

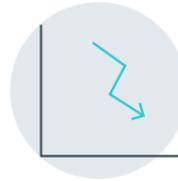
You would use this approach to improve production flow and reduce manufacturing lead times.

Projected performance gains



Improved

- Production flow



Reduced

- Bottleneck processes
- The 8 lean wastes

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 Engineers and Assembly Operators

EQUIPMENT



Possibly

Additional benches, racking, tools or even machines

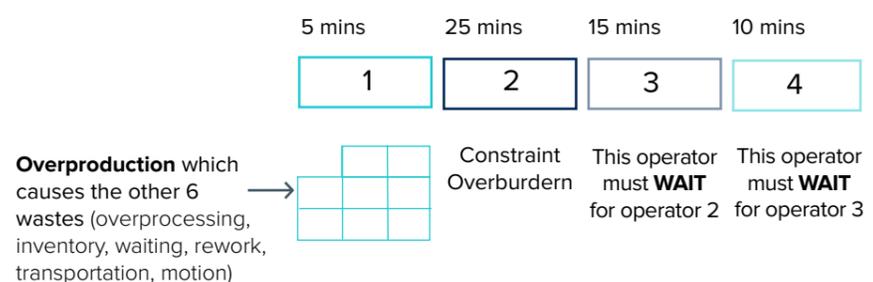
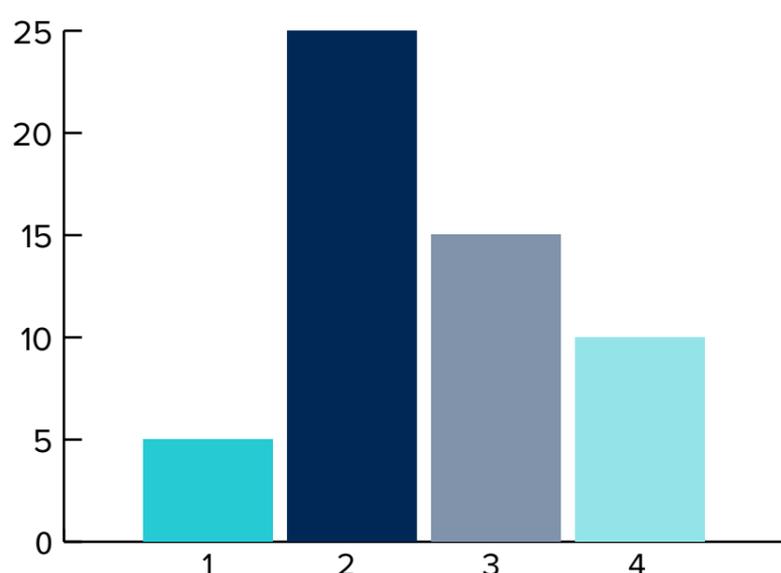
Explanation of the concept

Line Balancing is targeted at improving the flow of a production line. Improving the flow has a number of key benefits:

- Reduction in manufacturing lead time as products move through the process faster
- Reduction in Work In Process (WIP) as there are fewer build-ups of WIP in the process due to unbalanced Cycle Times
- Identification and reduction of bottleneck processes
- A more predictable and easier to manage process to work in and manage.

In the diagram, the columns represent the different Cycle Times of the process stages. Clearly they are not the same as each other. Stage 1 is a fast process and this causes a build-up of WIP in front of Stage 2 which has a much longer cycle time. Stage 3 spends much of the time waiting for Stage 2 and Stage 4, because it is faster than Stage 3, also waits.

Line Balance: Simple Example



The solution is to balance all four production stages. This can happen in a number of ways:

- Add machines/tools/people to Stage 2 to break the bottleneck
- Take some of the work from Stage 2 and redistribute it to Stage 1
- Share work content across all four production stages to equalise the Cycle Times as much as possible.

What action should I take?



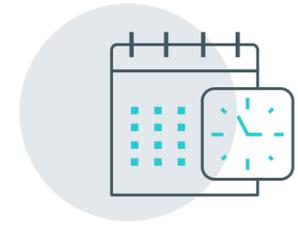
1

Gather together a group of Engineers and Assembly Operators



2

Explain the concepts behind Line Balancing



3

Time all of the process stages to calculate the total work content



4

Look for opportunities to redistribute work content to equalise Cycle Times



5

Invest in additional tools/machines/people to break bottlenecks.

Recommended reading



Bicheno, J. (2004). *The New Lean Toolbox*. Picsie Books.
ISBN: 0-9541-2441-3

Suzaki, K. (1987). *The New Manufacturing Challenge*. The Free Press.
ISBN: 0-02-932040-2

Rother, M. & Harris, R. (2001). *Creating Continuous Flow*. The Lean Enterprise Institute.
ISBN: 0-9667843-3-2

Glossary of references

Cycle Time – the time from a part entering a process stage to it leaving the process stage

Bottleneck – a process stage that is slower than all of the other stages and causes a build-up of WIP in front of it

WIP – Work In Process, parts that have been launched into the process

For more advice, case studies and additional factsheets visit:

www.businessgrowthhub.com/manufacturing