

A large, abstract graphic on the left side of the page, composed of several overlapping, curved shapes in shades of orange, green, and beige. The shapes are arranged in a way that they appear to be part of a larger, circular or semi-circular composition. The colors transition from a light orange at the top to a light green at the bottom, with a dark green and orange band in the middle. The overall effect is a modern, geometric design.

# Management Discussion and Analysis

## 1. Economic Overview



### 1.1 Global Economy

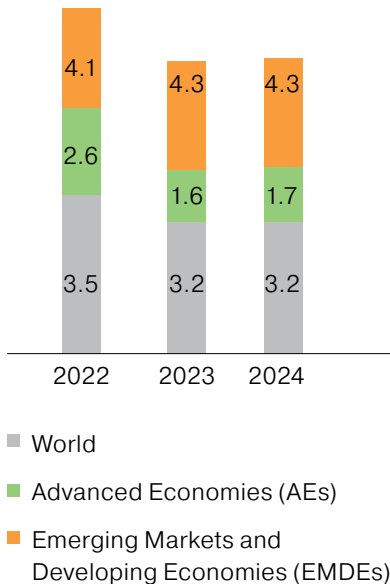
The year 2023 turned out to be better than anticipated. Real global gross domestic product (GDP) grew by 3.2% in 2023, as against the earlier estimation by the International Monetary Fund (IMF). The year started with the expectation of a slowdown in the western world following high inflation and subsequent tightening by all major central banks worldwide. However US economy

remained buoyant registering 2.5% GDP growth following strong growth in jobs and consumer spending. The geopolitical crisis in Europe continued while tensions in the Middle East hit the world towards the end of the year, turning the Red Sea into a conflict zone. Despite these challenges, the global economy remained on a solid footing, with the US economy expected to have a soft landing.

The International Monetary Fund (IMF) projects the global economy to grow by 3.2% in 2024 as well as in 2025. It expects global inflation to ease from 5.8% in 2024. Potential challenges to global growth include inflation and geopolitical uncertainties, such as the Red Sea crisis, which has led to higher freight and insurance costs and reduced shipment volumes, potentially hindering recovery.



## Global GDP Forecast (in %)



Source: World Economic Outlook, April 2024

The COP28 summit in Dubai concluded with the first-ever pledge to cut down fossil fuels and an agreement signalling the 'beginning of the end' of fossil fuels to keep the global temperature limit at 1.5 degrees Celsius. However, the world is lagging on sustainability targets, with only 15% of the United Nations Sustainable Development Goals achieved. Climate action is a matter of concern with every year becoming the hottest ever and extreme climate events becoming regular all over the world. In fact, at the current pace, the world temperatures could rise by 2 – 2.4 degrees Celsius over the next 100 years.

Over 100 countries pledged to triple renewable energy capacity by 2030. Renewable energy deployment, mainly solar and wind, has increased globally over the past several years. The amount of renewable energy capacity added to energy systems around the world grew by 50% in 2023, reaching almost 510 gigawatts (GW), led by China and India according to the latest edition of the IEA's (International Energy Association) annual market report on the sector Renewables 2023.



### 2024<sup>P</sup>

Wind and solar PV jointly generate more electricity than hydropower

### 2025<sup>P</sup>

Renewables surpass coal as the largest source of electricity generation

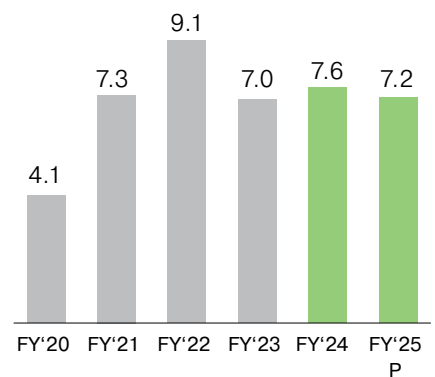
## 1.2 Indian Economy

India continues to be the fastest growing large economy. Its GDP in the financial year (FY) 2024 grew by 7.6% (according to the second advance estimate by National Statistical Organisation), compared to 7.2% in FY 2023. Continued government capital expenditures and robust domestic consumption were the key factors in driving the growth.

## 1.3 Outlook

The IMF expects the Indian economy to grow by 7.2% in FY 2025, following resilience in domestic demand. S&P Global Ratings anticipates India to maintain its position as the fastest-growing major economy for the next three years.

## India's GDP Trend (%)



P – projections

Source: NSO (National Statistical Organisation), RBI

## MANAGEMENT DISCUSSION AND ANALYSIS

Sectors such as steel, cement and distilleries are set to witness good growth due to a significant increase in government capital expenditures on infrastructure and a focus on ethanol blending. Government policies and capex outlays to support green technologies such as biofuels will strengthen Thermax's clean energy portfolio.

### 1.4 India's Climate Commitments

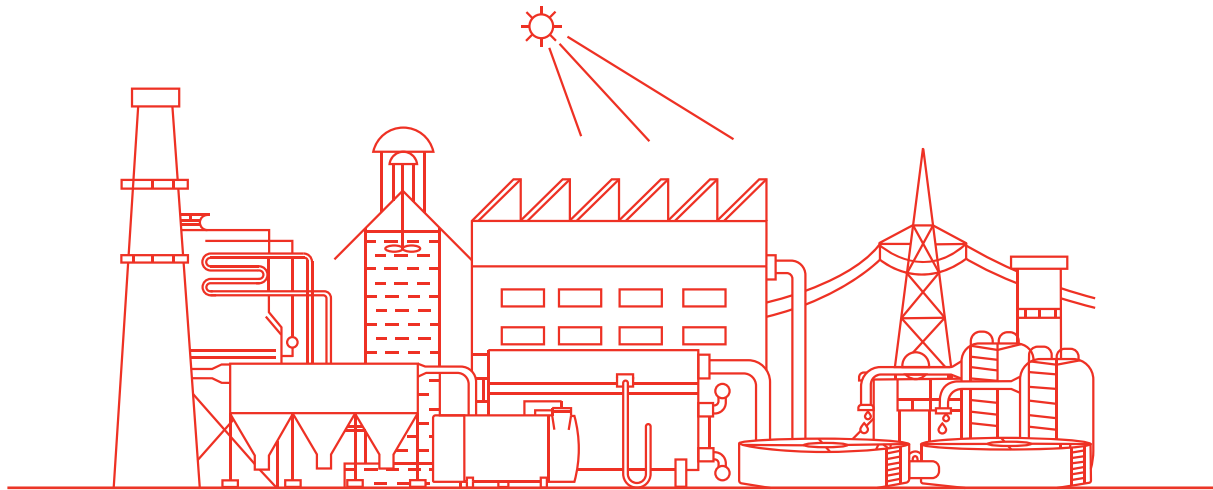
India has successfully managed economic growth while meeting the greenhouse gas emission targets

ahead of time. Between 2005 and 2019, India reduced the emission intensity vis-à-vis its GDP by 33%, achieving the initial nationally determined contributions (NDC) target for 2030. India now derives 40% of its electric installed capacity through non-fossil fuel sources, nine years ahead of the target for 2030. Between 2017 and 2023, India has added around 100 GW of installed electric capacity, of which around 80% is attributable to non-fossil fuel-based resources. In spite of these advances, India is the world's third-highest carbon emitter, indicating a significant scope for further emission

reductions. Thermax's strategic focus on clean and renewable energy areas aligns with government objectives.

Thermax's hydrocarbon fuel-based businesses also have good prospects. The all-India production for coal was 997.25 million tonnes in FY 2024 and the government is looking to substantially increase annual coal production to 1 billion tonnes by 2030. The government also plans to increase refining capacity from the existing 254 million tonnes annually to ~ 311 million tonnes by 2028.

## 2. Industry Overview



### 2.1 Clean Energy and Environment Sectoral Review

As climate awareness rises, investment in clean energy technologies is significantly outpacing spending on fossil fuels, with more than \$ 1.7 trillion expected to go into clean technologies, including renewables, low-emission fuels, grids, and storage. Global heat

pump sales have seen double-digit annual growth since 2021.

According to ITA (International Trade Administration) reports, the Indian environmental technologies market is valued at approximately \$23 billion, including goods and services, and is likely to grow at a CAGR of 7.5%

from 2023 to 2028. India ranks as the sixth largest world market overall for environmental technology exports, second globally in the subsectors of air pollution control and solid waste recycling, and fifth for water/wastewater management.



## 3. Company Overview

Thermax Group is a Rs. 9,323 crore company, standing as a trusted partner in energy transition and environmental sustainability. Thermax, with its long-standing expertise in offering clear air, clean energy, clean water, and chemical solutions, has strategically expanded its footprint across global markets and across a diverse range of industries. With the world moving towards decarbonisation, and resource conservation, Thermax has intensified its focus towards green and

clean solutions, reaffirming its commitment towards conserving resources, and preserving the future.

A one-stop utility solutions provider, Thermax offers comprehensive operations and maintenance support across all its business verticals. It also provides several specialised services, including retrofitting, revamping, upgrading, and auditing. Additionally, the Company has expanded its portfolio by introducing digital solutions that address all asset lifecycle requirements in real-time.

### 3.1 Thermax Order Booking by Industry

Amongst the many sectors that utilise energy and environment solutions, Thermax saw major business coming from metal, steel, food & beverages, refinery & petrochemicals, bio-CNG, and sugar & distillery industries, contributing substantially to the order book during the year.

Industries	FY 2023-24	FY 2022-23
Metals/Steel	18%	13%
Food and Beverages	11%	15%
Bio-CNG	8%	6%
Refinery and Petrochemicals	8%	15%
Sugar/Distillery	8%	9%
Engineering	7%	2%
Cement	7%	6%
Power	6%	8%
Chemical	6%	8%
Fertiliser and Agro	5%	0%
Pharma	3%	3%
Paper and Pulp	1%	3%
Others	13%	12%

## 4. Business Segments



Industrial Products



Industrial Infra



Green Solutions



Chemical

## MANAGEMENT DISCUSSION AND ANALYSIS

### 4.1 Industrial Products

Industries today face three prominent challenges: combatting climate change, securing clean energy, and managing water scarcity. Our products, engineered to provide solutions for clean air, clean energy, and clean water, along with our digital service EDGE Live empower industries to adopt environmentally sustainable practices, guiding them towards a cleaner tomorrow.



#### Clean Air Solutions

Thermax provides air pollution control (APC) systems for both particulate and gaseous exhaust.

We offer broad-based, single-source expertise and flange-to-flange solutions in all areas of environmental protection – from products and systems for air pollution control to retrofit and rebuild services.

We undertake turnkey environmental projects from concept to commissioning through tie-ups with technology majors and diverse industry sectors.



#### Clean Energy Solutions

This segment delivers a comprehensive range of heating solutions, including packaged boilers, fired heaters, and turnkey process heating solutions using steam, thermic fluid, hot water, and hot air.

Our solutions extend to biomass-fired equipment and heat recovery solutions for clean energy production.

We also offer energy-efficient vapour absorption machines and process cooling equipment for environment-friendly cooling and heating solutions in industrial and commercial settings.

Furthermore, we offer comprehensive operation and maintenance services to ensure the continued optimal performance of our solutions.



#### Clean Water Solutions

Our Company's Water and Waste Solutions (WWS) business assists industrial, commercial and residential establishments with products and services to purify, reuse and recycle water and treat sewage and effluents.

We also provide seawater desalination solutions, that reduce freshwater consumption and play a significant role in water conservation efforts.

Additionally, we provide operation and maintenance services, ensuring the sustained efficiency of our solutions throughout their lifecycle.



## Business Highlights



### Clean Air

Our Air Pollution Control business ventured into biogas purification and upgraded technology solutions to enhance gas processing quality and efficiency.

- » Thermax introduced hybrid heat pumps that combine the benefits of both electrical and absorption technologies in one product.

the globe, including manufacturing facilities in western India that cater to major companies in pharma and personal care.

### Clean Energy

#### Heating

- » We introduced a range of new and upgraded products to cater to the market's changing requirements and offer strong value propositions to industrial customers. Some of these included Dynatherm – a multi-combustor, compatible, solid fuel-fired thermic fluid heater; Shellmax Global Ultra – an upgraded version of a packaged oil and gas-fired steam boiler; the advanced Thermopac Global and UPRG (Ultrapac) – a compact and reliable biomass boiler for extremely fouling fuel.

#### Cooling

- » We launched a dedicated growth unit under our Cooling business to offer products that enhance energy efficiency and water savings, reduce fossil fuel dependency, and support industrial process improvements.

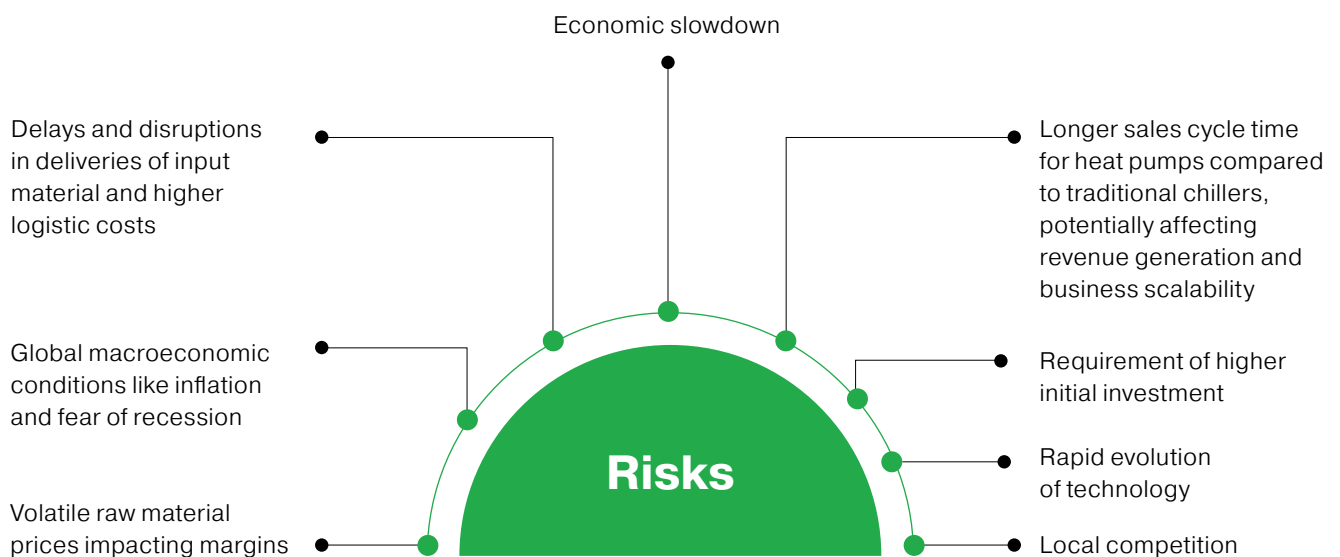
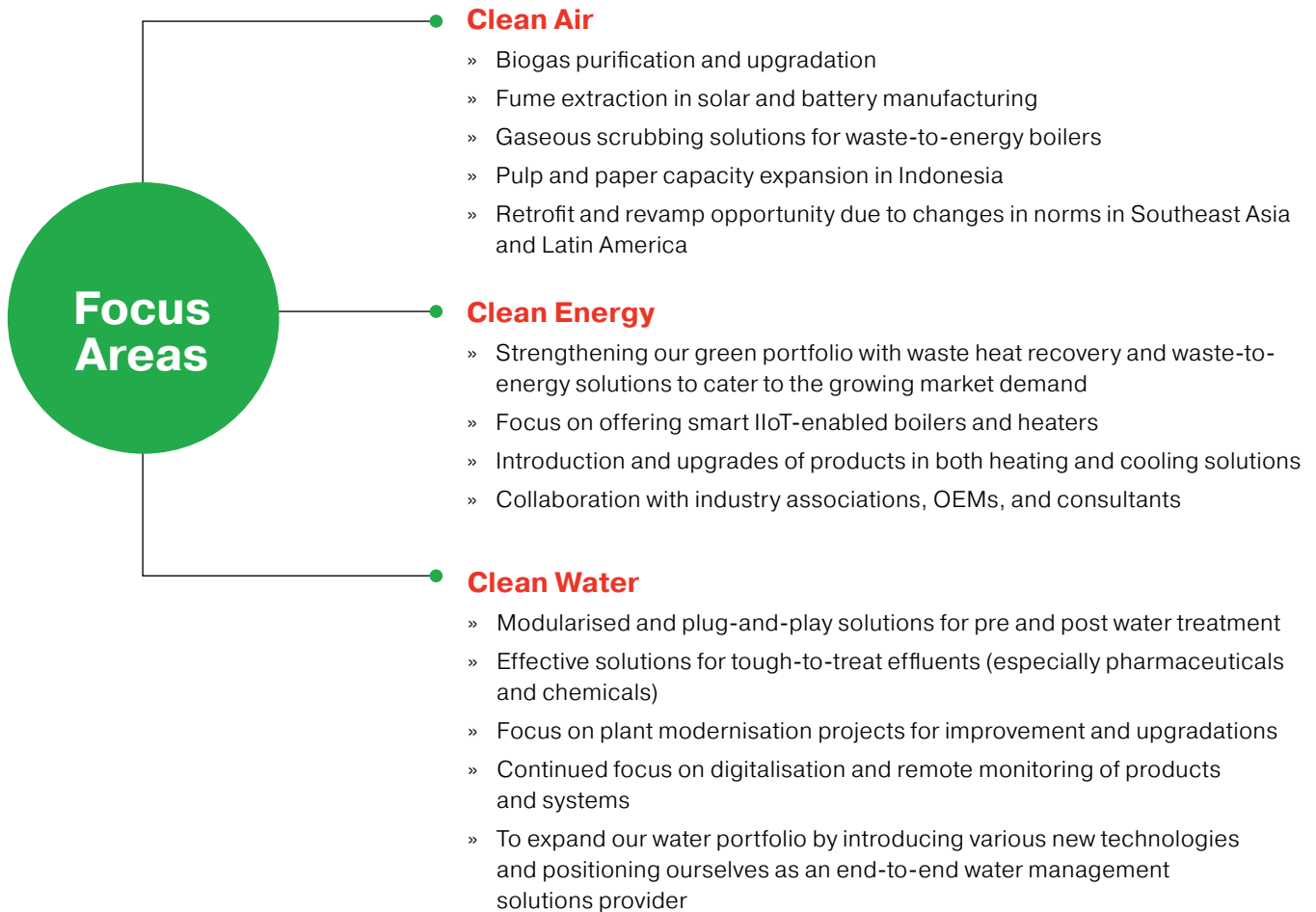
### Clean Water

- » Thermax's Water and Waste Solutions business inaugurated a new high-tech facility in Pune, Maharashtra, equipped with advanced machinery such as plasma plate cutting and robotic welding systems. The plant prioritises environmental sustainability by utilising solar power and rainwater harvesting, while its scalable design allows for future expansion. It incorporates efficient and eco-friendly practices, such as nanotechnology-based painting, to ensure swift delivery and top-notch quality.
- » With Thermax's acquisition of TSA Process Equipments on April 19, 2024, WWS now offers complete solutions to meet pure water requirements across industries including pharmaceuticals, biopharma, personal care, and food and beverages. Founded in 2004, TSA Process Equipments Pvt. Ltd. is headquartered in Mumbai, Maharashtra. It has over 500 installations across

### Growth Drivers

- » Enforcement of emission norms globally
- » Fuel shift from coal to biomass or agro-based fuels
- » Energy security concerns and global policies supporting energy transition
- » Market demand for pre-fabricated/plug-and-play water and waste treatment products
- » Increased government push for water recycling and reuse for industries
- » Stringent regulatory discharge norms for wastewater to prevent the pollution of water bodies
- » Traction in ethanol and high-purity water segments
- » Traction in predictive analytics and energy utility optimisation
- » Customers seeking organised single-point service providers for products, projects, and services for better reliability and uptime
- » Adoption of AI across the industry
- » Manufacturing growth in India

## MANAGEMENT DISCUSSION AND ANALYSIS





**New Product****Hybrid Heat Pump: A Sustainable Green Solution**

Heating and cooling are essential operational needs for any industry. To optimise energy usage and reduce carbon emissions, Thermax has introduced an innovative hybrid heat pump that combines electrical and absorption technologies to meet both cooling and heating demands singlehandedly. This dual-capacity solution is capable of generating high-temperature water at 120°C and providing a cooling capacity of up to 30%.

**Benefits of the Heat Pump****120°C**

High Temperature Efficiency

**Up to 30%**  
Simultaneous Cooling  
Generation Capacity**40%**

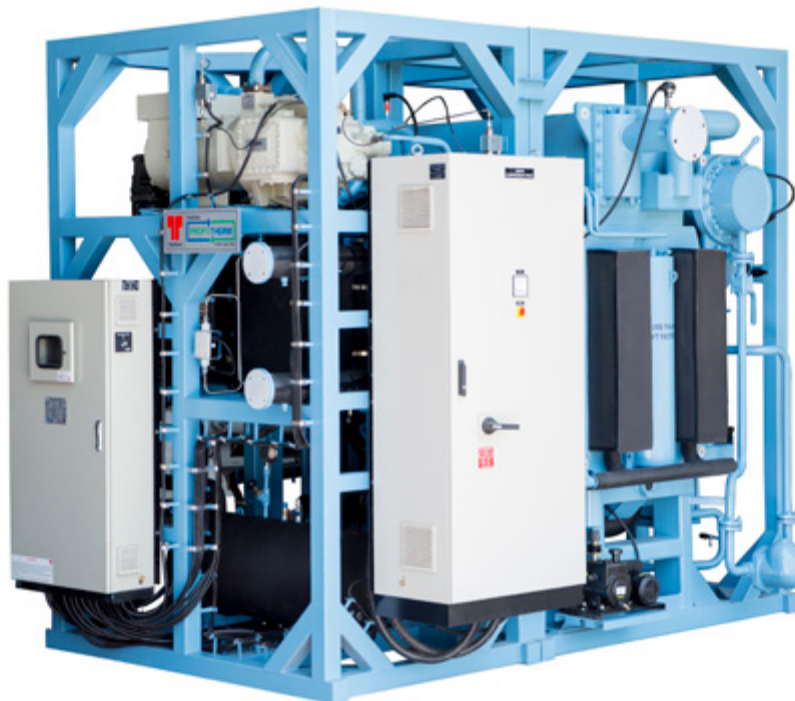
Fuel Consumption Savings

**30%**

Water Savings

**400 kw**

Capacity (Heating) Onwards



## MANAGEMENT DISCUSSION AND ANALYSIS

The MDA covers significant subsidiaries impacting segmental performance. Please refer to AOC-1 on page 298 for detailed information on each subsidiary.

### Industrial Products Overseas Subsidiaries

#### Danstoker Group, Herning, Denmark

##### Business Performance

The subsidiary's revenue grew by 38.9% in FY 2023-24 (FY 2022-23 saw a growth of 25.1%) while the order booking increased by 2.1% (in FY 2022-23 the order booking grew by 52.7%). This subsidiary has turned around in the last two years after registering negative growth for a prolonged period. This improvement is primarily driven by positive developments in the biomass segment, spurred by the non-availability of fossil fuels due to geopolitical circumstances, resulting in an increased demand for biomass-fired boilers.



*The 26 TPH boiler supplied and installed by Danstoker for a dairy company in France*

##### Key Solutions Provided

- » Solid fuel-fired (biofuel) boilers
- » Electric boilers
- » Waste heat recovery boilers
- » Oil/gas-fired boilers

##### Sustainable Growth Plan

- » To expand the business with waste biomass as a fuel that is likely to experience massive demand in Europe in the years ahead. The growing market is a consequence of Europe's plan to be independent of Russian gas supply
- » To leverage Europe's growing demand for biomass and electric boilers

##### Geographical Footprint

- » Denmark
- » Poland
- » Nordic countries (Norway, Sweden and Finland)
- » Baltic countries
- » Western Europe (France, Germany, the Netherlands, and Belgium)

##### Key Industries

- » Automotive
- » Breweries
- » Crematoriums
- » Dairies
- » District Heating
- » Food and Beverages
- » Pharmaceuticals
- » Wood

##### Highlights

- » Received its biggest-ever order from a packager in France for a biomass-fired boiler with a capacity of 25 tonnes per hour, operating at 45 bar pressure and 450 degrees Celsius temperature
- » Supplied the first-ever RDF (refuse derived fuel) fired hot water boiler with a capacity of 9.6 MW, operating at 16 bar pressure, for a project in Senja, Norway
- » Delivered another RDF fired hot water boiler of 17.5 MW capacity, operating at 10 bar pressure for a project in Kvitebjorn, Norway



## PT Thermax International, Indonesia (PT TII), Jakarta, Indonesia

### Business Performance

The subsidiary registered a 29.3% decline in revenue in FY 2023-24 (a growth of 83.3% in FY 2022-23). Order bookings decreased by 41.7% this year (61.7% increase in FY 2022-23). PTTI has been incurring losses since its inception. This year, we are bringing in management as well as operational changes, which will help to gradually turnaround its performance going ahead.

### Key Solutions Provided

- » Process heating equipment such as steam boilers, hot water and hot air generators, thermic fluid heaters and steam accessories
- » Services such as steam audits, along with value-added services like retrofitting and revamping existing assets within customer premises are also offered, complementing the product portfolio

### Key Industries

- » Agriculture and Allied
- » Chemicals
- » Food and Beverages
- » Palm Oil
- » Paper and Packaging
- » Petrochemicals
- » Pharmaceuticals
- » Rubber
- » Textiles
- » Tobacco



### Sustainable Growth Plan

- » To streamline local manufacturing facilities and increase the capacity utilisation
- » To penetrate the market with competitive products and pricing along with aggressive sales and marketing activities
- » To strengthen the services business by providing services such as revamping and retrofitting for boilers, heaters, and air pollution control equipment
- » To remain focussed on customer service and retention
- » To develop a network of channel partners and dealers and increase customer reach and visibility
- » As part of the expansion, the subsidiary is in the process of setting up a chemical blending unit
- » To reduce the overall cost
- » Closer coordination with India

### Geographical Footprint

- » Indonesia
- » Southeast Asia

### Highlights

- » Secured an order from one of the largest multinational corporations in the food and beverages sector for three boilers equipped with a reciprocating grate combustor. These boilers feature multi-fuel capability, including the ability to incinerate in-house process waste. This project represents a noteworthy fuel shift in the process industry and will serve as a flagship project for PT Thermax International Indonesia.
- » Secured a first-of-its-kind order for the supply of bag filters from an EPC partner for a government power plant project

## MANAGEMENT DISCUSSION AND ANALYSIS

### Thermax Europe, Bletchley, United Kingdom

#### Business Performance

During FY 2023-24, the order booking was down by 9% (23.8% down in FY 2022-23). However, the revenue increased by 1% (9.4% up in FY 2022-23). The business did not perform due to the destabilisation caused by the Russia-Ukraine war, resulting in the project uncertainties and diminished orders. Also, with electrification getting cheaper, the demand for both steam and gas fired chillers has reduced considerably.

<p><b>Key Solutions Provided</b></p> <ul style="list-style-type: none"> <li>» Absorption chillers and heat pumps with a capacity of 35 kW to 12,000 kW, driven by hot water, steam, oil &amp; gas and waste heat</li> </ul>	<p><b>Sustainable Growth Plan</b></p> <ul style="list-style-type: none"> <li>» With the change in the market and high energy costs in Europe, our focus is on heat pumps and absorption refrigeration applications of waste heat recovery through hot water chillers</li> </ul>	<ul style="list-style-type: none"> <li>» 2 MW hot water-driven chiller delivering chilled water at 2 degrees Celsius supplied to a lettuce grower in the UK</li> <li>» Supplied a 1 MW chiller with a special design for hazardous areas for one of the world's leading suppliers of chemicals, plastics, synthetic fibres, and agricultural products in the Netherlands</li> <li>» Delivered a 3.6 MW steam-driven chiller custom-made for a large refinery in Saudi Arabia</li> </ul>
<p><b>Key Industries</b></p> <ul style="list-style-type: none"> <li>» District Heating</li> <li>» Commercial Establishments</li> </ul>	<p><b>Highlights</b></p> <ul style="list-style-type: none"> <li>» Supplied a 6 MW steam-driven heat pump to Fyn district heating plant in Denmark</li> </ul>	
<p><b>Geographical Footprint</b></p> <p>Eastern and Western Europe</p>		

### Thermax Inc., Houston, Texas, USA

#### Business Performance

In FY 2023-24, order booking related to absorption cooling and heating products by the subsidiary was 14% lower (6% higher in FY 2022-23) owing to challenges emanating from fiscal policies and ongoing geopolitical turmoil. The revenue also decreased by 31.6 % (144% higher in FY 2022-23).

<p><b>Key Solutions Provided</b></p> <ul style="list-style-type: none"> <li>» Sale and service of cooling and heating equipment based on absorption technology</li> </ul>	<p><b>Geographical Footprint</b></p> <ul style="list-style-type: none"> <li>» Americas (North, South, Central and the Caribbeans)</li> </ul>	<p><b>Highlights</b></p> <ul style="list-style-type: none"> <li>» A leading university opted for a multi-energy absorption chiller to ensure comfort cooling through recovery of waste heat from exhaust gases</li> <li>» A major Latin American beverage manufacturer chose Thermax's multi-energy absorption chiller. This chiller recovers waste heat from its processes and utilises it for process cooling.</li> <li>» A renowned chemical manufacturer opted for a Thermax steam fired chiller for its critical processes utilising waste heat recovery across different operations</li> </ul>
<p><b>Key Industries</b></p> <ul style="list-style-type: none"> <li>» Chemicals</li> <li>» Commercial Establishments</li> <li>» Data Centres and Information Technology</li> <li>» Food and Beverages</li> <li>» Hotels, Resorts and Hospitals</li> <li>» Oil and Gas</li> <li>» Pharmaceuticals</li> <li>» Universities, Schools and Colleges</li> </ul>	<p><b>Sustainable Growth Plan</b></p> <ul style="list-style-type: none"> <li>» To focus on promoting decarbonisation efforts all over the Americas (namely North, South Central and the Caribbeans) with cutting-edge absorption technology that can be deployed together with on-site power generation, solar energy technologies, district heating and cooling segment, and above all, for process integrated and discrete industrial heating and cooling applications</li> </ul>	



**Case Study**

**Air Pollution Control Secures a Rs. 100 Crore Order from Solar Industry**

In a first-of-its-kind order in India, the Air Pollution Control (APC) business secured a Rs. 100 crore order for a process exhaust system for solar PV cell and modules production lines of 4 GW capacity on a turnkey basis for a leading power company in Tamil Nadu, India.

Traditionally, solar panel manufacturers turn to international markets for gaseous abatement

scrubbers. However, our team successfully leveraged our division's expertise in addressing similar challenges and tailored solutions to meet the unique requirements of solar cell and module manufacturing. By optimising layouts and providing plug-and-play solutions, they met stringent deadlines, ensuring seamless execution of the project.

The team successfully concluded the initial phase of the project, delivering 2 GW of the process exhaust system.



**Case Study**

**Water and Waste Solutions Pioneers Indigenous Mechanical Vapour Recompression (MVR) Technology**

A leading pump manufacturer, renowned for its expertise in micro-precision parts with chrome/nickel plating sought an effluent treatment plant (ETP) based zero liquid discharge (ZLD) system to reduce freshwater usage and adhere to government discharge standards. However, the project faced challenges concerning limited space and steam availability.

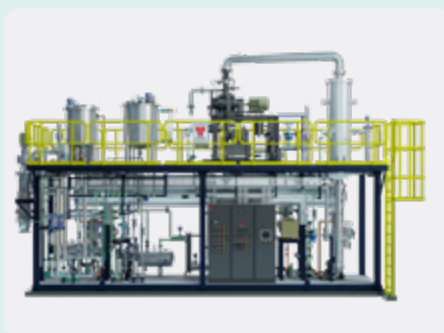
Thermax introduced an innovative solution – a 10 KLD mechanical vapour recompression (MVR) unit, incorporating a plug-and-play modular skid design that required no steam for start-up and included an agitated thin film dryer (ATFD). This approach also integrated an advanced two-phase closed-loop system to boost efficiency.

**Advantages**

**45 Days to 7 Days**  
Man-Days at Site Reduced as Most of the Assembly Work Was Done in the Factory

**45%**  
Space Savings Due to Skid-Mounted Design Versus Conventional Systems

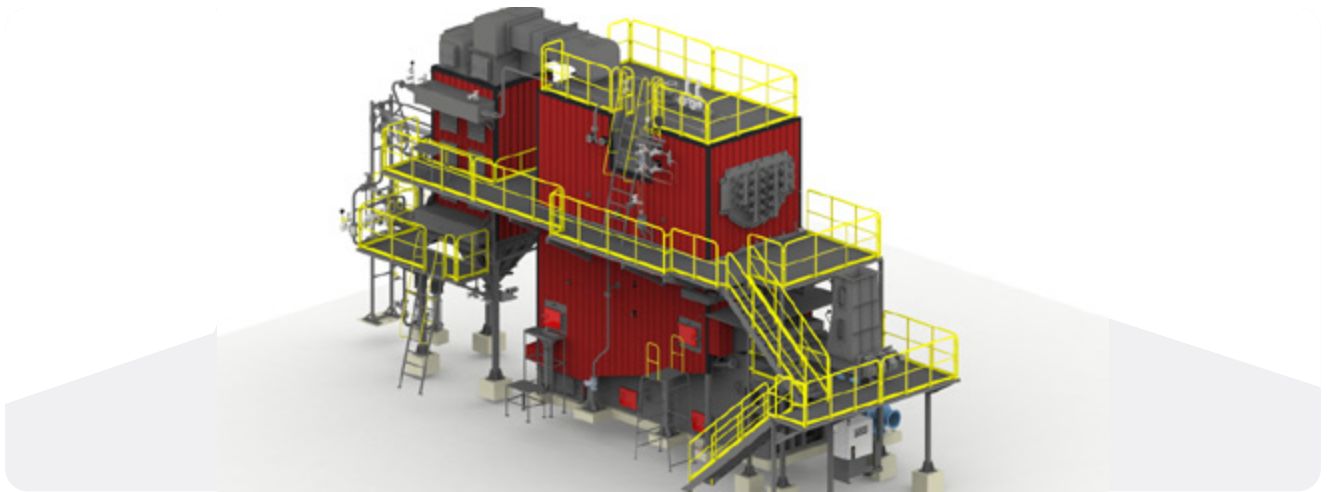
**95%**  
Water Recycled for Reuse



## MANAGEMENT DISCUSSION AND ANALYSIS

### Performance of Industrial Products Segment in FY 2023-24

In FY 2023-24, the Industrial Products segment accounted for 41.9% (40.2% in FY 2023) of the Group's gross operating revenue. The operating revenue (net) stood at Rs. 4,055 crore (Rs. 3,338 crore), while segment profit\* was Rs. 397 crore (Rs. 274 crore) for the same period. In FY 2023-24, the order booking was Rs. 4,329 crore, up from Rs. 4,172 crore in the previous year. The higher revenue can be attributed to strong growth in the metal, cement and food & beverage sectors.

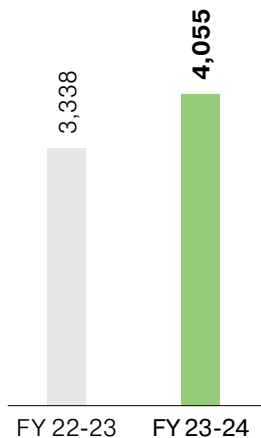


*Ultrapac is a compact and packaged biomass boiler designed for low-grade biomasses with extremely fouling characteristics. It offers fuel flexibility and requires minimal cleaning frequency, addressing the demand for CO<sub>2</sub>-reducing solutions in the smaller boiler market.*

### Industrial Products

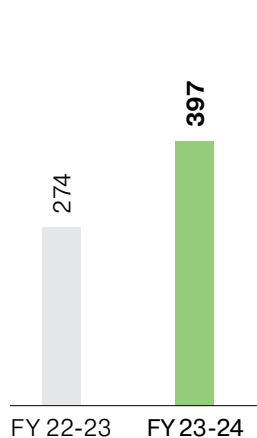
#### Revenue

(Rs. in crore)



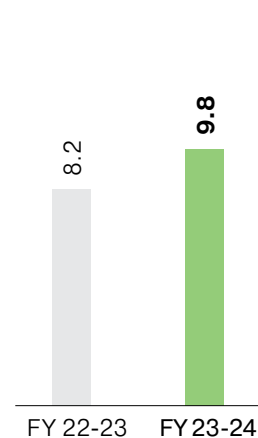
#### Profit\*

(Rs. in crore)



#### Profit Margin\*

(%)



Profit\* and Profit Margin\* – Segment PBIT before exceptional and unallocated overheads



## 4.2 Industrial Infra

Our Industrial Infra business supports industries in their energy transition process and encompasses our Projects and Energy Solutions (P&ES), Thermax Bioenergy Solutions Private Limited (TBSPL), and Thermax Babcock & Wilcox Energy Solutions (TBWES) businesses.

### Clean Energy



#### Projects and Energy Solutions (P&ES)

P&ES includes captive power plants, cogeneration systems, waste heat recovery plants, and independent power plants under an engineering, procurement, and construction (EPC) model. The business provides captive and independent power plants that rely on a variety of renewable fuels and energy sources.

P&ES' offerings also include sulphur recovery block installation and flue gas desulphurisation systems to capture SOx emissions from fossil fuel-based power plants. Additionally, it provides solutions based on conventional fuels to cater to diverse energy needs and preferences.



#### Thermax Babcock & Wilcox Energy Solutions Limited (TBWES)

TBWES supplies steam generation solutions for both process and power requirements, along with waste heat recovery. Additionally, it specialises in retrofitting boilers and process furnaces. The service arm of TBWES offers diagnostic services, spare parts, plant optimisation services, performance enhancement solutions, and digital services like Thermax EDGE Live® for boilers and heaters.



#### Thermax Bioenergy Solutions Private Limited (TBSPL)

TBSPL manages the setting up and operation of bio-CNG plants on an EPC basis collaborating with international technology partners. It offers comprehensive solutions for producing bio-CNG from various waste sources, including biomass, agricultural waste, municipal solid waste, and food processing waste. With a vision to become a preferred partner in the industry, TBSPL aims to ensure the accessibility of clean and sustainable energy while promoting a circular economy.

# MANAGEMENT DISCUSSION AND ANALYSIS

## Business Highlights



A site image of our bio-CNG plant in Dhuri, Punjab

### P&ES

Executed a transformative project for the Damodar Valley Corporation power plant, employing flue gas desulphurisation (FGD) technology to enhance sustainability and ensure environmental compliance

### TBWES

FlexiSource™ – our multi-fuel solution selected as one of the top innovative solutions introduced in the B20 Business Compendium of the G20 summit

### TBSPL

Driven by the Indian government's efforts to decrease natural gas imports and achieve stability against oil and gas price fluctuations, TBSPL has experienced significant traction. Since its inception, it has secured 15+ orders across five states, and initiated 4+ commercial gas generation projects

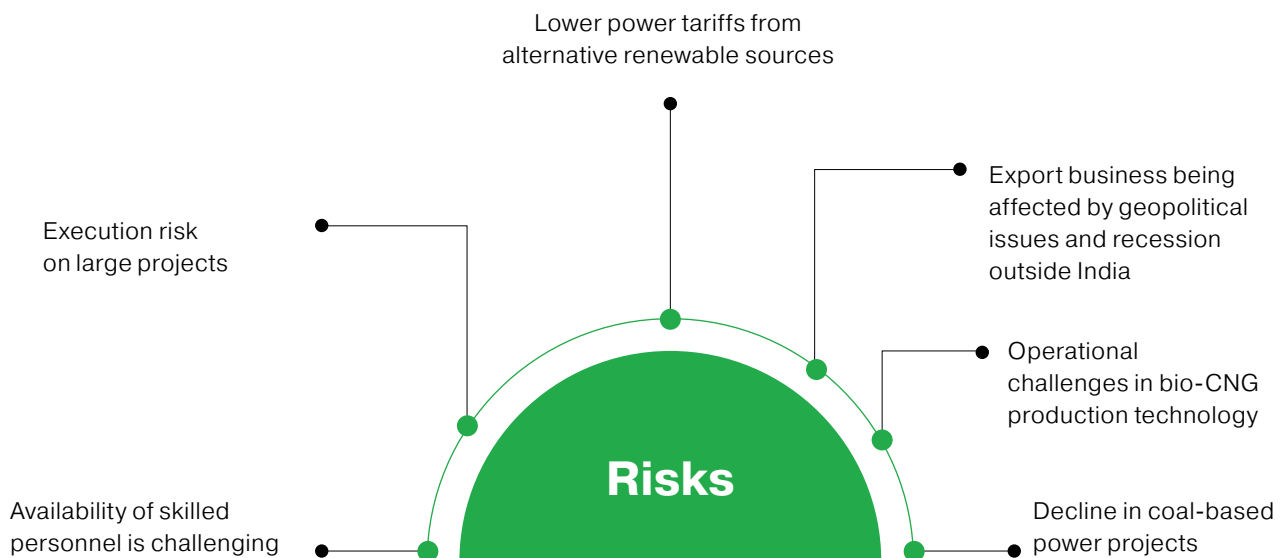
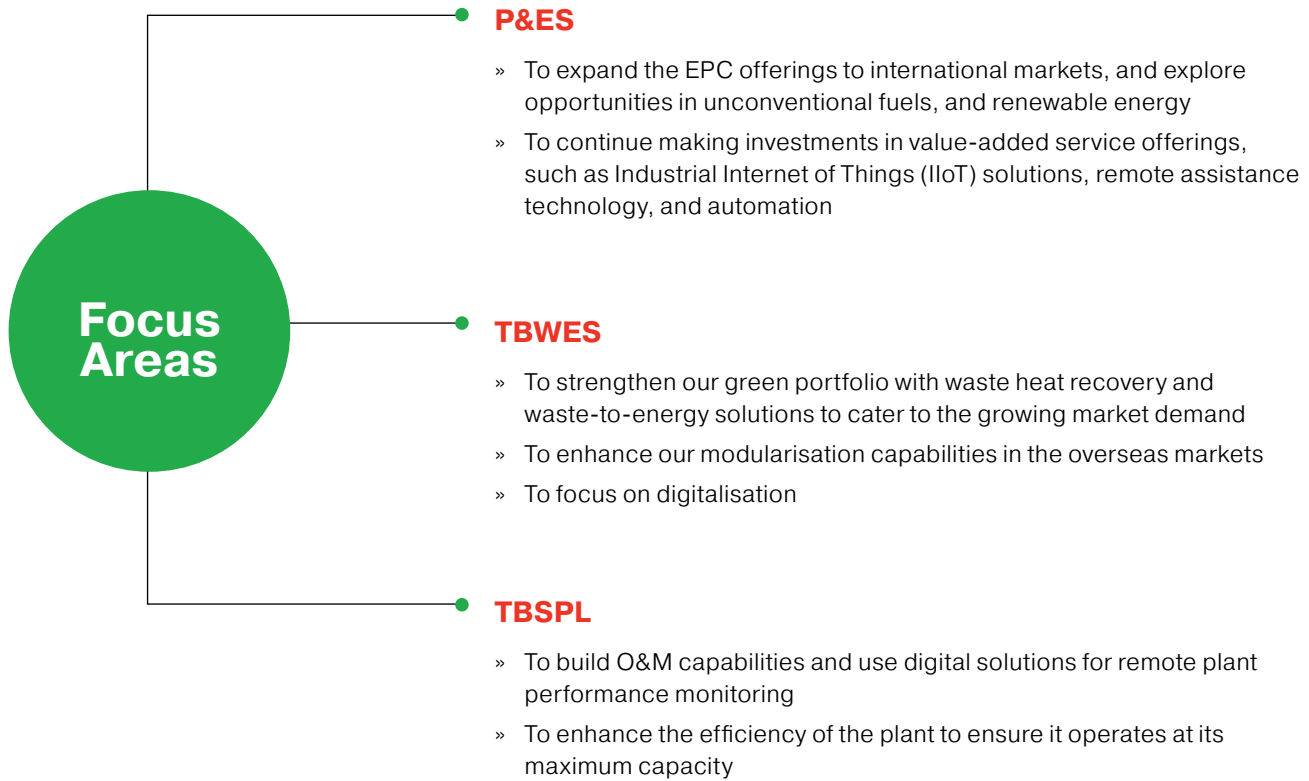
## Growth Drivers

- » Emphasis on clean energy driving shift in the energy mix and creating opportunities for greenfield projects and brownfield replacements
- » Increasing demand for EPC, renewable energy, waste-to-energy, waste heat recovery plants and biofuels with a focus on sustainability and energy-efficient solutions
- » Government mandate to power companies to install FGD systems within a stipulated timeframe to mitigate SOx emissions



The 20 MW captive power plant commissioned for a leading alloy steel manufacturer in South India





## MANAGEMENT DISCUSSION AND ANALYSIS

### New Product

#### FlexiSource™: Enabling Energy Input Flexibility

TBWES' ability to offer energy transition technologies and fuel flexibility is one of its growth drivers. The Company's multi-waste solution, FlexiSource™, provides energy input flexibility, effectively tackling fuel availability challenges caused by geopolitical changes, costs, and environmental factors. This waste-to-energy system enhances user capabilities by enabling them to switch energy inputs and decrease reliance on specific fuels.

#### Benefits of FlexiSource™

**14**  
Different Types of Fuels

**285+** kg/hour  
CO<sub>2</sub> Reduction

**10–300** TPH  
Capacities Range

**60-100%**  
Turndown Ratio

**81%**  
Maximum Efficiency





## Industrial Infra Subsidiaries

### Thermax Babcock & Wilcox Energy Solutions Limited (TBWES), Pune, Maharashtra

#### Business Performance

TBWES achieved a 6.4% growth in revenue for FY 2023-24 (31.6% growth in FY 2022-23) and experienced a 10.6% decline in order bookings (15.7% growth in FY 2022-23) compared to the previous year. This is on account of the deferment in large order finalisations and delayed traction in waste to energy projects.

#### Key Solutions Provided

[Read more on page 75](#)

#### Sustainable Growth Plan

- » To expand its green portfolio in conjunction with the trend towards clean energy, TBWES has formed strategic partnerships and developed newer technologies focussed on waste to energy, municipal solid waste (MSW) incineration and waste heat recovery
- » To develop and deploy multiple green energy solutions which offer multifuel flexibility to achieve the most economical fuel mix
- » To continue focussing on the services portfolio including plant improvement solutions that increase capacity, reliability, emissions performance, useful life and efficiency of existing plants along with digital solutions



*TBWES successfully shipped out its first consignment consisting of a fleet of 17 assembled modules for a leading waste to energy technology OEM in Europe*

#### Geographical Footprint

- » Asia
- » Southeast Asia
- » Middle East
- » Africa
- » Latin America
- » Europe

#### Key Industries

- » Cement
- » Chemicals
- » Distillery
- » Fertilisers
- » Non-Ferrous Metals
- » Paper
- » Petrochemicals
- » Power
- » Refinery
- » Steel
- » Sugar
- » Textiles

#### Highlights

- » An EPC order for design, manufacture, supply, erection and commissioning of a 250 tonnes per hour solid fuel fired boiler for a major chemical manufacturer
- » Order for design, manufacture, and supply of four waste heat recovery boilers for a leading cement manufacturer
- » Order for design, manufacture, and supply of first MSW RDF (refuse derived fuel) waste to energy boiler with HZI Steinmüller licensed technology in India
- » Order for study and provision of BFG (blast furnace gas) firing in a PC-fired (pulverised coal) boiler for a leading steel manufacturer
- » Order for dismantling and relocation of an HRSG (heat recovery steam generator) boiler for a leading refinery and petrochemical manufacturer

## MANAGEMENT DISCUSSION AND ANALYSIS

### Case Study

#### TBWES Commissions High Capacity CFBC Boiler for a Steel Major

The TBWES team successfully commissioned a high-capacity circulating fluidised bed combustion (CFBC) boiler for a prominent steel manufacturer. This boiler was designed to meet the specific requirement of maximising the utilisation of blast furnace gas (BFG), while also being capable of operating seamlessly on 100% coal in the event of gas supply interruptions. In traditional setups, BFG is fired in radiant boilers within steel plants. However, this poses challenges during interruptions, especially when steam generation

from more costly fuels such as natural gas or oil becomes necessary.

Our design team developed eco-friendly CFB technology, in line with the Pollution Control Board emission norms with BFG being the primary fuel and coal the secondary fuel. Customised methodologies were devised to predict thermal hydraulics of CFBC performance under the BFG and coal combination.

Another challenge was placing the BFG burner in the furnace due to the positive pressure nature of CFBC furnaces and low BFG gas pressure.

To address this, our design team identified the optimal elevation for the burner location, based on the pressure profile on the flue gas side. The unit achieved full-load operation in March 2024, meeting the customer's expectations.

**2,40,000**  
MT CO<sub>2</sub>  
Savings Per Day

### Thermax Bioenergy Solutions Private Limited (TBSPL)

#### Business Performance

TBSPL, similar to a start-up in the bio-CNG sector, is introducing many first-of-a-kind solutions for the Indian market, including rice straw and agro-residue-based biogas, which currently have no globally recognised technologies. TBSPL continues to scale up its rice straw technology in commercial plants although it faces challenges related to digestion technology and critical equipment, particularly in the rice straw preparation system. Despite these operational challenges, TBSPL is investing significant man-hours and financial resources, confident in its ability to enhance and scale pilot projects to commercial levels, making it highly attractive to the market.

#### Key Solutions Provided

[Read more on page 75](#)

#### Key Industries

- » Oil and Gas
- » Transportation (using bio-CNG for mobility)

#### Sustainable Growth Plan

- » To expand manufacturing and geographical footprint by deepening the business presence in domestic markets
- » To engage in strategic partnerships and promote sustainable energy, offering a one-stop solution for bio-CNG and contributing to a circular economy
- » To generate employment opportunities for local communities
- » To invest in technology and R&D

#### Geographical Footprint

- » India (Punjab, Uttar Pradesh, Gujarat, Delhi-NCR)

#### Highlights

- » Secured orders from a leading energy conglomerate to establish five bio-CNG plants to be set up in Rajasthan, Madhya Pradesh, Maharashtra (2), and Uttar Pradesh



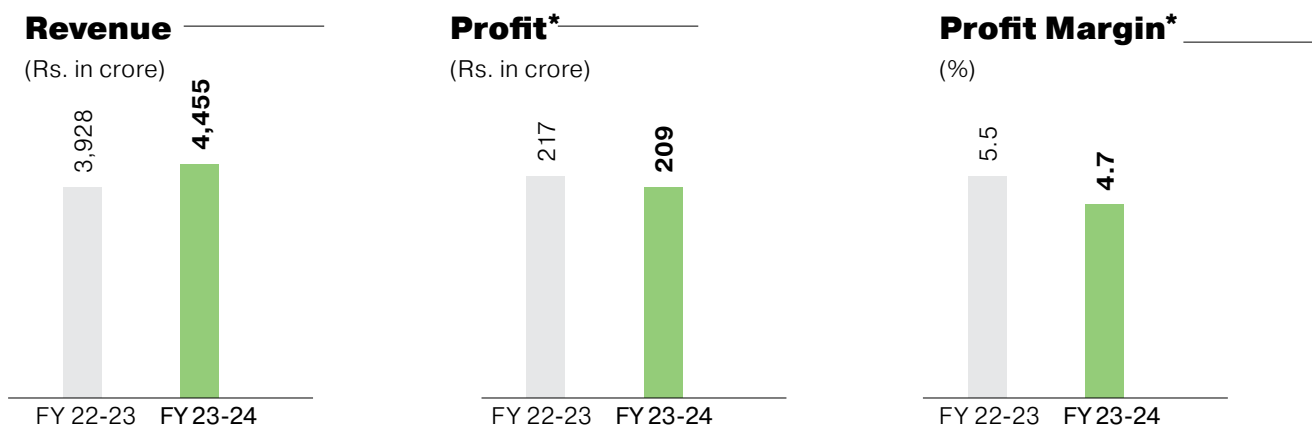
## Performance of Industrial Infra Segment in FY 2024

In FY 2024, the Industrial Infra segment accounted for 46% (47.3% in FY 2023) of the Group's gross operating revenue. The operating revenue (net) stood at Rs. 4,455 crore (Rs. 3,928 crore), while segment profit was Rs. 209 crore (Rs. 217 crore) for the same period. The growth in revenue is attributable to carry-forward orders in the project business and new orders received by TBSPL. In FY 2024, order booking stood at Rs. 4,100 crore, growing from Rs. 3,779 crore in the previous year.



■ 3x80 TPH modularised plug-and-play boilers supplied to a major refinery in Iraq

### Industrial Infra



Profit\* and Profit Margin\* – Segment PBIT before exceptional and unallocated overheads

## 4.3 Green Solutions Business

The Green Solutions segment includes Thermax Onsite Energy Solutions Limited (TOESL), and First Energy Private Limited (FEPL). Through these subsidiaries, the Company typically offers opex-based green utilities and renewable energy solutions through the build-own-operate model. Serving primarily industrial clients, the Company's engagements span 10 to 25 years, underscoring long-term commitment. Although capital-intensive initially, this business assures relatively secure cash flows.

## MANAGEMENT DISCUSSION AND ANALYSIS

Our financing model involves installing energy generation equipment for customers under long term fixed price contracts. However, the funding procurement for the same is subject to interest rate variations, thus posing a risk to our long-term profitability. For FEPL, customer default is also a risk which we mitigate by alternative off takers at profitable electricity prices. A default by a TOESL customer could leave our equipment stranded at the customer’s site. To minimise this risk, TOESL and FEPL are selective with the kind of customers they work with.

### Green Solutions Subsidiaries

#### Thermax Onsite Energy Solutions Limited (TOESL), Pune, Maharashtra

##### Business Performance

In FY 2023-24, TOESL registered a satisfactory performance. Revenue grew by 31.5% (60.5% in FY 2022-23), and profits increased by 65.8% (13.8% in FY 2022-23). TOESL commissioned seven new sites during the year, contributing significantly to the topline. Although order booking was not as per our expectations, for the next year, many customers have signed up with repeat orders.

##### Sustainable Growth Plan

- » With 100% green solutions, TOESL aims to help customers reduce their carbon footprint by replacing fossil fuel consumption. To date, it has enabled customers to reduce more than 1 million tonnes of CO<sub>2</sub>e
- » To strengthen its current portfolio through backward integration, digitalisation, and strategic business development
- » To tap new markets through selective internationalisation by capitalising on its present strengths
- » To diversify the portfolio with a focus on bio-CNG, biomass gasification and water and wastewater treatment solutions under the build-own-operate model

##### Key Industries

- » Chemicals
- » Food and Beverages
- » Pharmaceuticals
- » Textiles
- » Automotive

##### Key Solutions Provided

- » Supplies utilities such as steam, heat, treated water, and cogeneration power through the build-own-operate (BOO) business model
- » Invests in the capital, sets up and operates a utility plant for the entire lifecycle at the customer’s premises
- » Undertakes comprehensive operations and maintenance, and also handles supply chain management of fuel, spares, and consumables
- » Helps customers focus more on core manufacturing processes rather than owning and running such utilities

##### Geographical Footprint

- » South Asia (India, Sri Lanka, and Bangladesh)
- » Southeast Asia (Indonesia, the Philippines, Thailand, and Malaysia)

##### Highlights

- » Successfully secured a new account and entered a new industry by winning the inaugural project for green steam supply to a lithium-ion cell manufacturing company in Karnataka
- » Executed a 30 tonnes per hour biomass boiler plant for a biopharma major in Karnataka
- » Secured repeat orders and executed green steam supply projects across various industries, including agrochemicals, a confectionery major, and a specialty chemical company in Gujarat, Tamil Nadu, and Maharashtra respectively
- » Commissioned biomass boiler plants for steam supply to a chemical major in Gujarat and a pharma company in Madhya Pradesh

**Case Study****TOESL Executes a 100% Biomass-Based Boiler Plant for a Large Pharma Company**

TOESL executed a 100% biomass fired 30 tonnes per hour boiler plant for one of India's biggest pharma giants that wanted to switch from natural gas to a green energy source for their plant in Karnataka, India. The challenge was to deliver the project on a build-own-operate basis for a long term in a plant with severe space constraints and in close vicinity to urban commercial spaces.

TOESL deployed one of the largest saturated, hybrid water and smoke

tube boilers with a reciprocating grate to cater to the steam load of the customer. The company designed a first-of-a-kind plant configuration with 'Ground + 1' scheme. The boiler house was designed to have the boiler on the first floor of the plant, at an elevation of +7m height, with space for fuel storage on the ground floor. This ensured sufficient availability of biomass fuel for boiler operations. Four field electrostatic precipitators (ESP) have been deployed to meet the emission limit of 30 mg/Nm<sup>3</sup>

of suspended particulate matter, making it one of the largest ESPs supplied for a saturated boiler by Thermax.

**Rs. 15 crore**  
Annual Savings

**30,000 tonnes**  
Annual CO<sub>2</sub> Reduction

**First Energy Private Limited (FEPL), Pune, Maharashtra****Business Performance**

Achieved a healthy order booking during FY 2023-24, exceeding the annual target by 40%. FEPL's cumulative operational capacity increased from 27.5 MW peak of solar to ~170 MW peak, including solar, wind and hybrid captive renewable power projects in India by the end of March 31, 2024. Additionally, ~59 MW peak of wind and solar capacity projects are nearing commissioning. FEPL is also constructing a ~60 MW of wind renewable power project scheduled to be commissioned in the last quarter of FY 2024-25.

During the year, our solar site in Tamil Nadu was affected owing to unprecedented heavy rains but the plant was adequately insured and is currently under restoration and stabilisation.

**Key Solutions Provided**

- » Understands the unique energy matrix and designs custom-made solutions for different industries, applications, and energy management goals
- » Manages the entire energy corridor – from behind to beyond the meter – assuring dependable and reliable round-the-clock (24/7x365) green power to customers

**Key Industries**

- » All industrial clusters

**Sustainable Growth Plan**

- » To set up renewable captive power plants (solar, wind, hybrid, and storage) to tackle renewable power requirements, providing a sustainable solution for industries and reducing India's carbon footprint
- » To explore the option of connecting large power projects with the CTU (central transmission utility) in the future
- » To collaborate with credible partners
- » To explore additional revenue sources such as carbon market exchanges
- » To adopt new technologies and automate business processes

**Geographical Footprint**

- » India (Maharashtra, Gujarat, Tamil Nadu, Andhra Pradesh, Rajasthan)

**Highlights**

- » Single order of 75 MW wind captive project received from Tamil Nadu
- » First international order received from the Philippines
- » Concluded an industrial customer acquisition for solar and wind captive projects of 207 MW peak
- » Commissioned a 45.80 MW wind-solar captive hybrid plant in Gujarat for industrial consumers

## MANAGEMENT DISCUSSION AND ANALYSIS

### Performance of Green Solutions Segment in FY 2024

The Green Solutions segment accounted for 5.2% (4.4% in FY 2023) of the Group's gross operating revenue. The operating revenue (net) stood at Rs. 507 crore (Rs. 363 crore), while the segment's profit was Rs. 45 crore (Rs. 15 crore) for the same period. In FY 2024, the order booking was Rs. 241 crore, growing from Rs. 195 crore in the previous year. The increase in revenue was mainly due to the income generated by new sites under TOESL and FEPL.

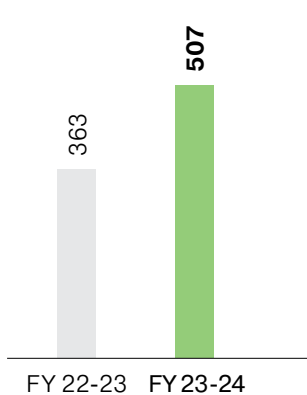


TOESL partnered with a leading specialty chemicals company, marking their third collaboration for green steam supply under the build-one-operate (BOO) model

#### Green Solutions

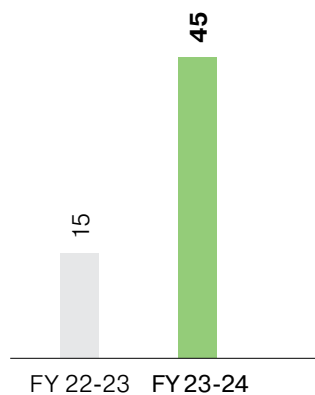
##### Revenue

(Rs. in crore)



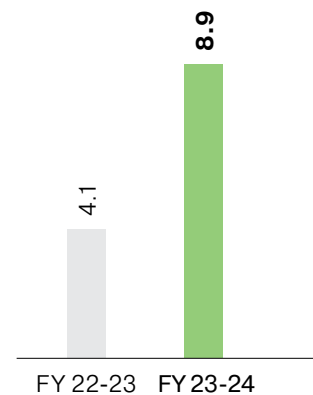
##### Profit\*

(Rs. in crore)



##### Profit Margin\*

(%)



Profit\* and Profit Margin\* – Segment PBIT before exceptional and unallocated overheads





## 4.4 Chemical

The Chemical business manufactures and markets a wide range of resins, water treatment and specialty chemicals to help improve processes across various industries through customised and cost-effective solutions. Thermax supplies a range of construction chemicals for strengthening, protecting and repairing concrete structures. It also supplies chemicals for oil field operations and paper and pulp processing.

### Case Study

#### Construction Chemicals Help Restore a 120 m Chimney for Odisha's Metal Conglomerate

A large metal conglomerate in Odisha, India, entrusted Thermax with the task of repairing the 120-metre tall chimney of its power plant. The project, however, was a challenging one. Firstly, the sheer height of the chimney required materials that could withstand severe environmental factors such as wind, rain, and temperature variations. Additionally, it demanded

a blend of innovation, expertise, and high-performance materials to ensure the structural integrity and longevity of the chimney. Also, the timeline for the project was tight, calling for swift execution without compromising on quality.

To address this, Thermax Construction Chemicals developed an innovative solution integrating a variety of high-performance

materials that complemented the existing range of repair products. This comprehensive system was designed specifically to repair and protect the chimney, offering a holistic solution. The Thermax team, along with a renowned applicator, provided extensive technical support, ensuring optimal application and performance of the materials.

## Chemical Subsidiary

### Thermax Inc., Houston, Texas, USA

#### Business Performance

During FY 2023-24, the order booking declined by 1% over the previous year (growth of 3.3% in FY 2022-23), and the revenue decreased by 16.8 % (growth of 29.6% in FY 2022-23). The decline was primarily due to the slowdown in the US market, driven by inflation and a recessionary environment.

#### Key Industries

- » Chemical
- » Commercial
- » Electronics
- » Food and Beverages
- » Oil and Gas
- » Paper
- » Petrochemicals
- » Urban

#### Geographical Footprint

- » North America

#### Sustainable Growth Plan

- » To expand into Canada, Mexico, and Latin America markets through our distribution channel with a focus on mix bed application in the North American market
- » We are planning to collaborate with companies through strategic alliances to expand our product portfolio

#### Key Solutions Provided

- » Sale of chemicals (ion exchange resins)

#### Highlights

- » Received orders from large OEMs for industrial water treatment
- » Secured multiple orders for drinking water applications
- » Received orders for specialty processing resins from the petrochemical industry
- » Acquired orders for specialty resins for a juice clarification process from a provider of citrus commodities in Brazil

## MANAGEMENT DISCUSSION AND ANALYSIS

### Performance of Chemical Segment in FY 2024

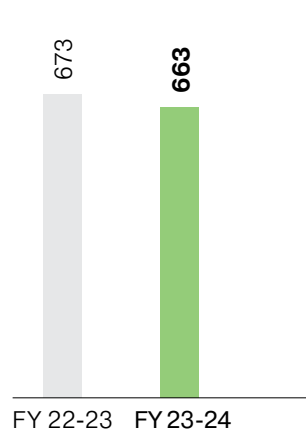
The Chemical segment accounted for 6.9% (8.1% in FY 2023) of the Group's gross operating revenue. The business posted an operating revenue of Rs. 663 crore (Rs. 673 crore), while the segment's profit was Rs. 124 crore (Rs. 86 crore) for the same period. The increase in profit and profitability was mainly due to the stabilisation of commodity costs and an increase in the sales of specialty products. Thermax is setting up an ion exchange resin manufacturing plant at Jhagadia, Gujarat, and will be investing an additional Rs. 45 crore into the Rs. 250 crore plant. We are also investing in new technology tie-ups and exploring partnerships with global majors to expand our chemical portfolio.



#### Chemical

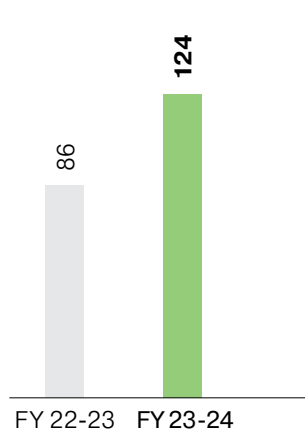
##### Revenue

(Rs. in crore)



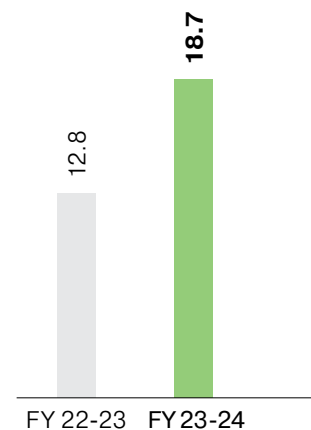
##### Profit\*

(Rs. in crore)



##### Profit Margin\*

(%)



Profit\* and Profit Margin\* – Segment PBIT before exceptional and unallocated overheads



## 5. Performance on Strategy



S01

### Innovate for Energy Transition

Introduce products and technologies to help industries bridge the gap between energy availability and energy sustainability

#### Focus Areas



#### Highlights

##### Develop cutting-edge energy transition products

- » Introduction of new products that prioritise decarbonisation and facilitate sustainability
  - Innovative hybrid heat pump that combines electrical and absorption technologies to meet both cooling and heating demands singlehandedly
  - Biogas purification equipment that enhances gas processing quality and efficiency

##### Foster technology partnerships

- » In collaboration with leading companies, Thermax has set up pilot projects to develop biomass gasification and microbial processes to generate green hydrogen
- » Collaborated with EverEnviro since 2022 for bio-CNG production

##### Invest in R&D

- » The Company is investing in a lot of new energy initiatives including coal gasification, hydrogen, as well as bio-CNG

##### Penetrate the market with energy transition solutions as One Thermax

- » Events such as Thermax Fest and Roadshows were arranged to showcase a host of our energy transition solutions across India

## MANAGEMENT DISCUSSION AND ANALYSIS



**S02**

### **Strengthen Solutions Businesses**

Enhance our capabilities to provide long-term industrial utility services

#### Focus Areas

#### > Highlights

#### **Implement build-own-operate (BOO) model for utility delivery services**

- » Adopted a focussed approach towards our TOESL business  
For details on business performance and order highlights

[Read more on page 82](#)

#### **Provide renewable energy solutions**

- » Established in 2021, FEPL is expanding its opex-based offerings to customers in India and select neighbouring geographies
- » We are currently advancing on multiple aspects such as developing intra-state and inter-state projects and connecting large power projects with central transmission units, working towards firming up RE power with battery energy storage systems
- » These initiatives will ensure round-the-clock clean electricity for industries, even in states lacking renewable resources, aiding their decarbonisation efforts

#### **Offer end-to-end energy management for utilities**

- » Provided an energy management solution to a leading industrial conglomerate, resulting in electricity savings of 3,500 units per day



SO3

## Scale Up Businesses Relating to Sustainability and Urbanisation

Grow our water, cooling and chemical businesses to offer comprehensive solutions beyond energy transition

### Focus Areas

### > Highlights

#### Form strategic partnerships and diversify product portfolio

- » Strategic alliances were made to diversify our portfolio and to ensure that we stay at the forefront of innovation  
For more details on the collaboration, refer to the Industrial Products business segment

[Read more on page 67](#)

#### Establish new growth units

- » Introduced a new ZLD growth unit as an independent entity dedicated to meeting the increasing market demand for effluent treatment and recycling, ensuring compliance with zero liquid discharge norms. This growth unit leverages our indigenously designed and developed multi-effect evaporator (MEE) and mechanical vapour recompression (MVR) technologies, to help industries achieve ZLD with energy efficiency and optimised opex & capex. This solution is particularly advantageous for industries with high water consumption in operations and stringent regulatory requirements, such as textiles, chemicals, pharmaceuticals, F&B, tanneries, and agrochemicals.
- » Secured over 10 orders in FY 2023-24, with a notable one being a 52 KLD MVR system for a reputed cable manufacturer

#### Expand manufacturing capabilities and capacities

- » Set up an ion exchange resin manufacturing plant at Jhagadia
- » Inaugurated a state-of-the-art manufacturing facility in Pune for water and wastewater treatment solutions to cater to various sectors, including industrial, commercial, municipal, and residential. The applications range from water treatment, effluent treatment, and sewage treatment to reverse osmosis (RO).

## MANAGEMENT DISCUSSION AND ANALYSIS



**S04**

### **Drive Digital Transformation**

Leverage digitalisation to improve efficiency both internally and externally

#### Focus Areas

#### > Highlights

#### **Increase digital interventions across processes**

- » Set up PMO (project management office) and trained 120+ project managers across Thermax
- » 26/80 digital projects completed in FY 2023-24

#### **Proliferate customer-centric digital platforms**

- » For EDGE, we have implemented several initiatives aimed at enhancing customer adoption, including feature additions, UX revamping, and backend process enablement. These efforts culminated in an impressive 8.6/10 rating from over 350 customers.
- » EDGE Live, an AI/ML based asset performance enhancement solution has seen substantial growth in FY 2023-24. We have onboarded 197 unique customers on the platform and currently have 4,670 assets under management.

#### **Strengthen cybersecurity measures**

- » Launched 24\*7 global cyber defence centre



**S05**

## Build an Agile, Market-Responsive Organisation Structure

Assess and align the organisation with evolving market demands to optimise business performance and resource management

### Focus Areas > Highlights

#### Expand and diversify businesses

- » Demonstrating nimbleness and agility, the organisation is foraying into various new areas in response to customer and environmental demands. Examples of this diversification include ventures into hydrogen, coal gasification, and bio-CNG. Furthermore, we are introducing new product lines within existing businesses. For instance, the Chemical business has introduced new products, and the WWS business has inaugurated a state-of-the-art manufacturing facility to bolster its offerings in water and wastewater treatment.

#### Restructure for sustainable growth

- » Implemented a strategic initiative to introduce specialised growth units within our business, targeting high-potential areas for expansion and development

#### Drive internal changes to mobilise, manage and retain talent

- » In order to enhance employee performance and gain optimum outcomes, the Company has facilitated mobilisation of resources within the organisation as per their talents
- » With a view to streamline processes and in line with the current management approach, Thermax has realigned its business segments, which has facilitated smoother operations, enabling the organisation to lead the business with ease
- » Introduced 'Project Sprint' to streamline processes in the organisation and achieve cost and resource optimisation
- » The Company has introduced a revised performance-styled compensation structure for high potential employees, and also introduced Employee Stock Option Plans (ESOPs) for senior officials
- » To manage and retain talent, the organisation conducts talent management programmes for different levels of employees across the organisation

## MANAGEMENT DISCUSSION AND ANALYSIS



**S06**

### **Energise the Core**

Continue to build on our existing strategic priorities

#### Focus Areas

#### > Highlights

#### Increase the share of green offerings

Key green orders leading to clean air, clean energy, and clean water received during FY 2024 across multiple segments include:

#### **Industrial Products**

##### **Heating**

- » First electric thermic fluid heater order from a chemical industry
- » First-of-a-kind bamboo-fired 26 tonnes per hour steam boiler supplied for an ethanol industry player

##### **Cooling**

- » Secured an order for two hot water and two steam-fired chillers from a textile company to meet their process cooling requirements effectively
- » Received an order for three double-effect chillers and two air-cooled heat exchangers for a leading steel manufacturing company

##### **Air Pollution Control**

- » Secured a first-of-a-kind scrubber order for cell and module manufacturing from a solar power company
- » Received a flue gas treatment (FGCS) order for a waste to energy municipal solid waste (MSW) project



**Focus Areas****> Highlights****Water and Waste Solutions**

- » Won an order for setting up the first ETP (effluent treatment) recycle ZLD (zero liquid discharge) plant from a battery manufacturer to manage lithium-based effluent
- » First WTP (water treatment plant) and effluent treatment recycle based ZLD system with an integrated biotechnology supplied to a leading biotechnology company manufacturing plasma protein and vaccines

**Industrial Infra****Projects and Energy Solutions (P&ES)**

- » Won multiple orders for cogeneration plants from the distillery segment

**Thermax Babcock & Wilcox****Energy Solutions Limited (TBWES)**[Read more on page 79](#)**Thermax Bioenergy Solutions****Private Limited (TBSPL)**[Read more on page 80](#)**Green Solutions****Thermax Onsite Energy Solutions Limited (TOESL)**[Read more on page 82](#)**First Energy Private Limited (FEPL)**[Read more on page 83](#)

## MANAGEMENT DISCUSSION AND ANALYSIS

### Focus Areas

### > Highlights

#### Grow services portfolio

Thermax provides a comprehensive array of services across its products and projects businesses, including operation and maintenance, plant upgrades, modernisation, and in-depth evaluations, to name a few. Major highlights across segments include:

#### Industrial Products

##### Heating

- » A retrofit solution provided for a pharma major to enable fuel shift in their existing boilers from coal to rice husk that resulted in CO<sub>2</sub> reduction of over 81,000 tonnes annually

##### Cooling

- » 85 abnormalities resolved at the customer end to ensure their equipment uptime through digital intervention - EDGE Live, which saved Thermax's 112 man-days and approx. Rs. 25 lakh of service cost

##### Air Pollution Control

- » Provided technical services by commissioning 300+ new pollution control equipment in India and globally
- » 240+ aftermarket equipment were addressed through our expert services with zero accidents

##### Water and Waste Solutions

- » Total portfolio of over 700 customers for O&M, spares and retrofit & revamp as of FY 2024
- » 20+ sites under operations and maintenance for more than 10 years

#### Industrial Infra

##### Projects and Energy Solutions

- » Over 100 assets under operations and maintenance, including power plants and utilities, with 25 contracts bagged in FY 2024

##### Thermax Babcock & Wilcox Energy Solutions Limited

- » Major RLA (remaining life analysis) order secured from a leading Indian player in the gas industry
- » A breakthrough order received from a leading steel manufacturer to convert four 300 MW coal-based power generation units to blast furnace gas firing units

**Focus Areas****> Highlights****Internationalisation**

Major export orders and those bagged by international subsidiaries for FY 2024 across segments include:

**Industrial Products****Heating**

- » Three 8 TPH oil and gas-fired boilers and two 21 TPH oil and gas-fired boilers were supplied to a major oil and gas company in the Middle East, providing a unique solution for operational flexibility and efficient steam utilisation for process heating and power generation
- » 30 TPH biomass-fired boiler supplied to a palm oil industry player in Thailand

**Cooling**

- » Received orders for double effect gas fired VAM (vapour absorption machine) and single effect steam fired VAM for a leading petrochemical company in Saudi
- » Two units of steam-fired VAM supplied to a leading ammonium nitrate company in Australia

**Air Pollution Control**

- » First order for submerged arc furnace in the Middle East
- » First order from Canada from a carbon black industry

**Water and Waste Solutions**

- » First EPC project for a 250 kilolitre per day capacity ETP in Indonesia
- » First international reference in the defence sector for a 30 KLD desalination plant in Mauritius

**Industrial Infra****Thermax Babcock & Wilcox Energy Solutions Limited**

- » Focussed engineering services in Thailand resulted in significant inquiry growth, leading to increased business in the spares domain
- » Received an order for modularised plug and play 3X80 TPH boilers for a major refinery in Iraq

## MANAGEMENT DISCUSSION AND ANALYSIS

### Focus Areas

### > Highlights

#### Green Solutions

» **First Energy Private Limited (FEPL)**

[Read more on page 83](#)

#### Chemical

» **Thermax Inc.**

[Read more on page 85](#)



An electrostatic precipitator (ESP) commissioned for a leading palm oil producer in Columbia. The ESP is for a biomass-fired boiler that uses palm shell and fibre as its primary fuel.



## 6. Financial Performance

During the year FY 2023-24, the Group recorded an operating revenue of Rs. 9,323 crore as compared to Rs. 8,090 crore in the previous year. The basic earnings per share for the year was at Rs. 57.30 per share (Rs. 39.98 per share in the previous year), and diluted earnings per share was Rs. 57.28 (Rs. 39.98 in the previous year). The analysis of major items of the financial statements is given below.

### A. Revenue from the Operation

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Revenue from projects and products	8,175	7,072	16%
Revenue from services	1,062	962	10%
Other operating revenue	86	56	54%
<b>Total operating revenue</b>	<b>9,323</b>	<b>8,090</b>	<b>15%</b>

The increase is primarily on account of the execution of orders received in the earlier period. Industrial Products, Industrial Infra and Green Solutions segments have grown by 22%, 13% and 40% respectively, while the Chemical segment registered a de-growth of 1%. The service revenue increased by 10%, primarily in domestic businesses. The other operating revenue increased due to an exchange gain of Rs. 9.4 crore against last year's loss of Rs. 25.83 crore.

### B. Cost of Material Consumed

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Cost of material consumed	5,220	4,625	13%
<b>% of total revenue</b>	<b>55.98%</b>	<b>57.17%</b>	<b>1.2%</b>

Stabilisation of commodity cost in Industrial Products and Chemical segments and change in business mix led to the reduction in material cost by 1.2%.

## MANAGEMENT DISCUSSION AND ANALYSIS

### C. Employee Benefit Expenses

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Employee benefit expenses	1,148	955	20%

During the year, employee benefit expenses increased primarily on account of salary corrections, regular increment cycle, additional headcount in services and for execution of projects and higher incentives to employees.

### D. Other Expenses

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Consumption of stores and spare parts	113.40	101.17	12%
Power and fuel	57.28	61.96	8%
Freight and forwarding charges (net)	187.32	207.22	10%
Site expenses and contract labour charges	1090.29	936.48	16%
Drawing, design and technical service charges	59.38	68.29	13%
Sales commission	29.25	28.66	2%
Advertisement and sales promotion	24.26	23.23	4%
Rent	26.05	23.05	13%
Rates and taxes	17.01	19.88	14%
Insurance	18.85	16.10	17%
Repairs and maintenance	102.87	91.82	12%
Travelling and conveyance	110.18	93.49	18%
Legal and professional fees (includes payment to auditors)	154.73	125.95	23%
Bad debts / advances written off	57.48	40.68	41%
Warranty expenses (net)	50.20	14.59	244%
Loss on sale/ discard of assets (net)	0.88	3.79	77%
CSR expenses	8.15	6.86	19%
Miscellaneous expenses (includes printing, communication, security expense, etc.)	52.24	50.36	4%
<b>Total</b>	<b>2,159.82</b>	<b>1,913.58</b>	<b>13%</b>
Less: Capitalised during the year	(1.60)	(1.31)	22%
<b>Net Total</b>	<b>2,158.22</b>	<b>1,912.27</b>	<b>13%</b>



Other expenses were higher as compared to the previous financial year. This is mainly due to an increase in direct expenses like site expenses and contract labour charges, insurance, and consumption of stores and spare parts on account of increase in activities and revenue during the year. However, freight and forwarding charges registered a decrease following a drop in international freight charges compared to the prior period. Expenses like drawing, and design charges occur frequently during certain phases and are not uniform over the life of various projects. There was an increase in legal and professional charges and travelling expenses due to an increase in volume of business and various new initiatives. Warranty expenses increased on account of provision of warranties on completion of projections / dispatches of product business. In the previous year, there was a reversal of provisions which resulted in lower expenses. Bad debts increased on account of expected credit loss provisioning.

## E. Exceptional Item

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Exceptional item	75.49	-	-

Exceptional gain is on account of the sale of the vacant plot of land for Rs. 126.12 crore and loss on provision related to litigation at Rs. 50.63 crore. The net gain on this transaction amounted to Rs. 75.49 crore.

## F. Property, Plant and Equipment

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Property, plant and equipment	1,701.45	1,039.89	64%
Capital work-in-progress	519.35	433.77	20%
Right-of-use assets	173.04	176.06	2%
Goodwill	3.03	3.03	0%
Other intangible assets	28.60	29.19	2%
Intangible assets under development	5.44	-	-
<b>Total</b>	<b>2,430.91</b>	<b>1,681.94</b>	<b>44%</b>

The movement in the property, plant and equipment, and capital work-in-progress is mainly due to solar assets under construction in First Energy Pvt. Ltd. Intangible assets under development pertain to software implementation under new initiatives.

## MANAGEMENT DISCUSSION AND ANALYSIS

### G. Investment

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Non-current investment	382.58	216.84	76%
Current investment	1,363.46	1,392.87	2%
<b>Total</b>	<b>1,746.04</b>	<b>1,609.71</b>	<b>8%</b>

Investments predominantly consist of debt mutual funds and fixed deposits of banks. The increase in non-current investments is mainly due to investment for a tenure of more than 12 months for better returns.

### H. Trade Receivable

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Non-current trade receivable	150.63	114.5	32%
Current trade receivable	2,116.43	1,762.06	20%
<b>Total</b>	<b>2,267.06</b>	<b>1,876.56</b>	<b>21%</b>

Trade receivables have increased in line with the increase in volume. Non-current trade receivables have increased due to retentions in large projects.

### I. Cash Flow

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Cash flows from operating activities	247.30	459.56	46%
Cash flows used in investing activities	(509.21)	(679.68)	25%
Cash flows from financing activities	285.40	348.54	18%
<b>Total Income</b>	<b>23.49</b>	<b>128.42</b>	<b>82%</b>

The decrease in operating cash flow is due to an increase in execution activities from operations, a subsequent increase in retention in project business, and lower customer advances during the current year. This led to a cascading effect on investing activities. Under financing activities, the increase in interest payment is on account of borrowings for the construction of solar assets in the subsidiary First Energy Pvt. Ltd.





## J. Cash and Cash Equivalents and Bank Balance

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Cash and cash equivalents	486.58	452.82	7%
Bank balance	488.74	678.76	28%
<b>Total income</b>	<b>975.32</b>	<b>1,131.58</b>	<b>14%</b>

The shifting of the investment portfolio resulted into reduced cash and bank balance.

## K. Borrowings

(Rs. in crore)

	FY 2023-24	FY 2022-23	Change (%)
Non current borrowings	789.48	422.52	86%
Current borrowings	466.47	388.02	21%
<b>Total borrowings</b>	<b>1,255.95</b>	<b>810.54</b>	<b>55%</b>

As stated above, the increase in borrowings is mainly due to the execution of solar/wind and hybrid projects under First Energy Pvt. Ltd.

## MANAGEMENT DISCUSSION AND ANALYSIS

### Thermax Financials at a Glance (10-Year Data)

All amounts are in Rupees Crore, except per share data and unless stated otherwise

Particulars	2023-24	2022-23	2021-22	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16*	2014-15
Domestic sales (excluding excise duty)	7,189	5,992	4,443	3,037	3,685	3,249	2,668	2,813	3,210	3,618
International sales/business	2,048	2,042	1,621	1,673	1,970	2,637	1,703	1,573	1,859	1,624
% to total sales	22%	25%	27%	36%	35%	45%	39%	36%	37%	31%
Total sales	9,237	8,034	6,064	4,710	5,655	5,886	4,371	4,386	5,069	5,242
Growth	15%	32%	29%	(17%)	(4%)	35%	0%	(13%)	(3%)	6%
Other operating income	86	56	64	81	76	87	94	97	76	62
Revenue from operation	9,323	8,090	6,128	4,791	5,731	5,973	4,465	4,483	5,145	5,304
Other income	233	160	127	108	100	150	116	114	122	123
Total income	9,556	8,250	6,255	4,899	5,831	6,123	4,581	4,597	5,267	5,427
Total expenses	8,526	7,492	5,707	4,435	5,324	5,516	4,064	4,049	4,716	4,843
Profit before depreciation, interest, extraordinary items and tax	1,030	758	548	464	507	607	517	548	551	584
(% to total income)	11%	9%	9%	9%	9%	10%	11%	12%	10%	11%
Depreciation	148	117	113	115	117	92	82	82	72	134
Interest	88	38	25	21	15	14	13	10	12	82
Exceptional items of expenses / (income)	(75)	-	-	53	-	90	-	18	-	49
Profit before tax	870	603	410	275	375	411	422	438	467	319
(% to total income)	9%	7%	7%	6%	6%	7%	9%	10%	9%	6%
Tax	226	152	98	69	162	85	166	156	144	171
Profit after tax before non controlling interest and share in loss of associate and joint venture	644	451	312	206	213	326	256	282	323	148
Share in joint venture /associate's loss	(1)	0	-	-	-	(1)	(25)	(66)	(41)	NA
Minority interest	-	-	-	NA	NA	NA	NA	NA	NA	(62)
Profit after tax after minority and share in an associate's loss	643	451	312	206	213	325	231	216	282	210
Other comprehensive income	(9)	0	8	17	(9)	(22)	27	(19)	22	NA
Total comprehensive income attributable to:	634	451	320	223	204	304	258	197	304	NA
Equity holders of the parent	645	450	312	223	204	304	259	204	304	NA
Non-controlling interest	(2)	0	-	-	-	-	(1)	(7)	-	NA
Gross block	3,753	2,903	2,396	2,352	2,255	2,236	1,741	1,515	1,438	2,051
Net block	2,431	1,682	1,239	1,266	1,339	1,352	1,076	952	887	1,474
Investments	1,746	1,610	1,470	234	875	829	1,472	1,083	1,050	822
Current assets	6,448	6,072	4,738	4,466	3,977	4,737	4,102	3,297	3,610	4,185
Current liabilities	4,725	4,409	3,758	3,071	2,787	3,654	3,079	2,365	2,615	3,274
Net current assets	1,723	1,663	980	1,395	1,190	1,083	1,023	932	995	911
Capital employed	5,229	4,291	3,553	3,273	3,061	3,050	2,768	2,585	2,450	2,719
Equity share capital	23	23	23	23	23	23	23	23	23	24
Reserves and surplus	4,417	3,846	3,469	3,228	3,005	2,992	2,692	2,515	2,393	2,123
Net worth	4,440	3,868	3,492	3,251	3,028	3,015	2,715	2,538	2,416	2,147
Minority interest	-	2	-	-	-	-	-	1	-	78
Loan funds (long-term)	789	423	61	22	33	35	53	46	34	494
Fixed asset turnover ratio	3.80	4.78	4.89	3.72	4.23	4.35	4.06	4.61	5.71	3.56
Working capital turnover ratio	5.36	4.83	6.19	3.38	4.75	5.43	4.28	4.71	5.10	5.75
Current ratio	1.36	1.38	1.26	1.45	1.43	1.30	1.33	1.39	1.38	1.28
Return on capital employed	17%	15%	12%	11%	13%	14%	15%	15%	18%	15%
Return on net worth	14%	12%	9%	6%	7%	11%	9%	9%	12%	10%
Cash earnings per share (Rs.)	70.45	50.36	37.74	28.50	29.30	37.06	27.93	27.08	31.48	28.86
Earnings per share (Rs.)	57.30	39.98	27.73	18.34	18.87	28.90	20.61	19.80	25.07	17.61
Dividend	600%	500%	450%	350%	350%*	350%	300%	300%	300%	350%
Book value per share (Rs.)	394	343	310	289	269	268	241	225	215	180

\*Figures have been reclassified as per Indian Accounting Standards ("IND AS") as prescribed by the Ministry of Corporate Affairs

\*It is the interim dividend paid to shareholders



## 7. Key Opportunities and Risks

The global fight against climate change is driving the sustainability agenda at an unprecedented pace. Governments and industries are both implementing decarbonisation measures to foster a greener future. The Government of India has also pledged to decrease carbon intensity by over 45% by 2030 and attain net-zero carbon emissions by 2070. As a trusted partner in energy transition, Thermax is well-positioned to seize opportunities in this domain.



### 7.1 New Opportunities

#### Coal Gasification

The Indian Government is targeting gasification of 100 million tonnes of coal by 2030 and has earmarked Rs. 8,500 crore in incentive schemes for the project. Adopting gasification will reduce India's reliance on importing natural gas, methanol, ammonia, and other essential projects.

#### ➤ Thermax's Response

Thermax is developing gasification plants that can process coal ranging from 100 to 500 tonnes per day. We established a pilot project in Pune with IIT Delhi that was supported by the Department of Science and Technology. The technology developed converts high-ash Indian coal into useful fuels, especially benefitting hard-to-abate industries like steel.

#### Promoting Bio-CNG (Compressed Biogas)

In November 2023, the government announced the compulsory blending of compressed biogas extracted from municipal and agricultural waste with natural gas to cut reliance on imports. Initially, 1% of biogas will be blended into gas used in automobiles and household kitchens for cooking, starting in April 2025. Gradually, the share will increase to around 5% in 2028.

#### ➤ Thermax's Response

Capitalising on the growing CBG demand and government initiatives such as the SATAT (Sustainable Alternative Towards Affordable Transportation) policy and CBG blending obligation to utilise available biomass in the country such as agro residue, press mud, cow dung and organic municipal solid waste, Thermax is setting up bio-CNG plants for its customers in various states of India. Although first-of-a-kind in technology, the Company is working on the challenges especially with regard to rice straw. This will also generate local employment opportunities and help in fostering a circular economy. We have also entered into biogas purification and upgradation solutions.

## MANAGEMENT DISCUSSION AND ANALYSIS

### Low Adoption of Sustainable Solutions Due to High Upfront Costs

The initial set up cost of sustainable solutions such as renewable energy remains a significant barrier for adoption. Price-sensitive consumers and smaller businesses often prioritise affordability over long-term benefits like energy independence and reduced environmental impact.

#### ➤ Thermax's Response

Thermax provides customers with the option of an opex model for certain solutions which eliminates the need for customers to incur high upfront costs. This approach makes sustainable solutions accessible to a broader range of players, including smaller ones. By offering solutions as a service, Thermax also generates recurring revenues, providing more predictable cash flows over the lifespan of the project. The government subsidies and concessions to various environment-friendly projects also make the proposition cost attractive.

### Digital Revolution is Transforming How Businesses Approach Sustainability

Technologies are increasingly penetrating the sustainability landscape. These include the Internet of Things (IoT) for improving efficiency, uptime, and maintenance predictability.

#### ➤ Thermax's Response

Through EDGE and EDGE Live, Thermax is also building a robust digital solutions portfolio to enable its customers to embark on their sustainability journeys.

## 7.2 Threats

- » The Red Sea crisis has significantly impacted global trade through attacks on commercial vessels. According to the Global Trade Research Initiative (GTRI), rising shipping and insurance costs, coupled with delayed shipments, will continue to disrupt global value chains. This trend is expected to squeeze margins, rendering exports of many low-margin products unviable from their current locations.
- » Competition from large Indian and foreign players, as well as start-ups, poses a serious threat. This risk includes competition from local players with robust biomass sourcing networks and databases offering BOO solutions, as several multinational corporations transition from fossil fuels to biomass.
- » Our businesses are heavily dependent on government policies. Any pushback in regulatory policies will negatively impact demand in the energy and environment segments.
- » The global EPC business faces a significant threat due to cheaper power tariffs from alternative renewable sources, making it less viable to operate captive power plants compared to grid tariffs. Additionally, increased costs of live energy are impacting the feasibility of VAM, while high gas prices are reducing the feasibility of cogen in Europe.
- » The continuous availability, storage, and pricing of bio-CNG feedstock, unclear mandates for selling digested material as bio-manure, and the absence of gas pipeline infrastructure without a take-or-pay policy threaten the bio-CNG ecosystem.
- » A rise in interest rates poses a threat to our capital-dependent businesses such as FEPL and TOESL. It also increases the total cost to customers of our capital products.



## 8. Others

### 8.1 Risk Management

The Company's Enterprise Risk Management framework periodically evaluates and monitors significant risks and business processes and suggests suitable mitigation plans across different locations to maintain the robustness of its systems. For more information on risk management

[Read more on pages 32-33](#)

### 8.2 Internal Controls

The Company examines the quality of its controls and the amount of compliance with the help of its Internal Audit function. The management and the internal audit team evaluate the Company's internal financial and operational controls. Operating managers are kept up-to-date on changes in the law that affect their areas of operation through a process. Managers check for compliance with certain provisions once a month. To decrease the possibility of unethical behaviour, the organisation has a strong culture and comprehensive protocols in place, including a clear code of conduct and a whistleblower policy. In addition, it employs enterprise resource planning software in its operations. The programme features a number of built-in controls as well as a thorough examination of differences between performance and plan. The Company's internal culture also helps to lessen the chance of any unethical practices.

### 8.3 Health, Safety and Environment (HSE)

- » Thermax cares about the health and safety of its employees and stakeholders and environmental preservation. The Company has deployed extensive programmes across its operations and manufacturing facilities, and is committed to creating a safe work environment for its stakeholders.
- » The leadership team drives the HSE initiatives with active guidance from the Board members. Respective leads at the business locations review the performance.
- » Thermax engages with all its contractors and partners in its HSE culture-building journey. The Company also engages with its supply chain partners through capacity building and onsite feedback on holistic HSE improvements.

#### Thermax Life

This initiative focusses on enhancing organisational culture building, while also receiving support from efforts aimed at improving processes, encouraging participation, increasing transparency, and fostering accountability.

#### a. Culture-building

#### Behaviour-Based Safety (BBS)

It is a significant initiative of the Company aimed at fostering a safety-conscious culture. All employees, workers, and contractors undergo training and are actively encouraged to practice BBS.

# 60%

Employees and Workers were Unique Observers\*

(\*A unique observer reports at least one BBS observation in a calendar year)

#### One Day Safety Officer

Thermax encourages line managers to take on the role of a safety officer for a day, engaging in tasks like conducting toolbox talks, safety inspections, safety meetings, and incident investigations. This approach provides them with a deeper understanding of the safety officer's responsibilities and enhances their sense of ownership towards safety initiatives.

# 1,182

Line Managers Worked as One Day Safety Officers at Project Sites in FY 2023-24

#### Thermax's Life Saving Rules

These rules are binding for all individuals working for or on behalf of the Company. Posters illustrating these rules are prominently displayed across various locations, and booklets in local languages are distributed to ensure understanding. A capacity-building initiative is currently in progress, and compliance with these rules is closely monitored.

## MANAGEMENT DISCUSSION AND ANALYSIS

### b. Standardisation

We review and standardise various processes as one HSE process across the organisation. This year, risk management and competency-building procedures were reviewed and revised. The risk management procedure provides guidelines on identification of hazards, evaluating risks, and establishing controls. The hazard operability (HAZOP) study is required for the chemical business and is also used with due diligence while onboarding non-Thermax-make boiler jobs for O&M.

The training and competency building programme is being updated in accordance with the intent of ISO 45001 and 14001 standards.

The Company conducts comprehensive assessments at its major projects and plant locations to identify training needs based on capability assessments. The results guide the delivery of tailored training programmes, with individuals undergoing reassessment until they are certified as competent. This approach drives continuous improvement and enhances the proficiency of personnel.

### c. Digitisation

Digitisation supports the Company's culture-building and implementation of HSE procedures by addressing safety concerns such as at-risk behaviours (BBS), near misses, and unsafe conditions. It supports entire incident management i.e. reporting, investigation and monitoring the implementation of lessons learned across business. Safety inspections and audit management provide critical assurance to the site management and leadership teams

on implementation of important safety requirements.

We have successfully piloted the HSE application known as 'Thermax LIFE' in one of our business units facing significant risk, overseeing various EPC and O&M projects. All employees, workers, and contractual workers can access Thermax LIFE, and it is available in local languages. Users can capture images of HSE concerns, add textual or vocal descriptions, and submit them for correction. Both regional and senior leadership can access these reports, ensuring swift resolution and enhancing visibility, accountability, traceability, and speed. With Thermax LIFE, the Company showcases its commitment to safety and enters a new era of technological advancement, where the fusion of digitisation and safety serves as the foundation for operational excellence.

### Safety Campaigns

The Company undertakes extensive activities to promote safety awareness among employees and workers. These activities typically are targeted training, competitions, skits, and gamified learning.

#### a. Quarterly Safety Campaign

Based on the Company's risk profile, it has undertaken campaigns on work at height, monsoon safety, electrical safety, and road safety.

#### b. Observing the Safety Week

The National Safety Week was celebrated from March 4 to 11, 2024, under the theme 'Focus on Safety Leadership for ESG Excellence'. It saw active participation from the managing director and our senior

leadership, with the hoisting of the safety flag at respective locations and highlighting the importance of safety.

# 15,000

Thermax Employees, Workers, Third-Party Staff, and Contractual Workers Participated in the National Safety Week Activities

### c. Road Safety Month

From January 15 to February 14, 2024, the Road Safety Month was observed across locations, offices, and customer sites. Activities included an online quiz, a drawing competition, training on mobile vehicle safety, an awareness rally and a skit, PUC check-up and check-ups of all transport vehicles.

### d. Special Safety Campaign

The Company believes safety starts at home. Extending its efforts beyond the workplace, it has engaged with the family members of employees and workers through targeted campaigns focussing on fire safety and road safety. An online awareness session was organised, complemented by motivational initiatives to reinforce the importance of safety both on and off the job.

# 400

Family Members Participated

### Toolbox Talks

Daily mailers on lessons learned based on the near-misses and incidents reported are shared with employees across the organisation under the HSE Connect initiative.



They are a mandatory part of the toolbox talks that are attended by every worker of the Company before the start of their shift. It helps to reduce repetitive incidents and mistakes and establishes a culture of learning.

### Emergency Preparedness

Emergency preparedness includes planning and responding to disasters. The Company takes steps to make sure the workers are safe before, during and after an emergency or

natural disaster. All manufacturing, project, and office sites across India have comprehensive emergency preparedness plans in place. The Company has provided training sessions on fire prevention and control to equip employees with the necessary skills. Additionally, mock drills on emergency evacuation are regularly conducted at manufacturing, project, and office facilities to ensure preparedness and effectiveness in handling potential crises.

Automated external defibrillator (AED), a life-saving device, is installed at manufacturing locations and major offices. Employees are trained to use it in case of an emergency.

# 110

Appreciation Letters Received From Customers

We regret to report three fatalities of contractual workers at our sites during FY 2023-24. Each of these incidents was thoroughly investigated by an expert team, and causes were identified. The Company regrets such tragic events and has taken the necessary precautionary measures wherever required. Lessons learned from these instances have been shared across the organisation to prevent future occurrences.

### Update on Certifications and Audit

Cooling plant at Sri City - Recertification audit done for ISO 14001:2015 and ISO 45001:2018 were conducted by M/S LRQA	TBWES project sites and manufacturing plants at Savli, Mundra, Chinchwad and Shirwal – Recertification audit for ISO 14001:2015 and ISO 45001:2018 were conducted by M/S Bureau Veritas	Heating manufacturing units at Chinchwad and Savli – Recertification audit for ISO 14001:2015 and ISO 45001:2018 were conducted by M/S TUV: SUD
TOESL - First surveillance audits for ISO 14001:2015 and ISO 45001:2018 were conducted by M/S DNV	Chemical manufacturing facilities at Paudh, Jhagadia and Dahej – First surveillance audit for 14001:2015 and ISO 45001:2018 were audited by M/S Bureau Veritas	P&ES business and heating project sites – First surveillance audit for ISO 45001:2018 was conducted by M/S TUV: SUD and M/S DNV
WWS division – Second surveillance audit for ISO 45001:2018 was conducted by M/S Bureau Veritas	Environment business – First surveillance audit for ISO 14001:2015 & 45001:2018 done by M/S TUV: SUD	

### Safety Audits and Trainings

1,668 internal inspections and audits and six external safety audits were carried out in FY 2024. Regular HSE trainings are conducted for employees, contractors, vendors, and suppliers. All new employees are introduced to the aspects of HSE, and all contractual workers receive mandatory HSE training before the commencement of work.

**2,941**  
Employees and

**68** Spouses  
Received CPR Trainings

**1,668**  
Internal Inspections  
and Audits  
Conducted

## 9. Human Resources

As an organisation known for governance and ethics, Thermax invests in skill-building, employee engagement and welfare to maximise outcomes and provide a safe and healthy work environment to our employees.

For more information on the Company's human resources

[Read more on pages 42-47](#)

## 10. Cautionary Statement

The Management Discussion and Analysis contains statements about future events, financial and operating results of Thermax Group, which are forward-looking. By their nature, forward-looking statements require the Company to make assumptions and are subject to change based on risks and uncertainties. A number of factors could cause assumptions and actual future results and events to differ materially from those expressed in the forward-looking statements. Readers are cautioned not to place undue reliance on forward-looking statements.