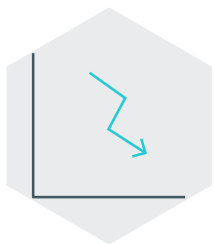


# Concepts of Lean Manufacturing

You would use this approach approach to stabilise and standardise processes, eliminate waste, develop flow, increase responsiveness to customers and engage people in continuous improvement and problem solving.

## Projected performance gains



### Reduced

- Cost
- Waste
- Inventory, Lead-times



### Increased

- Throughput
- Productivity
- Quality
- Morale

## What investment is needed to start the analysis?

### DIFFICULTY



### Simple

The basic concepts are simple and it's not difficult to make a start

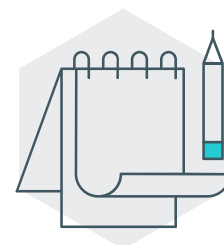
### ACTIVITY



### Team and Individual

This process can be conducted either as an individual or in a team

### EQUIPMENT



### None

Concepts of Lean Manufacturing should not require any equipment



## What is Lean?

The key concepts of Lean were described by Womack and Jones in 'Lean Thinking' as the following five Lean principles.

### 1. Define Value

- Have an uncompromising view of Value as being that which **the customer is prepared to pay for**
- Identify everything else as non-value adding Waste, and seek to eliminate or minimise

### 2. Understand the Value Stream

- From Goods in to Despatch
- Map out the steps required for you to meet customer orders
- See "the good, the bad and the ugly" in the 'Current State'
- Develop a 'Future State' plan

### 3. Make Value Flow

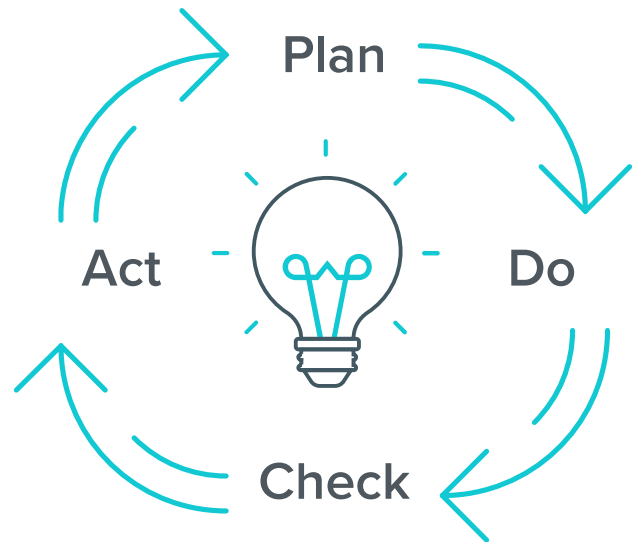
- The lean ideal is "one-piece flow", where parts are produced one at a time, often using "cells" to balance machine and people time.
- In order to make value flow, there will typically be a need to address constraints which are currently driving "big batch" production, including:
  - i. Replacing disconnected batch processes with manufacturing cells
  - ii. Eliminating time-consuming machine changeovers
  - iii. Addressing reliability issues
  - iv. Scheduling differently

### 4. So that you can respond to the Pull of the Customer

In a lean system, each process step only produces what the next process is asking for or ready for. This can be a "Kanban" system, for example a finishing process is scheduled every day to replenish the parts which have been removed from the warehouse stock to fulfil customer orders.

### 5. Seek Perfection

- Once significant initial steps have been taken, this is never the end.
- In truly lean companies, there is a continuous and relentless drive to seek perfection.



**Cell Manufacturing** - An approach whereby a number of machines or process steps are grouped together, often in a "horseshoe" shape, so that an operator can produce parts one at a time in "single-piece flow". This replaces the "non-lean" idea of producing on individual machines in larger batches, and introducing large amounts of work in progress (WIP) and long lead-times to complete the process.

**PDCA** - A cycle of problem solving improvement. Plan an improvement, Do something, Check to see what effect it has had and then Act to either Adopt/Adapt or Abandon the change.

## What action should I take?



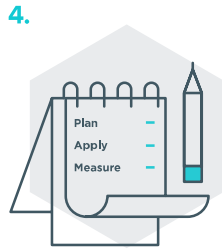
Identify the main value stream(s) in your business and select a priority for improvement.



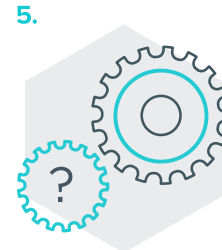
Define Value and Waste in the value stream.



Put together a Value Stream Map for the current state (Ideal) and future state (Next).



Develop an achievable action plan to achieve the "Next" Future State in 6-12 months.



Review progress using the "Plan Do Check Act" (PDCA) approach

1. Carry out a waste walk
2. Take action to stabilise the process where necessary (it is difficult to improve an unstable process)
3. Standardise Work
4. Addressing Machinery Reliability issues
5. Use Visual Management to support this

## Recommended resources



“The Toyota Way” – by Jeffrey K Liker. Liker, J. K. (2004) The Toyota Way: 14 Management Principles from the World’s Greatest Manufacturer. New York: McGraw-Hill. ISBN: 9780071435635

“The Lean Toolbox, 5th Edition” - by John Bicheno & Matthias Holweg. Bicheno, J. & Holweg, M. (2009) The Lean Toolbox: The Essential Guide to Lean Transformation. PICSIE Books. ISBN: 9780954124458

“Lean Thinking - Banish Waste & Create Wealth in your Corporation” - by James Womack & Daniel Jones Womack, J.P. & D.T. Jones (2003) Lean Thinking. New York: Free Press [ISBN: 9780743231640] ISBN: 9780954124458



[GC Business Growth Hub Manufacturing Factsheet 07: Value Add and 8 Wastes](#)

[GC Business Growth Hub Manufacturing Factsheet 08: Standard Work](#)

[GC Business Growth Hub Manufacturing Factsheet 09: Kanban/Pull Replenishment Systems](#)

[GC Business Growth Hub Manufacturing Factsheet 11: Value Stream Mapping](#)

[GC Business Growth Hub Manufacturing Factsheet 13: Visual Management](#)

## Glossary

**Value Stream:** The entire series of events, value-adding and non-value-adding, which lead from incoming materials being transformed into what the customer wants.

**Cell Manufacturing:** An approach whereby a number of machines or process steps are grouped together, often in a “horseshoe” shape, so that an operator can produce parts one at a time in “single-piece flow”. This replaces the “non-lean” idea of producing on individual machines in larger batches, and introducing large amounts of work in progress (WIP) and long lead-times to complete the process.

**Kanban:** A visual signal to replenish materials. For example, a signal which says “Part XYZ has just been taken from stock – please make another”.

**Strategy Deployment:** A system by which each team and individual in an organisation is engaged in developing and executing goals which meet the business needs.

For more advice, case studies and additional factsheets visit: [www.businessgrowthhub.com/manufacturing](http://www.businessgrowthhub.com/manufacturing)