

HEALTHCARE

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Time for Lean Thinking?

Lean Manufacturing in Healthcare

In recent times, there has been increasing pressure to reduce costs across all sections of the healthcare supply chain including manufacturing. This pressure, which is in direct response to the rising cost of healthcare provision, is coming mainly from state and private medical insurers both in Ireland and across Europe and represents one of the key drivers of change within the sector. It has prompted many companies to develop in-house 'Lean Manufacturing' programmes (although the term 'Lean' may not actually be used) to improve the efficiency of their manufacturing and business processes.

Whatever banner is used, the most effective programmes are those based on Lean philosophies with established best practice tools and methodologies being applied by well supported (and trained) project and process teams.

What is Lean Manufacturing anyway?

Lean Manufacturing is essentially a philosophy and a set of tools and techniques which aim to significantly reduce waste and not just waste in the traditional sense of the word but waste in the wider sense of any cost added to a product or service which does not add value to it. When Toyota were originally developing the Lean Manufacturing concept, they defined waste as "anything other than the minimum amount of equipment, materials, parts, space and workers time which were absolutely essential to add value to the product". By actively and aggressively tackling the causes of waste in an operation, the associated production costs can be significantly reduced.

Toyota identified 4 primary wastes:

1. Excessive Workforce
2. Overproduction
3. Excessive Inventory
4. Unnecessary Capital Investment

There are several levels of cost associated with each primary waste. Just think of the costs incurred through overproduction. If you make more than the amount you need, you create excessive inventory. Now you have to store the extra inventory which ties up costly factory space or may require the building of a warehouse.

You have to hire and pay additional workers to transport the materials in and out of the storage area. You have to buy and maintain transport and handling equipment. You have to buy the hardware and software for computerised inventory control. You have to hire and

pay a person to operate the computerised inventory control and so on including administrative and depreciation costs.



The fact that many healthcare factories are still built around a huge warehouse demonstrates that the sector has been slow to adopt true 'Lean' thinking.

How does it work?

Another way to think about 'Lean' is that it is essentially about using equipment, people and materials efficiently. There are established best practice tools to help to achieve this and to reduce the primary wastes to a minimum.

Using Equipment well

The objective should be to achieve high overall equipment effectiveness (OEE). OEE is a comprehensive metric that captures all equipment related losses and expresses them as a combined percentage. A good Preventative Maintenance programme (PM) is an important part of achieving this objective but it is not sufficient in itself. TPM (Total Productive Maintenance) is a more advanced and comprehensive approach to equipment management.

TPM still includes all the elements of preventative maintenance but whereas PM only aims to ensure that equipment is kept available for production, TPM goes much further by also focusing on how well the equipment is used when it is available. Its aim is not just to prevent breakdowns but to proactively work to maximise equipment performance and utilisation. A TPM system will usually include the following:

Focused Improvements: Improvement Projects or Kaizen events to increase OEE on bottleneck equipment using cross-functional project teams.



Autonomous Maintenance: Daily cleaning, lubrication, tightening and checking carried out by equipment operators rather than dedicated maintenance personnel.

Preventative Maintenance: The periodic inspection of equipment to detect machine deterioration and a system of periodic overhaul to correct this deterioration.

Technical Training: Technical training on equipment maintenance and operation at both operator and maintenance engineering levels should lead to better and quicker diagnoses of equipment deterioration and to a substantial reduction in the number of breakdowns due to improper operation. The training needs to be structured but can be very effectively delivered on the shop floor as a series of short one-point lessons.

Using Materials well

Here the objective is to avoid overproduction and to achieve low inventories, reduced waste and rejects and fast throughput.

Pull based Scheduling: Pull systems such as Kanban or make to order are used wherever possible to control production. The link to customer demand offered by pull systems allows inventories to be reduced and avoids obsolescence.

One Piece Flow: Again wherever possible, production is organised into cells with one piece flow. This minimises lead times and combined with quick set ups, contributes to reducing inventory and WIP. It leads to dramatic reductions in reject levels, and the inherent velocity can significantly improve productivity.

Using People well

World class productivity levels require a high level of motivation among shop floor employees. They measure, review and display their own key performance indicators and initiate their own improvement projects. Operators are organised into cells and self-directed shop floor teams. They are typically remunerated via skill based pay systems with annualised hours and often participate in gain or profit sharing.

The real value of 'Lean Manufacturing' is that through various improvement activities and best practices, it can significantly reduce the waste, which is inherent in most established processes. 'Lean' companies can make profit even during periods of negative growth because their systems prevent excessive headcount and inventory and the associated costs.

BEST PRACTICE SURVEY

The BSM consulting team recently conducted a snap survey of the application of best practices by 10 of their Healthcare manufacturing clients. The results were as follows:

- 'Pull' systems used where appropriate
true in 30% of cases
- OEE and losses routinely measured & displayed
true in 20% of cases
- Comprehensive autonomous maintenance process in place
true in 20% of cases
- Set-up times routinely monitored
true in 10% of cases
- Kaizen improvement event in last six months
true in 10% of cases
- SPC Control charts used where appropriate
true in 20% of cases
- Vendor managed inventory used where appropriate
true in 30% of cases
- Queue size limitation/one piece flow used where appropriate
true in 20% of cases
- Shop floor teams hold daily huddles
true in 30% of cases
- Shop floor Operators routinely measure own performance
true in 40% of cases
- Routine interaction between support groups and shop floor Operators
true in 30% of cases
- 360 degree feedback process routinely applied
true in 20% of cases
- Organisation structure as flat as is practical
true in 40% of cases
- Business issues routinely communicated throughout organisation
true in 40% of cases
- Intranet used to support knowledge management
true in 10% of cases
- E-business strategy documented for the Irish facility
true in 30% of cases
- Thorough objective cascading process in place
true in 20% of cases

The results above are based on the judgement of BSM consultants involved with the client companies. We intend to conduct a more comprehensive CONFIDENTIAL benchmarking survey in early 2002.