

New Process Development

You would use this approach as part of the design of a new manufacturing process.

Projected performance gains



Improved

- Safety
- Customer satisfaction
- Predictability of yields and costs.

What investment is needed to understand the concept?

DIFFICULTY



Medium

Requires some reading around the subject and a structured approach.

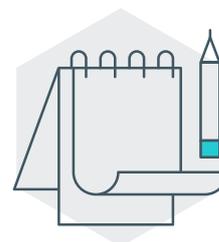
ACTIVITY



Team

Best results come from a team of Sales, Quality, Procurement, Production Planning, Engineers and Assembly Operators.

EQUIPMENT



Yes

CAD software or paper

Microsoft Excel

Process simulation software or boxes, tape, pens to manually recreate.

Explanation of the concept

Developing a new production process is an opportunity to create something better than what went before, and also to have confidence that the process will meet both customer and business needs. The customer wants a quality product, on time at the right price and the business needs a predictable process in terms of production costs, efficiencies and lead times.

Taking a structured approach to new process development will make it more likely that the needs of the customer and the business will be met.

A well designed manufacturing process should be:

- Safe to work in
- Meet the needs of the customer(s)
- Have predictable yields
- Have predictable costs
- Use Standard Work as a training aid to support daily work

In order to consider improving a process we should first consider some of the basics.

What is a process?

The steps to turn raw materials into an end product, these could include moulding, machining, joining, forming, packing etc.

How are processes performed?

By people and / or machines. Processes can be manual and / automated, and may or may not require human intervention.



Example of a Mock of Production Cell layout using "Cardboard Machines"

Cell Manufacturing

A proven example of process improvement is Cell Manufacturing. Here 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.

What action should I take?

1.



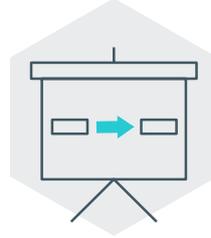
Create a team of Sales, Quality, Procurement, Production Planning, Engineers and Assembly Operators.

2.



Understand the predicted customer sales demand and potential growth, to determine the capacity requirements.

3.



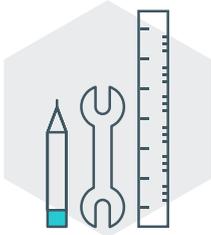
Perform a Process Mapping exercise to calculate the cycle time - see Recommended Reading for a template.

4.



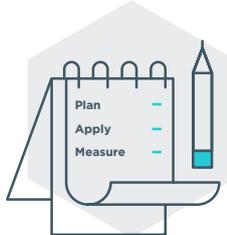
Understand the predicted yield from the line in terms of Right First Time - this will influence the capacity and production costs.

5.



Create targets for production costs, lead times and yield as early as possible. Use these to challenge the process, headcount and equipment selection.

6.



Create an initial layout for the production process - include production steps, material, parts and sub-assembly stores and movement, and space for any rework activities.

7.



Consider scalability in terms of how growth will affect the layout of the line and the people requirements. Use a modular approach to accurately predict capacity requirements.

8.



Develop the SOP and training plan in parallel with the physical line plan.

9.



Simulate the new production process running. Use software or mock up the process and have a go.

Recommended resources



[GC Business Growth Hub Factsheet 02: Concepts of Lean Manufacturing](#)

[GC Business Growth Hub Factsheet 03: SMED: Reducing Machine Changeover Times](#)

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

[GC Business Growth Hub Factsheet 14: Process Mapping](#)



Bicheno, J. (2004). The New Lean Toolbox. Picsie Books.
ISBN: 0954124413

Rother, M. and Harris, R. (2001). Creating Continuous Flow.
The Lean Enterprise Institute. ISBN: 0966784332

Glossary

Capacity Requirements: The people and equipment required to deliver customer demand.

Lead Time: The time it takes from order placement to the delivery of product or service.

Right First Time: The percentage of how many of the activities in a process were correct the first time.

Standard Operating Procedure (SOP): A document of the standard work.

Standard Work: An approach to standardise activities by breaking down tasks so that they are sequenced, organised and repeatedly followed.

Training Plan: It is very easy to focus on the technical solution and forget that people who will run the new process need to be part of the process development from the beginning.

For more advice, case studies and additional factsheets visit: www.businessgrowthhub.com/manufacturing