

What is Lean Manufacturing?

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Lean Guides for other sectors are available on our website
www.levantar.co.uk e.g. Lean Office, Lean Legal, Lean Engineering

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SMARTER BUSINESS THROUGH PROCESS IMPROVEMENT

This Guide includes the following pages?

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Why Read this Lean Manufacturing Guide?

- ▶ Lean helps you to produce your business outputs as fast as possible.
- ▶ The faster a business can convert a business enquiry to a finished output; then it can hold less raw material and finished stock inventory.
- ▶ Holding lower inventory levels means you need less cash to run the business
- ▶ Being able to produce work faster means
 - You can do more with the same resources (machinery , people)
 - You can complete work faster than competitors
- ▶ Is reducing the cash required for your business attractive?

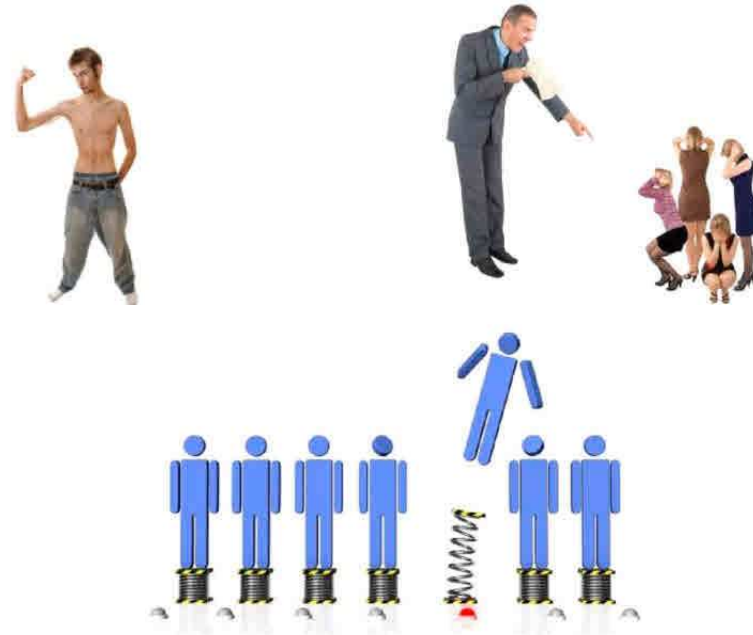
Lean Delivers

- ▶ Lean is proven to deliver
 - Increased Efficiency & Productivity - 15% more output with the SAME resources (staff, machines, work space)
 - Better Quality outputs (reducing re-work)
 - Better on time delivery performance (stop chasing work!)
 - Improved morale and employee engagement



What Lean Isn't

- ▶ Lean, is in our opinion, an unfortunate name for what is delivered,
- ▶ Lean ISN'T
 - About being SKINNY
 - Isn't about being MEAN
 - Isn't about cutting roles



Lean Isn't...



Lean is....

- ▶ “Lean” is the set of management practices based on the Toyota Production System (TPS).
- ▶ It has been applied in many sectors; engineering, manufacturing, call centres, service, legal.- This guide is for those involved in manufacturing.*
- ▶ One way of defining lean is in two parts:
 - ***Eliminate WASTE and non-value-added activity (NVA) through continuous improvement.***
 - ***Practice respect for people.***

*There are guides for other business types on our website

Waste and Value Added

- ▶ The opposite of **waste** is value-added, which has a special lean definition. An activity, in a process, is “**value added**” if, and only if, these three conditions are met:
 1. The customer must be **willing to pay** for the activity.
 2. The activity **must change** the product, making it closer to the end product that the customer **wants and will** pay for
 3. The activity must be **done right the first time**.

Respect for People - Leadership

- ▶ “Respect for people” is often harder to define.
- ▶ Lean leadership is about enabling and empowering people. Lean leadership is about helping people grow, allowing them to take pride in their work. Helping them and the business to continuously improve.
- ▶ Lean leaders recognise how a business operates. Lean leaders set targets for people, then spend time coaching staff to meet these. They spend very little time in their office.
- ▶ Lean Leaders see what is actually happening rather than managing KPIs and reading reports.

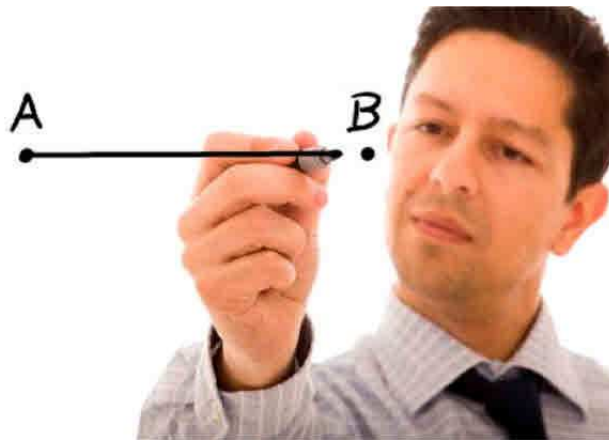
Why is Lean Manufacturing important?

▶ WIP

- **SIMPLE 3 little letters WIP or Work In Progress; WIP requires cash.**
- A customer orders from you. You start using to cash to pay staff to process the order, to design the parts, raw materials and sub-parts are ordered.
- Employees then convert the materials and sub-parts into the required products for the customer and these people need paying. This takes more cash - All this happens before payment is received from the customer.
- If WIP is high or rising, we've used up more resources
 - e.g. we've converted more cash to products that we've yet to finish or sell. To keep the business running well need to get hold of more cash. In the forms of loans, overdrafts, invoice discounting.
- Bring WIP down and the amount of cash required to keep the business running comes down.
 - E.g. we can reduce overdrafts, loans, finance arrangements.

How do you Reduce WIP?

- ▶ Find the fastest way of getting from A to B.



- ▶ If A is **customer order date** and B is **customer delivery date** then we want A to B to be as short as possible.
- ▶ The shorter we can make this then the less time we have to find cash for. Normally the shortest time to produce often comes out as the least cost, so we have to find less cash as well.

Looking for the 7 Hidden Wastes

- ▶ In any business there are a host of hidden wastes; these are the wastes that can't be seen without searching them out.
- ▶ Everyone can see the wasted paper, wasted materials and scrap but what about wasted time, effort, thinking, physical activity?
- ▶ Lean people will try classify the “waste” in one of 7 ways.



Lean Manufacturing – 7 Wastes

Read the next few pages.

If you find the examples of Waste familiar – you will benefit from Lean Manufacturing techniques.



The 7 Wastes

Waiting

Waiting for design sign off and approval.

Waiting for machines to come free – waiting for maintenance & repairs to finish. Waiting for tooling changes, changeovers, or tools to be free.

Waiting for material and parts to be delivered.
Waiting for quality checks.

Either the Machine or Operator is inactive during the process.

Waiting for previous jobs to finish.



The 7 Wastes

Defects and Rejects

Reworking errors
Re-inspection and sorting, recalls
Cost of Scrap and rejects



Extra labour costs (overtime) to make up production shortfalls due to poor quality
Extra transportation to remove and store rejects

Delays in process due to rejects produced

Information incorrectly recorded on job sheets
Incorrect specifications and information sheets

The 7 Wastes

Inventory

The often obvious sign of inventory waste is products made but not sold.

Sub assemblies made up but no finish dates or waiting for final build.

Batch Processing rather than single flow.

High Levels of consumables and raw materials.

Large amounts of racking and warehousing space.

The final sign is holding *“production progress”* or *expediting* meetings



The 7 Wastes

Overproduction

Making in large batches that don't match daily, weekly, monthly demand is symptomatic of Overproduction.

Making more products or units than you can sell immediately.

Making products or units before they are required by the internal or external customer.



The 7 Wastes

Over (Extra) Processing

Too many inspections or quality checks

Product features not requested by the customer

Excessive movement in the manufacturing process.

Large machine set-up or maintenance down time.

Bottlenecks in the manufacturing process.



The 7 Wastes

Motion

Searching for tools and materials to complete work.

Handling the units more than once

Turning, Stretching, bending, reaching to do the work.

Visiting other workstations or central locations to get stock, tools, consumables etc.

Visiting other areas for paperwork, quality checks, photo copying etc.



The 7 Wastes

Transportation

Unnecessary moving or handling of parts.

Handling equipment moving with no parts.

Raw material batch sizes not matching production batch size.

Materials, parts, stored a long way from point of use.



How Do We Find the 7 Wastes?

- ▶ Lean people call this “GEMBA” which translated means “go to the place”.
 - We go to the place where work happens and watch, observe, listen – only then do we ask questions, mainly WHY?
 - We’ll be producing another handout on GEMBA in the near future.

Lean Manufacturing Review

▶ Lean Manufacturing Review Service

- Levantar have developed a Lean Manufacturing Review Service.
 - We come to your site and assess what we believe you could attain from adopting Lean Manufacturing Practices;

 - i.e. What could it be worth? In terms of shorter delivery times, smaller amounts of labour input, quality measures etc.

 - You get a written report to help you decide whether you want to start a Lean Manufacturing journey.
- ▶ If you need any information in the interim, contact us;
- info@levantar.co.uk www.levantar.co.uk
 - Or call Mark on 01904 277007 or Neil on 0115 711 7007

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Thank you for your time in reading this.



As with all our work, it is subject to Continuous Improvement. If you have any feedback, thoughts or observations then send them directly to Mark Greenhouse, mark@levantar.co.uk, Or call on 01904 277007