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LEAN MANUFACTURING; IS IT WORTH IT?

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Lean Manufacturing allows manufacturers to quickly react to changes in customer demand and do it with little inventory. The days when companies could stockpile large quantities of raw materials, load up production with work in process, and stack up finished goods are history. In these changed times, lean supply chain performance must be the goal of every manufacturer. Creating the lean supply chain by streamlining the business and production processes to significantly reduce cycle time, decrease inventories, lower costs, and increase customer service, has become the mandate. Is it good for your organization? Let us explore …

The scenario of many businesses or shop floors may look different to many eyes, yet they look analogous in many ways to the lean mind. An auto component manufacturer was thinking about giving up the supply of a particular part because he was neither able to supply the demanded quantity nor make money on it. The order was lucrative because it gave their forging business a huge tonnage and turnover, but it was on the machining side that they had problems. The machinery installed was imbalanced in cycle times and their thinking did not address the best possible process. The designs of the machines installed were poor and inadequate in areas of torque, thrust, wear resistance, power etc. The parts were therefore sent to different vendors for machining. The bronze bush was reamed after fitting into the part, and this operation not only destroyed the surface finish on the bush but also reduced the depth of the oil retainer groove. The result was a struggle to meet the demand thereby allowing compromises in quality.

When you map the processes in discrete organizations, this is not an uncommon scene. When they were helped with some lean thinking, they realised that the price they were paid was fair but they were really loosing money in the following wastages they had created:

Over Production - their discrete manufacturing process with its imbalanced cycle times, production lines and uncertainties led them on the path towards producing more than the required quantity. They were pushing rather than applying pull.

Defects and Rework - their discrete process was not 'mistake proofed'. The process and equipment used allowed deviations to quality requirements and therefore had to be reworked for corrections where possible.

Movement - men were moving to each vendor location to chase the parts, QC inspectors were moving to each vendor location for inspecting the components, vehicles were moving to ferry the parts, not to talk of telephone calls, documentation etc.

Transportation - to and from the various vendors (people, materials and information)

Excessive Inventory - which they had to maintain as raw materials and WIP w.r.t. each vendor, and owing to the uncertainty in their process

Over Processing - their discrete process did not have any capability. So they had to perform operations that were actually not necessary (such as reaming a fully finished bush after fitting it).

Waiting Time - they had partially finished goods always waiting for instructions or transport to be moved, material waiting for instructions (processing, rework, inspection or movement). The concept of takt time or balanced cycle times was not used.

They decided to correct the wrong and meet the demand requirements, which was doubling their existing production, and knowing that demand could increase too. They decided to invest in a new process through a SPM that would combine different operations into one and eliminate the variability, eliminate the inventory and movement of material, eliminate the need to over process, reduce through put time, control process capability and guarantee both the quality and cycle times. The result is their manufacturing cost is reduced by half; they are back in business and excited about it.

From an inventory turn of about 15, they can approach 300. How did this company from a point of no return become tomorrow's industry example? What did they do? All they did was change their thinking!

A product maker supplying assemblies to the auto industry told me that although they have managed to

make money, their margins and profitability have been coming down every year. For the few parts they have per assembly, they have a surprisingly low inventory turn ratio of 6. The reason is their present discrete manufacturing practices, scattered process layout, not addressing flow, allowing problems to remain hidden, perception of problem is only size variation, imbalanced cycle times, absence of pull and dominance of push, imbalanced inventories, excessive people, etc. Commencing their lean journey with the help of a lean consultant, over the next one year they can triple their inventory turns, and over a further 24 to 36 months they should achieve 100 inventory turns.

From almost being a disaster in manufacturing what is going to make all these companies tomorrow's manufacturing example in excellence? It's their thinking and their vision for tomorrow. But more than anything it's their ability to make decisions and take actions today, as no dream or vision can be achieved without actions. Remember as you think, so you reap. Your tomorrow's results depend on your today's thinking - for your results will be based upon your actions, which will depend upon your thinking. So, does lean manufacturing merit your consideration? Is it really worth it? Look at what the CEO's in these organizations are going to achieve over the coming months. It is for you to answer. "Innovation is everybody's job," says Gary Hamel, 'but the engine at the top has to work to get it going'. I have seen organizations revel in doling out comparative figures of performance improvements; but few can quantify their increased value to the customer year on year.

Lean Manufacturing is a high velocity order-to-delivery process that many manufacturers have successfully used to improve their overall business performance. In the lean environment they operate in, they pull the inventory and allow it to flow only when there is need to satisfy a customer requirement. This means the entire organization must be configured for maximum flexibility and quick response to customer orders - standard or special doesn't matter. The demand based pull these companies use is in sharp contrast to the MRP based push used by companies that end up with unwanted inventories, slow response times and all other forms of wastes. The push system cannot respond quickly to changes that customers really want resulting in high lead times, more inventory and lesser service to customer.

Lean Manufacturing was originally conceived for low volumes and high variety. Today we know it can be adapted to any environment - high or low volume or variety. It is not necessary to have high volumes or repetitive production environment to achieve a synchronized high velocity flow of information and material. Using lean tools and techniques and the right quality information it is possible to create a fast and flexible order-to-delivery approach and neither the complexity of the product nor its variability can pose a problem. As the market place mandates more high velocity and on time delivery, customers can, and will change suppliers when they are unable to get the goods as they need them. The objective is to get today's orders ready and shipped without letting yesterdays order get in the way.

Lean Manufacturing is about total flexibility and throughput, emphasizing on reducing the order-to-delivery time to the bare minimum. As a result far reaching cultural and process changes are required to be brought in. This is necessitated by the need to substantially redesign the business processes in the flow of information and material in the entire order-to-delivery process and not just in 'some' such as inventory alone.

When inventory accumulates in buffer stocks, it is the cause of excessive cycle time with serious imbalanced and unsynchronized flow resulting in excessive and unbalanced stocks of raw material, WIP, sub-assemblies and finished parts. This is also the result of poor information flow. In such companies scheduling and rescheduling is a common sight because doable schedules are never achieved. So you see, it's easy to identify a company that can benefit from lean manufacturing.

Manufacturers who can implement lean processes usually end up cutting their cycle times by more than sixty percent. Imbalanced production schedules, WIP queues, and high fixed costs result in high inefficiency costs. Lean Manufacturing drives out this inefficiency and therefore those costs. In the figures 1 & 2, the manufacturer has cut down through put time that varied from two to three weeks to single digit (less than ten minutes), the working capital requirement has dropped dramatically, and the money can now be cycled into other investments.

When too many variations and manual interventions are present, the problem is not only to cut out non-value-added activity, but should also be that of value-subtracting activity caused by errors everyday. Lean Manufacturing mandates the necessity for faster flow and better balance of material through production. Companies will need to reconfigure their manufacturing processes from large lot and functionally oriented methods to more flexible and quick change over smaller lot method for fast response and higher through put. While most times improvements can be made with existing equipment, some times easily justifiable investments may be called for. The objective of higher through put and lower cycle time is better customer satisfaction and not mere reduction of labour and inventory costs.

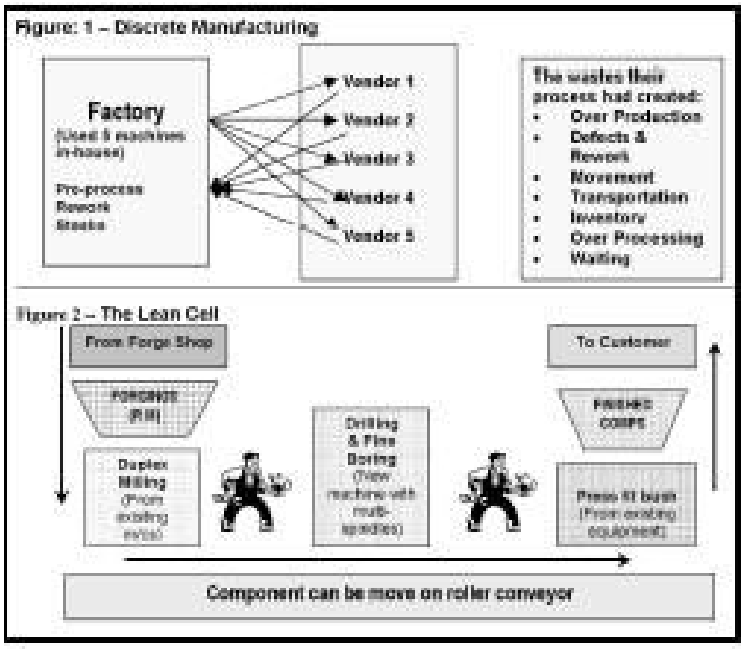
I have seen discrete performance evaluation matrix used in different organizations, some run into many pages. Few have theirs performance matrix linked to their goals, for these need to change every year. That is why this is one of the weak links in many organizations. At the same time just changing performance

matrix will not change the organization to lean, although they are critical to the transition. While managements can ask for anything, they will only get what is encouraged by the measurement system. Some goals that you can include in the lean matrix for performance evaluation are: Reduction in Manufacturing Cost, Reduction in Manufacturing Lead Times, Overall Throughput Time Reduction, Reduction in Inventory, Inventory Turns, Quality Indices, Reduction in floor space utilized, Reduction in material cost (purchasing cost), Price reduction to customers, On time delivery performance, Customer Satisfaction Index, Reduction in Number of Vendors. These can be measured against realistically set goals over fixed periods that may be quarterly, half yearly or annually.

The advantages of Lean Manufacturing go beyond the productivity gains and cycle times. Yet lean manufacturing is only as good as your weakest link. System enablers can link the entire enterprise and the supply chain. When redundancies are eliminated productivity improves. Orders can be processed without uncertainty, queues, or abundant paper work. The lean flow now faster will enable you back flush the cash easing cash flow, and payments to vendors. Lean also requires high information quality and close coordination with suppliers whose processes and systems need to be upgraded to get their performances synchronized using your new level of capability.

Getting started with an effective program involves careful planning, design and execution of the business changes and the need to achieve the desired goals. Implementation should only begin when top management is championing the effort with an understanding that many processes need to be changed. Decide to invest in lean manufacturing and set the direction for the future. Think of lean as a competitive strategy for gaining market share, generating more revenue, more profits and adding more value to your customer. Inventory and cost reductions are byproducts. Think, if your competitor's get ahead of you in terms of response, delivery, profits etc., you are in the worst position of always trying to catch up. Just look at Toyota - the leader always makes more money than the crowd put together.

So does lean manufacturing merit your consideration? You have known about some Japanese companies doing a 500-year plan for the future. Many Indian companies do a five-year plan. But the answer really depends on your vision of tomorrow for your company. You think, you decide. You know the industry examples of yesterday today. Tomorrow you will know of today's industry examples. The question is do you want to be one of them? The answer to that question is in your hands. If your answer is yes, there isn't a better way to act than to move over from your discrete manufacturing practices. Welcome to the world of Lean Manufacturing.



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