

Standardization of Work in a Manufacturing Industry

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Abstract - Standardization procedures are important in all the organizations as it may lead to better material flow, quality and productivity. This paper mainly deals with the need of standardized procedures in a manufacturing industry and emphasizes on improving the quality of standard procedures. There is a need for standardized procedures, which provides solution that account for uncertainty and variability during production process.

machines, equipments, and other manufacturing supports and facilities to create the most effective standardization of work. Work standardization which comes under Toyota Production System needs to be implemented in HMT, to ensure a better flow in the production line to decrease errors in production.

Toyota production system is based on two philosophies- elimination of waste and respect for people.

Key Words: Standardization, Manufacturing, Quality

1. INTRODUCTION

There is an emerging consensus that existing layout configurations do not meet the needs due to which there is a need for a new generation of standardized work that is more flexible, modular. Flexibility, modularity, and re-configurability could save factories the need to redesign their layouts each time their production requirements change. Re-layout can be highly expensive and disruptive, especially when the entire factory has to be shut down and production stopped. Equally important is designing layouts that can support the need for increased customer responsiveness in the form of shorter lead times, lower inventories, and higher product customization. As a result, layout performance tends to deteriorate significantly with fluctuation in product volumes, mix, or routings such as work-in-process accumulation, queue times at processing departments, and throughput rates.

Hence, there is a need for standardized work that is more flexible and responsive. There is a need for standardized work sheet, which provides solution that account for uncertainty and variability during production process.

2. APPROACH TO SOLVE PROBLEM

In industry sectors, it is important to manufacture the products which have good quality products and meet customers' demand. This action could be conducted under existing resources such as employees, machines and other facilities.. Work standardization has become a fundamental basis of today's industrial plants which can influence parts of work efficiency. It is needed to appropriately plan and position employees, materials,

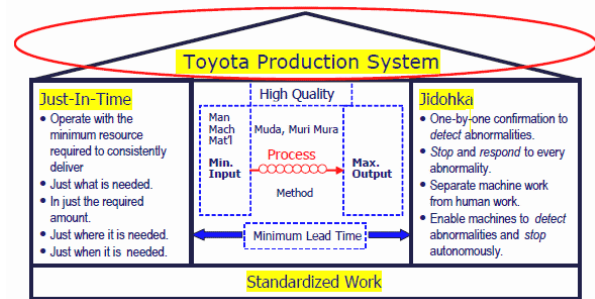


Chart -1: Toyota Production System

3. DEFINE THE PROBLEM

There is less production in the spindle department and it decided to add an extra lathe to the unit. The departmental flow in the spindle section of HMT can be understood from the following figure.

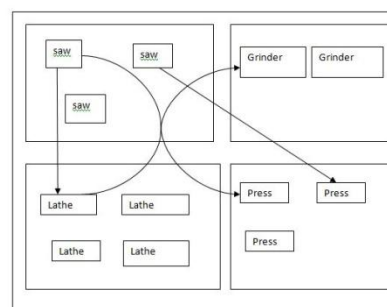


Fig 1: Flow of material

4. OBSERVING THE PROBLEM

The unit was checked for a one day shift of 8 hours, and the following data were obtained
 The capacity of the machine = 1920
 The demand by the customers = 1580
 Actual production by machine = 1200

So a demand gap of 380 and capacity gap of 720 were found in the spindle unit. So it was decided by the management to add an extra lathe to increase production and to meet the demand.

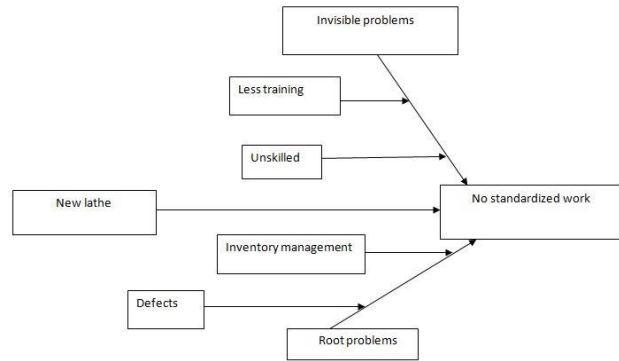


Fig -2: Problem and its causes

5. FOLLOW UP THROUGH STANDARDIZATION

Standardized work is one of the most powerful but least used lean tool. By documenting the current best practice, standardized work forms the baseline for kaizen or continuous improvement. As the standard is improved, the new standard becomes the baseline for further improvements, and so on. Improving standardized work is a never-ending process.

Basically, standardized work consists of three elements: Takt time, which is the rate at which products must be made in a process to meet customer demand. The precise work sequence in which an operator performs tasks within takt time. The standard inventory, including units in machines, required to keep the process operating smoothly.

Establishing standardized work relies on collecting and recording data on a few forms. These forms are used by engineers and front-line supervisors to design the process and by operators to make improvements in their own jobs.

6. RESULT

A work standardization chart consists of following documents Title , Work area, Author, Revision date, Work sequence, Approvals, Document location and ownership.

Standardized Work		Revision Date:		Walk Time:		Manual:	
Combination Sheet		Revision #		Manual Time:		Automatic: - - - -	
#	Element	Time	Count	Takt	Head	Cycle	Time
#	Element	Time	Count	Takt	Head	Cycle	Time
1	Pick up RM	2	2				
2	In/re-load start M1	46	21				
3	In/re-load start M2	46	24				
4	In/re-load start M3	46	18				
5	Gauge shaft OD	7	2				
6	Put down FG	2	2				

Fig -3: Work standardization chart

7. SUGGESTIONS

This technique can be spread to the other machines and departments. The non value items could be squeezed out and worked. The benefits of standardized work include documentation of the current process for all shifts, reductions in variability, easier training of new operators, reductions in injuries and strain, and a baseline for improvement activities. Standardizing the work adds discipline to the culture, an element that is frequently neglected but essential for lean to take root. Standardized work is also a learning tool that supports audits, promotes problem solving, and involves team members in developing poke-yoke.

The following suggestions have been made to improve the utilization of the machines. There should be a change in the lay out to improve the utilization. There should much more advanced material handling system. Introduction of new machines may alleviate the problem. Multi skilled employees should be introduced to the organization. Introduction of CNC machines helps to improve plant lay out. Improved lay out design would help the company to reduce production cost.

8. CONCLUSION

Toyota Production System is a continuous improvement program which is based on long term. In TPS, large number of non-value-added steps was squeezed out. Toyota system demonstrates that focusing on quality actually reduced cost more than focusing only on cost. Standardized work is a foundational element of lean manufacturing methodologies. Without it, the gains made from organizing work cells, creating flow production, and starting continuous improvement teams will only be

temporary. Implementing standardized work is never easy. The detail requirements and information have to be uncovered, revealing questions and new concerns. Time observation is time consuming, and often an unpopular activity on the plant floor. Standardized work activities are never finished. Lean manufacturing strives, but never achieves perfection, and with every new step towards perfection, the standardized work changes. But the hard work and the constant striving to improve are worthwhile. Improved quality, productivity, safety and customer satisfaction is the reward.

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