Annexure-3 to the Directors' Report

Energy Conservation, Technology Absorption And Foreign Exchange Earnings & Outgo

[Section 134(3)(m) of the Companies Act, 2013 read with Rule 8(3) of the Companies (Accounts) Rules, 2014]

A. Conservation of Energy

(i) Steps taken for conservation of energy

During the year, the following measures were taken for energy and resource conservation:

a. Electricity

The company continued its efforts to utilise energy optimally at its manufacturing facilities and office locations in India. Energy conservation measures adopted across the company have made energy usage more efficient.

At Chinchwad, energy efficiency initiatives such as efficient inverter based welding machine for operations and energy efficient water pump for a chiller were implemented. At Sri City, energy conservation measures include pressure optimisation of hydro-pneumatic and compressed air system for process use, occupancy sensor in common and washroom areas and use of natural daylight in stores. Other energy efficiency actions comprise switching to energy efficient LED (Light Emitting Diodes) lighting, use of mechanical ventilators, use of digital timer in oven for switch operation and load balancing and sequential operation in transformer.

b. Fuel

Various initiatives have been implemented at Paudh and Jhagadia plants such as optimisation of process operations of fluidised bed dryer, heat recovery from boiler blow down water and installed x plate on boiler burner. All these initiatives have resulted in saving 268 MT of furnace oil and 26,764 SCM of natural gas.

All these measures including solar rooftop installations have resulted in annual saving of Rs. 193 lakh.

c. Water

The company continued its efforts to conserve water resources by recycling a major portion of its wastewater, harvesting rainwater and reducing its water consumption as well as controlling water losses in all domestic manufacturing and office locations of the company. These efforts at factory locations of Chinchwad, Savli, Paudh, Solapur, Jhagadia, Shirwal, Sri City and Dahej have resulted in saving 2,16,413 m^3 of water during the year.

(ii) Steps taken by the company for utilising alternate sources of energy

The company continues its efforts to utilise alternate sources of energy at plant and office locations. The company has expanded solar rooftop capacity by 83 kWp at Environment House and Thermax House in Pune, this year. The total solar rooftop capacity has reached to 1.24 MWp at Savli, Jhagadia, Sri City plants and Pune offices. This total installed capacity generated 6.63 lakh units in a year.

B. Technology Absorption

1. Efforts, in brief, made towards technology absorption

- The project launched for methanol production from Indian coal closely working with Indian Institute of Technology (IIT), Delhi and NITI Aayog has reached the stage of near completion of construction activities. The project is funded by the Department of Science and Technology, Ministry of Science & Technology, Government of India. Thermax has worked on some novel processes for the conversion of Indian coal to methanol.
- Thermax has developed Capacitive Deionisation (CDI) technology as an alternative to RO based water treatment. All indigenous technology includes developing advanced electrochemical materials, coating process and unique power electronics and embedded controls. The control system is IoT enabled.
- Thermax has developed a Thermal Activated Cooler (TAC) for mobility application which has been integrated on a European coach bus. The system

was approved by the European Union for roadworthiness, providing validation and acceptance to waste heat recovery based Heating, Ventilation, and Air Conditioning (HVAC) technology by European bus OEMs.

- Thermax has continued its efforts on the development of fuel cell systems for stationary applications after testing its first fuel cell prototype for telecom towers.
- Thermax has partnered with Pune based M/s. Primove Engineering Pvt. Ltd., for utilising biomass to generate Bio-CNG. Bio-CNG is a valuable biofuel that can be used in transport vehicles.
- As a part of Zero Liquid Discharge (ZLD) solution, Thermax has developed Mechanical Vapour Recompression (MVR) evaporator system and a few units are under execution stage on the field.

2. Benefits derived as a result of the above efforts – product improvement, cost reduction, product development, import substitution etc.

- The fuel cell systems offer a viable solution as a backup power generator for telecom towers. In addition, indigenious development makes the product cost-effective.
- CDI provides cost effective solution to the drinking water segment with reduced wastage of water. It is also effective in the removal of multiple contaminants, mainly arsenic and fluoride.
- TAC integrated bus provides direct benefit to the end user in terms of better fuel economy and thus reduces the total cost of ownership. Additonally, lesser fuel burned for air conditioning due to TAC contributes to a green environment by reducing CO_2 and carbon footprint.
- Fuel cell systems integrated with CHP (Combined Heat and Power) will provide clean power solution to the commercial sector.
- Mechanical Vapour Recompression (MVR) is a thermal evaporation system that provides an efficient solution under the ZLD category, besides Multi Effect Evaporation (MEE) systems developed earlier.
- The Bio-CNG technology provides an effective environment friendly solution to pollution created by combusting biomass in northern India apart from generating transport fuel from biomass.

3. In case of imported technology (imported during the last three years reckoned from the beginning of the financial year), the following information is furnished:

Technology Imported	Year of Import	If Technology has been Fully Absorbed	If not Absorbed, Reasons and Future Plan of Action
Wet & Dry Flue Gas Desulfurisation (FGD)	2015	In the process of absorption	The company bagged two orders in FY 2019-20. Wet FGD technology will be absorbed to a great extent by the time these orders are executed and commissioned with assistance from the technology partner

4. Expenditure on R&D

(Amount in Rs. crore)

Particulars	Current Year 2020-21	Previous Year 2019-20
a. Capital	0.21	1.60
b. Recurring	26.56	28.25
c. Total	26.77	29.85
d. Total R&D expenditure as a percentage of turnover	0.6%	0.72%

5. Foreign exchange earnings and outgo

The company's operations in export markets are elaborated in the Management Discussion and Analysis of the report.

During the year, the company had net foreign exchange inflow of Rs. 610 crore as against a net inflow of Rs. 898 crore in the previous year.

For and on behalf of the Board

Meher Pudumjee
Chairperson
[DIN 00019581]
Pune, May 25, 2021