

STUDY & EVALUATION OF JUST-IN-TIME IN AUTOMOBILE MANUFACTURING COMPANY

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Abstract— Just-in-Time production system is one of the major initiatives that focus on cost reduction by eliminative non-valuable activities. The tools and techniques of JIT,widely used in industries starting with the introduction of the original Toyota production system. Various industries have been trying to adopt new business initiatives in order to persist good name in market in the new compitives market place. Zero inventory, shorten the set up time, elimination of waste,quality,low cost products are the essential areas for evaluation that leads impactful growth for the Automobile manufacturing company. Basic components and tools of JIT require the evaluation JIT system for the industry in focus. All tools often, however standards solutions to solving the skill gap. so company need to think creatively about evaluation of JIT to tapping skills and demands.

Index Terms— 5S, Cell Manufacturing Group Technology, Just-in-Time Manufacturing (JIT), Kanban, Lean Manufacturing, Quality Assurance, Quality Cycle, Quality Control, Quick Changeover, Single Minute Exchange Small Lots, Supply Chain, Total Productive Maintenance (TPM), Total Quality Management (TQM), Toyota Production System (TPS), Supply Chain Management, Visual Control.

I. INTRODUCTION

Automotive companies are constantly seeking ways to improve their organizations with various industrial tools. Just-in-Time is one of the most leading techniques adopted in industries as to set the standards. But there is need to evaluate JIT in industries to enhance the standards, quality, working environment, type of work system, inventory as well. Evaluation of Just-in-Time production system concept to the continuous production or process area with the focus on automobile manufacturing company. Simply JIT is a business philosophy that focuses on reducing time & cost, eliminating poor quality with in manufacturing and non manufacturing process. Sometime it called short-cycle or lean manufacturing. There are many studies found in management literature about the evaluation of JIT but there is lack of evaluation of JIT in automotive industry. This study improves the evaluation system for the automotive companies and includes the analysis of JIT basic components and tools of JIT.

II. TOOLS OF JIT

Just-In-Time is a completely pull system. The whole process configure the use of tools and processes makes the system .This results the use of Kanban system. A kanban is used to manage all shipments in small frequent lots shows in fig.1[1][7]

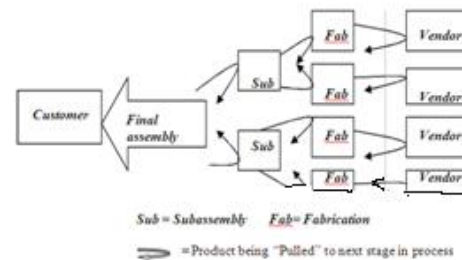


Fig.1 Pull production system

Continuous improvement (Kaizen) improves the manufacturing system in one sentence that is "one less at a time "reduce the lot size. The continuous improvement approach is illustrate by the Shewhart-Deming PDSA cycle shows in fig.2[1].



Fig.2 PDSA Cycle

TQC is another tool Total quality management for improving the total performance and organized kaizen activities in company, managers, workers. It is integrated effort toward improving performance every level [2] [3]. As JIT require high quality in every aspects of production. In quality perspective inventory management, total productive

maintenance, Total employee involvement should be evaluated. [3]

Good house keeping Japanese companies widely used the concept of 5's, is examined by splitting in to tidiness ,cleanliness,safety results to improve workplace organization shows in fig.2[4].

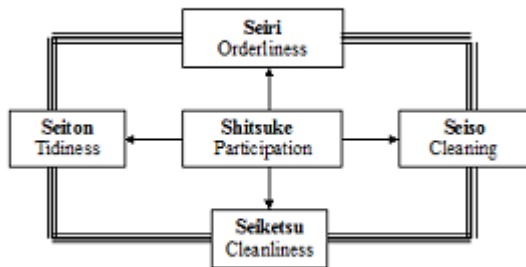


Fig.2 Housekeeping principles: the 5 S's

Cellular manufacturing technique is cornerstone that increase the mix of product with the minimum waste possible. It consist of equipment and workstation that are arranged in order that maintains a smooth flow of materials and components through the process also called group technology ;concept explain in fig.3[5][6]

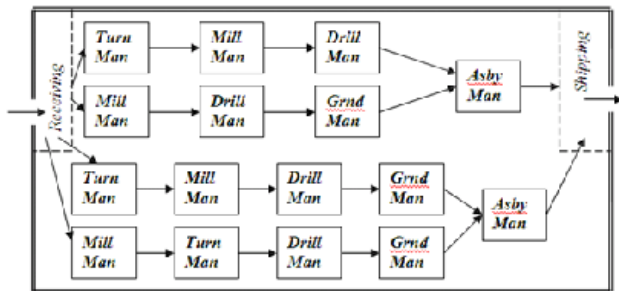


Fig.3 Group technology layout

Lot/Batch Size Reduction is the principal feature of JIT manufacturing..JIT requires that batch sizes, stocks, be reduced. For this, setup time and cost must be minimized.[7].

At each process all the critical information including lead time, cycle time, inventory levels etc. are documented.

Evaluation of JIT in automobile industries analyze the JIT component, tools, techniques are, needed to eliminates the gap between pull system and pull-push system in manufacturing processes.

III. MAJOR PROBLEMS OF AUTOMOTIVE MANUFACTURING COMPANY

Today's India global market Automotive manufacturing company address the following problems:

- (1) Increased cost of truck assembly production.
- (2) Competition among local as well as international brand items.
- (3) After JIT implementation there is presence of incomplete pull system in manufacturing.
- (4) Higher work-in-process inventories.

IV. ASSESMENT OF JIT IN AUTOMOBILE MANUFACTURING COMPANY

A common workflow assembly layout diagram for automobile manufacturing company, the inputs is automotive components items & subassemblies and other necessary departments like CKD component storage, SKD parts, bodyshop up to finished product storage shown in fig.4[7]

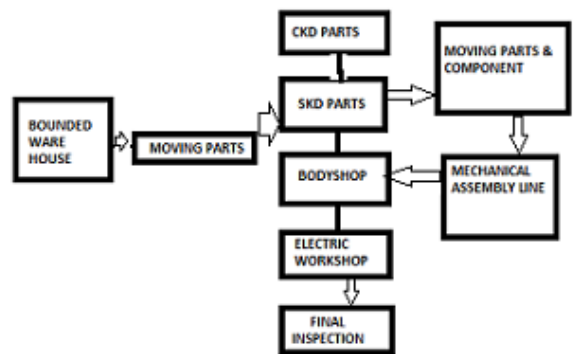


Fig.4

JIT techniques every employee of the company should know and understand about JIT. For this assessment some important parameter should be analyzed like waste reduction ,overproduction waste, waiting time waste, lead time, transportation time, inventories, set-up time and compare all these for the justification of JIT in company. The given table 1 presents the main difference between JIT practices in Japan and the Indian manufacturing culture[1][4][5].

Japan	India
deals with quality of people	deals with quality of products
customer-oriented	manufacturer-oriented
upstream	Mixing of upstream and down stream
Process-oriented, aimed at improving the total performance	Product oriented, aimed at detecting and eliminating defective parts

Table.1

In general, the study shows the characteristics of JIT is partially practiced in automotive industries. As the gained knowledge and after comparisons, founds in order to achieves the benefits from JIT or indirectly pull (customer-demand) production necessary to evaluate.[4][7]

The various reasons found for the analysis of JIT in automotive company are:

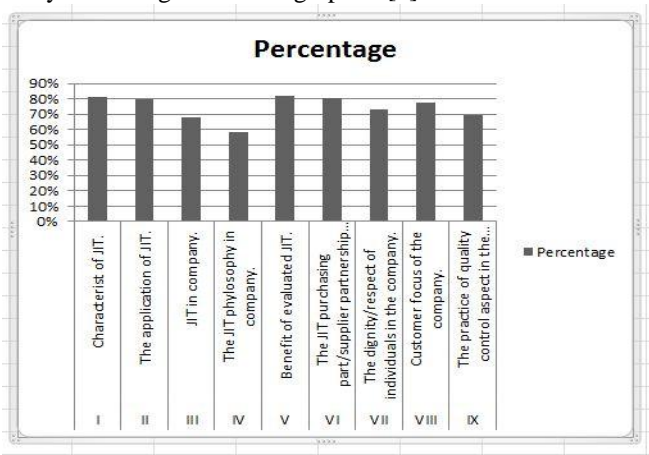
- (1) Absence of quality control tools.
- (2) Lack of advance technology.
- (3) Lack of training.
- (4) Lack of research and development in each industry, are cited as the outstanding problems.

The above study analyzed in tabular form based on some parameters given in form of table 2[7]. Other review of JIT shows that company are currently using mixing push-pull system, therefore it requires much effort to change this to complete pull system as the JIT philosophy said.

S.No	Parameters for study
1	Characteristic of JIT
2	Application of JIT in company
3	JIT in company
4	JIT philosophy in company
5	Benefit of evaluated JIT
6	The JIT purchasing part/supplier partnership of the company
7	The dignity/respect of individuals in the company.
8	Customer focus of the company
9	The practice of quality control aspect in the company

Table.2

The impact of the above parameters in graphically after study found is given below graph 1. [8]



Graph.1

V. CONCLUSION AND RECOMMENDATION

As the industries focus are facing fierce international competition in the face of global market. To be very effective, one of the best way to do so this is to evaluate JIT production system principals into their operations to provide better cost, quality, performance, delivery, flexibilities. In general to evaluate JIT, the company first made priorities like: develop controllable production system, responds to customer requirements, have a companywide defect protection program, train the work force to multiskill. The primary idea of this study is to helps to take initiatives evaluation of JIT in automotive production area in order to become more cost effectives well as quality in today's global market.

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