Kanban / Pull Replenishment Systems
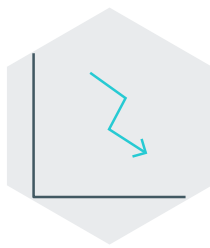
You would use this approach as part of the design of your manufacturing process and material replenishment systems.
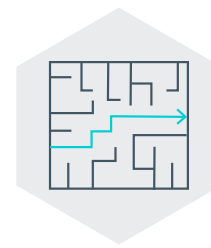
Projected performance gains

Improved

- The replenishment of lineside parts and subassemblies

Reduced

- Overproduction

Simplify

- The flow of production information – no computers or paperwork
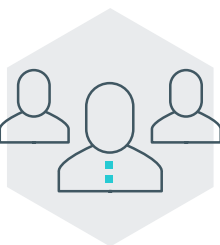
What investment is needed to understand the concept?

DIFFICULTY

Medium

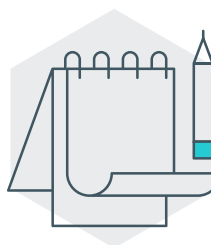Requires some reading around the subject and a structured approach.

ACTIVITY

Team

Best results come from a team of procurement, material replenishment and production employees.

EQUIPMENT

Racking and Tote Bins

Depending on the nature of the parts and products.

For more advice, case studies and additional factsheets visit: **www.businessgrowthhub.com/manufacturing**
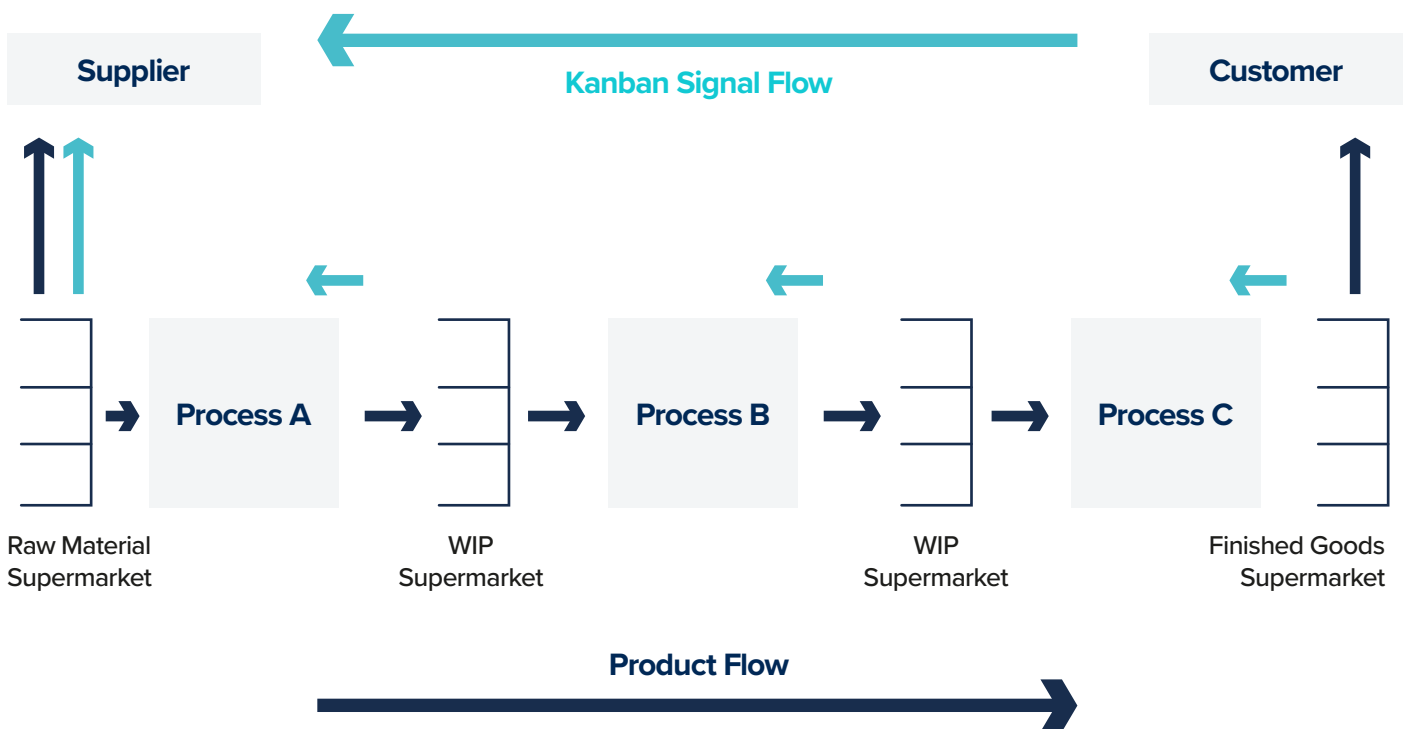
Explanation of the concept

The idea behind Kanban is to only make or replenish a part once a part has been consumed by the next downstream process. By doing this, true customer demand is passed backwards, upstream through the process, avoiding guesswork on what or when to make things. Typically, either a Kanban card or an empty container is used as the signal to make or replenish.

By limiting the number of Kanban cards and containers in circulation, the maximum level of inventory can be controlled and known all of the time.

There are 6 generally accepted rules for Kanban:

1. Downstream processes may only withdraw items in the precise amounts specified on the Kanban

2. Upstream processes may only send items downstream in the precise amounts and sequences specified by the Kanban

3. No items are made or moved without a Kanban

4. A Kanban must accompany each item at all times

5. Defects and incorrect amounts are never sent to the next downstream process

6. The number of Kanbans should be monitored carefully to reveal problems and improvement opportunities

Supplier   **Kanban Signal Flow**   Customer

Process A   Process B   Process C

Raw Material Supermarket   WIP Supermarket   WIP Supermarket   Finished Goods Supermarket
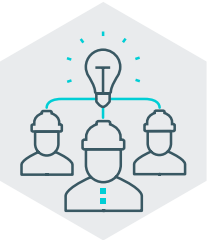
Product Flow

Determining the number of Kanbans

To calculate the number of Kanbans you require use this formula:

$$\text{No. of Kanbans} = \frac{\text{average demand during lead time} + \text{safety stock}}{\text{container size}} \qquad N = \frac{dL + S}{C}$$
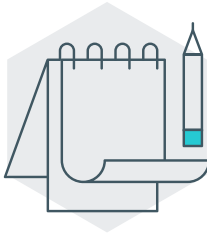
N = number of kanbans or containers
d = average demand over some time period
L = lead time to replenish an order
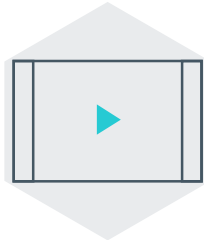S = safety stock
C = container size

Kanban / Pull Replenishment Systems

What action should I take?

1.

Gather together a group of procurement, material replenishment and production employees

2.

Explain the concepts behind Kanban/Pull Replenishment system

3.

Identify part of a production process where a Kanban system can be trialled

4.

Calculate the number of Kanbans required (see formula)

5.

Trial the Kanban system

Recommended resources

Kanban Pull Simple Demo:
https://www.youtube.com/watch?v=Zlv2e61SH1A
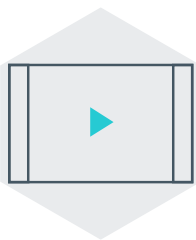
Toyota Production System: Kanban Production:
https://www.youtube.com/watch?v=6y3qrOla9Tc

Hammarberg. M. & Sunden. J. (2014). Kanban in Action, Manning Publications.
ISBN: 978-1522847618

Glossary

Kanban: Japanese for "card you can see"

Pull: In lean manufacturing pull means the true customer demand

Replenishment: Restoration of a stock or supply to a former level or condition

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