VI. Business Segments of the Company

Energy Segment

The increasing demand for energy globally, coupled with issues of current scarcity and adverse environmental impact of traditional sources of energy generation, points to a likelihood of an energy crisis in the future. As an energy and environment solutions provider, Thermax is well-positioned to partner with industries that are looking to reduce their carbon and water footprint.

Thermax's Energy segment includes Process Heating, Absorption Cooling and Heating, Boiler & Heater (TBWES), Projects and Energy Solutions, Renewable Energy Solutions (FEPL), as well as ancillary services. The Group also offers Build-Own-Operate (TOESL) utility distribution solutions. Products for process heating include packaged boilers, thermal oil heaters, heat recovery boilers, and hot water generators. Its vapour absorption cooling and heating systems are used for industrial refrigeration, air conditioning, process cooling, and heating. It also offers wet and dry process cooling options for significant energy savings.

Thermax Babcock & Wilcox Energy Solutions (TBWES), a wholly-owned subsidiary, provides steam generation for process and power needs, as well as waste heat recovery solutions. It also retrofits boilers and process furnaces.

With a current contracted base of more than 3,500 MW, Thermax has a strong edge in constructing best-in-class captive power, cogeneration, and trigeneration plants on an EPC basis. Solar business, which is now part of First Energy Private Limited (FEPL), has executed more than 150 predominantly rooftop projects, totalling more than 72 MW of green power output.

Thermax's recently launched ultra low temperature hot water chiller

Thermax Onsite Energy Solutions Limited (TOESL), a wholly-owned subsidiary, delivers 'green' utilities on a long-term contractual basis. The business model encompasses investing in, constructing, and operating plants on customer premises, as well as managing the supply chain for all consumables, including biomass fuels.

Recognising the expanding opportunity in this segment, Thermax continues to enhance its digital capabilities to maintain a competitive advantage. In addition to focussing on digitalisation (IIoT-enabled services), the Company is developing innovative technologies in the green energy sector.

Prime Drivers

- Energy transition and action on climate change are major priorities of governments globally
- Emphasis on clean energy driving shift in energy mix, creating opportunities for greenfield projects and brownfield replacements
- Increasing demand for EPC, renewable energy, waste to energy, waste heat recovery plants and biofuels due to focus on sustainability and energy-efficient solutions
- Gradual shift from capex to opex based models
- Increase in demand for dry cooling solutions and adiabatic cooling towers on account of sustainability and water consumption regulations
- Growth across industries such as food, pharma, chemicals, cement, and steel, owing to encouraging policies and macro-economic factors
- In FY 2022-23, as a part of government borrowing, sovereign green bonds are to be launched in order to fund green infrastructure
- India is best placed to benefit from the altered situation post-Covid owing to its competitive advantage in various industries, favourable factors of production, conducive business environment, and incentivising government policies

Key Focus Areas

- Diversification of EPC offering into international markets, unconventional fuels, and renewable energy
- Bridging the gap between energy availability and sustainability
- Waste heat recovery, waste to energy and municipal solid waste (MSW) incineration in line with the demand to increase the green portfolio
- Considering the volatile nature of fuels available as well as their cost, focus on multi-fuel fired boilers for higher flexibility
- Continued momentum of domestic growth in opex-based biomass solutions and penetration in international markets
- Penetrate India as well as Asian and African markets for solar opex-based solutions
- Scaling up of energy management solutions for comprehensive operations and maintenance
- Modularisation in international markets for reduction in on-site construction work
- Due to considerable industry pressure, focus on complete solutions to minimise energy costs and carbon footprint
- Continued investments in value-added service offerings, such as industrial internet of things (IIoT) solutions, remote assistance technology, and automation
- Business development collaborations with industrial associations, OEMs, process licensors, and consultants in important markets

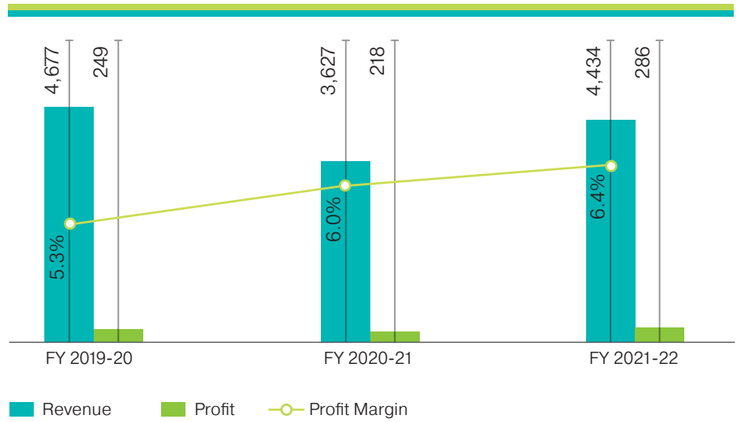
Performance in FY 2021-22

In FY 2021-22, the Energy segment accounted for 70.8% (74.8%) of the Group's gross operating revenue. The Group's operating revenue (net) for the year was Rs. 4,434 crore (Rs. 3,627 crore), while segment profit was Rs. 286 crore (Rs. 218 crore) for the same period.

In FY 2021-22, order booking was Rs. 6,237 crore, up from Rs. 3,724 crore in the prior year.

With an increased focus on clean energy, energy efficiency, and decarbonisation solutions, as well as the opening up of markets post-Covid, revenues and profit margins for the Energy segment have improved.

Financial Performance – Energy Segment (Rs. in crore)



Case Study

Reducing Sulphur Compounds from a Refinery Process

Thermax concluded an order of Rs. 1,176 crore from an Indian public sector refinery to set up their sulphur recovery block on a lump sum turnkey basis.

In order to meet the BS VI emission standards of low sulphur fuels, the refinery is reducing sulphur content in fuels it produces. The sulphur recovery block will treat the resultant H_2S gases and deliver about 500 TPD elemental sulphur in liquid form. This sulphur can be further used for conversion to sulphuric acid, a basic raw material for many industrial processes that produce fertilisers, industrial explosives, storage batteries, etc.

The sulphur recovery block will be a part of the customer's ongoing refinery expansion project and is being pursued as a part of the Government of India's North East Hydrocarbon Vision 2030. The scope of supply includes project management, engineering, procurement, manufacturing, construction, and commissioning. The project is slated to be completed in 28 months.

Environment Segment

Concerns about air pollution and wastewater management have prompted process-oriented industries to develop and follow stricter environmental regulations. The Environment segment includes the Water and Waste Solutions (WWS) and Air Pollution Control (APC) businesses.

The WWS business supports industrial and commercial establishments to recycle water for their process requirements, clean sewage and treat effluents through its water treatment, wastewater treatment/recycling plants, zero liquid discharge, sewage treatment/recycling and desalination solutions. It has completed more than 25,000 standard and over 600 industrial large-scale installations up to FY 2021-22.

For more than four decades, the APC business of Thermax has been a focal point entity for all industrial and utility sectors concerned with controlling hazardous emissions. Besides pollution control systems, the APC business also provides flue gas desulphurisation (FGD) systems to mitigate sulphur dioxide (SOx) emissions in thermal power plants. A diverse range of solutions offers multi-fold benefits to various industries, helping them not only improve air quality but also comply with stipulated emission norms. The business has successfully completed over 25,000 installations across a wide range of industries including power, cement, steel, sugar, refinery & petrochemicals, paper, chemical, food, textiles, fertiliser sectors.

The Company's technological know-how, customised solutions and well-trained field engineering staff have aided the expansion of the Environment segment. It has a full-fledged in-house R&D setup, including testing equipment, prototypes, pilot plants, and shop floor plant installation to validate product performance.

Thermax has installed an electrostatic precipitator (ESP) for a power company in Thailand to control emissions from their 26 MW biomass power plant

Prime Drivers

- Lack of access to water
- Stringent regulatory norms for water and effluent treatment
- Market demand for modularised/ plug-and-play water and wastewater treatment products
- Shift from coal to biomass or agro-based fuels
- Government's mandate to power companies on installation of FGD systems within a stipulated timeframe to mitigate SOx emissions
- Enforcement of air pollution emission norms globally

Key Focus Areas

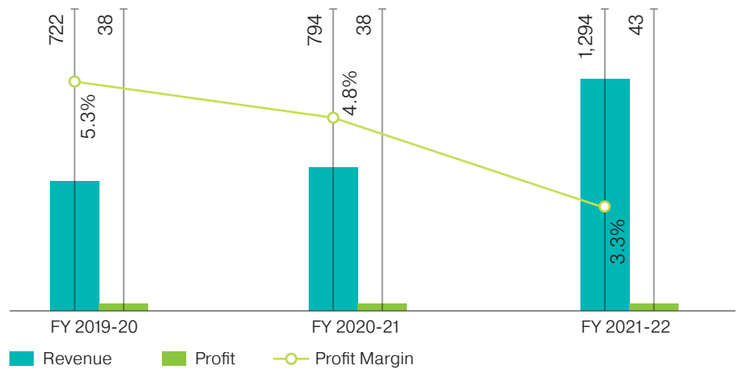
- Continued focus on digitalisation and remote monitoring of products and solutions
- Modularisation of new products
- Focus on urban and commercial segments to offer sewage recycling solutions with newer compact products based on membrane bioreactor (MBR) and sequential batch reactor (SBR) technologies
- Emphasis on zero liquid discharge (ZLD) systems with advanced multi effect evaporator (MEE) and mechanical vapour recompression (MVR) technologies, developed in-house
- Improve and upgrade plant operations through modernisation projects
- Development of new air pollution control technologies to manage diverse versions of gaseous pollutants and enable agro-based fuel combustion
- Expansion of spares and services portfolio
- Strengthen presence in the overseas markets

Performance in FY 2021-22

In FY 2021-22, the segment accounted for 20.6% (16.4%) of the Group's gross operating revenue. The Group's operating revenue (net) for the year was Rs. 1,294 crore (Rs. 794 crore), while segment profits were Rs. 43 crore (Rs. 38 crore) for the same period.

In FY 2021-22, order booking for the segment was Rs. 2,604 crore, compared to Rs. 636 crore in the previous year. Higher emphasis on the urban and commercial sectors led to an increase in order bookings for WWS. In APC, there was an improvement in revenue due to the two major FGD orders received in FY 2021-22.

Financial Performance – Environment Segment (Rs. in crore)



Case Study

Making every drop count

A glass-making major in Gujarat wanted to treat the wastewater generated in their wet coater and vacuum coater and reduce the quantity of rejects in order to meet the norms prescribed by the Pollution Control Board.

Thermax suggested a comprehensive solution to the problem of wastewater treatment. The Company worked on a specific design project to treat the wastewater by providing equalisation, filtration membrane, and zero liquid discharge solutions to treat the wastewater generated during coating operations.

The facility designed by Thermax has the capacity to reduce fresh water intake and save water by 800 KLD, while adhering to the principle of delivering clean water.

ZLD plant installation at the customer site

Chemical Segment

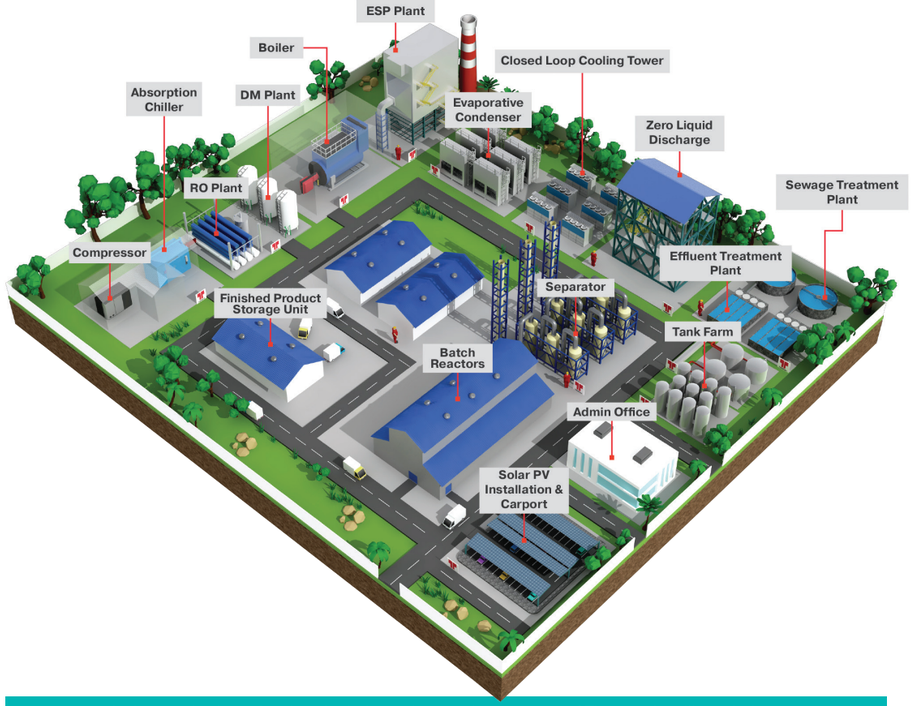
Thermax is widely recognised as a leading manufacturer and exporter of ion exchange resins and a pioneer in water and wastewater treatment chemicals. Within its Chemical segment, the Company manufactures and markets a vast array of specialty chemicals that aid in the enhancement of various processes. In addition, the product portfolio encompasses construction chemicals for improving, protecting and repairing concrete structures as well as chemicals for oilfield operations. Providing custom and cost-effective solutions to industrial sectors and clients around the globe gives the Company a distinct advantage. The segment is guided by research and supported by production facilities that meet global standards.

Prime Drivers

- Increase in demand for solvent-free and low total organic carbon (TOC) resins for ultrapure water applications in industries such as food, pharma, and electronics
- Increasing emphasis and government push towards recycling of water in the wake of the worldwide water crisis and severe regulatory criteria for water and wastewater treatment
- Rise in demand for RO, multi effect evaporator (MEE), and incinerators which help boost water treatment chemicals that aid in zero liquid discharge and effluent treatment
- Investments in the petrochemical sector are leading to opportunities for monoethylene glycol (MEG) and catalyst resins
- New demand from infrastructure segments - cement and steel, supported by infrastructure expansion and government policies

Key Focus Areas

- Enhance market presence and broaden the portfolio of specialty resins, build references for specialty applications
- Expand global market presence through dealer network and collaboration with industrial licensors and consultants
- Widen the market reach of water treatment chemicals by focussing on digitalisation and remote monitoring of water treatment products and systems

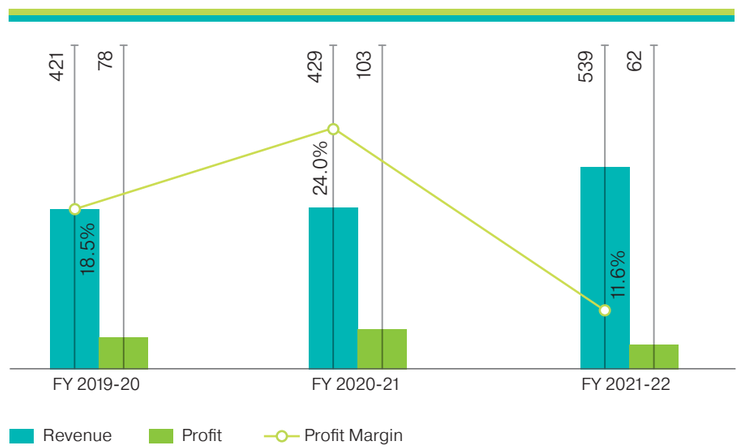


An isometric view of a chemical plant, showcasing an array of Thermax's utility solutions

Performance in FY 2021-22

The segment accounted for 8.6% (8.8%) of the Group's gross operating revenues in F Y 2021-22. The Chemical business posted an operating revenue of Rs. 539 crore (Rs. 429 crore). Profit for the year stood at Rs. 62 crore, compared to Rs. 103 crore in the previous year. The second wave of the coronavirus outbreak at the beginning of the fiscal caused a near-catastrophic blow to the economy, followed by the Russian-Ukrainian conflict. A combination of these factors, along with unprecedented increases in the cost of key raw materials, rising ocean freight charges, and the highest inflation rate seen globally, adversely affected the profitability. The Company has adopted measures such as passing on the cost to the customers to mitigate the impact.

Financial Performance – Chemical Segment (Rs. in crore)



Ion exchange resins

Case Study

Chemical Breakthrough Order for Demineralisation (DM) and Condensate Polishing Applications

Africa's largest producer of granulated urea fertiliser for DM and condensate polishing applications was experiencing issues with existing uniform particle size (UPS) resins and wanted assurance of enhanced performance. Due to its established reputation in ion exchange resins and the technical expertise of the team, Thermax Chemicals won the order from the customer against strong competition, conditions of tight payment terms and freight challenges.

Tulsion® ion exchange resins from Thermax met the customer's requirements, resulting in a second order for another DM plant from its cement group.