

Just In Time Manufacturing: A conceptual survey & Its Application in ‘Bajaj Steels Ltd.’ Nagpur

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Abstract-In this paper, the various innovations done by the renowned scientists towards the JIT policy are studied and also how ‘Bajaj Steel Ltd, Imambada, Nagpur’ is implementing JIT technique is also pointed out. This method is not only successful in its origin country but also in various countries which truly believes that this policy is very essential in making the work less hectic. From all the resources available; the attempt is been made to make an effective survey of JIT manufacturing process. To make it more effective and bold, suggestion of some ideas is mentioned.

Keywords- JIT, Quality Improvement, Norms etc.

1. INTRODUCTION

1.1 Background of Studies:

Just in time manufacturing process is a type of operation management approach. JIT leads to significantly higher quality and productivity and provides visibility for results so that worker’s responsibility and commitment are improved [9]. It notably deals with the elimination of time, elimination of man work. The main aim of JIT manufacturing is to make work less hectic and with less man work to improve the quality of work. It means continues improvement in the manufacturing management process. For better steadfastness and compliance, companies implements JIT in their work. In order to improve in design, supply, distribution, production & marketing field or in overall system; JIT is the best ideology to follow. It is not just the technique but an Ideology.

The Japan originated JIT technique is now widely used all over the world in some large countries. Taichi Ohno in the late 60’s -70’s first made it into the account in Toyota manufacturing plants. At start it was just a method of improving the cleanliness of the factory. The proper meaning of the JIT manufacturing process is, ‘the continuous improvement in the time saving and more working process used in the manufacturing management.’ To reduce the man work and improvement of the work quality is the main motto of the JIT process. According to Voss, JIT viewed as “a

production methodology which aims in increase in overall productivity through elimination of waste & which leads to improved quality” [11]. It involves various steps which can be taken in consideration while performing the work in the industries. Elimination of wastage of time, wastage of more labor work and more importantly the wastage of quality and the quantity can be reduced by following the simple steps of JIT process [1]. The steps involved in this process: -

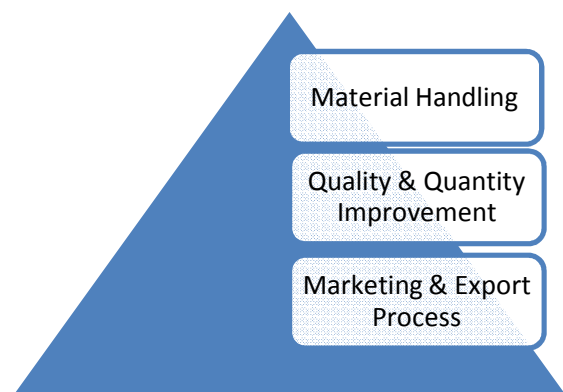


Fig1:- Processes involved in JIT

By following these three processes, one can do the work more effective and with ease. Research and application with respect to JIT proficiency has been reported in the various studies. The importance

of the manufacturing stages such as designing, production, supply, distribution and finally the quality and marketing process are been improved by this Japanese technology. By taking into consideration the importance of JIT process, an attempt has been made to review the literature process. JIT is moreover a team work than the individual work.

2. LITERATURE REVIEW

1) Concept of JIT Process:

A novelty of work lies in the use of a mix of qualitative and quantitative approaches, which not only evaluates the present system but develops an understanding of future challenges to continuous improvement [2].

JIT is just not limited to automobile industry; it can be applicable to everything. Like in agricultural issues, in aerospace issues, in educational field also. JIT goes hand-in-hand with the total quality management. Both these processes are sustained to do more work and improve quality.

Adie Hellihan & Gareth Williams pointed out that the aerospace industries are very much interested in involving the JIT technique in aerospace field, UK. The CEO of British aerospace (BAE) showed an interest in it. The high value material used in aircraft manufacturing and the complex bill of material structures give long lead time and increase the need to reduce work in progress levels. This can be completely utilized with the use of JIT technique [3].

The production cost can also be reduced if the supply and purchase department associate with each other in practical manner [1]. The Mann-Birlec division, Wellman furnaces, has recently designed, supplied and installed a third integrated casting and rolling line in Japan for the production of aluminium and aluminium alloys at the works of Nihon Atsuen Kogyo.

They are applying this just because the JIT technique has gain the tremendous success in former country far more than anything else in its high success rate.

Alejandro A. Loreface stressed on the four conditions which are required for implementing JIT. People involvement, planning, systematic work and purchasing are the basic conditions to follow to make it more effective [5]. When we talk about wastes in JIT, we are not referring to loses or diminish in materials, but to those activities that do not add value to the production process. In JIT, success relies both on the workers and the supervisor, if they both work as a team it would be done more easily and in shortest possible time hence reducing the hectic time work and increasing the manufacturing process. This

can be helpful to avoid the risk that might increase inventories.

“Just in time system is an approach for providing smoother production flows and making continuous improvements in processes and products”. [8]

When moving from traditional purchasing to JIT purchasing, there is a need to overcome any sort of resistance from employees [7].

JIT implementation often waits for organizational changes to catch up. Sustaining the continuous improvement philosophy of JIT is critically dependent on this organization transition. Implementing JIT requires a plan along with commitment. This plan should be an integral element in the company's total business plan [8]. JIT technique is not new to the present image of the industrial view neither it is limited to any particular country. As it has large beneficial around the globe in every field, many countries have adopted it and others are going to implement it to stay focused in this fast growing industrial arena.

Talking about the Indian industries, the JIT is implemented in Volkswagen India, Lukas TVS & Tata industries. Although they are implementing it, yet it is not fully making its presence valuable. Thorough acceptance is lacking which leads to less in production.

Genichi Taguchi once said that, “In India and nearby countries, the insistence is on the sophisticated machines and high material but the quality and assurance is not up to the level.” JIT has the potential to increase the organizational performance of the Indian industries [9]. Indian industries must be willing to apply this technique. Now Tata and some more companies have taken the interest in it; hopefully they will make the most of it.

In Libya, where the industries have not gained much importance, because they were unaware of JIT technique. But after applying the JIT in Libyan industries they came to know that the application of JIT system in the local environment can provide a number of advantages for example: decreasing storage cost, decreasing work force, increase the number of qualified expert, and well trained personal, plus developing effective programs [10]. Also the adoption of this system would affect the cost improvements in Libya which, in turn will affect other sectors.

JIT is a system of manufacturing logistics in which materials or parts are ordered and delivered just before they are needed in the production process. As a result, JIT manufacturers gain flexibility in their ordering decisions, reduce the stocks of inventory held on-site, and eliminate inventory carrying costs [6].

The costs of JIT and the alternative manufacturing practices all depend to a large extent on the utilization of factory labour, and the total cost of labour does not vary much depending on whether JIT is used. Compared to alternative production methods, successfully implemented JIT is typically associated with more extensive utilization of labour and higher productivity [3].

JIT technique is now rapidly patting its existence all over the globe to make the respective country more powerful in manufacturing management.

2) Objectives of JIT Process:-

- Reducing the set-up timing with a quality work in quick-of-session.
- Production management with zero error.
- Concentrating on the improvement of Industry's position in this fast growing Industrial period.
- Ultimate Increase in the Productivity.

3) Application of JIT process:-

In this section, the implementation of certain 'Norms' in Bajaj steels ltd. Imamabada Nagpur are discussed. The above mentioned industry is well known for its production in Double Roller (DR) Ginning Machine which is use in cotton process. The machine has demand from all over the globe. For the production process, the company has set up the certain Norms for each department to work accordingly. Being a seasonable production, the company manufactures about 48 complete assemblies of machines in approximately 8 hours including 11% of relaxation time. Proximately around 450 workers work to do the job. The different Norms for the different departments are as follows-

I) For Machining Shop

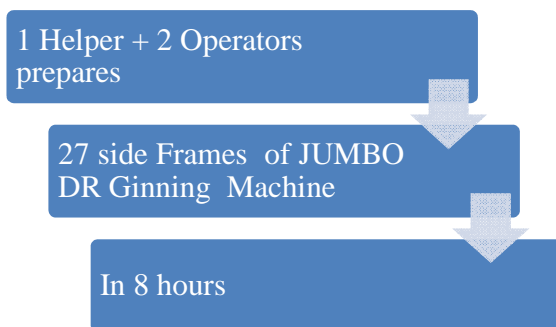


Fig2:- For Jumbo Machine Side Frame

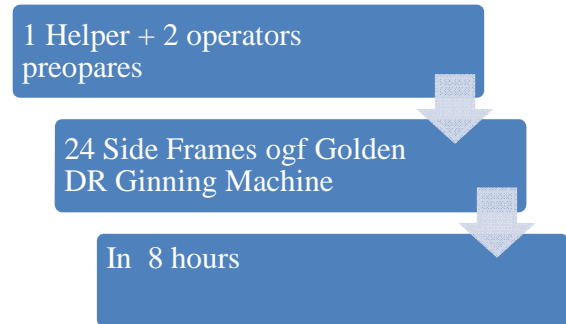


Fig3:- For Golden Machine Side Frame

II) For Assembly Shop-

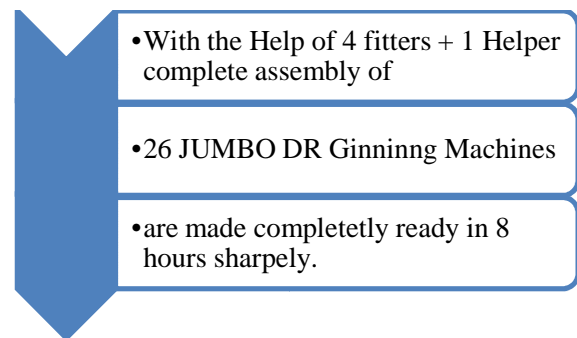


Fig4:- For Jumbo Machine Assembly

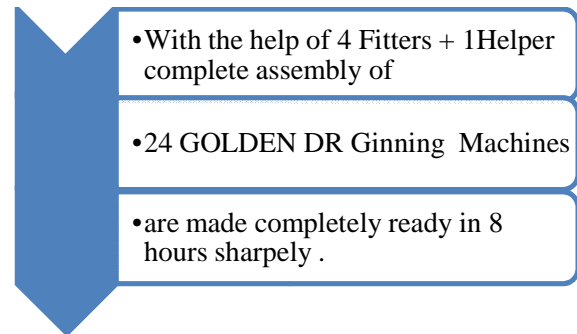


Fig5:- For Golden Machine Assembly

These Norms are nothing but the implementation of JIT technique. Norms are full filling the definition of JIT i.e.: - more and more work in shortest possible time with less man work. They have given the new name to JIT technique in their own form. It is not that the Indian industries are not implementing JIT, but in a different way. Though it needs to be imply more to give more effect & improve the industrial scenario in the Indian environment.

3. FRAMEWORK

As JIT has gain the importance in all the fields, the implementation should be done in agricultural field, in banking field, in educational field as well. In educational process, by providing the every student with a unique code so that after putting the particular code; the computer will automatically locate where the book is actually located within a fraction of second hence reducing the extra time & delay time which is very important in today's fast learning world.

As in banking process, the use of software's is now the need of every working officer. Everything is computerized now. While doing the banking work; the software generally slowed down because of the routers down server which leads to time wastage of the needy people who want the money for some urgency. If the routers are replaced once in every month; then this problem will get solved quickly hence reducing the time wastage and increasing the customer arrival in the bank.

In industries, the handling of heavy & large machining parts is very hazardous; it can cause some serious issues. To avoid this scenario, highly equipped machines, trolleys, chain hoist arrangements should be provided to increase the work & use the time to the fullest. This can save the man work and that will reduce the delay in time which in other words is the main motto of JIT.

Now the Government in India has put up their hands in the manufacturing management process. The tie-ups with the China and Japan government recently have showed up that India is on a way to improve more as a manufacturing country. JIT is must applying process in India because approximately 1/3rd of the world's 4-wheeled vehicles run on the roads of India & it is necessary to improve more in automobile field. The intentions are very clear that the Indian government is on a way to become more powerful in management manufacturing processes and JIT is the need of it. India should take the help from Japan in this subject as JIT is originated from Japan.

4. MOTIVATION

JIT emphasizes on quality, which is essential for a JIT system. JIT system is designed to expose errors and get them corrected rather than covering them up with inventory. JIT can be applied to many subsystems of a manufacturing environment such as engineering design, setup time and lot size reduction, purchasing, flexibility, suppliers' management [9].

JIT is implemented in many countries such as in Korea, Japan, US, Germany that is the reason of these countries reaching higher & higher stage in every field.

JIT is an Ideology of eminence in the entire organization, depending upon the quality by eliminating wastages to improve quality with quantity sufficiency.

5. CONCLUSION

The ultimate aim of this paper is to stress more on JIT technique, its implementation & about the process of work. JIT is a better tool that can benefit the company to improve their performance. JIT can be applied to any working process within the industry. In this way, JIT technique can leads to TQM to improve efficiency and performance.

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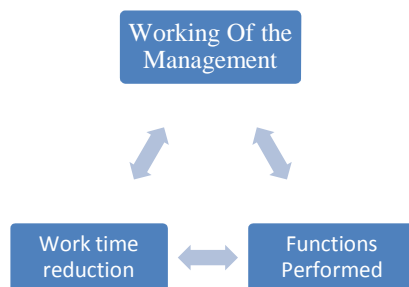


Fig6:-Governable Requirements of JIT

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