# STREAMLINING THE WORKFLOW FOR MAXIMUM PRODUCTIVITY

**A Proposal report for the BDM capstone Project**


Report by

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# Declaration Statement

I am working on a Project Title "STREAMLINING THE WORKFLOW FOR MAXIMUM PRODUCTIVITY". I extend my appreciation to "SHREEVARI ENERGY SYSTEMS (P) Ltd, for providing the necessary resources that enabled me to conduct my project.

I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered through primary sources and carefully analyzed to assure its reliability.

Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the information of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project's completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I agree that all the recommendations are business-specific and limited to this project exclusively and cannot be utilized for any other purpose with an IIT Madras tag. I understand that IIT Madras does not endorse this.

Signature of Candidate

Name: YOGASWETHA SANJAYGANDHI

Date: 03-Oct-2024

# Executive Summary

### Organization Overview:

SHREEVARI ENERGY SYSTEMS (P) Ltd, a part of the NTC Group, specializes in B2B solutions for engineering design and manufacturing of industrial energy components.

### Current Challenges:

The organization is currently facing challenges in meeting its monthly production targets, which is vital for maintaining competitiveness and ensuring customer satisfaction.

### Data Collection and Analysis:

To tackle these challenges, a thorough data gathering strategy will be put in place, concentrating on production processes, equipment efficiency, and workforce productivity. Analytical methods, including spreadsheets, control charts, and bar graphs, will be employed to facilitate insightful data analysis.

### Identification of Roadblocks:

The analysis will identify specific roadblocks impacting productivity, including downtime, and workforce constraints. Understanding these barriers will guide targeted interventions.

### Recommendations for Enhancement:

Based on the findings, strategic recommendations will be proposed to enhance productivity, including process optimization, staff training, and technology investments, aimed at improving operational efficiency and achieving production targets.

# Organization Background

Shreevari Energy Systems (P) Ltd is a non-government organization, incorporated on December 21, 2004, operating under the motto **"SERVICE WITH SMILE."** The company specializes in designing, fabricating, and maintaining industrial energy components, partnering with clients such as **Suzlon, Nordex, and Danieli.**

**The organization has two units:**

- Unit 1, located in Tiruchirappalli, focuses on manufacturing of windmill support components, blade support and transport tools, as well as machining activities.
- Unit 2, situated in Tuticorin, focuses on manufacturing windmill towers, specifically producing steel tubular towers.

Shreevari Energy Systems holds an Integrated Management System (IMS) certification and employs a highly skilled workforce. The organization maintains operational hours designed to optimize production efficiency. With its ongoing success in generating substantial revenue, the company plays a vital role in the growth and stability of the energy sector.

# Problem Statement

Shreevari must enhance its competitiveness by addressing two key areas:

### Problem 1: Workflow Challenges

Identify the workflow inefficiencies (cycle times, down time, labor hours, material wasted, defect rates and rework times) at each phase of the production line. Quantify the findings to understand the present situation and look for the areas of improvement to boost the overall operational efficiency.

### Problem 2: Inventory Management Challenges

Collect the inventory audit reports, supplier data, cost and demand data to understand the flaws in inventory management and propose a reliable solution for managing time-based inventory, ensuring alignment with demand and supply to minimize stock discrepancies.

# Background of the problem

From my initial discussions with the firm's SPOC, I noted that various issues are significantly influenced by the interactions between man, machine, and materials.

The following scenarios highlight key factors contributing to the identified problems.

### Scenario 1: Lead time

The time spent at each stage of the production line, from preparation to shipping, varies significantly, leading to inefficiencies. Addressing these discrepancies is crucial for enhancing workflow and boosting overall productivity.

### Scenario 2: Raw material Availability

The absence of effective inventory planning and management tools results in raw material shortages when needed, causing delays in production. This inefficiency directly impacts the company's ability to meet demand.

### Scenario 3: Inconsistent Adherence to Procedures

Workers often do not consistently follow established procedures, leading to rework, reinspection, and, in some cases, product scrapping. This inconsistency further detracts from productivity and quality.

### Scenario 4: Limited Automation

The dependence on outdated machinery hinders effective data collection for analysis, making it difficult to spot trends and identify opportunities for enhancing production efficiency.

## Problem Solving Approach

The below given analyzing methods and tools to be applied to collect the required data, using which the source of the problem will be identified and studied.

### Problem 1: Workflow Challenges

Methods

- **5 Whys Analysis:** This technique helps identify root causes by repeatedly asking "why" until the fundamental issue is found, such as equipment malfunctions or labor shortages causing delays.
- **Flow Charting:** Creating a visual map of the production process highlights and redundant steps, providing a clear overview for identifying improvement areas.

Data

- **Types**: Time stamps for each production stage, labor hours, inspection check points and rework hours, output rates and target achievement details.
- **Expected Length**: Four months of historical data to identify trends and seasonality.

This data is essential for pinpointing delay sources, enabling targeted interventions to streamline operations.

Tools

- **Control Charts:** These track production metrics over time, providing insights into process stability and variability, crucial for identifying inefficiencies.
- **Bar Graphs:** Visual representations of time spent at each production stage help easily identify areas needing improvement.

## Problem 2: Inventory Management Challenges

Methods

- **Fishbone Diagram:** This tool categorizes potential causes of inventory issues (e.g., raw material shortages), allowing a structured exploration of contributing factors.
- **Stock Audit reports:** Conduct regular physical counts and reconcile them with recorded inventory. Discrepancies can highlight areas needing attention.

Data

- **Types:** Inventory levels, order frequencies, and lead time for raw materials order & delivery, supplier availability.
- **Expected Length:** Monthly data for the past year to capture fluctuations and patterns.

Understanding inventory flow is vital for aligning supply with demand, reducing stockouts and excess inventory.

Tools

- **Excel Pivot Tables:** These allow dynamic data analysis, summarizing and visualizing inventory trends efficiently, making them user-friendly for quick insights.
- **Cost-Benefit Analysis Templates**: These templates evaluate potential inventory management solutions based on feasibility and financial impact, ensuring data-driven decisions.

**By systematically applying these methods, data collection strategies, and analytical tools, we can effectively address the productivity challenges at Shreevari Energy Systems.**

# Expected Timeline

Work Breakdown Structure:

- Initial discussion, Proposal Submission and Approval : 23rd Sep to 07th Nov
- Data collection/Cleaning/Analyzing : 19th Oct to 15th Nov
- Mid Term Submission and Approval : 07th Nov to 10th Nov
- Root Cause Identification and Problem Solution : 10th Nov to 30th Nov
- Final Preparation, Submission and Viva Voce : 01st Dec to 24th Dec

**Find the below GANTT chart represents the project activities and the timeline planning:**

**BDM Project**
**YOGASWETHA SANJAYGANDHI (23F2000098)**

| Project Start Date : 23rd Sep 2024 | | | | | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Week 13 | Week 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CW39/24 | CW40/24 | CW41/24 | CW42/24 | CW43/24 | CW44/24 | CW45/24 | CW46/24 | CW47/24 | CW48/24 | CW49/24 | CW50/24 | CW51/24 | CW52/24 |
| S. No | Activity Description | Start date | End Date | Status | 22-Sep | 29-Sep | 6-Oct | 13-Oct | 20-Oct | 27-Oct | 3-Nov | 10-Nov | 17-Nov | 24-Nov | 1-Dec | 8-Dec | 15-Dec | 22-Dec |
| 1 | Initial Discussion with Firm SPOC | 23-Sep | 24-Sep | Completed | | | | | | | | | | | | | | |
| 2 | Make the Project proposal | 25-Sep | 1-Nov | Completed | | | | | | | | | | | | | | |
| 3 | Collecting the data while waiting for approval | 3-Oct | 7-Nov | On Going | | | | | | | | | | | | | | |
| 4 | Proposal Approval | 3-Nov | 7-Nov | | | | | | | | | | | | | | | |
| 5 | Collect more data | 3-Oct | 10-Nov | | | | | | | | | | | | | | | |
| 6 | Data Cleaning | 19-Oct | 15-Nov | | | | | | | | | | | | | | | |
| 7 | Data Analyzing & Finding Insights | 19-Oct | 16-Nov | | | | | | | | | | | | | | | |
| 8 | Preparing Mid Term Submission | 2-Nov | 7-Nov | | | | | | | | | | | | | | | |
| 9 | Finding more insights while waiting for approval | 7-Nov | 10-Nov | | | | | | | | | | | | | | | |
| 10 | Mid term approved | 10-Nov | 12-Nov | | | | | | | | | | | | | | | |
| 11 | Identifying the root cause | 10-Nov | 16-Nov | | | | | | | | | | | | | | | |
| 12 | Finding Problem's solutions | 17-Nov | 30-Nov | | | | | | | | | | | | | | | |
| 13 | Preparing Final Submission | 1-Dec | 15-Dec | | | | | | | | | | | | | | | |
| 14 | PPT creation | 15-Dec | 17-Dec | | | | | | | | | | | | | | | |
| 15 | Final approval | 15-Dec | 18-Dec | | | | | | | | | | | | | | | |
| 16 | Viva Slot Booking | 23-Dec | 24-Dec | | | | | | | | | | | | | | | |

# Expected Outcome

The purpose of this project is to enhance the productivity through analyzing the different variables/key factors with the help of various statical tools. To gain the knowledge on steps involved in industrial manufacturing process and understand the importance having robust process plan and implementation of lessons learned for the success of business.

**Key takeaway points:**

- Enhanced productivity with better planning for stocks.
- Better process for the workflow management in the production line.
- Profession development of labors with improved skill set.
- Improved communication and cooperation between departments for quicker problem-solving.