



Company Profile

Larsen & Toubro Limited:

L&T is one of the top 20 business houses in India with sales of \$7 billion dollars with employee strength of 35000.

L&T group of companies are managed through 5 operating divisions of Construction, E&C Projects, Electrical & Electronics, information technology and heavy engineering.

Heavy Engineering division has five manufacturing units located in Powai, Hazira Ranoli, Talegaon and Coimbatore.

Larsen & Toubro Limited – Hazira Works

Hazira works is one of the largest fabrication shops in Asia with 70,000 square meters covered area with additional facilities of open fabrication yard and Captive jetty for sea transport.

L&T Hazira Works is engaged in design and manufacture of hi tech fabricated equipment for core sectors such as Oil & Gas, Refineries, Petrochemicals, Coal Gasifier and Thermal Power plant, Fertilizers & Chemicals , Defense, Nuclear and Ship Building for our customers in India and abroad. Hazira works manufactures fequipment such as Pressure Vessels, Reactors, Columns, Steam Generators, Nuclear Equipment, EO Reactors, Decks, Offshore platforms, Commercial ships and other Marine equipment.

2 Energy Management at L&T Hazira Works

L&T Hazira works has always focused on improving organizational effectiveness over the years through various planned management interventions to improve productivity, customer satisfaction and process performance. This was primarily done through resource efficiency measures (Labour, Equipment utilization, **Energy Conservation**, working capital, Materials) management systems improvement (Operations, Human Resources, Technology, Supply Chain, Marketing and Quality). This has resulted in the supply of superior quality of goods or services to our customers which resulted in consistently improved customer satisfaction and achievement of business objectives as per the long term strategic goals.

Top Management commitment for Energy Conservation

L&T Hazira works management paid focused attention on energy conservation efforts even though energy expenses contribute to only 2-4% of the manufacturing expenses. Considering the national and social importance of the subject, the commitment to the energy conservation is demonstrated by the fact that Mr V C Bedi, Executive Vice President, Hazira works has been heading energy management cell for the period of 20 years.

Energy Management Policy

With a view to give more thrust to energy management, top management enunciated a energy Management policy and made known to all employees through by publishing the policy through displays, frames, training programmes and on intranet. Salient features of energy management policy are given below

Commitment to conserve resources like water, fuel, electricity and take all possible efforts to optimise consumption of these resources through,

- Continuously monitor and control energy consumption
- Awareness of all the employees on energy conservation
- Continual improvement in manufacturing processes, to reduce energy consumption
- Replacing old machines with energy efficient machine and upgrading old machines with energy efficient retrofits.
- Promoting the use of alternate natural energy resources.

Energy Auditing and Monitoring

Energy conservation plans, progress and results are reviewed periodically and publish to the employees during energy conservation day celebrations. In addition, Conservation of energy is part of EHS external and internal audits. A separate management programme (MP) is in operation for conservation of Power, water and Oil and the same is being reviewed by top management of the company periodically. 'Manthan' scheme is launched to appreciate and recognize the employee driven improvements in the area of resource conservation. Unit has undergone five independent energy audits so far by various external agencies. All the recommendations by these auditors are implemented by us.

Formation of Energy Management cell

A permanent "Energy Management Cell" comprising members from cross functional departments like production, planning, purchase and maintenance was formed in 1998-99. The cell is primarily responsible for holding the gains obtained from earlier improvement projects and explores new areas and technologies for energy conservation as an ongoing basis. In addition, this cell ensures availability of resources and timely implementation of energy conservation measures identified.

Appointment of energy manager

Being the engineering unit, our plant does not fall under designated consumer category; hence designation of 'Energy Manager' is not applicable. However, to impetus the focus we do have BEE certified Energy manager cum Energy Auditor in our Industry.

Organizational Structure for energy managing

A permanent “Energy Management Cell” comprising members from cross functional departments was formed in 1998-99. The cell is primarily responsible for holding the gains, to explore new areas and technologies for energy conservation as an ongoing basis. In addition, this cell ensures availability of resources, budget and timely implementation of energy conservation measures identified. The energy management cell is shown in pink colour in the chart-1.

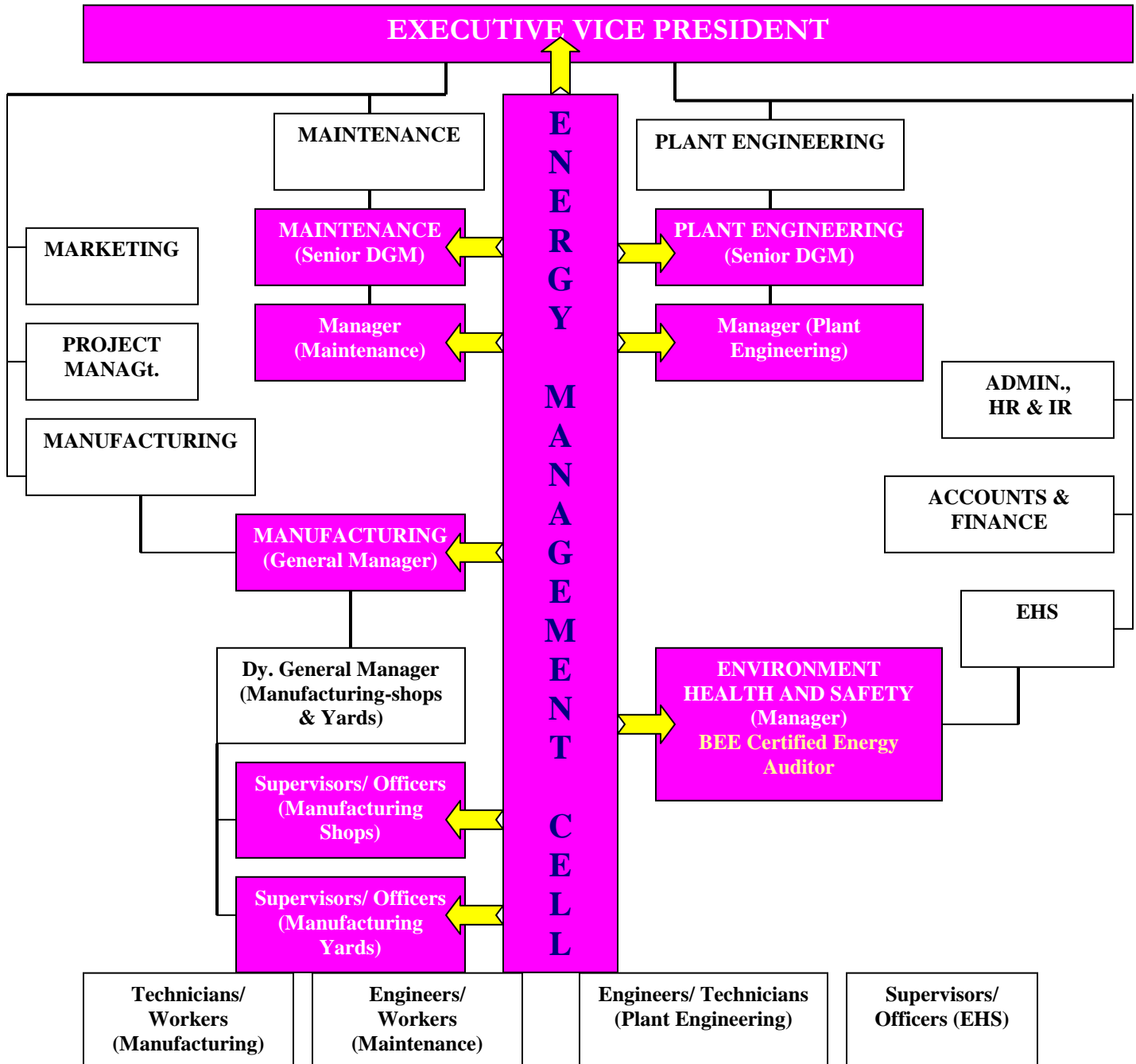


Chart-1: Organizational Structure for managing energy

Implementation of energy conservation measures and results

L&T Hazira Works paid focused attention to energy conservation measures since inception of Hazira Plant (1986-87). The conscious efforts have resulted in consistent saving of energy and improvement in specific energy consumption.

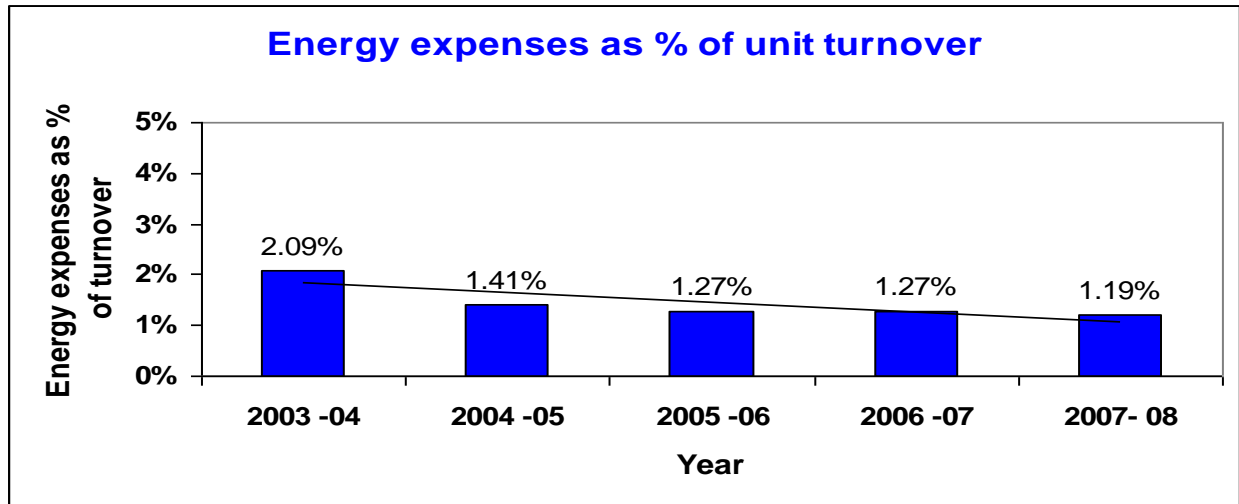


Chart-2: Energy expenses as % of unit turnover

We can conclude from the chart 2 that energy expenses as a % of sales stands at 2.09% in 2003-04 which reduced gradually over the years to reach 1.19% in 2007-08. Though Energy expenses as percentage of sales is very low at 1.19%, we have not let down our efforts to further reduce energy expenses. Similarly Annual savings achieved as % of previous year sales increased from 0.08% to 0.49% as shown in chart-3.

Annual saving achieved / Annual Sales Turnover (%)

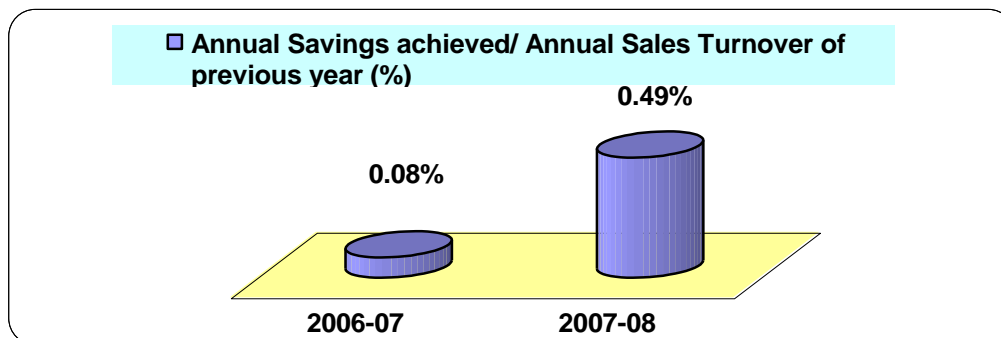


Chart-3: Annual saving achieved / Annual Sales Turnover (%)

Energy expenses Contribution to Manufacturing Expenses

Focused attention to energy efforts has resulted in reduction of energy expenses contribution to the manufacturing expenses from 8.4% in 2003-04 to only 1.70% in 2007 - 08 as can be seen from Chart-4 .

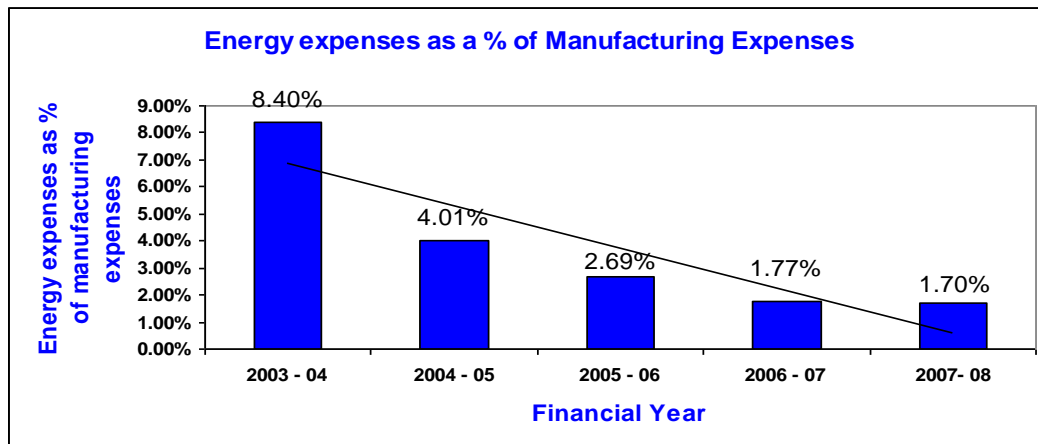


Chart-4: Energy expenses contribution to manufacturing expenses

Energy savings

Table-1: Summary of Energy Savings		
SL.NO	Description	Figures
1	Electrical	
i)	Electrical energy savings in Lakh KWH (2007-08)	8.82 Lakhs
ii)	% Saving in electrical energy over the previous year (2006-07)	6.86%
2	Thermal	
i)	Thermal energy savings in million Kcal (2007-08)	2290 Mkal
ii)	% Saving in thermal energy over the previous year (2006-07)	5.28%
3	Total Energy Savings	
i)	Energy Savings in Lakh Rs for 2007-08	525.86 Lakhs
ii)	Savings as % of energy cost over the previous year (2006-07)	38.84%
4	Technology	
i)	Savings achieved by adoption of latest technology in 2007-08 in Lakhs of rupees	12.4Lakhs in Green building 2.04 Lakhs in others
5	Renewable Energy	
i)	Savings achieved by adoption of renewable energy in 2007-08 in Lakhs of rupees	Rs 0.72 Lakhs

Specific Energy Consumption - Reduction

SL.NO	Energy SEC	Year	Figures		% reduction over the previous year
			Target	Actual	
1	Electrical (KWH/Tonne)	2005-06	340	264.84	NA
		2006-07	290	251.97	5.11%
		2007-08	250	241.85	4.18%
2	Thermal (Mkcal/Tonne)	2005-06	1.1	0.91	NA
		2006-07	0.97	0.85	7.06%
		2007-08	0.95	0.93	-8.6%

Brief summary of impressive energy savings achieved in Electrical, Thermal, Alternate energy sources and technology related savings are shown in Table-1. Similarly specific energy savings achieved in electrical and thermal energy are shown in the table-2.

Energy Management Plans, Targets and achievements

Target for year 2008-09 : Absolute Saving of 3 lacs of Electrical units and 3000Mkcal of thermal units by Identifying areas for energy saving and eliminate wastage by implementing new methods and techniques.

Plans for year 2008-09 : As a continual improvement approach to energy management, we have several ongoing projects in hand which will be completed in year 2008-09. Few of them are listed as below.

- Installation of clean fuel (Natural gas) based 1.1MW generating set in synchronization with existing sets.
- Use of Exhaust heat for air-conditioning.
- Conversion of 100 nos. of contractor's owned conventional welding machines to energy efficient machines.
- Redesign of preheating and post heating gas burners
- Implementations of recommendations of Energy Audit done recently