ■ Canada | ■ Mauritius | ■ Senegal | ■ UAE |
| ■ Denmark | ■ Myanmar | ■ Singapore | ■ Vietnam |
| ■ Egypt | ■ Netherlands | ■ Sri Lanka | ■ Zambia |
| ■ Germany | ■ Nigeria | ■ Tanzania | |
| ■ Indonesia | ■ Philippines | ■ Thailand | |
| ■ Italy | ■ Poland | ■ Turkey | |



90+
Countries

14
Facilities

Industries Served



Agriculture & Allied Industries



Automobiles & Auto Components



Aviation



Cement



Chemical



Commercial & Construction



Engineering & Capital Goods



Food & Beverages



FMCG



Healthcare



Hospitality



Infrastructure



IT & Data Centre



Medical Devices



Metals



Oil & Gas



Paper & Pulp



Pharmaceutical



Power



Renewable Energy



Rubber



Telecommunication



Textiles



Wood

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