APPLICATION OF LEAN PRACTICES IN A MANUFACTURING FIRM

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ABSTRACT

Lean manufacturing is a concept which focuses on elimination of wastes and enables process streamlining. Value stream mapping (VSM) is a lean manufacturing technique that is capable of tracking wastes, thereby streamlining the processes. However, the framework of VSM does not enable the systematic identification of wastes as well as the techniques to eliminate them. In this context, this paper presents a study in which quality function deployment (QFD) technique has been used for scientific prioritization of wastes and techniques for waste elimination. The fuzzy model has a great flexibility, its modification and refining being done with great easiness .

Keywords : Lean manufacturing, VSM, QFD, Fuzzy logic

I.   INTRODUCTION

Due to increasing global competition, firms have to radically change their manufacturing practices to improve their competitiveness. In pursuing this goal, all the firms have adopted a number of advanced techniques, such as just-in-time, total quality management, lean manufacturing and flexible manufacturing systems. The objectives of all these programmes have been to reduce cost, improve quality, reduce cycle time and increase flexibility on the shop floor.

Lean manufacturing is "A systematic approach in identifying and eliminating waste through continuous improvement by flowing the product at the demand of the customer."

Once companies pinpoint the major sources of waste, tools such as continuous improvement, just-in-time production, production smoothing, and others will guide companies through corrective actions so as to eliminate waste. More detailed explanation of lean tools to be used in this globally to enable managers make better, and data-driven selections that will trade the way they manage enterprise operations and compete in the market place. project is given Kanban, VSM, Fuzzy logic QFD

II.   METHODOLOGY

Lean manufacturing is the concept used in industries to eliminate nine types of wastages. In this work the problems faced in the industry is identified and adopt the best lean tools to eliminate those wastages.

III.   PROBLEM IDENTIFICATION

➢ Unnecessary motion was the major problem identified in industry.
➢ Push production followed in the industry was the problem.
➢ Demand forecast was unpredictable due to that overproduction occurs.

➢ Higher lead time due to resource constraints.
➢ Industry not implemented 5s concept.
➢ Inventory maintenance is higher due to delay in delivery.

IV. DATA COLLECTION FROM INDUSTRY
DATAS COLLECTED FROM SENTHIL FABRICATION INDUSTRY SITUATED IN COIMBATORE

FABRICATION PRODUCTS
1. Pressure Vessels
2. Storage tank
3. Chemical tank
4. Chimney
5. Foundry equipments

Machines Available
1. Hydraulic press 300 ton capacity
2. Crane 7.5 ton capacity
3. Rolling machine (2000 x 25)mm capacity
4. Radial drilling machine
5. Arc welding machine
6. Pug cutting machine

RAW MATERIAL SUPPLIER
1. Hindustan hardware supplies sheet metal
2. Pioneer steels supplies glass and truss material
3. Apollo steels supplies steel
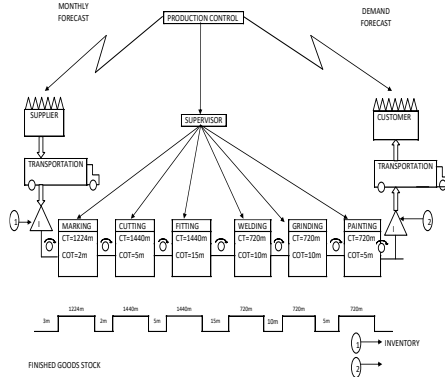4. Ramesh iron steels supplies iron

V. CALCULATION

VSM FOR PRESSURE VESSEL
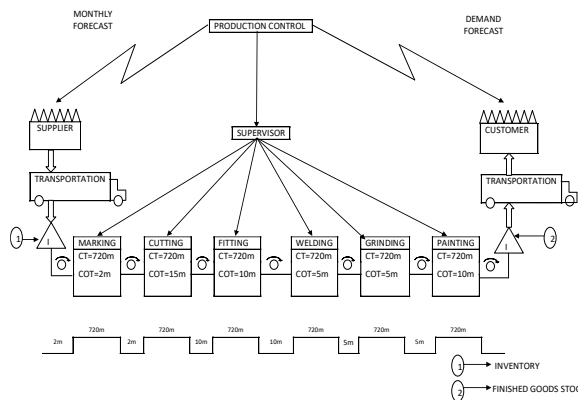
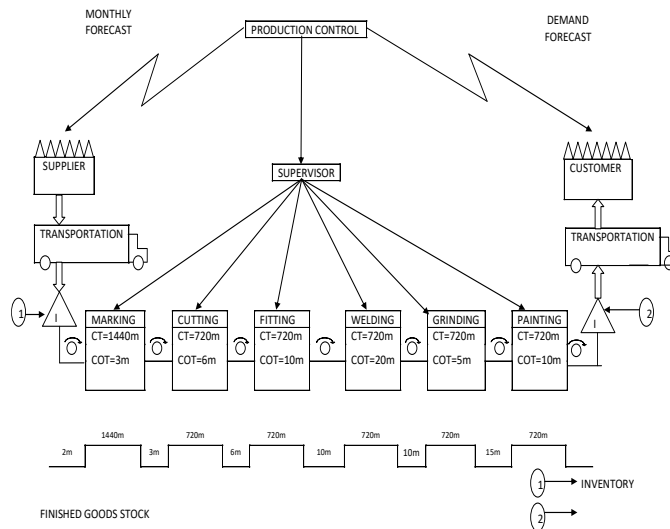VALUE STREAM MAPING [CURRENT STATE MAP] FOR PRESSURE VESSEL 5TON CAPACITY

Total Value added time =9864 mins
Total Non value added time=72 mins
Total lead time = 9936 mins

VALUE STREAM MAPING [CURRENT STATE MAP] FOR STORAGE TANK 10TON CAPACITY

Total Value added time =6264 mins
Total Non value added time=47 mins
Total lead time =6311 mins
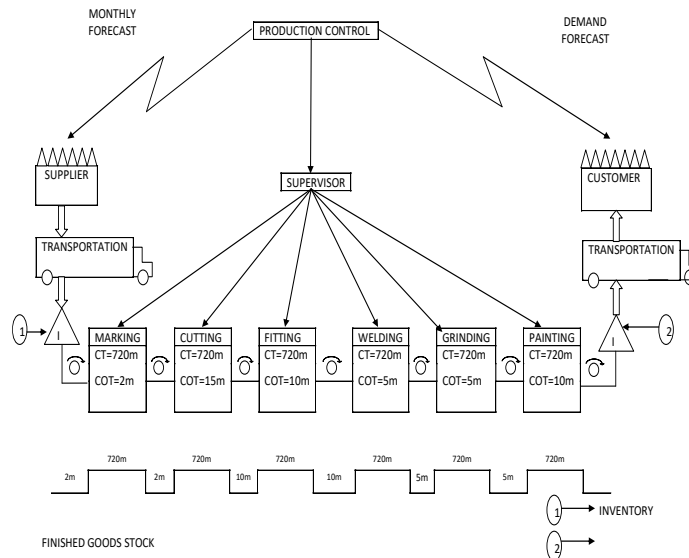
VSM FOR FOUNDRY EQUIPMENT

VALUE STREAM MAPING [CURRENT STATE MAP] FOR FOUNDRY EQUIPMENT

Total Value added time =5040 mins
Total Non value added time=54 mins
Total lead time=5108 mins

VSM FOR CHIMNEY

Total Value added time =4320 mins
Total Non value added time=47 mins
Total lead time =4367 mins

VALUE STREAM MAPING [CURRENT STATE MAP] FOR CHIMNEY

VI.   CONCLUSION

From the collected data's the problems such as unnecessary movement for searching tools and improper raw material storage were identified. Through current state VSM the process is visualized and lead time was estimated. Through FUZZY AHP the key factors which affect the industry can be optimized

VII.   FUTURE WORK

In future the identified wastes will be eliminated by using lean tools and optimization technique like QFD. For simulation purpose ARENA software is going to be used

VIII.   REFERENCES

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