

“The Challenges in Optimizing Investment and Market Demand Faced by MSMEs – An Empirical Case Study on Sriguru Melters & Engineers, Kolkata”

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Abstract : Sriguru Melters & Engineers (MSME) is the renowned manufacturer, supplier, exporter of a wide assortment of locomotive components, Suspension Bearing (Axle lining), Axle Box Bearing, Wearing Pieces for carriage wagon and many more. The company is ISO 9001 2015 certified company. This internationally recognized certifications add value to their product and helps to create a place among the best organization in the industry, but the company is going to face the challenge of abolishing Suspension bearing in next few years which is the core product of the company. Recently Indian Railway has started using high tech Bearing for locomotive diesel engine instead of using Suspension Bearing because roller bearing's raw material price is much lesser than of suspension bearing, the process of making this kind of bearing requires advance technology and Roller bearing is used in Electric Engines whereas Suspension Bearing used in Diesel Engines, as Diesel is a non-renewable resource Indian Railway is shifting to Electric Engines. The new product is more market economical. Now, for the Company broad expansion for making those new bearing using specified technology is the main hindrance and it also requires a huge investment of nearly Rs 80-100 cr.

Keywords: Locomotive component uses to run diesel rail engine.

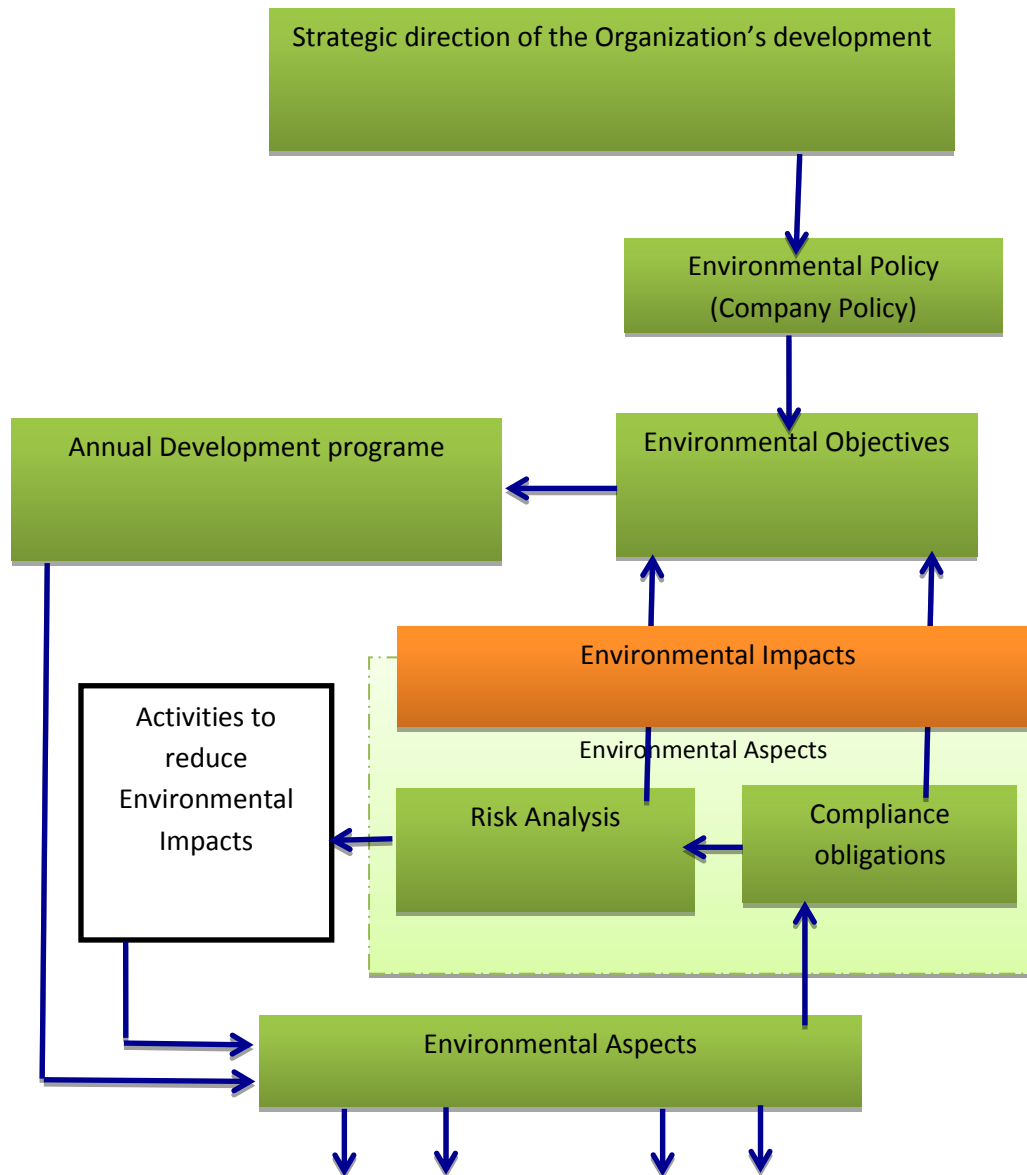
I. Introduction

Sriguru Melters & Engineers is the renowned manufacturer, supplier and exporter of a wide assortment of quality approved Locomotive Components, Metal Casting, Metal Bush, Bronze Part, Pump Spare, Casting Bush and many more. This company was established in the year 1979 at Kolkata in West Bengal, India as sole proprietorship firm that has been focusing on three main things that are complete customer satisfaction, ethical business practices and total quality management. These three things are the hallmark of this company and it does not compromise with them. The company is an NSIC registered and ISO 9001:2008 certified company. These internationally recognized certifications add value to the products and help create a place among the best organizations in the industry. The company exports approximately 20% of the total production to Sri Lanka, Nepal, Bangladesh, Bhutan and Myanmar. Since the inception, the company is registered vendor of Indian railways and is approved part -1 vendor of RDSO. The company is NSIC (National small industries corporation Ltd) registered as well as ISO 9001 2015 certified company. This internationally recognized certifications add value to their product and helps to create a place among the best organization in the industry. The company has started its business with the core product which is Suspension bearing which use in diesel locomotive traction engine to generate power from dynamo and helps to run the engine, but as diesel is natural resource it will end up some day that is why Indian railway starts manufacturing electric engines so this suspension bearing will be no longer in use after some day, there are only 25% diesel engines are running in the track and the need of Suspension bearing will be 5 to 6 years (approx.) as per the life cycle of these diesel engines. Need not to say the company's sole customer is Indian Railway & it is in B2G (Business To Government) business.

II. Indentations And Equations

Sriguru Melters & Engineers is well equipped with two storied buildings with adequate shop floor area for casting, stores, QC and small office area and Office at Chetla is for other support functions (Human Resources, Finance, Purchase, Strategy & Innovation and Sales).

1.1 Process Model



1.2 Operational Planning and Control

The Quality & Environmental Management System (QEMS) is adapted for improvement in Company performance. To achieve the desired goals, effective implementation of the system is essential.

The Company is approved vendor of RDSO. QEMS planning, Company policy and objectives are planned to meet the requirements of Railway Board and customers expectations. The QEMS Coordinator develops the initial process layout in consultation with principal, core group and other personnel as felt necessary. These are documented in the form of procedures, which include the following:

- Activities and their interaction within the process
- Responsibilities for the entire process or activity and initiating corrective action
- Control needed
- Method of verification and monitoring, measurement inspection and tests required at appropriate stages with different responsibilities
- Improvement objectives set for the process or activity
- Reference documents and various records need to be generated for evidence of conformity
- Improvement objectives for the processes are fixed considering the followings
- Needs and expectations of customer and customers
- Current competency level
- Availability of resources

To achieve the desired output from the various processes and to achieve the objectives and targets, department in the organization has prepared process maps. QEMS Coordinator and respective process owners are responsible for developing the process maps and monitoring the performance against the identified process performance parameters.

1.3 Requirements for Products and Services

1.4 Customer Communication

The organization determines and implements effective arrangement for communicating with customers related to

- a) Product information
- b) Enquiries, contracts or order handling, including amendment in the form of tender/order register and
- c) As Railway is the only customer, for each consignment, railway provides a Receipt Note through which they can communicate

The modes of communication are as followS

- a) Internet
- b) E-mail
- c) Telephone
- d) Fax
- e) In-person meetings

1.5 Determining the Requirements Related to Products and Services

While determining product requirements following has been considered as appropriate :

- a) specified requirements for service delivery and post-delivery activities;
- b) Railway Guidelines
- c) statutory and regulatory requirements;
- d) any additional requirements determined by the CEO which can meet the claims for the *product/services it offers*.

1.6 Review of Requirements Related to Products and Services

The CEO, Management Co-ordinaotor and Commercial Manager review the customer requirement related to the product. The review is conducted before any commitment (e.g submission of tender) or acceptance of contract or order. Requirements related to products are documented in **Enquiry Register & Order Register**.

- Product requirements are clearly defined and understood by the organization.
- The requirements are written and confirmed by the customer.
- Any difference between the tender enquiry and the order /contract is resolved.
- The organization has the capability to meet the defined requirements of the product.

Amendment to the contract is recorded and is to be effective with a mutual agreement between the organization and the customer. The changes are communicated within the organization for effective implementation. The results of the contract review meeting are recorded in the respective register and maintained for a period of 2 years. All changes made to the contract are also subsequently recorded.

1.7 Changes to Requirements for Products and Services

Whenever there is any such change to its requirement required the Company conducts a review following Change Management Procedure to verify its suitability to meet the defined requirement. Records of actions arising from the review are maintained. Appropriate amendments are done in case of change and are immediately intimated to concerned personnel through coordination meeting.

1.8 Design and Development of Products and Services

The Company manufactures products as per customer's/ company's standard. Thus this clause of design and development is not applicable to the activities of the organization and hence has been excluded from the scope of the manual.

(a) Supplier Evaluation/Rating

Suppliers are rated on the basis of price , quality of supplies and delivery once in six months by the Chief Executive. The following gradation will be applied:

A = 0.90 and above

C = 0.79 to 0.60

B = 0.80 to 0.89

D = less than 0.60

Suppliers getting B and C rating are intimated to take adequate measure for improving quality. Suppliers getting D rating are deregistered. A deregistered suppliers can be enlisted again following supplier approval procedure. Records are maintained in Vendor Performance Review.

1.9 Purchasing information

A series of purchase specifications exist for control of Suppliers product quality. The Purchasing activities are initiated by floating enquiry to the approved Suppliers on receipt of Indent from the stores. On receipt of quotations or verbal prices or in some cases based on Standard contractual prices as applicable, Chief Executive places the order in Purchase Order to the approved suppliers. Copies of which are distributed to Stores for verification purposes. Before release, the purchasing data is reviewed and approved by the appropriate authority.

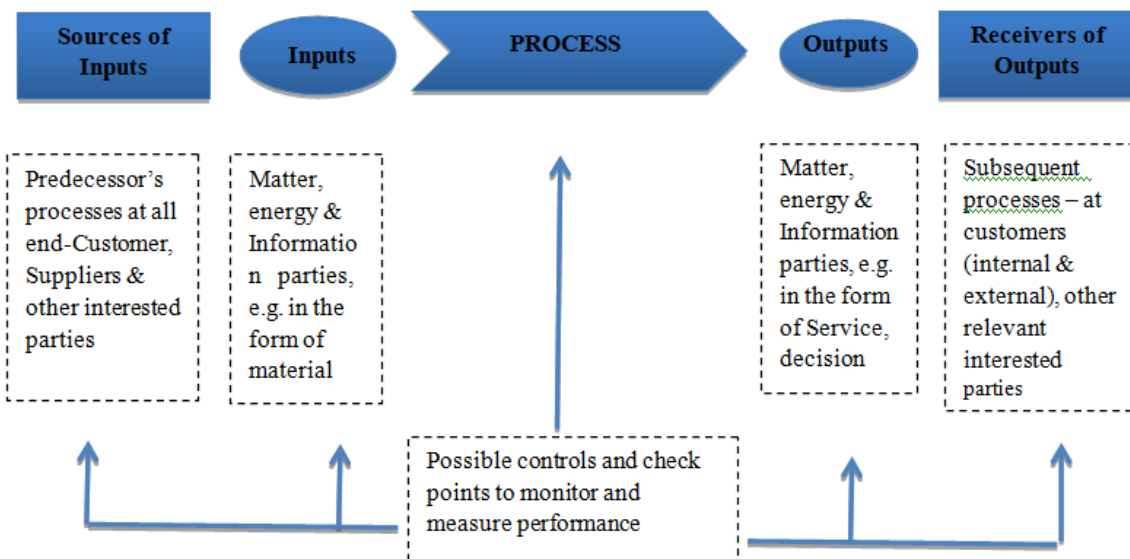
2.0 Verification of purchased product

Purchased products after receipt are verified with the requirements of Purchase Order. These are tested by Quality Control personnel with necessary inspection and testing as documented in Inspection Plan for Incoming Inspection. Where the extent and control needed on the suppliers includes verification at supplier's premises the details are documented and communicated to the Suppliers.

If the contract requires verification of purchased items by the customers, this is facilitated. Any such requirements do not absolve the company from verification of supplies from the Suppliers and ensuring that the product is satisfactory.

III. Figures And Tables

a. QMS Process



It involves –

- Identification of Process
- Identification of Input, Output and Process Performance Parameters
- Identification of Environmental aspects and impacts and business hazards and risks interacting with environment and business.
- Identification of criteria and method needed to control the process.
- Development of work instructions, standard operating procedures, standard maintenance procedures to control the process
- Identification of improvement opportunities, setting up objectives and targets and action plan to achieve set targets.
- Provision of resources to facilitate the process
- Monitoring, measurement and analysis of the process performance against set norms.

In Sriguru Melters & Engineers, processes have been defined and documented for various processes (Ref: Annexure:-B, List of Processes). The interaction between various processes have been documented in process interconnection diagram (Ref: Annexure-C, Process Interconnection Diagram)

Each process may be supported by other activities, such as tasks or sub-processes. Monitoring and control of top level processes ensures effective implementation and control of all subordinate tasks or sub-processes.

Each top-level process has a Process Definition including Process Maps document which defines:

- applicable inputs and outputs
- process owner(s)
- applicable responsibilities and authorities
- applicable risks and opportunities
- critical and supporting resources
- criteria and methods employed to ensure the effectiveness of the process
- quality objectives related to that process

b. Company Data

- ❖ Annual Turn Over - 2.5 crs to 3cr
- ❖ Business Type -B2G (Business to Government)
- ❖ Profit Margin - 20 % Per Order Execution
- ❖ CAGR-5.59 Percent
- ❖ Customers- Indian Railways
- ❖ Certificates- RDSO(Research and design Standard Organization), ICF(Integral Coach Factory),RCF(Rail Coach Factory),NSIC(Nation Small Scale Industry Ltd), ISO 9001:2014(International Organization For Standardization)

3.3 Items manufactured:-

- Suspension Bearing uses in diesel engine.
- Axle Box Bearing for EMU coaches.
- Wearing Pieces uses in carriage wagon and all EMU coaches.

3.4 Customers:-

- Indian Railways including all zonal railways.

3.5 Suppliers:-

- All the authorized dealers of Leaded Bronze, Babbit Metal, Phosphorus like Shri Bajrangi Metal, Bikash Metal, Bhanu metal etc.

3.6 Competitors:-

- Omega(Bhopal),Jai Bharat Industries(New Delhi),Krishna Engineering(Hyderabad),Chandra Udyog(Kolkata),Monarch Industry(Hyderabad),Jonardhan ltd(Bombay).

3.7 Findings

(a) Core Product Obsoletion; By going through detail analysis we found that we cannot help to survive suspension bearing in the market because of obsoleting of the particular core product because diesel engine will not be used after some years, and Indian Railway has been started manufacturing electric engine and Suspension bearing will be in no use after some years.

(b) Reason behind obsoleting & problem to develop the new technology:

- Roller Bearing, which is new entrance in the market came in the Indian Railway industry.
- Cheap rate of this new entrance.
- Traction Motor journal has started modifying itself, so Suspension Bearing will be in no use after some days
- Lack of Investors.
- Liquid cash problem.
- High Infrastructure shifting cost needed.
- Highly Technological manpower needed for production and lack of sound R&D department.
- Managerial decision making dilemma.
- Crisis of Core Industrial area in west Bengal to make the new product because of high pollution emission they can't produce this in their current area.

(c) Recommendations

After considering these issues our opinion is :

- The company should give more focus on its another high demand product which is Wearing Pieces.
- The company can produce this item 1000-1500 per month, as it is in high demand in Indian Railway but they only can supply `1500 pieces due to limited resources and technology.
- The company should install 4-5 automatic machineries (CLC) each costing Rs.12-15 lakhs each which is available in the market to meet the demand.
- Recruit 4-5 professional to run those machineries by which they can reduce their cost per pieces.
- The company has enough space & financial condition(after analysis of current and previous 5 years Balance sheet) to avail and install this new CNC(Computerized Numerical Control) machines to increase production of wearing pieces.

- Also after analyzing the melting section/area we recommended them to use high technological electrified chulli which generally use to decrease pollution and increase production about triple times.

IV. Conclusion

4.1 Management review inputs

- a) The status of actions from previous management reviews;
- b) changes in external and internal issues that are relevant to the QEMS;
- c) information on the performance and effectiveness of the QEMS, including trends in:
 - 1) customer satisfaction and feedback from relevant interested parties;
 - 2) the extent to which quality objectives have been met;
 - 3) process performance and conformity of products and services;
 - 4) nonconformities and corrective actions;
 - 5) monitoring and measurement results;
 - 6) audit results;
 - 7) the performance of external providers;
- d) the adequacy of resources;
- e) the effectiveness of actions taken to address risks and opportunities;
- f) opportunities for improvement.

4.2 Management review outputs

The management uses outputs of the management reviews as inputs to improvement process. They also form important data in the context of strategic planning of the Company.

The outputs of the management review includes decisions and actions related to:

- a) opportunities for improvement;
- b) any need for changes to the quality management system;
- c) resource needs.

4.3 Environmental & Performance

The level of Environmental performance needs to be measured to the extent possible and monitored to ensure that the Environmental impacts associated with activities are controlled and reduced further for continual improvement.

4.4 Improvement

4.5 General

the Company continually improve s the effectiveness of QEMS through the implementation of Company policy, objectives, audit results, analysis of data, corrective/preventive actions feedback from customers and customer, management reviews and achievement of improved targets.

4.6 Nonconformity and corrective action

Procedure is established and documented for investigating the cause of non-conformance and corrective action taken to prevent recurrence. For this purpose, the Q.C. Incharge conducts meetings along in the participating functional members. The reasons of non-conformance are established and are recorded.

The procedure for Corrective Action includes:

- The effective handling of customer’s complaints and reports of product non conformities
- Investigation of the cause of non-conformities relating to product, process and quality system
- Determination of the corrective action needed to eliminate the cause of non-conformities.
- Recording results of the action taken
- Reviewing of the effectiveness of the corrective action taken during management review.

List Of Abbreviations

SRIGURU	Sriguru Melters & Engineers
QEMS	Quality & Environment Management System
CTC	Critical to Customer
PPE	Personal Protective Equipment

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References

- [1] Internal Procedure for Risk Assessment
- [2] Internal Procedure for identifying Aspect/hazard
- [3] Internal Procedure for Legal & Other Requirements
- [4] Internal Procedure for emergency preparedness & response
- [5] Internal Process Map for Production Realization
- [6] Internal Process Map for Maintenance
- [7] Internal Process Map for Customer Performance & Measurement Process
- [8] Internal Process Map for Quality Control
- [9] Procedure for Internal Audit
- [10] Procedure for Control of Nonconforming Products
- [11] Procedure for corrective and preventive action
- [12] Inspection Plan for Incoming Inspection
- [13] Inspection Plan for In-process Inspection
- [14] Inspection Plan for Final Inspection