

2018年度

デミング賞
受賞報告講演要旨

Sundram Fasteners Limited



Mission

SFL aspires to be a globally admired, diversified, high technology engineering company, a market leader in manufacturing and product quality for fasteners and other precision engineering products.

SFL will strive to maintain and enhance the respect of its customers, investors and other stakeholders by creating an environment of teamwork and goal-orientation.

Vision

SFL aims to become the dominant manufacturer in India of fasteners and other precision engineering products by supplying the best quality products and giving value for money as perceived by the customers by 2020



House of TQM





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1 Company Profile

1.1 The TVS Group

Sundram Fasteners Limited (SFL) is a part of the TVS Group of companies. The TVS Group was founded in 1911 by TV Sundram Iyengar (TVS) in Madurai, Tamil Nadu. The TVS Group began as a small transportation company and rapidly grew with a plethora of products and verticals including auto components, two wheelers, electronic equipment, logistics, aerospace, wind energy and infrastructure. The group has earned a stellar reputation for quality and precision. Currently, the TVS Group is India’s largest manufacturer of auto components and is a leading exporter, as well.

The group’s culture is built strongly around customer focus, total employee involvement, innovation and ethical practices. TVS stands for Trust, Value and Service.

There are 33 companies under the TVS Group employing over 30,000 people. The group’s total sales turnover was INR 469 billion (USD 7.2 billion) and export sales was over INR 101 billion (USD 1.6 billion) in 2016-17. The corresponding figures for the total Indian Automotive Components Industry were INR 2614 billion (USD 40.1 billion) and INR 724 billion (USD 11.1 billion) respectively. The milestones of the TVS Group are given below:

1911	1920s	1960s	1970s	1980s	1990s	2000 onwards
Launch of Bus Service	Distribution of Auto Components	Auto Components Manufacturing	Entry into Two-Wheeler Manufacturing	Foray into Electronics Manufacturing	Embracing Global Best Business Practices	Globalisation Drive

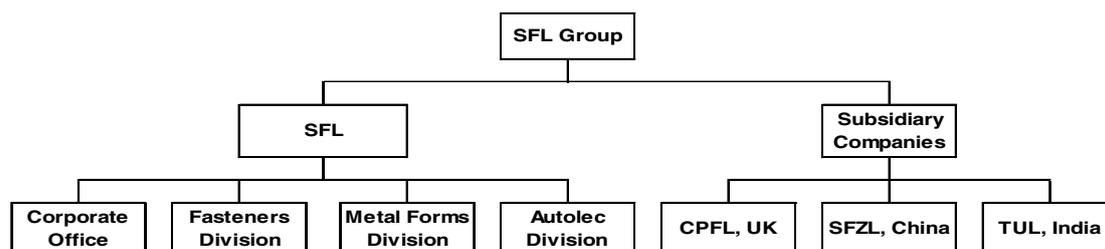
1.2 Brief History of SFL Group

SFL was established in Chennai, Tamil Nadu in the year 1966 with an initial investment of INR 0.4 million (USD 0.01 million) with just 30 employees, to manufacture high tensile fasteners for automotive applications. It is a matter of great pride that from a simple fastener manufacturer, SFL has now grown into a multi-product multi-location company, manufacturing state-of-the-art precision engineering products. It is now the market leader in the domestic market with a strong presence in the international market. The total sales of SFL in the year 2017-18 is INR 33 billion (USD 515 million) with an export sales of INR 11 billion (USD 176 million).

Apart from its accomplishments in quality, customer satisfaction and engineering capability, SFL has always had a goal of caring for its people. The employees have always been the primary driving force for the company’s success.

SFL has now grown into the SFL Group with the addition of 3 major subsidiary companies, viz. (1) Cramlington Precision Forgings Ltd. (CPFL), acquired by SFL in UK in 2003 which manufactures hot forged products, (2) Sundram Fasteners (Zhejiang) Ltd. (SFZL), set up in China as a greenfield site which manufactures high tensile fasteners for the local market and (3) TVS Upasana Ltd. (TUL), set up in Chennai and Hosur which manufactures forging tools as per SFL designs, small screws and spokes and nipples for two-wheelers.

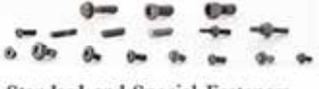
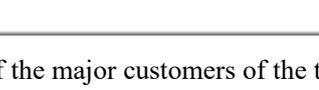
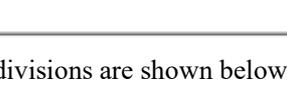
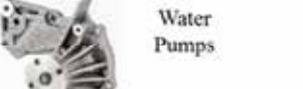
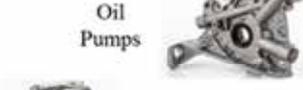
The organization structure of the SFL Group is shown below.





1.3 Products and Customers of SFL

SFL has been organized into 3 divisions: Fasteners Division (FD), Metal Forms Division (MFD) and Autolec Division (AD). The major products manufactured by the 3 divisions are shown below:

Fasteners Division (FD) Products	Metal Forms Division (MFD) Products	Autolec Division (AD) Products
 <p>Standard and Special Fasteners</p>  <p>Aerospace & Wind Energy Fasteners</p>  <p>Bevel Gears & Pinions</p>  <p>Power Train Components</p>  <p>Radiator & Fuel Caps</p>	 <p>Cages</p>  <p>Shafts</p>  <p>Tappets</p>  <p>Engine Parts</p>  <p>Base & Pre-mix Powders</p>	 <p>Water Pumps</p>  <p>Oil Pumps</p>  <p>Bearing Housings</p>  <p>Cam Shaft</p>  <p>Rocker Arm Levers</p>

Some of the major customers of the three divisions are shown below:

Cars	Commercial Vehicle / Tractors	Two Wheelers / Three Wheelers / Wind Energy	Engines / Infrastructure / Non-Automotive
Maruti Suzuki	TATA Motors	TVS Motor	Cummins
Honda Cars	Ashok Leyland	Bajaj Auto	Avtec
NTN	Volvo Eicher	Gamesa	Caterpillar
Denso	Navistar	Suzlon	Kirloskar
NSK	Daimler		JCB
General Motors	Mahindra		General Electrical
TATA Motors	John Deere		Godrej
Mahindra	New Holland		LG
ZF	TAFE		
Volkswagen			
Ford Motor			
Renault Nissan			
KIA Motors			
Hyundai Motors			
Force Motors			



1.4 Technical Capabilities

SFL with its cutting edge technologies serves a wide range of industry segments across the world. As India's largest manufacturer and exporter of high tensile fasteners, SFL produces a complete range of standard and special fasteners for the OEMs and the aftermarket. From the smallest fastener and the tiniest thread, to the most complex parts that hold together wind turbines, thermal power plants, aircrafts and bridges, SFL powers its growth through its philosophy of uncompromising adherence to quality. SFL's expertise lies in hot and cold forging technology, cold extrusion technology, powder metallurgy, precision machining and assemblies. SFL's manufacturing facilities are state-of-the-art, encompassing the TPM and TQM principles along with robust quality systems.

SFL is among the top 3 manufacturers of sintered metal parts in India. It has a vertically integrated iron powder facility. SFL's design centres cater to stringent customer requirements, and its sophisticated machining centres of excellence ensure that these requirements are executed with utmost adherence to quality and precision. SFL's technologies enable it to manufacture the most accurate parts that meet the highest demands of the customers, leading to its internationally recognized reputation. SFL can offer its products with a multitude of choices of surface finishes depending on the applications and customer requirements.

SFL has world-class tool room facilities in all its divisions to make most of the sophisticated precision tooling requirements in-house. Tool making capability for complex tools required for the multi-level powder compacting presses gives a distinct edge to SFL over the competition.

1.5 Quality Accreditations

At SFL, quality is much more than conforming to product specifications. It is a constant endeavour to touch greater spheres of excellence in all areas of performance. Both in the domestic and the global markets, SFL has been lauded for consistently delivering products and services that delight the customers, vendors, the OEM community and the aftermarket. Recognitions have come to SFL from all quarters – the government, the corporate fraternity and the domestic and global clients.

SFL is the first Indian company to get the ISO 9000 certification in the year 1990 and all plants of SFL are certified under ISO/TS 16949. Aerospace fasteners facilities are certified for AS 9100. SFL plants are certified under ISO 14001 and OHSAS 18001 for Safety, Health and Environment. SFL fasteners division laboratory is accredited by NABL. Some of the SFL plants have also got the Ford Q1 certification.

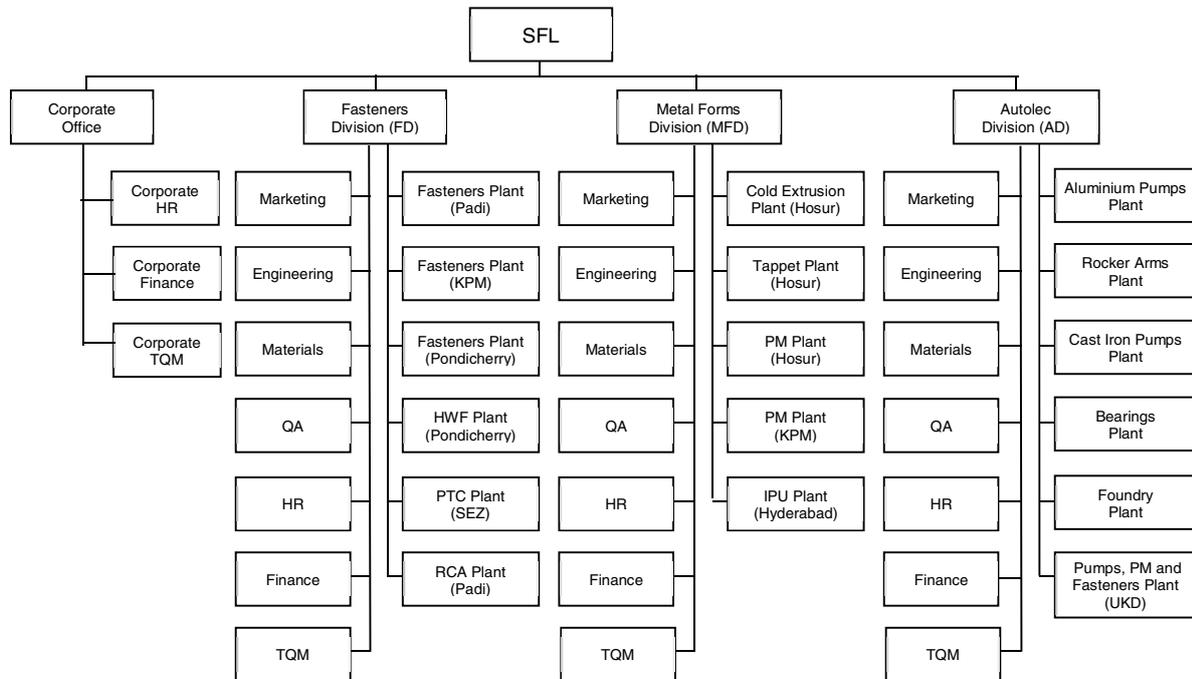
SFL is the first Indian engineering company to get the TPM Excellence Award from JIPM in the year 1998 as well as the TPM Special Award in the year 2007. SFL was the winner of "Supplier of the Year" award from General Motors for 5 consecutive years for radiator caps. SFL also won the "Supplier of the Year" award from GM for the Power Train Components plant.



2 Organization and Roles

2.1 Organization Structure of SFL

The organization structure of SFL comprising of the Corporate Office and the three manufacturing divisions is shown below:



Legend: HWF: Hot & Warm Forging; PTC: Power Train Components; RCA: Radiator Caps & Assemblies; KPM: Krishnapuram (near Madurai); SEZ: Special Economic Zone (Mahindra World City near Chennai); PM: Powder Metallurgy; IPU: Iron Powder Unit; UKD: Uttarakhand (Pantnagar)

2.2 Functions, Roles and Responsibilities

The roles and responsibilities of various functions at corporate/division/plant levels are given below.

Function	Level	Roles & Responsibilities
Human Resources (HR)	Corporate	Developing & implementing HR policies Increasing organizational effectiveness through well-defined HR systems
	Division	Ensuring on-time recruitment Developing Skill and enhancing Will Enhancing Total Employee Involvement (TEI)
	Plant	Ensuring safe work environment Ensuring harmonious employee relations



Function	Level	Roles & Responsibilities
Finance	Corporate	Budgeting, monitoring, review and control Utilization of IT systems for business efficiency and effectiveness Carrying out financial, systems, management and investigative audits Financial reporting, Treasury & Fund Management, Tax Administration and Legal & Secretarial functions
	Division	Budgeting, monitoring, review and control for the division Managing financial and management accounting functions Adhering to statutory requirements Managing operating capital management
	Plant	Budgeting, monitoring, review and control for the plant Managing financial and management accounting functions Adhering to statutory requirements Managing operating capital management
TQM	Corporate	Developing plan and strategy for company-wide implementation of TQM Coordinating and ensuring achievement of SFL's Vision in the TQM Way
	Division	Ensuring deployment of TQM concepts and principles across the division Ensuring TQM promotion through awareness and training
	Plant	Ensuring implementation of TQM practices through daily reviews Ensuring participation of all employees in QCC / QIT activities
Marketing	Division	Increase Business growth and market share. Increase Customer Satisfaction Maintain Preferred supplier status.
Engineering	Division	Developing new products following the NPD / NMPD process Developing / improving product / process technology through R&D
	Plant	Technical support to manufacturing
Materials	Division	Ensuring availability of the right quality material at the right cost at the right time Material Cost Reduction Supplier Development
	Plant	Ensuring availability of material and manufacturing consumables
Quality Assurance (QA)	Division	Product Quality Assurance Increase customer satisfaction Support suppliers for Quality Improvements
	Plant	Improve product quality Support to improve manufacturing quality
Manufacturing (Plants)	Production	Improve manufacturing quality, productivity and production schedule adherence Reduce manufacturing cost
	Maintenance	Improve Equipment availability Reduce maintenance and power cost
	Production Planning & Control (PPC)	Developing and implementing appropriate manufacturing systems with a proper mix of pull production, Kanban and inventory production concepts Achieving 100% adherence to customer schedules by online monitoring and control of WIP, stocks and in-house/sub-contract production schedules



3 Business Objectives & Strategies and TQM Promotion

3.1 Background

In the late 1980's, the liberalization of the Indian economy along with the privatization and globalization of Indian companies witnessed the fast expanding Indian markets and the entry of many world-class multi-national companies. This resulted in the increase in the quality expectations of the customers. Hence SFL had to redefine its mission, vision, business objectives and strategies to adapt to the changing business

3.2 Business Environment

(1) Global Business Environment: The global auto industry is projected to grow at about 2.9% in the next 3 years. The emerging market & developing economies are projected to grow further at 4.6% by 2019.

(2) Domestic Business Environment: At present the Indian Auto Industry is the 6th largest in the global market and is projected to be the 3rd largest by 2026. The Indian Government has planned to increase the GDP contribution of the Auto Industry from the current 7.1% to >12% by 2026. The government has come up with various plans for the promotion of hybrid and electric vehicles. This coupled with increased Foreign Direct Investments (FDI) has created a very promising domestic scenario.

(3) Internal Environment: SFL continuously and proactively upgrades both its technology and human resources to meet the dynamic demands of the growing market place

3.3 Vision Setting and Realization

(1) Vision Setting: In line with SFL's mission of becoming a globally admired, diversified and high technology engineering company and becoming a market leader in manufacturing and product quality for fasteners and other precision engineering products, SFL has arrived at the following as its vision statement:

“SFL aims to become the dominant manufacturer in India of fasteners and other precision engineering products by supplying the best quality products and giving value for money as perceived by the customers by 2020”

(2) Business Objectives and Strategies: The vision statement articulates the business objectives in quantifiable and measurable terms along with the business strategies to be used for achieving the same. SFL's business objective is to become the dominant manufacturer in India of fasteners and other precision engineering products. The business strategy for achieving this objective is to supply the best quality products and give value for money to the customers.

Business strategy planning is an important requirement for arriving at the Mid-Long Term Plan (MLTP) and for the realization of the vision. Through a SWOT analysis, SFL periodically upgrades its business objectives and strategies.

(3) Mid-Long Term Plan (MLTP): MLTP is prepared every year on a roll-on basis for a period of three years, by applying the business objectives and strategies. MLTP sets out the milestones and delivery targets for the business objective areas or the policy items, such as business growth, profitability, marketing, quality, productivity, cost management, product technology, manufacturing process technology, human resource development, customer satisfaction.

3.4 Need for TQM

In the late 1980's after the economic liberalization, SFL felt the need to upgrade all equipments to world class levels. SFL identified the Japanese concept of “Total Productive Maintenance” (TPM) and embraced it to enhance the Overall Equipment Effectiveness (OEE) in terms of availability, performance and quality.



Although SFL had been pursuing TPM after obtaining ISO 9000 management system certification, its market share and turnover were not increasing. Also SFL’s profit growth was low and the quality did not improve sufficiently. Therefore, SFL introduced and started TQM in 2012 in order to secured competitive edge in its business by achieving world-class quality and enhancing organizational capabilities. SFL recognized that TQM was the only scientific approach for achieving its objective of becoming the most trusted and preferred “No.1 Quality Supplier”.

In order to achieve its VISION 2020, the entire organization comprising of all 17 plants embarked on the TQM journey with Prof Washio’s guidance. SFL built the framework of Policy Management and formulated customer-oriented strategies to achieve business objectives and goals under the strong leadership of top management.

TQM activities are progressing across the organization and now the 17 plants are managed better with TQM. It has deployed Kaizen activities such as QCC and QIT etc. among all employees and has realized TEI (Total Employee Involvement).

3.5 TQM Implementation

SFL implemented TQM in three phases viz. 1) Introduction Phase, 2) Promotion Phase and 3) Deployment Phase. The major activities done in each phase of TQM implementation is given in the table below.

TQM Phases	Major Activities
Introduction Phase (2012-13)	Training on TQM Concepts Top Management Announcement
Promotion Phase (2013 to 2015)	Formation of TQM Promotion Office Introduction and Use of TQM Tools Introduction and Use of DHS, Cp & Cpk Formation of QC Circles and QITs Introduction of Policy Deployment and Daily Work Management
Deployment Phase (2015 onwards)	Strengthening of Policy Deployment and Daily Work Management Strengthening of Manufacturing TQM Tools Strengthening of Total Employee Involvement (TEI) TQM Activities in Non-manufacturing Areas Productivity Improvements Extending TQM to Suppliers

3.6 Effects of TQM

- Significant improvement in overall performance of SFL, in general, as well as dramatic improvements in manufacturing quality, in particular, has been achieved.
- TQM has helped to establish a culture of Total Employee Involvement (TEI) and to achieve improvements in employee morale and in employees’ ability to solve problems in a systematic, scientific and statistical way.
- TQM has also helped SFL to enhance customer satisfaction and achieve successful business results.

4 Policy Deployment

4.1 Background

Policy Deployment (PD) is an important element of the overall process of TQM. Policy Deployment process provides an opportunity to continually improve SFL’s performance by deploying the vision, strategies, target and means (major measures) from corporate level to the lower levels. The entire organization aligns itself to achieve breakthrough improvements through policy deployment.



4.2 Policy Deployment Process

The MLTP translates the Mission and Vision statements of the company into time-bound business objectives (targets) and business strategies (means). MLTP is prepared for a period of 3 years on a roll-on basis every year. The first year of the MLTP is taken as the Annual Business Plan. For the effective deployment and achievement of the Annual Business Plan or President's Policy, SFL has restricted the number of levels in the organization structure to three, viz. Departments, Sections and Groups. Annual President's Policy (Form 1) is then deployed to the Department Heads and then to Section Heads as their policies (Form 2).

(1) Annual President's Policy

The Annual President's Policy contains the key policy items derived from the Annual Business Plan. For each key policy item, the Annual President's Policy is set with a target and major measures (means or guidelines) in the format called Form 1.

(2) Deployment of Annual President's Policy

Presidents deploy the policy items in terms of target and means, to their department heads. Department heads in turn, deploy it to their section heads. This deployment of the President's Policy to the lower levels is done through the "catch-ball" process. Department and Section Heads set their policy items in the format called Form 2, which consists of managing points, major measures and checking points. The managing points include those deployed from the upper level as well as the ones added from their own roles.

(3) Implementation, Evaluation and Action

Department Heads and Section Heads implement the major measures given in their policy. They check achievement level of policy targets, managing points and checking points, on a monthly or quarterly basis. Checking is also done for execution of major measures. The achievement level of each managing point / checking point is monitored using graphs / tables in Form 4. If any gap exists between the targets and actuals with respect to managing points, an action plan (CAPDo), for both corrective action and preventive action on major measures, is prepared in Form 4.

(4) Presidential Diagnosis and Department Head Diagnosis

Presidential diagnosis with individual department heads and the Department Heads' diagnosis with individual section heads are done annually. This is done to carry out checks to find out whether the policies, targets and major measures are appropriate or not. It helps in target achievement by rotating the PDCA cycle.

(5) Self-examination of Policy and Action Plan

At the end of the year, each department head prepares a self-examination report known as Form 5. For each managing point, the gap between target and actual and the causes for the gap are identified by them. This is taken as an input while deciding the Form 1 and Form 2 for the next year.

(6) Review of President's Policy

At the end of the year, the President reviews the current year's policies and finds out the causes for achievement / gaps. These are taken as inputs while deciding the next year's policy.

4.3 Effects

- PD process has helped in aligning individual department efforts towards the overall company level targets
- Company level issues and priorities are now known to everybody in the organization
- The roles and responsibilities and the key performance areas for each position are clearly defined.



5 Implementation Status of TQM

5.1 Marketing Management

(1) Background

SFL is an established leader and a preferred supplier both in India and the global arena. SFL is a one-stop solution provider of parts from its diversified portfolio of products to its customers in the Automotive, Agriculture, Wind energy, Infrastructure, Off-highway and Aerospace segments.

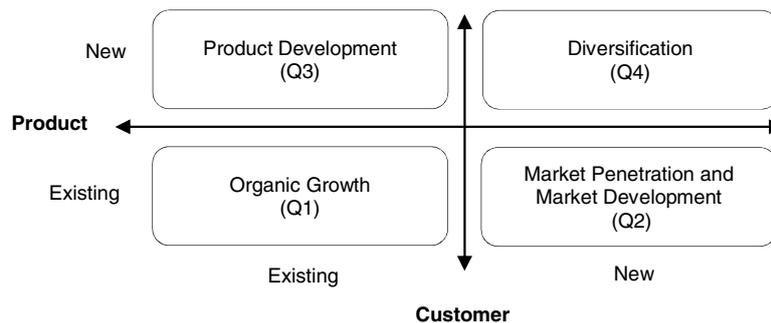
(2) Major Activities

① Private Marketing to Organisational Marketing

Prior to the implementation of TQM, the marketing activities were more dependent on individual customer account holders. After introduction of TQM, the customer data records are organized and commonly shared customer-wise, with all details like customer profile, customer communications and visit reports.. Standard Operating Procedures (SOPs) have been established for visiting customers with frequency norms and visit reports have been made mandatory.

② Four-Quadrant Analysis for Market Strategy

SFL utilises the four quadrant analysis concept to identify and arrive at market strategies in terms of market share of business, new product and market developments and product diversification.



Organic Growth (Quadrant 1)

This quadrant is for existing customers and existing products. The main activities done to achieve organic growth and SOB were improved delivery performance through regional warehouses and building capacity in line with customer requirements.

Market Penetration and Market Development (Quadrant 2)

Market Penetration and Market Development are achieved by leveraging competencies to win more business through Technology day at customers’ sites, presentations on newly acquired technology, latest product launches, core capabilities and available capacities.

Product Development (Quadrant 3)

The key activities in New Product Development are early involvement in customers’ new programs – being involved from customer’s design stage, sharing past experiences with customers, doing proposal marketing and participation in localization programs of OEMs and offering the QCD advantage.

Diversification (Quadrant 4)

The key activities in product diversification are diversification to adjacent space, backward integration and related diversification.



③ Introduction of Coverage Ratio and Hit Ratio

Increasing the market share was taken as an objective through the introduction of Coverage Ratio (CR) and Hit Ratio (HR) concepts. Market share is the product of CR and HR.

Coverage Ratio: CR is an indication of the percentage of RFQs (requests for quotation) received by SFL against the total RFQs issued by all the customers. To improve CR, prospective customers are identified and plans for top-level team visits to make technical presentations are drawn. During these visits, focus is also on the existing customers' new ventures. This way, RFQs are received by SFL from all the customers, in respect of the existing range of products manufactured and supplied..

Hit Ratio: HR is an indication of the percentage of purchase orders received by SFL against the total number of quotations submitted by SFL. It is the success rate of quotations and the ability to convert RFQs into purchase orders. Quick response and competitive prices are the key factors for improving HR. A close follow up with the customers in respect of the quotations submitted, by personal visits along with engineering to provide technical clarifications, if any, to facilitate the process of getting the purchase orders from the customers has been introduced.

④ Win-Lose Analysis

Based on Hit Ratio, SFL has started the practice of making Win-Lose analysis for key enquiries on a quarterly. The factors which resulted in loss of orders are identified. Action plans are arrived based on the above analysis to win future business.

⑤ Aftermarket (Retail) Sales Expansion Activities

SFL Marketing has a large network of aftermarket distributors and dealers in major cities and towns in India. ASPIRE (Accelerated Sales and Profitability Improvement in Retail sales) task force was set up to expand the aftermarket business.

⑥ Customer Satisfaction Survey

SFL conducts a Customer Satisfaction survey once in a year. Survey forms are sent to customers to rate on service parameters on a 10 point scale on QCD aspects. Actions are identified on low scoring areas for improvement and evaluated in the next year

5.2 New Product Development (NPD)

(1) Background

The NPD process is followed whenever SFL has to develop product design as well as process design for new products. In these cases, the customer provides the Statement of requirements (SOR) only and not the product drawings. SOR will only indicate fit, function, performance and life requirements. With our strong NPD infrastructure and a complete range of water pumps and oil pumps catering to all segments of the automobile industry, SFL is involved with the customers at the initial development stage itself to understand their requirement and suggest suitable design.

(2) Major Activities

① Institutionalisation of NPD Process

Structured NPD Process: The earlier NPD process was revisited to include CFT, suppliers, and plant teams at an early stage of development. The Cross Functional Team (CFT) is now responsible for each NPD project. Customers and top management are involved in the NPD process at all appropriate stages. The new NPD system is divided into 7 phases: 1) Product concept 2) Outline design 3) Detailed design 4) Proto development 5) Tooling up samples development 6) Manufacturing process design & Development 7) Mass production.

Design Reviews are conducted at the end of each phase to ensure a clear focus in Quality (Q), Cost(C) and Delivery (D) targets before proceeding to the next phase.



② Reduction of Product Validation Time through Computer Aided Engineering (CAE)

Earlier, only key CAE activities were identified and outsourced. Since all the required activities were not carried out with CAE, there used to be some delays in product development, especially in the validation phase due to the iterative “trial and error approach” to fine tune a few design parameters.

To address this, in-house CAE resources are developed and equipped. This has resulted in significantly reduced design finalization lead time and improved confidence levels.

③ Develop Design Manual and Design Standards

Design Manuals are used during the product concept design stage. The Design Manual offers a practical guide to key principles of product design based on in-house competency of design engineers. It features a compilation of extracts from various experiments and experiences for a range of oil pumps and water pumps. This manual describes ways of choosing materials, tolerances and special processes.

Design standards are used during the detailed design phase. It gives details on the properties of materials, shapes and dimensions. It also provides information about standard parts.

④ Enhance Lab Tests

Simulation of the failure modes in the lab test is carried out to address the field failures. Design Validation tests are strengthened by adding new tests to address the failure modes in the development stage itself. A Lab test matrix is newly prepared, linking all the lab validation tests and the known failure modes.

5.3 New Manufacturing Process Development (NMPD)

(1) Background

NMPD is applicable when customer gives the product design and SFL does the process design. Earlier, the NMPD process was not standardized and was people dependant and experience based. Now, as a part of TQM implementation, NMPD is a structured & standardized process to meet the QCD targets.

(2) Major Activities

① Institutionalization of NMPD Process

Structured NMPD Process: Earlier, NMPD process was people dependent and experience based. This resulted in lack of skill in some areas and delays in development. With the introduction of TQM, NMPD process has now been institutionalised. It has 5 phases: 1) Customer Drawing Review & Outline Process Planning 2) Preliminary Manufacturing Process Design & Development 3) Final Manufacturing Process 3) Manufacturing Process Validation and 5) Mass Production; with Process Review (PR) gates (similar to NPD design review DR gates) at appropriate phases involving all Department Heads to authorise “Go Ahead” clearance to the subsequent phases.

② Improved Method of Tolerance Stacking

Earlier, while preparing production drawings, dimensional tolerances for each stage were calculated considering only the linear tolerances of previous stages (tolerance stacking). This resulted in frequent revision of stage drawings due to manufacturing issues in the production trial run. Now, tolerance stacking method is improved, taking into consideration actual variations of the manufacturing process and the geometrical tolerances.

③ Reduction of Die Development Lead Time through FEA

Now, new die designs are validated through Finite Element Analysis (FEA) simulation software, which helps to eliminate design errors, thus avoiding multiple trials and reduction of die development lead- time.



④ Flexible Manufacturing System

During the finalization of the manufacturing layout, productivity and quality improvement aspects such as Line balancing, Quick change over techniques, Ergonomics, Poka-Yoke, Auto inspection and Material handling are considered. Machines are selected considering these improved manufacturing layout requirements.

⑤ Lead Time Reduction in Proto Samples Development

The customer expects quick submission of proto parts. Many times, on-time submission of proto samples results in customer satisfaction. Design and modeling software such as CATIA, Pro-E, Uni-Graphics, KISS-Soft have been utilized to improve the quality of process design.

⑥ Process Technology Development

SFL continuously upgrades its process technology with a defined technology road-map to meet the future needs of the customer in terms of shorter development lead time, competitive pricing and environment friendly processes. To improve process technology development, SFL does bench-marking, interacts with customers and attends technical exhibitions and seminars. SFL also associates with academic institutions, technical institutes and with leading equipment manufacturers to solve problems faced in critical and bottleneck processes.

5.4 Manufacturing Management

(1) Background

There are 17 manufacturing plants in SFL at different locations in India. The key manufacturing processes involved are cold forging, hot and warm forging, atomized powder manufacturing, compaction & sintering, cold extrusion, gravity sand casting & pressure die casting, precision machining, spline-forming, gear shaping & hobbing, heat treatment, surface finishing and assembly operations. Some plants have a discrete manufacturing process layout and the others have a single-piece flow product layout.

(2) Major Activities

① Improvement of Manufacturing Quality

Institutionalization of SFL Manufacturing Systems: “Product quality should be built-in through SOP and QCPC (Quality Control Process Chart)” is the basis on which SFL manufacturing systems have been developed. One of the key SPC (Statistical Process Control) concepts, viz. PMC (Process Monitoring Chart) was introduced in SFL for quality maintenance and quality improvements. The final inspection process has been strengthened to assure product quality to customers based on Cpk values. Further, manufacturing quality at every manufacturing process stage is also ensured through reviews at different levels following the DWM (Daily Work Management) system. Manufacturing quality is continually improved through QC Circles and QITs using problem solving methodologies such as QC Story and DOE

Introduction of Daily Work Management (DWM): In manufacturing, DWM is used cell-wise for shop floor management. DWM is a group activity to achieve the targets set for the control items under PQCDMS and 5S.

Section heads and department heads review the activities and support the groups in achieving the targets. The check / actions for the control items are monitored and reviewed day-wise at the appropriate levels. Groups discuss their CAPDo analysis for the gaps along with the recovery plans and preventive action plans with their section heads. Effective practice of DWM has improved the efficiency in the manufacturing areas.



Utilization of Problem Solving Methodology: Earlier, problems were solved by operators and supervisors based on their knowledge and experience. Emphasis was not on using systematic and statistical problem solving methodologies. Now, the problems are solved by the operator teams (such as QC Circles) and cross functional teams (such as QITs) based on facts collected through observations in the shop using statistical tools. Statistical methodologies such as QC Story / Design of experiments (DOE) is extensively used by QC circles and QITs.

② Improvement of Productivity

Job Change-Over Time Reduction: Job Change-Over Time (JCOT) is a major issue in the multi-station high-speed cold-forging machines / presses of the Fasteners division. Because of JCOT being as high as 4 hours in some of the conventional higher diameter forging machines, the batch sizes used to be large, and resulted in high Work-In-Progress (WIP). As a part of the TQM implementation, SFL has given special focus on reducing the change-over time in the major forging machines by applying the concept of Single Minute Exchange of Dies (SMED). Each manufacturing plant of SFL has identified bottleneck primary process machines, like forging, to carry out the JCOT reduction. The total JCOT is split into elemental activities and is examined for conversion from internal to external activities, which reduces the JCOT. The remaining internal activities are examined for conversion to parallel activity from sequential activity.

Cycle Time Reduction: In SFL, productivity improvement is also achieved through cycle time reduction by using the ECRS (Eliminate / Combine / Re-arrange / Simplify) concept. Other VA/VE productivity improvement activities include automation, speeding-up of the machines, process optimization, multi-cavity operation, loading factor improvement and batch size optimisation.

Multi-machine operation by operators has also been identified as one other approach to increase production output per operator per shift. Low cost automations (LCA) are introduced to replace monotonous manual activities to improve productivity while also eliminating the dependence on operators.

Equipment Availability Improvements: Improving the availability of machines by reducing the breakdown occurrence, as well as the mean time to repair (MTTR) continues to be the main focus. By effective practice of Jishu Hozen (JH) and Planned Maintenance (PM), the breakdowns are on a decreasing trend. SOPs have been created to perform maintenance activities to reduce MTTR on a continual basis.

To prevent recurrence of breakdowns, why-why analysis is done for every breakdown to identify the root cause and to implement permanent preventive actions. PM check list is continuously updated based on the feedback from breakdown occurrence and PM schedules are executed accordingly.

5.5 Human Resources Management

(1) Background

SFL has grown from a single location, single product organisation to a global, multi-product organisation with varied technology, varied manufacturing processes and a diverse workforce. To meet the changing environment, there was a need to develop the skills and competencies of employees on a continuous basis as well as ensure that employees have the will to adapt to the new environment. Hence, there was a need for developing robust HR processes.

(2) HR Policy

SFL believes that Human Resources are its key assets. In line with the principles of “Monozukuri Wa Hitozukuri”, which means “Manufacturing Products = Training People” and the belief that “Performance of an employee = Skill of the employee x Will of the employee”, SFL’s HR policy focuses on developing skill and competencies of all employees, facilitating team work and total employee involvement, providing a happy work environment to employees and support to their families and remaining a socially responsible company contributing to society.



(3) Major Activities

① Recruitment

SFL's recruitment objective is to find the right person for the right job on time. Manpower planning for the executives is based on the business requirements of each plant and recruitment is carried out throughout the Year.

② Skill and Competency Development

At SFL, training focuses on improving potential skills / competencies of employees and on developing employees for future roles. The ultimate aim of training at SFL is to contribute to the overall development of every employee and to take them to the expert level of their skill or competency. Operators are assessed / developed on skills and executives are assessed / developed on competencies.

Skill / Competency Assessment: The skill assessment process for operators has been structured with common skills and functional skills, depending on their job. The competency assessment for executives also has been structured with common and functional competencies based on their job.

Skill / Competency Development: After completing skill/competency assessment, the Training Calendars are released for the operators/executives. For common skill development, classroom training is conducted by internal / external trainers. Functional skill development of operators is done through on-the-job training (OJT) conducted by their immediate supervisors or through classroom training.

For functional and common competency development of executives, classroom training is conducted by external and internal trainers. SFL sends senior level executives for training to reputed institutes within and outside India. The training programs at SFL use modern methodologies of training like eLearning, Micro-learning, Gamification and Outbound training. An online Learning Management System (LMS) is used to efficiently track the executive training calendar.

Feedback on training effectiveness is obtained from the supervisors of the participants after a period of 3 months and based on the same, the training programs are modified in respect of course content, duration and faculty.

③ New Employee Induction

Every new employee joining SFL has a structured induction. Executives attend the 'Know Your Company' program, that orients new employees on SFL's growth history, products, customers, manufacturing processes, values, culture, policies and practices. There are also inputs given on the TQM journey of SFL.

Every new operator joining SFL undergoes one week training at the Skill Development Centre before being deployed on the shop floor. This training comprises of classroom training covering topics such as 'Introduction to SFL', safety training, 5S training, Introduction to QCC's and Code of Conduct.

They are also provided with training on work stations to help in improving their quality consciousness and to gain familiarity with the product and the machine. They are also given complete explanation and understanding of the SOP's required for their particular job. After this they are provided with 'On the Job Training' where the supervisor helps them to execute the SOP. The training is concluded with a test to ensure that effective learning has taken place. Depending on their performance on the test, they are deployed to the shop floor. All operators are taken only as temporary operators and based on the business requirements and their aptitude they are made permanent operators over a period of time.

④ Will Enhancement

In SFL, HR processes are aligned to make employees feel that they are a part of the SFL family. SFL creates the platform for employees to voice their opinion and make suggestions to improve the working environment.



The company maintains regular communication with employees to make them feel connected with the company and perform their jobs most effectively. This is through dialogue, communication meetings, in-house magazines and employee portals.

SFL initiated a system of mentoring for executives as a process to induct new employees into the SFL way of working and to ensure that all employees are aligned to the “One-SFL” culture.

⑤ Operators and Executives Engagement Survey

As part of the TQM initiatives, SFL has started conducting separate employee engagement surveys for both executives and operators.

Operators’ Survey: The operators’ survey was conducted in-house on Nine categories which impact the engagement level of workmen. A questionnaire with 20 statements was developed and the survey findings were presented to the management and the weaker areas were acted upon by the plants.

Executives’ Survey: The executives’ survey is being conducted focusing on 20 categories which impact the engagement level of executives. A questionnaire with 55 statements was developed to cover all categories and an on-line survey was conducted. The survey findings were presented to the management and specific focus areas for improvement were identified and implemented both at the company and plant level.

⑥ Enhancement of Total Employee Involvement

As one of the ways of enhancing Will, post-TQM, SFL HR focused on inculcating the habit of continuous improvement and motivating employees to participate in improvement activities for the organisation. The company nurtures a participative culture by promoting “Total Employee Involvement (TEI)”. Employees voluntarily participate in TEI activities. The total system of improvement activities designed to enable TEI has been named as “Kaizen at SFL” and is implemented through the following:

Suggestion Schemes: Employees are encouraged to give suggestions voluntarily for workplace improvements and eligible suggestions are suitably rewarded.

Quality Control Circle (QCC): QCC is a small group activity comprising of permanent & temporary operators working in the same / similar workplace, who voluntarily meet to solve the problems in the areas of production / productivity, quality, cost, delivery, safety, morale, environment and 5S.

Quality Improvement Team (QIT): Quality Improvement Team (QIT) consists of executives from various departments formed by the department head, specifically to take up breakthrough and innovative improvement projects which are identified at the beginning of the year.

Taskforce (TF): Cross functional task forces comprising of executives are formed by the management to implement strategically important projects. Task forces are normally full-time and are time-bound.

SFL One Big Family: SFL has the fundamental value that all employees are together members of one big family. The SFL family values and respects each member and takes care of all aspects of the employees. No member of the SFL family feels uncared for and together the family stays happy.

The story of Sundram Fasteners is the story about its people. A unique feature of the company is the cohesiveness among its people who feel a sense of ownership with the company. The Founder Mr. Suresh Krishna explains that the ‘dharma’ or “purpose of existence” of the company lies in the ability of SFL to build trust and facilitate upward social movement of all its employees.

SFL has a strong tradition of caring for the welfare of its people. All employees are taken care like family members. The legacy of communication by Ms. Arathi Krishna, MD and the Presidents is an initiative that has held SFL together as a family. In its fifty years of existence SFL has had no instance of labour unrest. Honest communication within the SFL family has been the key to this achievement. The mentoring process among executives of SFL is unique in building this familial relationship. While there is a physical contract (appointment letter) between the employer and the employee, it is the emotional contract between individuals and the Company that holds everyone together.

The real SFL is not what is in the balance sheets, profit and loss statements, the products or the plants. It is in reality, in its strong brand of employees who live and work together as one big family.



⑦ Knowledge Management

The SFL Knowledge Management System (KMS) has been initiated to capture information on critical processes at different plants. It is technology driven and has been designed for easy retrieval of information using “key word search”. Critical verticals such as QC Story Bank, Supplier Quality Management, Customer Communication Protocol, Human Resources, Engineering, Quality, SOPs, Marketing, Manufacturing, R&D, Procurement, Finance and Information Systems are part of the KMS. The usage of KMS is being monitored to ensure effectiveness of the system.

5.6 Supplier Management

(1) Background

In SFL, Supplier Management means management of suppliers of Raw Material (RM) & other bought-out items as well as sub-contractors. Bought-out items include both direct and indirect materials.

(2) SFL’s Supplier Policy

The aim of SFL is to raise the level and standard of all suppliers by strengthening SFL’s support to them and to help them achieve and continuously improve their QCD performance.

(3) Major Activities

① Materials Cost Reduction

Alternative Sourcing: SFL looks for alternative sources in specific cases, where the existing suppliers are not able to meet the QCD requirements. This is done in a manner that does not affect the interest of the existing suppliers,. The process of identifying alternative sources includes feedback from market and customers, supplier visits, visiting exhibitions, information available through on-line and business journals.

Alternative Materials: Based on requirements given by engineering department, supplier management function initiates actions for buying quality and cost effective alternative grade of raw materials from suppliers.

Localization: In order to reduce lead time, material cost and inventory a major initiatives is to develop local suppliers for raw materials, child parts, maintenance spares and tools. Robust processes are established for identifying and selecting suppliers for localization. Manufacturing is supported in localisation of imported machinery spares, tools and other consumables.

Price Negotiation: On a dynamic basis, the commodity price trend of all input materials such as crude oil, alloying elements and petro products is being monitored and trends are used for price negotiation. Earlier, the decision to award business to a supplier was based mainly on ‘unit price’ given in the supplier quotation. Now the decision is based on “total cost approach”, considering other factors such as logistics cost, inventory holding cost and cost of poor quality while negotiation.

Group and Corporate Level Buying: In order to obtain volume based special prices and discounts and better credit terms, the consolidation of requirements is done at both the group level and at the corporate level.

VA / VE Initiatives: Continuous efforts are made by Engineering / Manufacturing team on weight reduction of input materials and process improvements through VA/VE projects to reduce material cost.

② Ensuring Availability of Raw Materials

Introduction of Kanban: Kanban was introduced for all domestic RM, child parts and castings with 100% coverage. Kanban size (or quantity) has been fixed based on maximum daily consumption and the lead time determines the number of Kanban. Domestic RM suppliers have been asked to create their own local stock yards.



Improving the Ordering System for Overseas Suppliers: The overseas suppliers operate on a fixed rolling cycle and hence, to ensure on-time delivery, advance information is provided to them to include SFL requirement in their manufacturing planning.

In addition to this there are delays in logistics and port clearances. To overcome these challenges, the ordering system has been revised by entering into 3 month contracts with overseas raw material suppliers and the communication systems has been streamlined in respect of shipping arrangements and port clearance systems without delays.

③ Inventory Reduction for Imported Raw Materials

In order to control inventory, stock levels at various stages / locations are being monitored on a daily basis. Both immediate and long term actions are being identified to control inventory. Excess stocks are interplant transferred between units. Inventory reviews are being done on a monthly basis jointly with manufacturing.

④ Supplier Support

Supplier Audits: All suppliers are audited by a Cross Functional Team (CFT) as per Audit Plan. To conduct the process audits at the steel mills, a metallurgist and a supplier support member have been included in the CFT.

Supplier Rating: Supplier rating criteria have been revised to include Quality and Delivery performances.

Supplier Development: SFL provides training to sub-contractors on 5S, safety, product inspection, product handling, FMEA and other QMS requirements. Supplier training also includes topics such as SOP, 7 QC tools and QC story.

Technical Support to Suppliers: Technical support to suppliers is provided during new raw material / die / part / process development and also to resolve technical issues in their manufacturing processes to improve quality. Support is also offered in the areas of cycle time reduction, material handling and layout improvement, capacity enhancement, set up time reduction and selection of new equipments. Financial support is also provided for procuring capital equipment in specific cases.

Supplier Morale Improvement: The best and innovative suppliers are awarded with merit certificates. Supplier participates in “Supplier Kaizen Competition” and shares their knowledge with others.

⑤ Supplier Satisfaction Survey

To understand the current satisfaction levels and to identify the areas for improvement, Supplier Satisfaction Survey was started. Based on the survey feedback, actions are identified on improvement areas.

5.7 Quality Assurance Management

(1) Background

SFL had established itself as a supplier of “Quality” products in the domestic market. SFL was the first Indian company to receive ISO 9000 certification, followed by QS9000, TS 16949 and IATF16949. However, there were issues in the areas of new product development, in-process quality and supplier quality which needed to be addressed through TQM.



(2) Major Activities

① Quality Assurance for New Products

Active Participation in Design Reviews: QA is involved from the initial stage of CFT formation and actively participates in design reviews with inputs on Quality history and feasibility study data to ensure clear focus on Quality, Cost and Delivery targets.

Active Participation in Design FMEA: QA supports by participating in Design FMEA and Process FMEA using the lessons learnt from the past. QA ensures to check lab test results at appropriate design review stages and then gives approval for mass production of a new product.

② Quality Assurance for Manufacturing Quality

Participation in Process Reviews of NMPD: QA gets actively involved in Process Reviews (PR) and regularly checks for the action taken with respect to recurrence prevention of in-process and customer line rejections, preparation of Process FMEA, SOP/QCPC and implementation of Poka-yoke. QA also supports in conducting Measurement System Analysis (Gauge Repeatability & Reproducibility) and initial process capability study (Ppk) of new processes. The approval for mass production is cleared by QA after verification of production trial run.

Process Audits: Earlier, process audits were conducted as a part of the 'Quality system audit'. Now, in order to give more focus to process robustness, evaluation of and adherence to SOP & QCPC, 'system audits' and 'process audits' have been separated. Separate process audit check sheets and audits schedules have been introduced.

Now, the process audit has been enhanced by fixing acceptance criteria. If the SOP/QCPC is not adhered to, the production process / line is stopped, and restarting of the process is done only after implementation of necessary action. Opportunities for improvements observed during the audit will be given as homework and the same will be verified in the subsequent audit.

Product Audits: Product audits are conducted by QA to assure product quality to customers using product audit manual. Earlier, products for monthly audit were randomly selected. Product audit score was given based on the conformance to specifications. If all the characteristics are found within the specification, audit score was given as 100%.

Audits are conducted product group-wise and the products are classified into various groups based on their application. In every audit, minimum 2 samples of the product that is ready for dispatch are taken from packing and audited to check whether requirements given in the customer drawing and engineering specifications are met. Quality characteristics covered in product audit includes dimensional, visual, metallurgical, mechanical, performance characteristics and labelling/packaging requirements. Product audit scoring criteria has been revised for critical variable characteristics.

③ Quality Assurance for Customer Quality

Reduction of Customer Line Rejections: A CFT is formed for every customer line rejection. The root cause is identified through analysis and corrective actions are initiated. QC Story methodology and DOE is applied where ever applicable. In order to eliminate recurrence, effectiveness is monitored through the tracker for recurrence prevention.

Earlier, the products in Final Quality Inspection (FI) were cleared based on sampling inspection if all the samples were within specifications. Now Cpk based lot clearance for critical characteristics has been introduced which has drastically reduced the customer line rejection..

Field Quality Improvements: Quality information on field performances is collected by marketing and provided to QA function for analysis. QA analyses the warranty returns, identifies the causes and appropriate countermeasures by simulating the field conditions at the engineering lab, wherever applicable.

After implementing countermeasures, the effectiveness of the countermeasures is monitored. Warranty returns are addressed in Design FMEA if attributed to design.



④ Supplier Quality Improvements

SFL purchases materials in the form of raw materials, semi-finished products or finished child parts, which are used for further manufacturing or in assemblies. SFL has introduced “Supplier quality manual” to institutionalise its quality system and processes across its supplier base covering all the divisions. Supplier quality improvements are achieved through the following initiatives.

Supplier Audits: Quality system and Manufacturing process audits are carried out at the supplier premises to identify the gaps in meeting the requirements of SFL. Action plans are arrived at for the identified gaps in the audit. Also audit plans are revised based on rejection, if any, of supplier parts in customer line / in-house assembly / incoming inspection.

Supplier Support: Supplier performance rating system has been introduced to monitor the performance of the supplier for continual improvement on QCD performance. Suppliers are selected and supported based on their rating under QCD performance.

5.8 Cost Management

(1) Background

SFL is operating in a competitive environment, with its profit margins under pressure. The domestic and export customers are extremely price conscious, constantly looking for supplies with high quality at low cost. Thus there has been a serious need for SFL to control costs in order to maintain its margin in such a competitive environment. Through implementation of TQM, SFL has initiated various measures that have led SFL to hold on to its product prices and improve its profitability. Cost management process is an integral component of SFL’s profit planning exercise to enable the organization to achieve its financial goals.

(2) Major Activities

① Budget Control

The cost management process in terms of the three steps followed is explained below:

Budgeting: SFL’s annual goal setting and fixing of growth targets is in line with the overall Mission, Vision and the medium/long term plans of the Company. Revenue and cost targets are fixed for the divisions / plants accordingly. Profit targets are derived from these revenue and cost targets for each of the divisions/plants. The Budget exercise is split into two parts viz. “Revenue Budget” and “Cost Budget”.

Monitoring and Review: Sales value is monitored and reviewed at the divisional level against the business plan and triggers for the shortfall in revenue are sent to plant/department heads. Similarly, various cost heads are monitored through ERP system and triggers are sent to the Plant/Department heads on a regular basis.

The review of actuals against Business plan is done at the monthly “Divisional Executive Committee Meetings” (DEC) chaired by the Divisional Heads of the respective divisions. The variance reports and the recovery plans presented by the plant/department heads are also reviewed at this meeting.

Corrective Action: The Plant/Department Heads prepare recovery plans which are validated by the plant/divisional finance teams for their adequacy and effectiveness. The recovery plans / corrective actions, inter alia, includes prevention of such variance in the future and making good the variances in other heads in subsequent months. These corrective actions are monitored for implementation on a regular basis by the respective divisional finance teams.



5.9 Utilization of Information Technology

(1) Background

SFL has been effectively utilizing Information Technology (IT) over the last four decades. SFL's utilization of IT has evolved over the years from, a simple data processing system using unit record machines to the level of a fully integrated Enterprise Resource Planning (ERP) IT solution using SAP software. Collection and analysis of information from the market and within the organization have been streamlined and fully integrated to effectively address and achieve customer requirements.

(2) IT Policy

“Leverage Information Technology to improve Business Speed and Business Effectiveness”.

(3) Summary of IT Utilization

Information Technology solutions have been implemented across the business functions of SFL to bring in digital enablement and operational efficiency.

(4) Major Activities

Major activities in the utilization of IT can be broadly grouped under two major heads, viz. Development of new IT systems and Up-gradation of existing IT systems.

① Development of New IT Systems

Product Information System (PIS): In order to achieve effective and seamless integration of Request for Quotation (RFQ), Request for Development (RFD), Change Management and Corrective and Preventive Action and to capture and maintain key information and documents related to New Manufacturing Process Development (NMPD), SFL has implemented this PIS software solution. This will enable analysis of win/lose cases in enquiries, and further improve RFQ process. The data and documents are centrally managed. There is also significant reduction in time for retrieval of documents. The solution enables users to easily access the latest version of drawings and APQP documents. Digital approval minimises wait time and the process will improve the RFQ and RFD lead time.

Knowledge Management System (KMS): KMS is a knowledge base in each process area in order to have a common platform for exchange of information across the organisation. This enables the company-wide users of respective process areas to be aware of key learnings and pitfalls to be avoided.

QC Story Bank: The solution provides for digitalization of QC stories and DOE methods. In allowing all employees to access QC story projects, special filter search has been provided in the solution for quick tracking.

② Up-gradation of Existing IT Systems

Quality Information System (QIS): All quality manuals, standard operating procedures (SOP), quality control process charts (QCPC), quality data history sheets (DHS) and all other quality related documents are managed in Quality Information System through a centrally managed digital library. This can be used by a wider user group. An example of QIS is the supplier quality module. Capturing and monitoring of supplier performance and supplier development activities in a common forum across the organization is possible with this module. Information regarding inspection of incoming materials, rejections, approvals and relevant reports are made available in this module as a part of QIS.

Engineering Application (CAD / CAE) Support: SFL has invested significantly over the years in building up engineering and design capabilities in order to meet increasing customer expectations. The software application and tools enable SFL to be in a unique position in its design capabilities and be the first choice in collaborative product development for OEMs. Adoption of these technology tools has helped SFL to respond effectively to customers' part design process.



5.10 Corporate Social Responsibility

(1) Background

SFL believes that it has a duty to share its prosperity with society. SFL's CSR vision is to actively extend support and build a better way of life by uplifting the weaker sections of the society and developing the society surrounding it.

SFL has focused its efforts in three key areas, viz., – Education, Healthcare for the underprivileged, and contributing to a sustainable and green environment.

(2) Supporting Education of Children

To provide high-quality education to children and youth from poor socio-economic backgrounds.

① Sundram Matriculation Higher Secondary School

SFL founded the English medium Higher Secondary (co-educational) School in Aviyur Village, Tamil Nadu in 1993 to provide high-quality education with modern facilities to needy children. The school caters to the need of eight villages that have no opportunity to provide quality education for children. A majority of the students at the school are first-generation learners.

SFL provides full educational scholarships to best students of class 10 and 12 to support their higher education. The school also offers career guidance to students, with assistance from professional bodies. The school alumnus includes doctors, engineers, chartered accountants, teachers etc. who have been able to break the poverty cycle and elevated their and their family's standard of living.

② Other Education- Related Projects

SFL also supports other projects in the field of education by working in partnership with specialist organisations like NGOs (Non-Governmental Organizations).

After School Project: To bridge the learning gap of government school students in villages and to ensure students are motivated to continue education, SFL partners with an NGO in providing after school classes in Language, Mathematics, and Science to students from class 3 to 8. The project covers 900 students from 30 villages across Tamil Nadu. This intervention has resulted in reduced dropouts from school. SFL involves its employees in evaluating the students' learning achievement.

Scholarships: SFL provides scholarships to bright, talented children from underprivileged backgrounds to take up higher education and thereafter, be gainfully employed. SFL employees volunteer with the students through knowledge sharing / self-development sessions and mentoring.

Mental Health Professionals: SFL co-anchors the "Center for Research and Social Action in Mental Health" which focuses on transforming mental health care services in India.

SFL Employee Volunteers: Employees volunteered in the area of Education through counselling sessions for high school students, conducting engagement activities at government schools to motivate children to continue education, reading and scribing for visually impaired girl students, raising awareness about education for children, teaching computer skills to teachers and students, book donations etc.

(3) Contributing towards providing Healthcare for Women and Children

To provide high-quality free medical facility, especially to women and children and create awareness on healthy practices.

① Sundram Medical Centre

SFL has identified rural health as an important factor for rural development. SFL offers free medical facilities to the economically and socially backward villages in Aviyur, Tamil Nadu, benefitting 2500 underprivileged families through the programme. The medical centre has a dual role of providing medical care as well as educating people on various health related issues.



② Other Health- Related Projects

SFL funds a project that supplies natural health supplements to over 900 government school students in Thandalam Village, Tamil Nadu. This project has a dual goal of providing nutritious supplement to children and providing employment to women self-help groups who produce this supplement locally.

SFL Employee Volunteers: SFL volunteers participated in events organised across SFL in the area of “Health & Well-being.” Employees organised awareness campaigns on prevention of heart diseases, prevention of dengue, personal hygiene, women’s health, Down’s syndrome, and Thalassemia among the public. SFL conducted free medical camps and heart check-up camps in poor areas.

(4) Contributing Towards Sustainable Environment

SFL endeavours to manufacture products with zero pollution and accidents, by continually improving environmental and occupational health and safety management systems. The processes meet environment-related laws and regulations and are free from prohibited substances, thereby reducing their impact on environment.

① Green Practices

SFL has installed adequate equipment to control air / water pollution and to treat effluents in all its plants. All the major plants of SFL have obtained certification for conformance to ISO 14001 standards. With employees' participation, SFL eliminates or minimizes risks due to workplace hazards. Continuous improvement programmes have resulted in improved environmental performance across all plants.

As a measure to conserve ground water, SFL installed treatment facilities with Reverse Osmosis (RO) technology for recycling and reuse of industrial water. Mechanical Vapour Re-compressor and Evaporator, which treats the reject water from the RO plant, has improved water recycle percentage above 85%.

Reuse of food and kitchen waste from the canteen to generate fuel through Bio Gas facility and use of solar heaters for heating water in the canteen kitchen, helps in reducing SFL’s dependency on Liquefied Petroleum Gas (LPG) cylinders. All plants have rainwater-harvesting facilities installed. SFL maintains vast green spaces with lots of trees and well-maintained lawns, which is higher than the requirements as per statutes.

SFL is in the forefront of reduction of Greenhouse Gas emissions through usage of green energy viz., Wind energy and Bio Mass energy for plants in Tamil Nadu. SFL has initiated installation of roof top solar power plant.

SFL also promotes Environmental Management System (EMS), environmental consciousness and practices among all its suppliers. All the suppliers must follow and comply with all the applicable laws and regulations in force and SFL prioritizes such Green Suppliers for business.

② Other Environmental Related Campaigns

SFL also extends its commitment towards environment and preservation of environment through campaigns driven by employees. During the year, employees took part in initiatives like promoting kitchen gardens, reduce and reuse plastic awareness campaign, anti-spitting campaign, solid waste management, tree plantation and prevention of pollution due to fire-crackers. SFL employees have also been participating in the Chennai Coastal Clean-up drive for four years.

(5) Donation from Salary

Employees donate a small part of their salary every month on a voluntary basis, towards a cause of their choice. This amount is deducted from their Payroll and directly given to the cause.



(6) Other Areas

Beyond the broad areas of Education, Health, and Environment, SFL also contributes towards other social causes.

① Preserving Indian Heritage through Temple Renovation

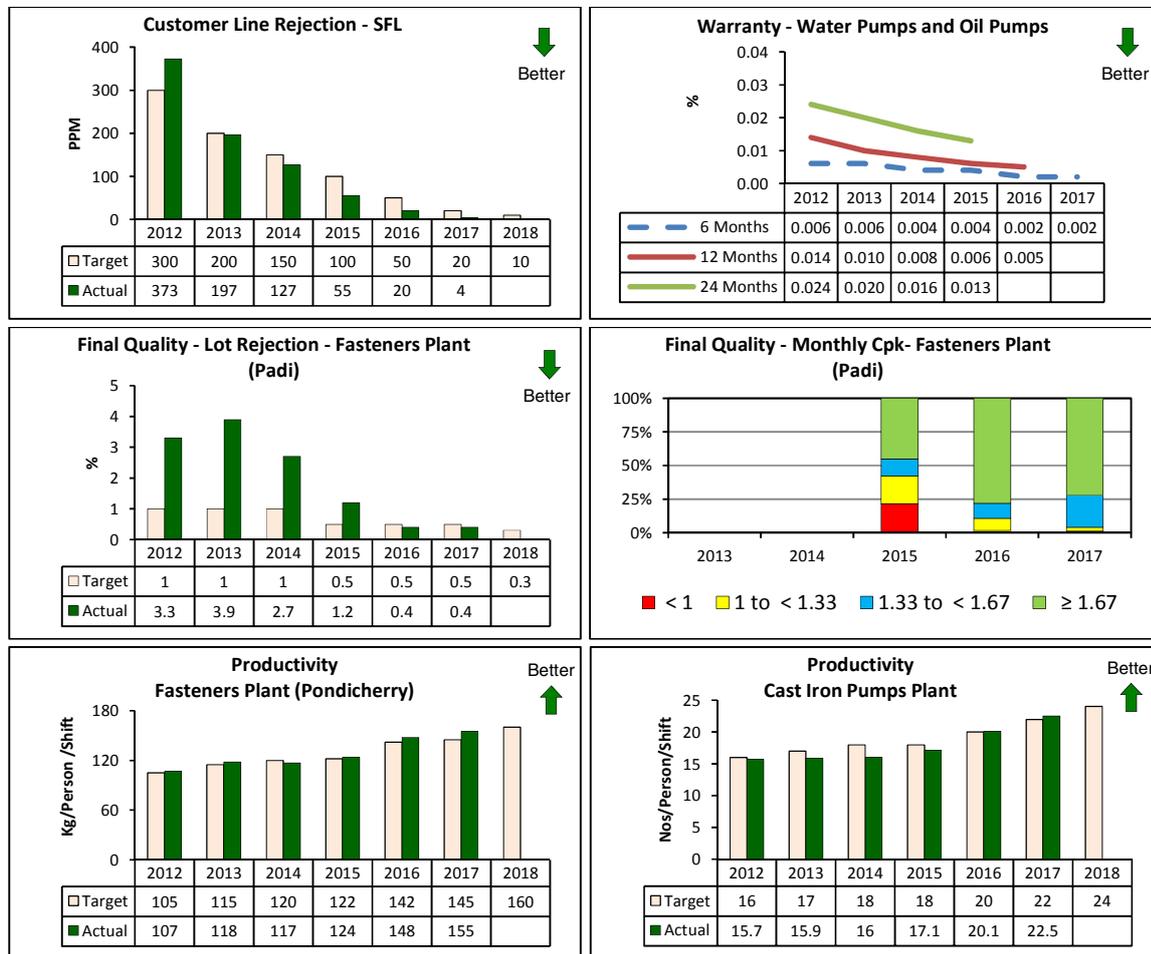
SFL has taken up initiatives in pursuit of heritage, art and culture by restoring dilapidated temples, providing infrastructure support by building wells and toilets etc. for the community.

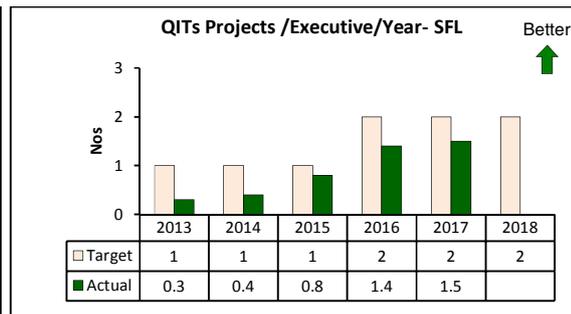
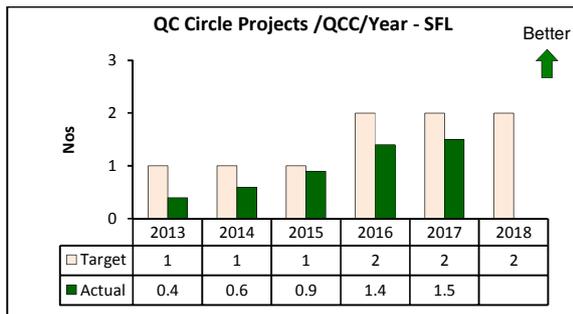
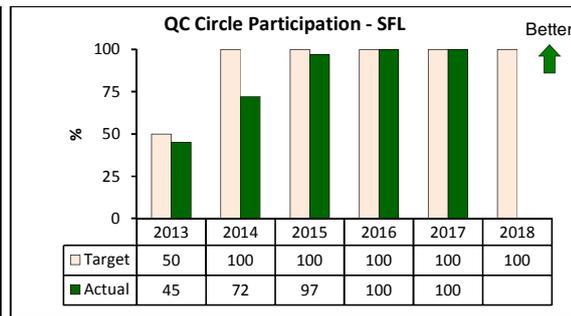
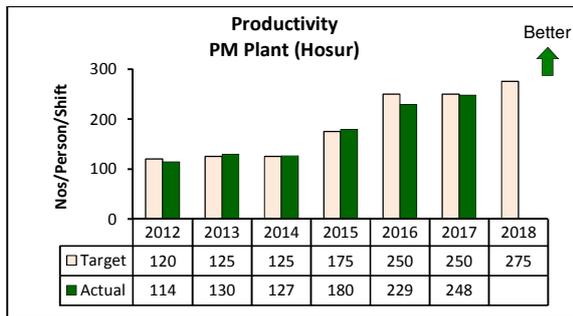
6 Effects of TQM

The adoption of TQM practices at SFL has resulted in numerous tangible and intangible benefits to the organisation.

6.1 Tangible Effects

(Years shown in effects graphs are financial year from Apr to Mar, example 2012 means Apr 2012 to Mar 2013)





6.2 Intangible Benefits

- Strengthening of the QCD management system and establishing companywide continual improvement process
- Institutionalization of people development process and greater level of total employee involvement.

7 Future Plan

SFL believes that TQM is a continuous journey. Constant review of performance in order to promote TQM more effectively and efficiently throughout the organization is required. SFL will be addressing the following pending issues and will be taking up new challenges in a systematic manner.

- Adapt and transform our QA system to meet the new challenges of the ever-changing economic and political environments.
- Review and change the scope and practice of our business to de-risk and make it broad-based.
- Give more emphasis on market development, new products introduction and product diversification.
- Through education and training, enhance the skill and will of all employees for effective engagement.
- To benchmark with world leaders and achieve QCD targets that will match with theirs.
- Venture into new product and manufacturing process technologies to keep ahead of competition.
- Improve the manufacturing systems to make it more flexible to move from weekly production plan to daily production plan to meet customer requirements.
- More effective use of IT