２０１９年度

デミング賞
受賞報告講演要旨

Larsen &Toubro Limited,
Electrical & Automation IC,Product SBG,
Electrical Standard Products SBU
and New Product Development

Index - General

1.0 Outline of the Organization:

1.1 Introduction:

The applicant company, Electrical Standard Products (ESP) is one of the business units of Larsen & Toubro (L&T) group, which is among the largest industrial groups of India.

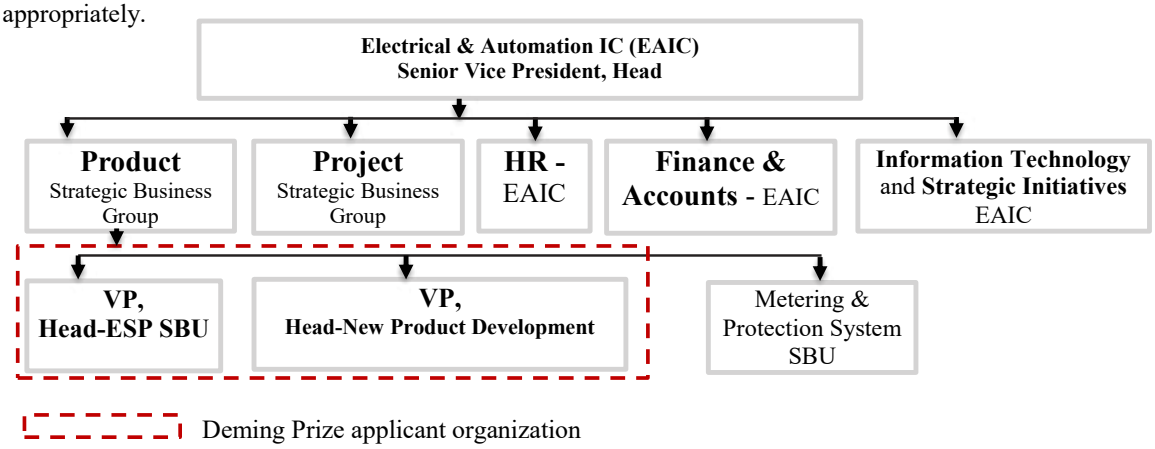
Established in 1938, L&T operates in key areas, which are crucial to the development of India's infrastructure and economy viz. manufacturing of diverse Engineering Products, Construction, Infrastructure Projects as well as Technology and Financial Services. L&T is an Indian Multinational with INR 1200 Billion (USD 18.4 Billion) revenue in FY 2018.

Within L&T, Electrical & Automation is an Independent Company (EAIC), which is a leader in the Electrical segment and has a turnover of INR 54.03 Billion (USD 830 M). EAIC has two Strategic Business Groups (SBG) – Product SBG and Project SBG. ESP is one of the two Business Units of Product SBG.

ESP is India's largest Low Voltage Switchgear manufacturer having Gross Sales revenue of INR 25.08 Billion (USD 385 M) in FY 2018. Established in 1958, ESP has retained market leadership for over last 4 decades and is one of the most profitable entities in L&T. This has been achieved through high focus on R&D relating to India's climatic needs by a product basket, which competes effectively with the offering of global leaders. ESP products, through which customers directly relate to the L&T brand, make ESP the most customer visible business of L&T.

1.2 Organization Chart:

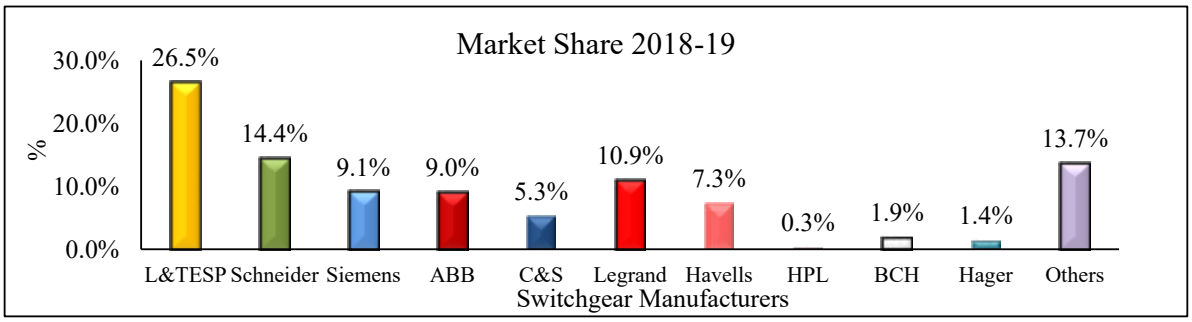
EAIC Head, Dr. Hasit Joshipura is a member of ECom (Executive Management Committee) which is extension of L&T Board. In EAIC Finance & Accounts, HR and the Strategic Initiatives functions report to Dr Hasit Joshipura and ESP utilizes their services. Therefore, in the TQM process of ESP, these functions are also contributing appropriately.



1.3 ESP's Market, Products and Customers:

1.3.1 Market:

ESP operates in the Switchgear Industry. This industry in India has a market size of INR 74330 Million. In recent years, this industry has become highly competitive with entry of all major Multi National Companies. Group Schneider, ABB and Siemens are No. 1, 2 & 3 in the world in Switchgear Market. Despite this, ESP continues to retain market leadership in India as shown in Chart below- (as in FY 2017-18)



Chart/01

1.3.2 Customer Value Proposition:

The above leadership position is sustained due to ESP's strong customer value propositions, which are:

- Deep Understanding of Indian customer specific needs and designing and manufacturing the products in accordance
- Wide reach and close connection with customers through strong channel network
- Strong Service support

1.3.3 Products:

The products of ESP are used in the low voltage power distribution and utilization. These products perform switching, measurement, monitoring & control and protection function against any faults in the circuit. Due to the nature of their function and application, the key expectations from these products are:

a. Reliability in performance; b. Safety in Operation; c. User friendliness; d. Ease of Maintenance

The products are governed by statutory regulations and various customer specific certifications.
Following are various products: Circuit Breakers, Contactors, Switch Dis-connectors & Fuses, Changeover Switches, Controllers & Starters, Final Distribution Products, Bus Bar Trunking Systems and allied products to complete the range offering.

ESP's Customer Segments:

The Customer segments, in which ESP operates are shown below.

1.3.4 Reflection of Customer requirement in ESP Organization Structure:

A strategic decision was taken in 2015 to change to a more customer-centric organization where customer-facing operations were divided into four verticals namely Low Voltage, Agriculture, Retail and Industrial Automation.
These four customer focused verticals have been organized, trained and equipped to deal with the specific customer requirements. Each of these verticals has also been characterized based on various other aspects which are summarized in the table below. This is also reflected in ESP's organogram, as shown in above Organization chart

Sales Vertical	Characteristics
Low Voltage Products	Long Presence, Product range complete, Good Installation Base, Huge Brand loyalty, B2B Model, competition with MNCs
Agricultural Products	Long Presence, Product range complete, Huge Brand Loyalty, Good Installation Base, B2C Model, competition with Local Makes
Retail Products	Presence only for 10 years, Product range close to complete, Low Installation Base, B2C Model, competition with local as well as MNCs
Industrial Automation Products	Though present for years, started new product in own brand two years ago, No installation base, B2B Model, competition with MNCs

Table/01

1.4 ESP Manufacturing Plants:

Manufacturing Plants	Ahmednagar Switchgear works (ASW)	Vadodara Switchgear Works (VSW)	Mahape Switchgear Works (MSW)
Established in year	1984	2012	2014
Key Products	Contactors, Switch Dis-connectors & Fuses, Changeover Switches, Controllers, Starter, Final Distribution Products, Bus Bar Trunking Systems	Air Circuit Breakers, Moulded Case Circuit Breakers	Air Circuit Breakers

Table/02

1.5 Features of ESP Business:

1.5.1 Scale of Operations:

• More than 100,000 customers	• 3 state of the art manufacturing facilities in India
• 32 Branch Offices covering major states in India	• Presence in South East Asia, Middle East Asia & African Countries
• Over 1500 Employees (Staff) with Engineering background, 650+ Channel Partners, 350+ Suppliers	

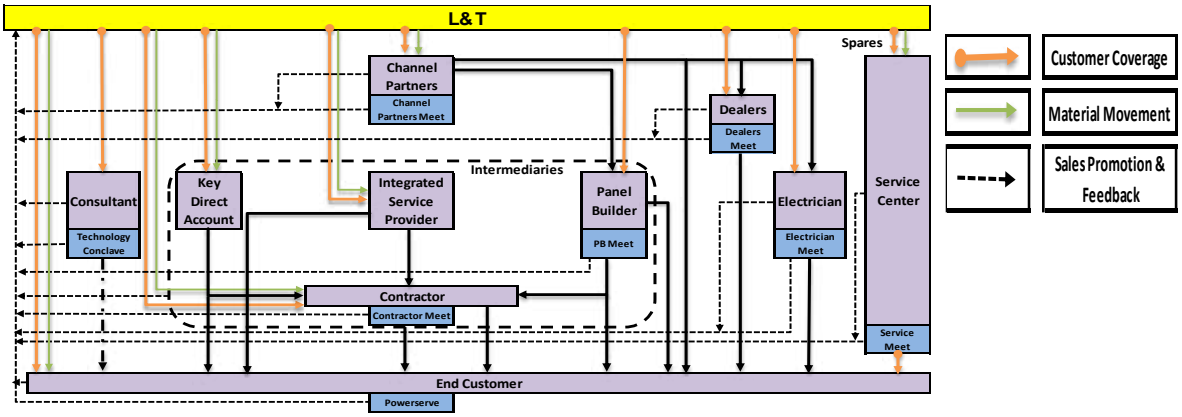
Table/03

1.5.2 Business Model and distinct features:

ESP products are involved in Power Distribution. The primary driver for market growth is therefore investments made by various entities and ESP's business is essentially a B2B model with a small portion going directly to individual end users. Hence, the major opportunities are capital investments made under the following:

- Large Industrial investment: New Plants, Expansions, Modernization etc.
- Government Investment: Infrastructure
- Investments in setting up of non-industrial infrastructure: Hotels, Hospitals, Commercial establishment, Residential Complexes, Individual Homes

1.5.3 ESP's Value Chain Model:



2.0 Business Goals and Management Strategies:

2.1 Business Environment:

India provides strong opportunity for ESP business being closely involved with the development of infrastructure. The Indian economy is the fastest growing large economy in the world averaging 7 % over the last 5 years. At the same time, overall infrastructure in India is considerably inadequate. As a result, there is very high investment in infrastructure development – roads, railroads, airports, ports, electrification and connectivity - by the government. With major rural population moving rapidly to urban centres creating explosive growth in the need for housing and urban development utilities.

2.2 Market and Customer Characteristics:

- The details shared under 1.3.1, 1.3.3 necessitate a strong emphasis on quality and service excellence. Equally, there is continuous demand for technical upgradation to improve product life cycle experience.
- With competition from MNCs and some unorganised sector manufacturers, there is strong pricing pressure.

2.3 Vision and Business Philosophy of ESP:

L&T VISION

L&T shall be a professionally managed Indian Multinational, Committed to total customer satisfaction and enhancing shareholder value

L&T-ites shall be innovative, entrepreneurial and empowered team constantly creating value and attaining global benchmarks

L&T shall foster a culture of caring, trust and continuous learning while meeting expectations of employees, stakeholders and society

Business Philosophy:
The business philosophy of ESP is based on our need to be independent, continuously striving for improvement and being customer focussed. It can be summarised as "*Listen – Learn - Implement – Improve*

2.4 Business Planning:

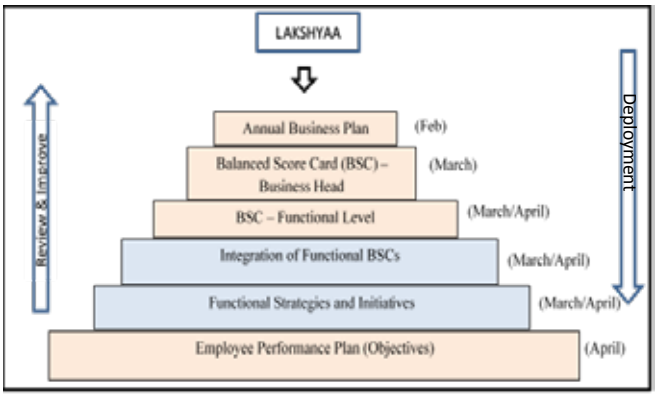
2.4.1 Strategy Development Period:
ESP's strategy development process relates to the rapidly evolving business environment in the Indian market. At the same time, the process provides adequate continuity in the strategy in order to suitably implement and assess important initiatives. Therefore, the business strategy period has been fixed as five years and is termed *'LAKSHYA'* (Sanskrit word meaning 'Target').

2.4.2 Strategy Development and Deployment Process (SDP):

Input	Output
1. Analysis of market – Customer and Competition, 2. PESTEL Analysis and SWOT 3. Review of results of initiatives and business achieved in previous LAKSHYA, including reconfirmation of strategic directions.	LAKSHYA Plan: • Strategies • Goals and Targets • Initiatives • Roadmaps

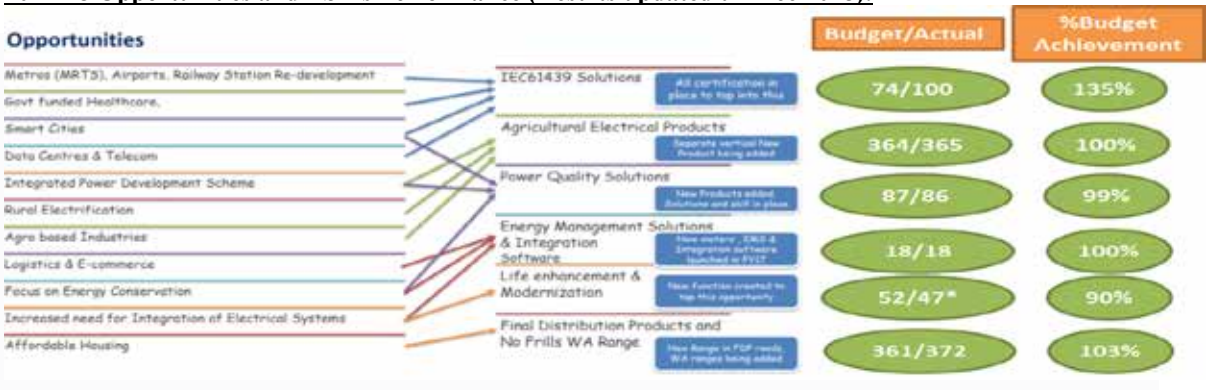
Table/04

2.4.3 Translating LAKSHYA to Annual Plans:



- ESP's annual business planning process is called PACE (Performance Acceleration in Changing Environment). The name itself reflects our approach of closely monitoring changing business circumstances and preparing annual plans to cater to the same while keeping the five-year LAKSHYA goals and milestones in mind.
- The five-year LAKSHYA plan is used as the framework for preparing the annual plan. The targets for the annual plans are based on the annual milestones of LAKSHYA. The strategic initiatives in each year are a reflection of LAKSHYA's five-year strategic priorities and initiatives. FSM approach is used in this process.
- PACE includes involvement of people at different levels and across functions of the organization. There is a system of periodic reviews aimed at collecting internal feedback. Which is used while framing the annual plan.
- IT is extensively used in the business planning process in order to ensure efficient handling of data as well as providing transparency in our business processes.

2017-18 Opportunities and ESP's Performance (Results updated till Dec 2018):



All figures are in INR Crores(1 crore = 10 Mn) and for 9 Months of 2018-19 except LEM, which is for 8 Months

SWOT of 2018-19 & Environmental Scan to arrive at 2018-19 final plan:

SWOT analysis carried out by ESP based on market environment and internal assessment is as below:

Strengths	Weakness
• Very strong brand image with customers and Business Partners based on recognition of trust worthiness, competence, responsiveness and ethics • Deep knowledge and understanding of product applications in the Indian context • Extensive national reach – Area Offices, Channel Partners and Service Centres • Comprehensive product range • Highly experienced and competent employees • Strong presence in lists of formally approved products • High Customer focus • Cost effective manufacturing	•Brand not established in overseas market •Low coverage of OEMs •Products for solar application •Approval from Railways •Lakh premium, advanced technology brand image •Data based market intelligence and analysis
Opportunities	**Threats**
• Increased government and private investment in infrastructure creating large opportunities for our products • New opportunities in existing market segments like Agri because of increased use of electronics • Higher educated and technically savvy customers creating more demand for digitization based, smart products • Overseas markets with India-like characteristics like Africa and Middle-East • Post GST, increased participation in previously informal sector	• Increased competition with entry of MNCs • Market is metamorphosing to digital from Electromechanical. Hence venturing into high uncertainty area • Price war coupled with high tech features • Agility and ability to keep pace with technology

Table /05

3.0 TQM Framework for the realization of Management Strategies

3.1 Introduction:

In early 1990s with government decision to open the Indian market, foreign competition was the next thing to be faced by Indian companies. To prepare for it, L&T felt a strong need of a mind-set change and adopted TQM framework to facilitate a companywide transformation. The three pillars of this framework were:

a. Total Employee Involvement; b. Structured Problem Solving; c. Waste Elimination

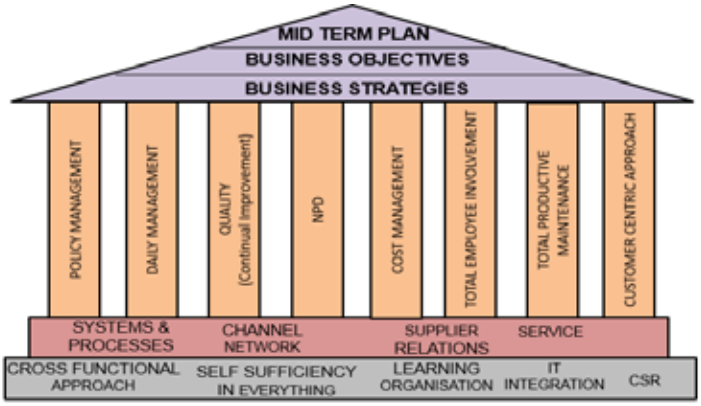
Since then, ESP has been using various TQM tools and other initiatives towards operational excellence for an effective realization of its management strategies to suit changing market and business needs with time.

3.2 Need of TQM:

With changing business scenario and increasing competition from world's leading brand entering in Indian market, ESP's belief on TQM and its abilities firmed-up further, mainly due to following reasons:

- ESP being a self-sufficient team, there was a need for continual education and training for sustaining and enhancing employee skills and competence.
- As majority of ESP Products perform fault protection as main function, product quality is an important element to be sustained and improved
- Since 81% of business comes from products manufactured by ESP, Manufacturing excellence was identified as a strong tool to remain competitive on cost, delivery and operational efficiency.
- Being in Products business with majority of the business coming from products designed and developed by in-house NPD team, the time for New Product Development (NPD) along with benchmarked quality levels has emerged as one of the critical needs.

3.3 TQM in ESP:



3.4 TQM Organisation:

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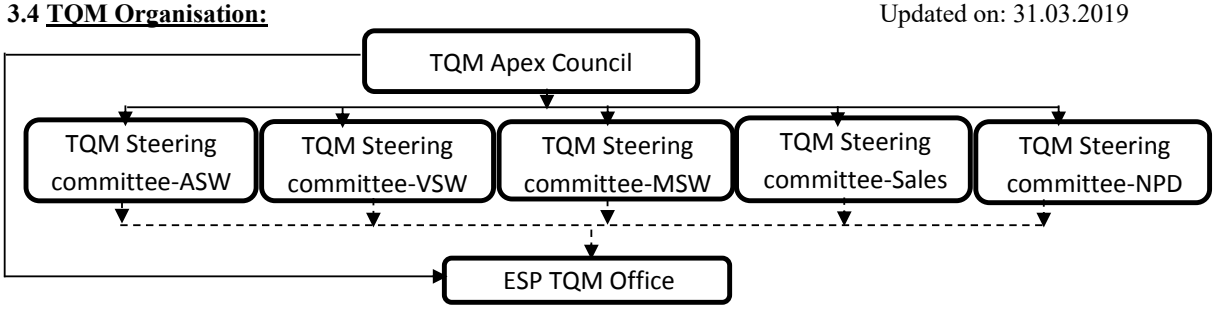


3.5 Roles and Responsibilities for TQM promotion:

Functions →	TQM Apex Council	TQM Steering Committee	TQM office
Roles and Responsibility	Create, Promote and guide organization on TQM initiatives Review along with TQM office the business performance and status of TQM implementation at each level of operations.	Implementation of TQM initiatives at respective areas. Drive improvement projects like 5S, Kaizen, QC etc. Progress review of TQM implementation at respective areas and update to TQM Apex Council.	Collaboration with TQM Apex council and TQM steering committee to ensure implementation of TQM practices all across. Provide Training on TQM concepts and approaches. Coordinate TQM reviews and ensure implementation of decided improvements. Ensure adherence to TQM promotional plan.

Table/06

3.6 Top Management communication and reviews:

Type of Communication / Review	Major Participation	Frequency	Purpose
Perspective Plan Meet	Corporate Management	Once in 5 Years	To Communicate macro level thinking and kick start the Mid-Term Process for the LAKSHYA
PACE Workshop	Senior Management of EAIC, ESP and NPD	Once in a year (March/April)	Appraise employees on key achievements and highlight focus areas/Themes for the coming year
Business & Finance Review	CEO, CFO	Once every Quarter	Business Review, Provide Direction for performance enhancement
Management Review Meeting	EAIC Head, F&A Head, HR Head, Strategic Initiatives Head,	Every Month	Review performance of each vertical, its strategies, Review action plans and provide direction for performance enhancement
Strategic Plan Review of roadmaps of Mid Term Plan	EAIC Head and Strategic Initiatives Head,	Twice in year	Review status of road maps and provide direction based on results seen.
GRCOM (Group Review Committee)	EAIC head, NPD head, Business Head, Sales & Marketing Head	Every Month	Review New Product Projects, Review Process as per EPDS, clear projects to the next Gate
Q-Day	Business Head, Q-Head along with Mfg. Head of each Plant	Once a month	Review Quality Levels at various stages, Review status of various TQM initiatives
Customer Complaint Review	Service Management Cell	Once in a year – Zone wise	Review Complaints, KPIs of Service Function, Review effectiveness of actions, and do CAPDo
Safety Review	Safety Committee at each plant location along with Plant Head	Once in a quarter at each plant	Review of Safety Performance of the Plant, Verification of Statutory Compliance
Mid Term Review	Head EAIC, Business Head ESP and Head NPD	Once in a year (October)	Appraise employees on key achievement, status on various initiative of BSC of different functions, Status of business objectives, CAPDo

Table/07

4.1 Policy Management

4.1.1 Introduction:

ESP is a multi-function, multi-location and multi-layered in its operation and structure. The growing Indian economy and presence of global leaders make the environment challenging.

PACE (Performance Acceleration in Changing Environment) is the process, which is deployed by ESP to establish a seamless and effective policy management.

The key objectives of PACE are: a) Integration of various functions b) Alignment of Employee objectives, Functional objectives with Business objectives.

Effective use of IT makes this process efficient, accurate and seamless with greater ease of access to all involved.

Platform for Appraisal Process	Time Period
Offline Appraisal Process (Manual)	Up to March 2002
Online Appraisal Process (Based on Lotus Notes platform)	April 2002 to March 2005
Online Appraisal Process (New in-house platform)	April 2005 to March 2009
Online Appraisal Process (CRISP-SAP)	April 2009 onwards

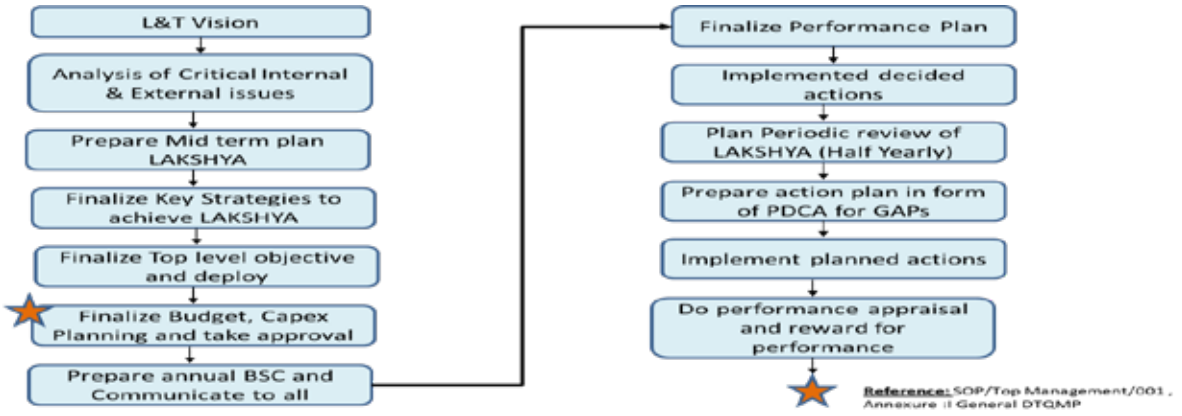
Table/08

4.1.2 Approach towards Policy Management:

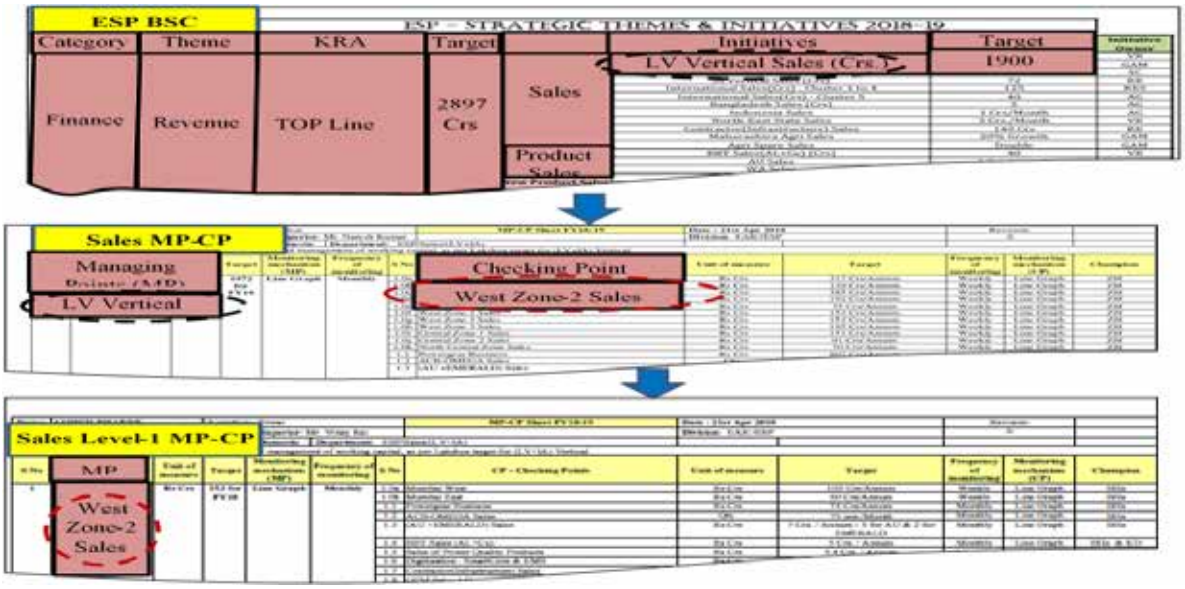
Period	Approach towards Policy Management
Till 2010-2011	- Seen as a tool to involve employees into strategy formulation and deployment process (LSIP), with joint participation from ESP along with participants from other businesses of EAIC (1997-2002) - The Process was further improved and titled as PACE (2003). In the annual PACE Workshop, BSC (Balanced Score Card) was adopted as a tool to formulate the strategies and deploy them down the line in the organization - PACE was de-centralized in 2007. ESP started conducting its separate PACE Workshop with larger and wider level involvement of employees (close to 160)
2011-12 onwards	- PACE process was modified to have two stages viz. a) Strategy or Theme Workshop where some strategic themes at business level get focused and developed further by key functions and b) Integration Workshop – where inter functional integration of Themes and Initiatives takes place. Involvement of employees increased to more than 400. - Use of Four Students Model (FSM) started while reviewing the achievement v/s targets (2017-18)

Table/9

4.1.3 Policy Management Process:

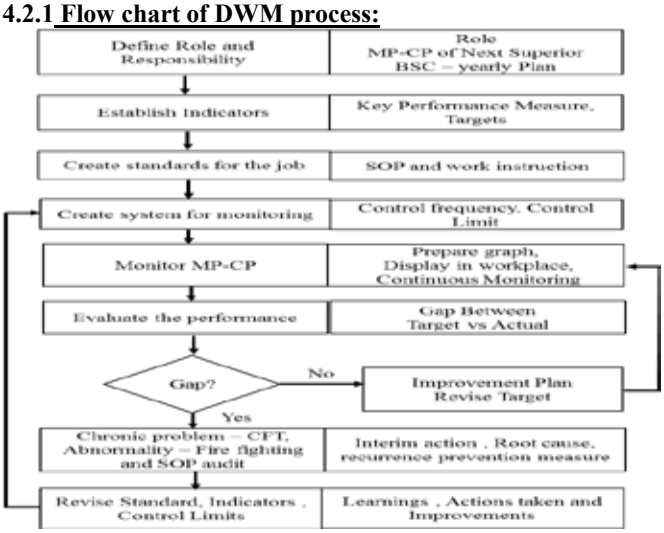


4.1.4: An Example of Policy Deployment:



4.2 Daily Work Management:

4.2.1 Flow chart of DWM process:



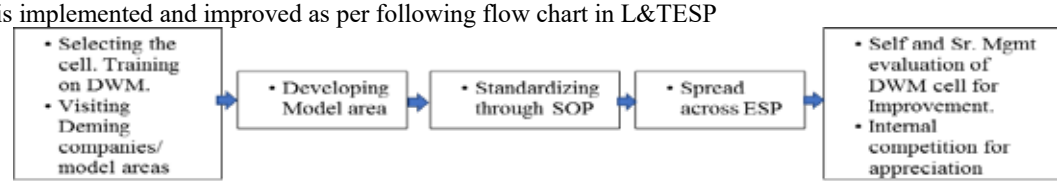
PDCA cycle for improving DWM process is rotated by taking corrective actions of the points found in self and senior management evaluation. Competition amongst various Groups utilizing occasions such as Quality Month, recognizing areas doing well, provide cross learning and improvement in DWM

For **Standardization** of DWM process following SOP's and formats are prepared. SOPs are revised periodically for improving the process

1. DWM Implementation SOP
2.Abnormality firefighting SOP
3. SOP for deciding control limits of MP-CP graphs
4. SOP for target setting
5. SOP for schedule adherence monitoring practices.

4.2.2 Promotion and Improvement of Daily Management:

DWM is implemented and improved as per following flow chart in L&TESP



4.3 Cross-Functional Activities:

4.3.1 Background:

Employee involvement has been one of the key pillars in L&T ESP for the last 3 decades and it was further strengthened with TQM implementation in 1992. 'People, the prime mover' has been a driving philosophy as the organisation became large and spread to multiple geographical locations. All these made cross functional working a necessity and hence structured Cross Functional Team (CFT) approach was adopted in L&TESP. As L&T ESP

has various functions spread across multiple plants, locations hence making CFT based working is effective approach to achieve the planned objectives.

4.3.2 Process of selecting Cross-Functional Approach:

CFT approach is deployed under following needs and reasons:

a) To address the problems caused by an upstream part of workflow which are not tackled individually because their effects appear downstream in a different part of the organisation.

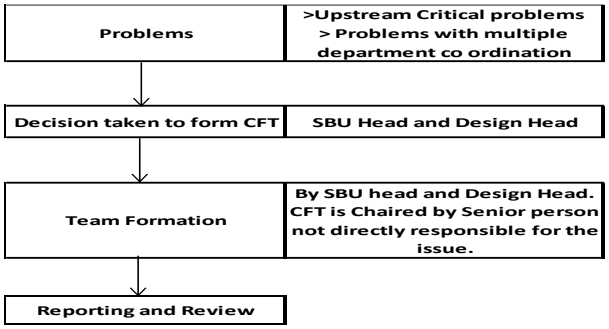
b) Problems, which require coordination between multiple functions and without coordination, workflow will hamper.

c) CFT approach is used when coordination is required

I. Between different sales verticals i.e. Low Voltage, Retail, Agri and Industrial Automation
II. Between New Product Development and other main stream functions of Electrical Standard Product SBU
III. Between Sales verticals, Product Management and Plant.
IV. Within plant involvement of multiple functions.

d) To complete specific task and projects.

4.3.3 Broad Mechanism of selecting Cross-Functional approach:



We have flexible CFT approach.

Working with CFT is culture but not all the CFT's are formally announced by SBU and Design Head.

Other functional heads also can form CFTs as required

Key Role and responsibility of CFT:

Role in activity	Responsibility
CFT Leader	- Project monitoring - Coordinating between team members - Providing resource as needed
CFT Members	- Completing activity as per time line - Report project status as per schedule - Update required standards after completing the project.

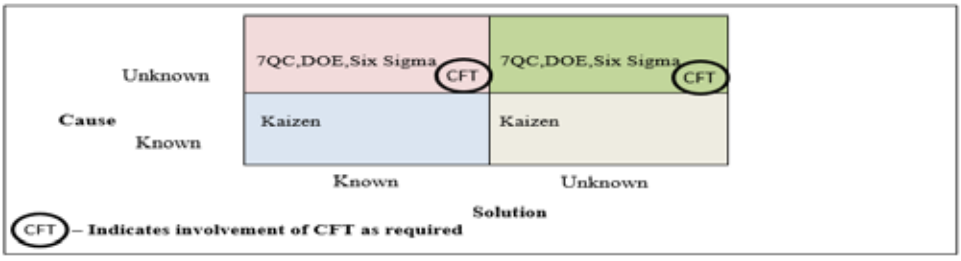
Table/10

4.4 Problem Solving/Task Achieving Activities:

4.4.1 Process for identification of problems:

The process for collecting inputs on problems and tasks to be achieved is available at all functions and all levels in the organization. Some of the key inputs come from Customer Relationship Management (CRM) data, Customer Complaints, Sales analysis, Design Reviews, Inspection Reports, and Audits etc. Based on these Inputs, departments collates the data and decides the priority for actions and solution. PDCA approach is used to achieve the planned result and further improvement (SOP for problem solving is attached as **Annexure- II**).

4.4.2 Problem solving approach:



4.4.3 Training & Promotion:

Key Approach	Training provided	Promotions
QC Story methodology	-7QC tools to all concerned - New 7QC tools to relevant functions - DOE training to all concerned	- Corporate level competitions. - Plant level competitions - DOE project review by external expert. - Participation in external competitions
Six Sigma	- Black belt & Green Belt training by authorised agencies	- Corporate level competitions. - Participation in external competitions
Kaizen	- Continues Training on Kaizen - 100% Coverage of operator for Kaizen training	- Reward and Recognition for Kaizen at plant level - Participation in external competitions

Table/11

4.4.4 Key Events and Training :

Training on problem solving approaches are conducted on regular basis through subject experts. The team identifies projects based on problem at their respective areas seniors and external experts (As required) are reviewing the projects at scheduled frequency to monitor the progress and effectiveness of the projects. Structured approach based on PDCA is being used for addressing the problem by using various improvement tools (7QC, Kaizen, 6Sigma etc). The projects are rewarded based on its result and sustainability.

4.5 Quality Control Circle Activities:

4.5.1 Background & Purpose:

ESP has adopted QC Circle tool to involve and engage operators with the aim of unlocking creativity, doing small improvements, improving morale and thus creating happy workplace.

QC Circle being one of the powerful TQM tools, ESP decided to adopt the same on a moderate scale at Ahmednagar plant to begin with in 2014. Later, looking at the success it achieved and benefits it started yielding, the concept and model of QCC was horizontally deployed at other two plants viz. Vadodara plant and Mahape Plant, in a quick succession between 2015 & 2017.

4.5.2 Implementation of QC Circle:

ESP adopted following methodology for implementing QCC initiative in a structured manner:

Phase 1: Core team of shop floor engineers was formed in each factory assigning them the responsibility of implementing this initiative. These engineers were trained in problem solving techniques like 7 QC tools

Phase 2: Core team members trained all shop floor operators on 7QC tools.

Phase 3: QC Circle teams are formed comprising 5-6 line workers in each team.

4.5.3 Operation of QC Circle:

After formation of teams, QC Circle started operating and solving small problems faced on shop floor. One member from core team is assigned as a mentor for each QC Circle team. QC Circle operates as per following process.

a) QC Circle meets at pre decided frequency to discuss problems faced in shop floor.
b) Problem directory is prepared.
c) Problems are prioritized in categories viz. Safety, Quality, Productivity, 5S.
d) These problems are solved by applying 7 QC tools.
e) Every month these QC Circle teams make presentation in the Unit Steering Committee meeting. Seniors of respective functions attend this meeting to guide and motivate teams.

4.5.4 Promotion of QC Circle:

Every quarter QC circle competition is held amongst all QC circles. Annual competition across ESP is organized during celebration of Quality month celebration i.e. in November, every year. This inter factory level competition gives cross learning opportunity. Winning teams get opportunity in participation in state level QC Circle and Kaizen competition organized by organization like Confederation of Indian Industries (CII), Quality Circle Forum of India (QCFI) etc.

4.6 Sales Management:

4.6.1 Purpose and Background:

ESP gets a competitive edge in the switchgear market largely due to its distinctive customer reach and customer connect. Our Sales & Marketing team (with close to 500 people) based at 50 locations across India constantly engage themselves in supporting and delighting our large & esteemed customer base. This relationship with customer is further strengthened by more than 700 channel partners spread across 29 states & 500 districts (out of 640 districts in India). The testimony of coverage of customers reflects through repeat orders from brownfield projects and growing number of orders from green-field projects as well. The value chain shown in figure 1.6.3, explains how ESP works with multi channels to serve the customers by providing right product & services at right time. ESP's motto is **"Be with more & more Customers, Be more & more with Customers".**

ESP's Sales & Marketing team focuses on following factors to retain its market leadership position in India:

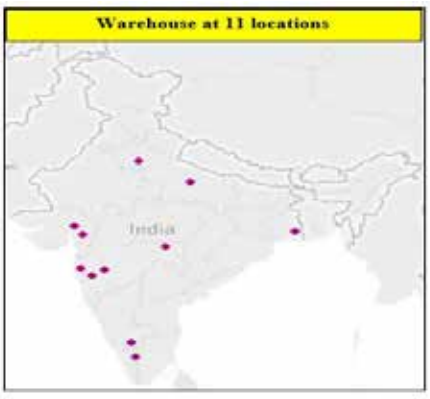
a. Coverage; b. Reach; c. Pre & Post-Sales Support; d. Channel Motivation

Following table shows the "SIPOC" flow for ESP's Sales Management.

Supplier	Input	Process	Output	Customer
•Market Trend •Government Policy •Competitors Trend	•Mid Term Goal as per LAKSHYA Plan •Key Initiatives derived from Mid Term Goals •Balanced Score Card	•Data Based Decision (Data Analytics) •Unique Sales Promotion Activities •Win-Loss Analysis •Channel Retention Program •New Channel Partner Development •PESTEL Analysis •New Product Development through QFD Approach •Customer Training •Customer Approvals •Comprehensive Approach Towards Competitive Offering(CACO) •Customer Relationship Management	•Customer Satisfaction •Profitable Sales Revenue •New Product Sales •Channel Acquisition &Retention •New Channel Partner Performance	• End Customer • Channel Partners • Dealers • Contractor • Panel Builders • Consultants • Architect • Electrician

Sales Organization & Presence:

Following figures indicate presence of our team across various geographies of the country.



4.6.2 Major TQM activities towards reaching the planned growth:

Year	Before 2011	2011~2016	Post 2016
Initiatives implemented	• Sales Monitoring • Sales BSC • Sales Module Introduced(IT Utilization) • Documentation of key Processes • 26 Sales Offices & 4 Zones • Area Development Initiative(ADI)	• Introduction of Policy Deployment and Daily Work Management • Vertical Formation - Low Voltage Business - Industrial Automation Business - Agriculture Business - Retail Business • Business Development Team formation for coverage of Consultants • Structured Format for review • KPI Tracking System • Data Based Decision Making • CFT team for - OEM Segment Business - Ti Solution Business - Major Sub-Segments like Healthcare, Railway, Automobile, Metro, Airports , Hospitals, Solar • Exclusive Sales Promotional Activities for End-Customers like - *Powerserve* - *Firstserve* - *Buildserve* - Technology Conclaves for Consultants • 2 Zones added(i.e. Central Zone, North Central Zone) • Identified 5 Sales Offices added(Total : 31) • 23 Cities identified under Area Development Initiative (ADI)	• Strengthening of Policy Deployment and Daily Work Management • CFT team for - New Product : AU Sales - Sub-Segment like Affordable Housing • Strengthen of Business Development team for Preference creation Prescription Selling Key Account Management • Win-Loss Analysis • Mapping of Competitor Data Base • Drive Usage of statistical tools • Enhancement in IT Utilization • 1 Sales Offices added(Total : 32) & 1 City added as ADI(Total ADI : 24) • War room for franchisee based panel solutions, New range of FDP & New range of MCCBs.

Year / Effects	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Revenue (INR in Mn)	11483.5	13232.6	15494.1	16367.0	17660.3	19790.0	20840.0	21000.0	23140.0	25080.0	28750.0
CAGR ESP (%)	Base Year	15.2	16.2	12.5	11.4	11.5	10.4	9.0	9.2	9.1	9.6
CAGR Market (%)		12.7	11.6	14.1	8.5	7.1	11.4	9.9	9.4	9.1	8.8
Remaining Problem	• Training on TQM for Team			• Data Analytics					• Usage of CRM Software		

Table/12

4.7 New Product Development Management:

4.7.1 Background:

New Product Development (NPD) is one of the important processes, fundamental to ESP's business philosophy of Listen-Learn-Implement-Improve. It is a cross-functional process of developing new products to cater to market requirements based on our strong understanding of customer needs. For the last 55 years, almost all our products are designed and developed in-house. It is responsible for the success of the business, contributing to the revenue growth and profitability. It helps in long-term business sustenance. A Cross-functional team comprising members from functions like Marketing & Sales, Design, Engineering, Sourcing, Quality and Tooling are responsible for the execution of NPD projects.

4.7.2 Objectives and Purpose of NPD:

The strategic objective of NPD is to develop and maintain a portfolio of products and solutions that enable the business (ESP) to grow its share in the identified markets. The objectives are as follows:

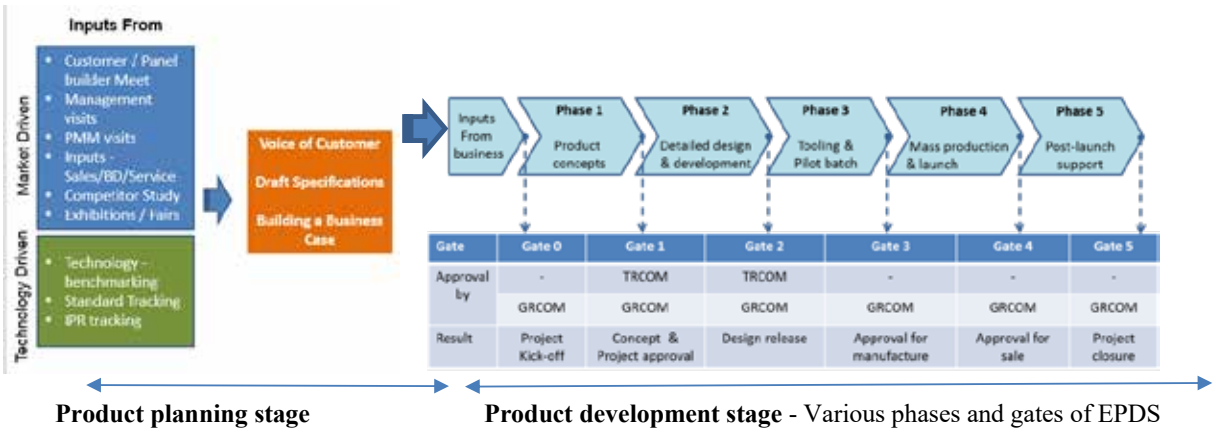
- Strengthen leadership in Low Voltage Power Distribution
- Strengthen leadership in Agriculture market
- Grow market share in Domestic business

In order to achieve the stated Objectives, following points illustrate the Purpose of NPD:

- To ensure long-term business sustenance by planning of technology and products for future.
- To design and develop products and solutions in right quality, cost and time to meet and/or exceed the customer needs.
- To develop products and solutions meeting the environmental regulations.

4.7.3 NPD Process:

Our NPD process is divided into two stages, product planning stage and product development stage. In the planning phase, the inputs for a product need can be driven either from market or from the technology. After favourable evaluation of the technical feasibility, strategic alignment with business and financial benefits for the development, the product gets into the development phase.



Product planning stage **Product development stage** - Various phases and gates of EPDS

Illustration of NPD process /NPD/1

EPDS (E&As Product Development System) forms the major framework for NPD Management. It was introduced in 2006. EPDS defines a six gate, five phase product development process as per **above image**. It starts from project kick-off and ends in project closure. There are various review gates built in after development Phases. Activities by different functions in each phase are well defined. Technical reviews (TRCOM) and senior management reviews (GRCOM) review the adherence to project deliverables at each gate.

A detailed Flow Diagram(NPD System Chart) ensured details (Reference DTQMP Annexure IV)

1. Roles and responsibilities of various departments participating in NPD.
2. The process Flow with inputs and outputs required in various phases of NPD
3. The various document requirements during each phase of NPD

4.7.4 Our current New Product Roadmap:

Any new project needs to be approved by GRCOM at Gate 0. Once approved the project is adapted to the EPDS system for further development. Below table represents year-wise product roadmap. The list here is just an indication of the product roadmap for ESP for the next 5 years. This list gets regularly reviewed for new project addition or deletion as felt appropriate by management.

		2018-19	2019-20	2020-21	2021-22	2022-23
Platform Products Range Extension &Up-gradation	Power Distribution	- New MCCB, 2 frames & Solar solutions - Enclosed motorized COSD - DN4 SEOM	- New MCCB complete range - New range of SD (Fr I) - Upgraded MCO range	- New range of SD (Fr II) - Epoxy BBT range - Feeder Protection relay - 1 P MCCB	- Omega Plus ACB	- Cat B MCCBs
	Motor Control	- RTX electronics relay - MO control contactors - MOC 3/10/70A	- Electronics MPR - Electronic 1 P controller - iMCC relay (Profibus, MODBUS, TCP/IP)	- Solar drive Phase 2 - MV drives - iMCC relay(Profinet & Ethernet) - Electronics 3 P starters	- LV drives	
	FDP	- 80/100 A RCBO	- New range of SPN, TPN DBs	- AFDD	- Type B & B+ RCDs	
	WA	- Mini MCB	- Englaze Touch switches - Entice plus range	- Premium switches		
	Agri		- Solar Pump Controller, Phase 1 - Smart Pump Controller (DOL and SD) - RO control	- Agro drive & pump controller	- Precision Agri products (Drip etc.)	
	New Market		- SMARTCOMM Upgrades and Apps	- IOT enabled Products & solutions		- Statcom -Inverters - AHF

Table/13

- Text in Blue represents projects that are market driven and development request are provided by product management.
- Text in Green represents the projects that are generated based on Technological Advancements as felt appropriate by design department.

4.7.5 TQM initiatives in NPD to address key challenges:

Key Challenges in NPD	Processes to overcome the challenges	
	Before 2011	**After 2011**
To remain Competitive in Product Technology and cost with respect to competition.	- Designs were based on empirical models / rule of thumbs and experience. - Extensive use of testing to identify areas of improvements. - Competing products were compared (catalogue) for features only.	- Development of soft simulation models to establish electrical performance during arc quenching. - Extensive use of CAE tools to reduce prototype iterations. - Detailed benchmarking & testing of competing products for performance & cost to identify opportunities for improvement. - Processes developed for understanding the trends and the direction of technology through patent tracking, literature survey & standards / regulation tracking - Guidelines for Design to meet Cost targets developed
Deeper engagement of customer in trying to understand the real needs	- Customer needs were mapped through gap analysis based on catalogue comparison. - Customer interaction was limited to a few customer visits and inputs from stockiest.	- Customer in-sighting process introduced by Product Management - Use of QFD table to Benchmark the needs of Customer and convert these into specifications - Focussed Seminars like POWERSERV, Technology conclave, BUILDSERV, panel builder meets started to capture inputs from end users, consultants, panel builders etc
Increase the NPD effectiveness in terms of product success in market.	- Institutionalise EPDS for NPD. - KPIs were not present and hence not measured.	- KPIs institutionalised to measure performance of NPD - To improve effectiveness of EPDS, following COP's were introduced: o Product validation by Product validation Group o Critical Design Verification Process o Pre-Release Design Validation o FMEA process redefined.
Use of ICT (Information and communication Technology) in NPD	- All design and development and analysis were on a digital platform however for development drawings were paper - All past project data were stored as hard papers in project files - Retrieval of specific information on the development and Change management was difficult.	- SAP PLM improved the data transfer during development phase and became streamlined and paperless. - All project data, presentations, learning etc. are uploaded in the Knowledge management Portal for Future reference - Information retrieval process and change management process is simplified.
Policy Management	- New product Engineering (NPE), was under manufacturing function. - Electronic development was done by a separate business unit of L&T (L&T Technology services) - Linkage of overall policy as deployed to individuals was not clearly defined	- NPE was integrated with design for NPD - Integration of electronic design Group - EDDG to SDDC - Balanced Score Card aligned with LAKSHYA - DWM introduced

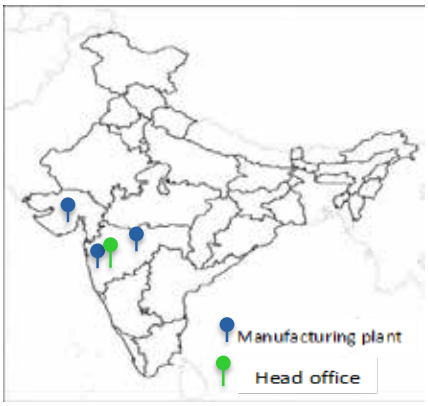
Table/14

4.8 Manufacturing Management:

4.8.1 Background:

The Manufacturing facilities of ESP are situated at three strategic locations in India viz. Ahmednagar in Maharashtra, Vadodara in Gujarat and Mahape in Navi Mumbai (close to Mumbai).

Each plant is equipped with contemporary machineries, equipment, well-designed infrastructure and layouts in a self-sufficient functional framework. These Plants have about 3000 people that include employees on roll as well as on contractual workforce distributed among various mainstream and support functions, ensuring a harmonious work environment. ESP has been observing smooth operations at all its plant locations for more than 40 years through sound Industrial Relations. Each Plant is certified for its continued compliance to international system standards viz. ISO 9001, ISO 14001, OHSAS 18001, ISO 50001, ISO 27001 and 5S certified by recognised agencies.



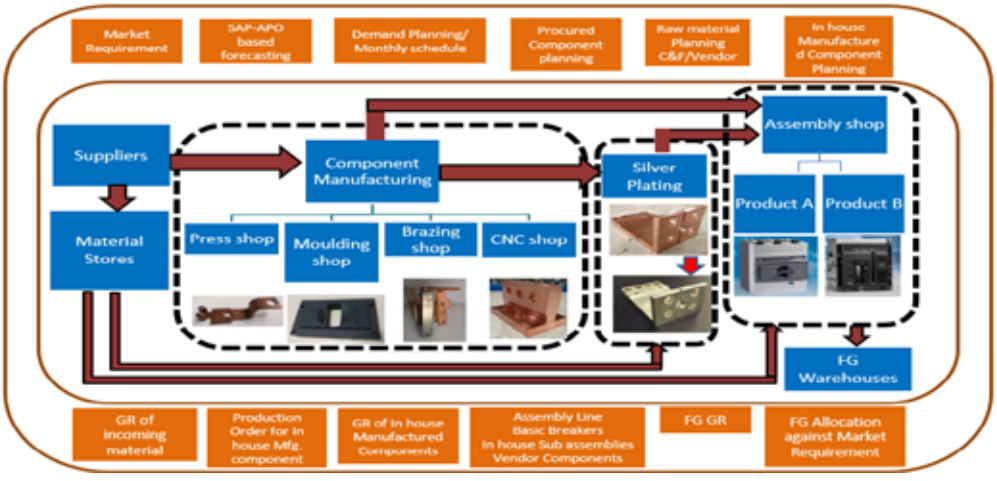
4.8.2 Manufacturing Excellence journey in ESP under TQM Phases:

Before 2011	After 2011	Future Plan
- Upgradation of Shop-Floors (Epoxy Flooring, Engineered Workstations, FDVS etc.) to enhance customer confidence - Implementation of MOST, SAP for improving productivity. - Adoption of 5S, Lean, SQC etc. through various participation of AOTS - Structured Supplier Modelling. Formation of Strategic Sourcing Group. - In-house Silver Plating for all components for assured product reliability - Introduction of SOPs (largely for Manufacturing Processes) - Benchmarking of Manufacturing Processes with various excellence models - Certificates for Quality, Environment, Health & Safety	- Enhancement in IT enabled Planning (SAP upgraded to APO) - Deeper adoption of TQM practices viz. DWM, QC Story, VE, QC Circle, Kaizen – to business advantage as well as enhanced employee involvement - Higher visibility of Suppliers through their deeper, wider involvement in business - Manufacturing shifted to cost effective location (Powai to Vadodara and Mahape) - Increased use of Contract Labour supported by intensified activities such as de-skilling, rapid induction and active involvement in improvement initiatives - TQM Diagnosis through JUSE - Q-KPIs defined, monitored and improved	- Higher level of Automation - Institutionalization of Weekly Scheduling - Focus on Suppliers upgrade for their improved contribution to business - Enhanced Worker participation - Implementation of TPM - OEE Improvement

Table/15

4.8.3 ESP Manufacturing Management Model

Manufacturing Process Flow



4.8.4 Approach for Manufacturing Excellence:

Safety	Quality	Productivity	Environment
- TQM practices - OHSAS 18001 certified - 5S certified - Safety PokaYoke at machines - Visual Controls - Safety Committee and Safety officer at each location - Mock drills, PPE adherence monitoring - Accidents/Near misses monitoring	- TQM practices - ISO9001 certified - Application of problem solving tools like 7QC, DOE (details in departmental DTQMP) - In-house test laboratories - PokaYoke for defect control and prevention - Training to new operators at Dexterity School (GURUKUL) before putting on job	- TQM practices - TPM practice - Machine automations (data available in Chapter 6) - IT based production planning - In-house tool room - Training to new operators at Dexterity School (GURUKUL) before putting on job	- TQM practices - ISO14001 and ISO 50001 certified - ETP and STP facilities with zero discharge at ASW and VSW - Implementation of Energy Saving projects - Landscaped gardens and trees - Controlled emission

Table/16

4.9 Quality Assurance

4.9.1 Background & Purpose:

With increasing customer expectations and increased global competition, it is imperative to continually benchmark the quality levels and strengthen ESP's position in the market. Quality Assurance at ESP is an organisation-wide initiative. L&T Vision, Mid-Term Plan (LAKSHYA) and ESP Business Objectives (BSC) provide necessary framework for aligning QA activities to business objectives while the Quality Policy and Quality Management System as per ISO 9001Standard provide guiding principles and facilitate QA process in ESP.

4.9.2 QA System, Linkage of Business Objectives and Strategic Initiatives of QA:

Business Objectives	Strategic Priorities	Strategic Initiatives
Improve product quality to 5 Sigma level (233 dpm) for all ESP products by FY21	- Reduce Customer dpm - Reduce FTY loss – (monitored product line wise)	**Existing Products** - CFT approach in complaint analysis and Corrective Actions with stratification - Predictive assessment through Reliability Tests - DWM and QC story approach to reduce FTY loss **New Products** - Methodology for Capturing VOC and QFD - CFT approach to Improve DFMEA and PFMEA - Reliability Evaluation by CFT by simulating customer usage & field conditions e.g. Emerald – 55 tests added
Provide effective service back-up	- Reduce customer call closure time - Improve CNPS	- Call closure status review through DWM - Proactive inspection process at customer "First Serve"

Table/17

4.9.3 QA Activities:

4.9.3.1 Design Quality:

Quality at Design and Development stage starts right from capturing voice of Customer, factoring past learning and conceptualisation of product specifications. At each subsequent phases of EPDS, quality gets assured through established processes and review mechanisms such TRCOM, GRCOM, Design release and approval for manufacture & sale.

4.9.3.2 Supplier Quality:

ESP has wide supplier base for components and sub-assemblies, which play critical role in meeting quality level. Suppliers (new and existing) are evaluated through Supplier Quality Improvement Program (SQIP) for their QMS. Suppliers are graded in five bands based on audit score. Structured approach is adopted to upgrade suppliers to next higher band level on long-term focus.

4.9.3.3 Manufacturing Quality:

With more than 80% of sales coming from manufactured products, ESP gives a strong focus on ensuring product quality through robust processes which include state of the art in-house component manufacturing and tooling facilities, assembly workstations with automations & interlocks for error-proofing, upgrading operator skills through GURUKUL, visual controls, detailed SOPs, 100% product testing and use of SPC. Application of PDCA using QC story and DOE approach help in ensuring sustenance and continual improvement.

4.9.3.4 Field Quality:

To ensure field quality, apart from routine QC, Reliability Tests and Product Audits are carried out on regular basis to detect early/potential failures and improve. New initiatives like Accessory Marriage Test and Electronic assembly robustness tests are implemented during past 3 years, which has helped in improving field reliability. Customer rejection in dpm, Service Call Closure time and Customer satisfaction rating on service (NPS) are key performance parameters being monitored in Field Quality.

4.9.4 Actions implemented to achieve key objectives:

Process	Before 2011	After 2011
Design Quality	- Design Request for New Product by Marketing was based more on judgement - Lack of structured approach to mitigate risk in Design - Reliability & customer touch point evaluation done largely by Quality	- Methodology for Capturing VOC and QFD - Improved DFMEA and PFMEA - Pre-release Design Verification (Testing on proto-tooled up samples) - New Product Reliability Evaluation by CFT by simulating customer usage conditions
Supplier Quality	- No system for supplier gradation and monitoring their performance - Lack of focused efforts for upgrading suppliers processes and QMS - Training and technical handholding to suppliers were need based - Lack of focused efforts for improving suppliers participation and motivation	- Supplier gradation and improvement (SQIP) - Supplier Training and Plant visits - Supplier meet and Quality awards to suppliers - Addition of Green-Green band and removal of Red and Orange band suppliers - Celebrating Zero dpm at suppliers end - Monitoring & Improvement in incoming rejection dpm
Manufacturi -ng Quality	- FTY monitored for major lines in % yield - Analysis of defects when production affected - Quality reviews and Workmen training were carried out need based	- FTY loss in dpm for all product lines - DWM and QC story approach - Stratification of Quality levels - Quality review through 'Q-Day' - GURUKUL
Field quality	- Customer call closure time not monitored - Effectiveness of Service not monitored - Service calls attended based on customer call - Complaints units analysed by Design - Reliability assessment and improvement carried out based on Customer inputs	- Customer call closure time is monitored - Net Promoter score based on Customer feedback on service is monitored (CNPS) - Proactive inspection process "First Serve" is implemented in addition to Service Calls - CFT approach in complaint analysis - Site visits by Quality & Design based on CRM inputs - Predictive assessment through addition of Accessory Marriage Test & Robustness Test for Electronics assemblies - Audit on Sold Products (Market Samples)

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4.10 Utilization of IT

4.10.1 Background & Purpose:

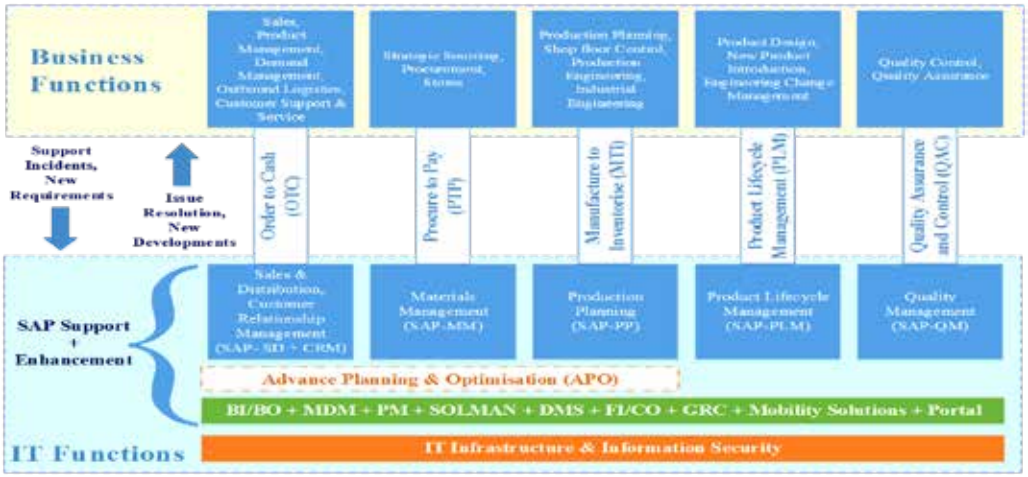
ESP has many Customers, Channel Partners and is engaged in mass production. Delivery and availability is key so need is for real time information, quick information, easy information and accuracy in data base decision in material planning and for forecasting. ESP business is a complex blend of operations at multiple locations with plants, suppliers, channel partners and other stakeholders situated at different geographies. This makes it inevitable to have

a robust, contemporary and constantly evolving IT system with its equally effective utilization across the entire value chain of business.
ESP has been using SAP ERP system for almost two decades now adopting major upgrades in the same at regular intervals. This system encompasses and extends IT support to the key processes of each of the business function from design & development stage to product delivery and post delivery services to customers.

4.10.2 Objective of IT system in L&TESP

Business Objectives	IT Objectives
Improve Top Line	• Ensure 99.9% System Uptime to ensure smooth business • Timely information flow to all the Users, i.e. Employees, Customers, Suppliers.
Improve PBIT	• Business reports for effective MIS, enabling optimisation of resources & fact based decisions • Cost reduction by elimination of Process NVAs thru Business Process Automation.
Improve Market Shares	• Onboarding of business partners by providing right information in real-time thru various Digital solutions like Portal, Mobile applications etc.
Improve Product & Process Quality	• Interlocking in processes to ensure compliance and mistake proofing.
Process Oriented Working to bring Process Focus	• e – Learning, knowledge sharing Platform to all Employees, Employee participation provisions.
Improve Machine efficiency to ensure smooth production flow	• Connect Shop floor to Top floor by bringing visibility of asset utilization & production losses thru available standard solutions.

E&A-IT Functional Structure:



4.10.3 IT Utilization at ESP:

Business process driven customization and adoption of Software applications gives required proficiency to operations as detailed below

Function	Business Process	Application / System	Support to business
Sales	Sales data, Customer data, Order Win – loss data	CRM + SD + GATP (APO) Module	Improve Top Line. Increase market reach
Marketing	Technical updates & latest information to Customer	CRM + Doc Whiz Mobile App	Improve Market Share

Customer Support	Information on Product Installation, complaints, servicing.	CRM Module + Mobile App, integrated with Customer Interaction Cell System	Improve Customer Satisfaction. Faster response to Customer)
Outbound logistics	Demand planning , Scheduling, delivery Commitments , finished Goods Stock Management and Delivery to Customer	SD + PP + MM + DP (APO) + SNP (APO) Modules. Customer portal	Ensure timely delivery through optimized inventory levels.
Manufacturing	All manufacturing processes are integrated with on line Stocks availability , data acquisition during product testing, interlocking of Setups for mistake proofing	ERP – SAP, SNP (APO), Customized software, Minitab, use of HMIs at workstations	Supply plan for manufacturing aligned to Customer requirements.
Quality	Data analysis, complaint call analysis, tracking of Calibration of IMTEs	ERP-SAP + customized software	Improve Product Quality
Strategic Sourcing	Information to suppliers regarding purchase orders. Inspection report and challan parking in the system	Supply Network Collaboration portal (SNC)	Improved supply chain visibility & reduce errors at incoming GR as well as Invoice processing stage.
HR	Training and development, Reward and Recognition, Performance Management System	CRISP Portal, R&R Portal, "ATL" Any time learning portal	Improve Employee Engagement & Growth. Lower attrition rate.
Engineered Tooling Solutions	Tool designing, project management, work scheduling and tracking of tool manufacturing	Unigraphics, MasterCAM, ProE, eStar software	Efficient Designing, Scheduling and Production of Tools.
Product Design	Product design, Design data storage and communication	ProE (creo), PLM Module	Reducing Time to Market for New Product Introduction due to efficient design approval & release process
Customer Interaction Cell – CIC	Front end for Customer – Queries on product selection, Installation, delivery, complaint logging and Order booking	Web based system	Improve CIC agent efficiency & enhance customer interaction experience

Table/19

4.11 Human Resource Development activities

4.11.1 Purpose and Background:

Human Resource is a corporate level function in Electrical & Automation business vertical of L&T, which extends its services & support to ESP Business. The 3 key components of the department are:

- Attract Talent
- Develop Talent
- Retain Talent

A defined Human Resource policy of L&T is enumerated beside. Our efforts are aligned to meet the policy guidelines.


Corporate
Human Resource Policy

4.11.2 HR to Business Relation Model:

The ultimate aim of Business is 'Profitable Growth'. This is normally envisioned through parameters like Sales, Profit and ROCE.

Three factors that are responsible for achieving the growth are Product, People and Market

Of the three, People constitutes the most important component as they are capable of impacting both Product and Market.

4.11.3 Scenario after TQM promotion:

Key Activities	Before 2011	After 2011
Learning & Development	Lack of In-house training programs to meet employee training needs	New quality programs launched inhouse at all levels – Jr, Middle and Sr Management
	Lack of In-house training programs to meet employee training needs	New quality programs launched inhouse at all levels – Jr, Middle and Sr Management
	Competencies available in JD however Structured Competency matrix was needed	Initiated Competency matrix
	Krickpatrick Level 1 training feedback was in place	Initiated Level 2 and Level 3 for key programs through an online platform.
Reward & Recognition	Unavailability of Structured Employee appreciation process	Launched the Reward and Recognition policy
HR Services	Lack of awareness in employees about HR practices at various locations in EAIC	Initiated 'HR Connect' to bridge this gap.
	Unavailability of Grievance redressal procedure	Initiated a structured Grievance redressal process with Committee and timelines.
Talent Acquisition – Onboarding	Huge dissatisfaction with the on boarding process by new joinees.	Revamped the process and introduced Buddy scheme for new joinees

Table/20

4.11.4 Training and Development process:

Objective: Identify and provide the right learning opportunity for individual employees to excel, develop and grow in the Organisation.

Introduction: L&T follows a holistic approach of developing technical competencies of an employee as well as behavioural competencies. The inputs on these functional competencies are gathered through the Competency matrix process. L&T has special Technical Training centres for employees at different parts of the country. Apart from that Electrical and Automation have their own training centres at 6 locations. L&T also lays focus on developing individuals by providing them training on Leadership and Behavioural competencies.

The process starts with need identification that comes broadly from individual employee needs as well as competency matrix. L&T offers host of programs from both internal and external sources for employees to meet their training requirements. All efforts are directed to meeting identified needs.

4.11.5 Employee motivation:

Employee motivation is one of the cornerstones of effective employee engagement. Enumerated here are the policies and practises which impact employee motivation.

R&R policy - L&T E&A has in place Reward and Recognition policy which was launched in 2014. This was result of one of the TQM initiatives towards enhancing employee engagement and motivating the talents in a changing scenario with increasing expectations from millennial Gen Next.

The aim and objective of the policy is to recognise Extra efforts, Team work, Innovation, projects beyond routine work and Excellence based up on uniqueness and sustainability.

The awards constituted are as follows –

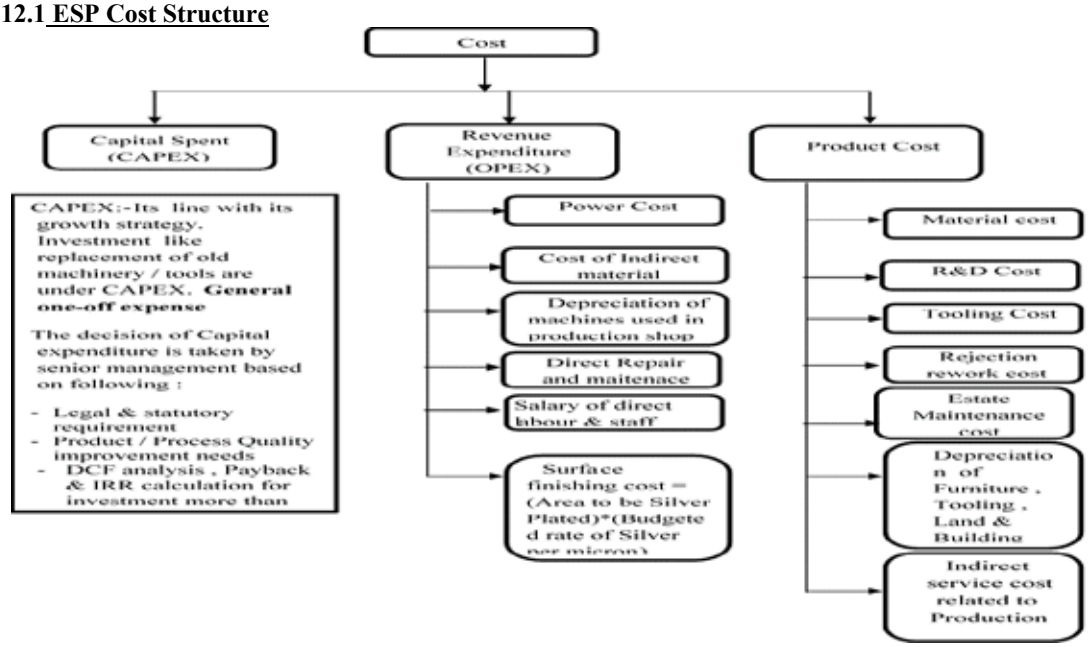
Name of Award	Type	Frequency	Key points
e-Appreciation Award	Team/ Individual	Ongoing	Significant efforts done by team
STAR TEAM Award	Team	Quarterly	Significant Achievement by a TEAM, Financial / Customer / Processes
QUANTUM LEAP PROJECT Award	Team	Quarterly	BEST Improvement projects – Line Managers, Quality / Cost Reduction/Delivery time
GROUND-BREAKER INNOVATION Award	Team/ Individual	Quarterly	BEST Innovations successfully implemented at each Unit Level, Benefits, Freshness of idea
HUMANITARIAN CHAMPION Award	Team/ Individual	Annually	Demonstrates spirit of humanity, Volunteer work/CSR projects/Supports fellow colleagues
STAR GET Award	Individual	Annually	Demonstrates excellent performance & learning ability, is a good team player Recognise the best GET at BU level.
STAR JET Award	Individual	Annually	Demonstrates excellent performance & learning ability, is a good team player Recognise the best JET at BU level.
ACE TEAM Award	Team	Annually	Significant Achievement by a TEAM having an org. wide impact, Balanced Score Card approach
ACE PROJECT Award	Team	Annually	Best Improvement project by a TEAM having an org. wide impact
ACE INNOVATION Award	Team/ Individual	Annually	BEST Innovations successfully implemented at Org. Level, Benefits, Freshness of idea
ACE INTELLECT Award	Team/ Individual	As & When required	Reward Patents & Designs which generate exceptional value for Org.

Table/21

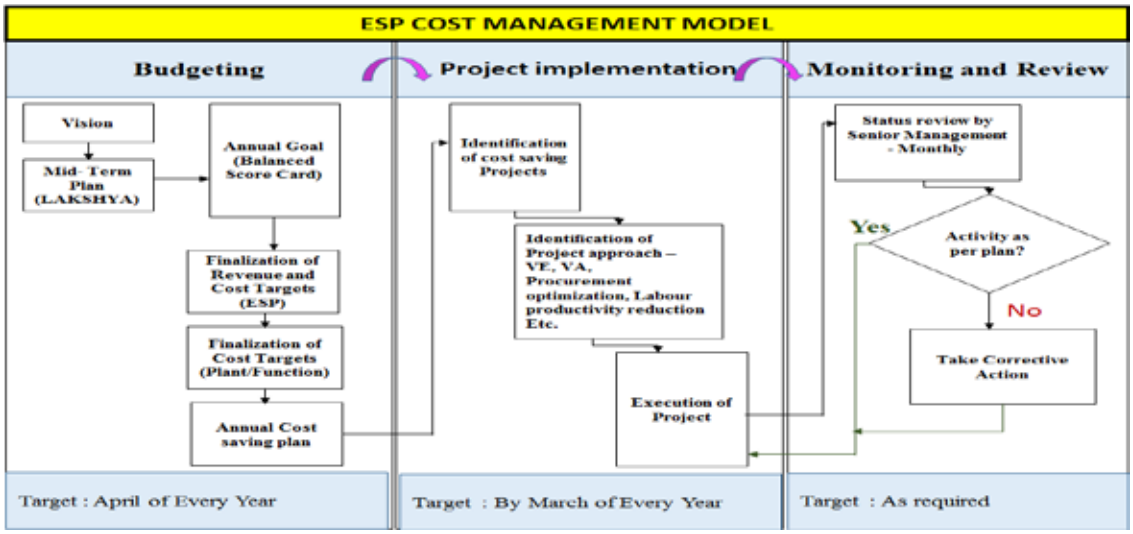
Other initiatives for employee motivation are R&R policy, Appreciation Week, Sales incentive schemes, Participation in external training programs.

4.12 Cost Management:

4.12.1 ESP Cost Structure



4.12.2 Approach for Cost Management:



4.12.3 Scenario after TQM promotion

Before 2011 (Before TQM)	After 2011 (After TQM)
➢ Limited use of statistical tools for cost reduction. ➢ Review with senior management at lower frequency.	➢ Structured approach towards cost reduction. ➢ Cost Management Model created. ➢ Use of statistical tools for cost reduction increased. ➢ Review frequency of Senior management increased to Monthly.

Table/22

4.12.4 Key Cost Reduction Initiatives

Key Initiatives	Key Approach Taken	Prime responsibility	Contributing responsibility
Travelling Expenses	- Use of Video / Tele Conference - Car Hire Policy - Flight Ticket booking policy - Use of Guest House/Transit House	Individual Department	NA
Revenue Expenses	- Pass Book holder to monitor Opex at department level	Individual Department	Finance & Accounts
Utility Expenses	- Energy conservation measures - Water conservation measures	Maintenance Department	Individual Department
Courier Expenses	- Scanning centre set up at Plant for claims & bill processing	Finance & Accounts	NA

Table/23

Expense Type: Product Cost

Key Initiatives	Key Approach Taken	Prime responsibility	Contributing responsibility
Value Engineering	- Cost pie analysis - R1/R2 analysis - Competitor product bench marking - Change in Design , Material , Norms & specifications - Change in process	LCM Engineering	SDDC , Manufacturing

Procurement Optimisation	- Rate negotiation and Alternate source - Tax benefits and Global sourcing - Reverse auction - Cost sheet rationalization	SSG	Manufacturing , LCM Engineering
In house - Labour Productivity improvement	- Long term negotiation - Time study and Automation - Process change - Improving machine OEE	Manufacturing	LCM Engineering , Industrial Engineering
Vendor - Labour Productivity improvement	- Time study and Automation - Process change - Improving machine OEE	SSG	LCM Engineering , Industrial Engineering
Rejection / rework reduction	- FTY / RTY improvement through - QC story and Six sigma project - Quality circle	Quality	SDDC , Manufacturing , LCM Engineering

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4.13 Corporate Social Responsibility

4.13.1 Background:

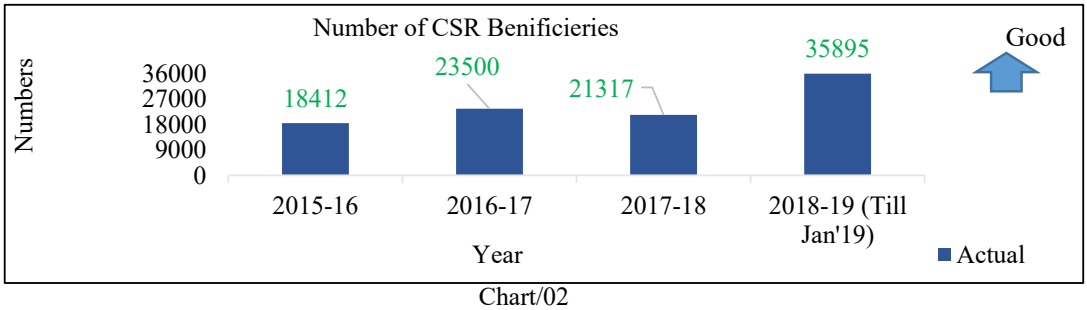
The growth of any country relies significantly not just on strengthening of economic infrastructure in sectors such as Energy, Power, Telecom, Transport and IT but also in investing in the social infrastructure, which facilitates social development. The social infrastructure investments will include schools, hospitals, skill training institutes, water supply & distribution and, sanitation facilities.

L&T as a corporate and ESP as a business have always been active in investing in community development across our business location executing various CSR initiatives in number of areas among the underprivileged and needy.

4.13.2 CSR Initiatives:

Contribution to Safety , Health & Environment	Contribution to Community Services
• Clean and Safe Drinking water facilities at schools • Toilet construction at schools (Support Swatch Bharat Mission) • Organizing Health check-up camps at Villages and schools. • Organizing Blood donation camps at all Plants • Maintaining Traffic signals to strengthen road safety • Maintaining Gardens, City Squares and Tree plantation	• Upgraded school standards by providing computer labs, e-learning kits ,Infrastructure. • Vocational Training to youth • Training & Placement for specially abled (Divyang) • Mini Science centers at Rural areas

Table /25



Chart/02

5.0 Outstanding Activities

5.1 Augmenting Customer reach and Product/Service availability through sustenance of channel network

5.1.1 Background:

One of the Customer Value propositions of ESP is wider reach and closer connection with Customers through wide channel network. Channel engagement, sustenance performance is effective way to this. Almost all channel partners are in family owned business, hence ESP adopted a unique model of developing and grooming the second generation and spouses of the channel partners, who have the potential to create the value for their customers and grow the family business by building an organisational, set up. ESP has developed programs like YLDP (Young leadership Development Program) WPDP (Women partner Development program) to develop and induct them into their family managed business for their perpetuity and continual growth.

5.1.2 Challenges in business:

There are multi layers of key influencers and decision makers like End Users, Consultants, Panel Builders, OEMs, and Contractors etc. Hence, customer coverage plays a very important role

ESP has also the biggest product basket, which needs to be promoted to all these levels. Hence, to meet the challenges of growth and exploit the huge potential in switchgear market, business needs additional resources, extended arms to reach all such key influencers and decision makers. Which if provided by a family member lessens the dependability and reliability issues. Business owner is spend time in business development and customer meeting whereas spouse will manage day-to-day business.

Hence, business calls for developing trained and expert sources within the family who can create the value for customers and help in growing their family managed Businesses.

5.1.3 Activities:

Training Programs are conducted with the help of India's premier institutions like SP Jain/IIMs for developing and grooming Channel partners' next generation and spouses to induct them into their business. The program outline comprises various sessions, like:

- Challenges in business, Value creation and negotiation skills, Opportunities in the business
- Family Dynamics
- Fundamental Management Education, Strategic planning in small business and Factory visits

5.2 Sales Order Win-Loss Analysis:

5.2.1 Background:

- With reference to Value Chain model explained in point 1.6.3 in Chapter 1, Each order depends on multiple factors hence analysis of this order is key to built strategy
- Order loss analysis highlights what changes in products or service are needed to gain & retain customer and to improve customer satisfaction
- Order Win-Loss analysis is a specific information on pricing, service, competitor strategies & even market trends.

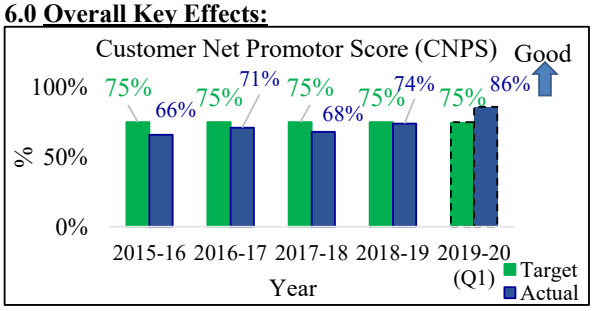
5.2.2 Challenges:

- Right/objective data
- Understanding and ascertaining the correctness of reason received for Order Win-Loss from Customer

5.2.3 Methodology followed:

- Structured format prepared to capture the data
- Monthly review of each order by Branch Head & Zonal Head
- Sharing of Key findings of Major Orders with Headquarter

6.0 Overall Key Effects:



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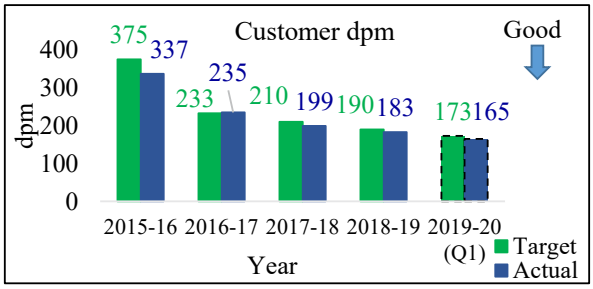

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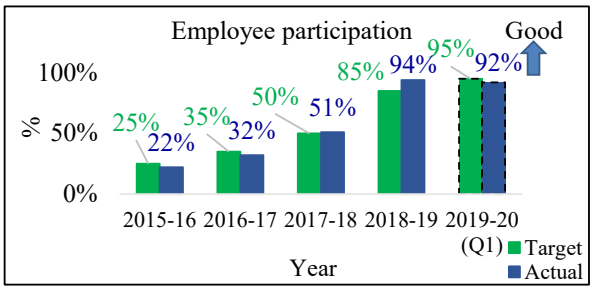

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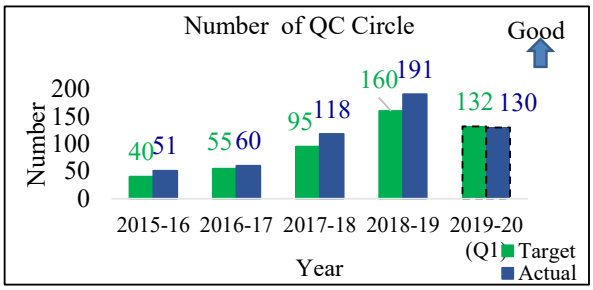

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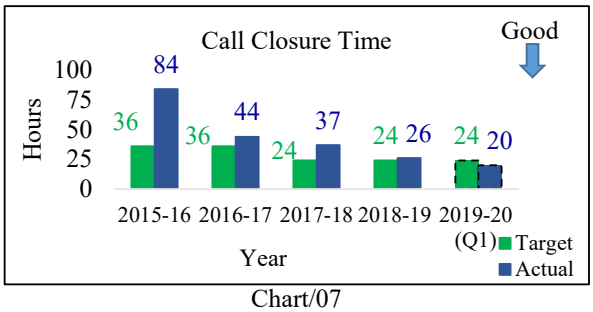

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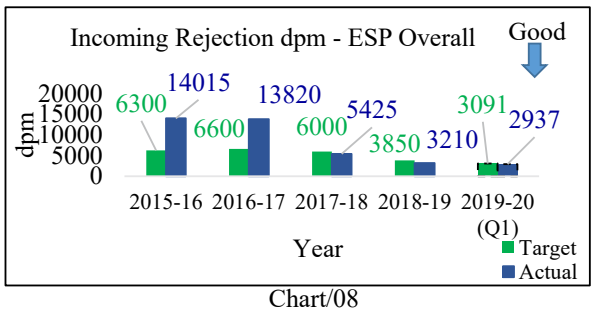

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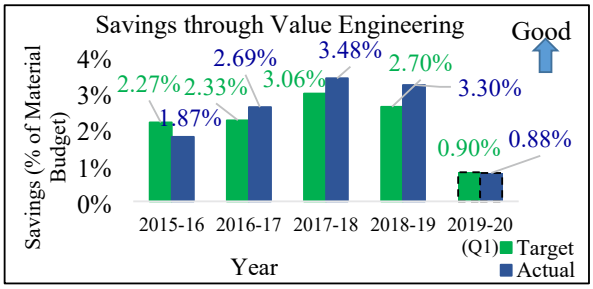

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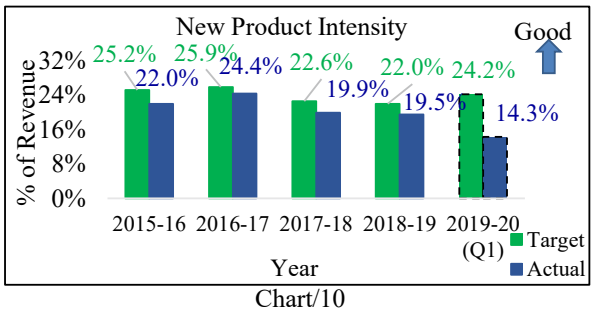

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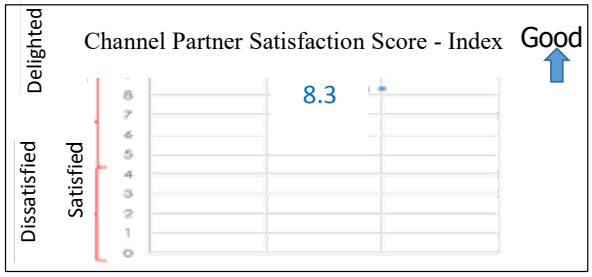

Chart/12

7.0 Future Plan:

TQM Promotion Plan	Business and Excellence Plan
• Spread TQM practices amongst business partners • Improve forecasting process to enhance order fill rate • Promote MP CP concept and DWM in staff functions • Establish TPM in factories • Conduct customer Satisfaction Survey (India and also Selected International Market) • Employee Satisfaction Survey	• Deming Grand Prize in 2024 • Grow at higher growth level in LAKSHYA 2022 to 2026 period • TPM award in 2021 • International Sale to be 8% of ESP sale by 2021-22 • Reach INR500 Cr level in Retail Vertical by 2020-21 • Upgradation of 4 government schools in rural Maharashtra and promotion of STEM (Science, Technology, English and Mathematics) by 2019-20

Table /26

Terminology Glossary:

Alphabet	L&TESP Terminology	Description
A	ABB	Asia Brown Boveri
A	AFDD	Arc Fault Defect Detection
A	Agri / Agro	Agriculture
A	AHF	Active Harmonic Filter
A	AOTS	Association for Overseas Technical Scholarship
A	APO	Advance Planning & Optimization
A	APQP	Advanced Product Quality Planning
A	ASW	Ahmednagar Switchgear Works
A	ATL	Any Time Learning
A	ATL	Ahmednagar Tool Room
A	AU	Name of new MCB product range
B	B2B, B to B	Business to Business
B	B2C, B to C	Business to Customer
B	BI Reports	Business Intelligence reports
B	BO	Business Objective
B	BSC	Balanced Score Card
C	CAGR	Compound Annual Growth Rate
C	CAPEX	Capital Expenses
C	CNPS	Computerized Numerical Control
C	COP	Code of Practice
C	CRM	Customer Relationship Management
C	CRISP	A web based portal for administrative activities
C	CTQ	Critical To Quality
D	DB	Distribution Board
D	DMS	Document Management System
D	DOL	Direct On Line
D	DP	Demand Planning
E	E&A	Electrical & Automation
E	EAIC	Electrical & Automation Independent Company
E	ECom	Executive Management Committee
E	EDDG	Electronics Design and Development Group
E	EPDS	E&A's Product Development System
E	ERP	Enterprise Resource Planning
E	ESP	Electrical Standard Products
F	FDP	Final Distribution Products
F	FDVS	Forced Draft Ventilation System
F	FSM	Four Student Model
F	FTY	First Time Yield
F	GATP	Global Availability to Promise
G	GET	Graduate Engineer Trainee
G	GR	Goods Receipt
G	GRC	Governance Risk and Compliance
G	GRCOM	Gate Review Committee
G	GST	Goods & Service Tax
G	GURUKUL	Dexterity School
I	ICT	Information and Communication Technology
I	IMTE	Instrument Measuring & Test Equipment

I	INR	Indian Rupees
I	IOD	Institution of Directors
I	IOT	Internet of Things
I	IP	Internet Protocol
I	ISO	International Organisation for Standardisation
I	IT	Information Technology
J	JET	Junior Engineer Trainee
J	JH	Jishu Hozen
K	KK	Kobetsu Kaizen
K	KPI	Key Performance Indicator
L	LAKSHYA	Name for L&T's Mid Term Plan
L	LCM	Life Cycle Management
L	LEM	Lifecycle Extension Management
M	MCCB	Moulded Case Circuit Breaker Product
M	MCC	Motor Control Centre
M	MDM	Master Data Management
M	MM	Material Management
M	MMI	Material Management
M	MNC	Multi National Company
M	MOST	Maynard Operation Sequence Technique
M	MSW	Mahape Switchgear Works
M	MTBF	Mahape Switchgear Works
M	MV	Medium Voltage
N	NPS	Net Promoter Score
O	OEM	Overall Equipment Effectiveness
O	OPEX	Operating Expenses
O	OTC	Order to Cash
P	PACE	Performance Acceleration in Changing Environment
P	PAM	Performance Acceleration in Changing Environment
P	PAS	Product Approval for Manufacturing
P	PB	Product Approval for Sale
P	PESTEL	Political, Economic, Social, Technological, Environmental and Legal
P	PLM	Product Lifecycle Management
P	PTP	Procure to Pay
R	RCBO	Residual Current Breaker with Overload protection Product
R	RCD	Residual Current Device
R	RTY	Rolled Throughput Yield
S	SD	Standard Consumption Quantity
S	SD	Sales and Distribution
S	SDDC	Standardise-Do-Check-Act
S	SEOM	Stored Energy Electrically Operating Mechanism Product
S	SNC	Standard Man Milli Hours
S	SNP	Supply Network Collaboration
S	STEM	Switchgear Training Centre
T	TRCOM	Technical Review Committee
V	VOC	Voice of Customer
V	VSW	Vadodara Switchgear Works
W	WPDP	Woman Partner Development Program
W	YLDP	Young Leaders Development program