JIT & KanBan

JIT

- **Just in Time** and **KanBan** are two important elements in the **lean system**.
- JIT stands for Just In Time.
- The idea is you get supplies and materials just when you need them not before and in the quantities you need not more.
- Probably the biggest misconception about JIT is that you can implement JIT without implementing a **lean system**.

JIT

- One purpose of JIT is to drive improvement.
- Some organizations have attempted to impose a system of JIT on their suppliers without any process improvement.
- **The hope seems to be that the purchasing organization can reduce its inventory.**

JIT

- Ultimately when this is attempted inventory is not reduced.

- **The burden of inventory is simply shifted to the supplier.**

- This new burden can threaten the viability of supplier organizations.

- And this could ultimately disrupt the supply chain.

JIT

- It primarily serves to reduce lead times, and eliminate the waste of over production.

- Inventory reduction does occur, but it's a benefit not necessarily the goal.

- The goal as it is for the Lean System is to shorten cycle times and eliminate errors in order to better serve customers.

JIT

- Important elements that make JIT work.
  - SMED(Single Minute Exchange of Dies)
  - TPM (Total Productive Maintenance)

SMED and TPM

- SMED is sometimes just referred to as quick changeover.

- The faster you can changeover a process, the shorter cycle time will be and the more responsive an organization will be to its customers.

- Total Productive Maintenance is a careful system of a preventative maintenance so that processes are more predictable and reliable.

Kan Ban and POUS

- **Kan Ban** and **Point-of-Use-Storage (POUS)** are other elements that are almost always part of an effective JIT system.

- Kan Ban is a visual production signaling system.

- POUS advocates for keeping the items you need to do your job in the work area.

- Its purpose is to eliminate waste of motion or time spent looking for the things you need when you need them.

- If through the system you can reduce work in process inventory adequately, you can store all of your work in process right where it will be used.

- This eliminates the ways of transporting it to the warehouse and back.

Kan Ban

- **It's not a system for controlling inventory** (although it does have elements of material control through the information on the cards).

- **Kan Ban is a visual scheduling system** (because it is visual you can determine the status of the system at a glance).

- Kan Ban will tell you **what** to produce, **when** to produce it and **how** much to produce.

Kan Ban Benefits

- None of these tools works well alone.
- Kan Ban needs to be part of the Lean System.
- When it is, **it can help eliminate the waste of over production**.
  - You will produce just what is needed and no more.
- Additional benefits including **increased flexibility** for your customers.
- It is also possible to greatly **simplify procurement processes**.
- Integrate processes and **tie your production to the customer**.

Kan Ban Benifits

- Additional benefits from this lean systems will include reduction and **working process inventory**.

- Which will cause a **reduction in cycle time**.

- And in improvement in service to your customers.

- Internal benefits are **improved quality** and **additional floor space** available for production purposes.

Lean System
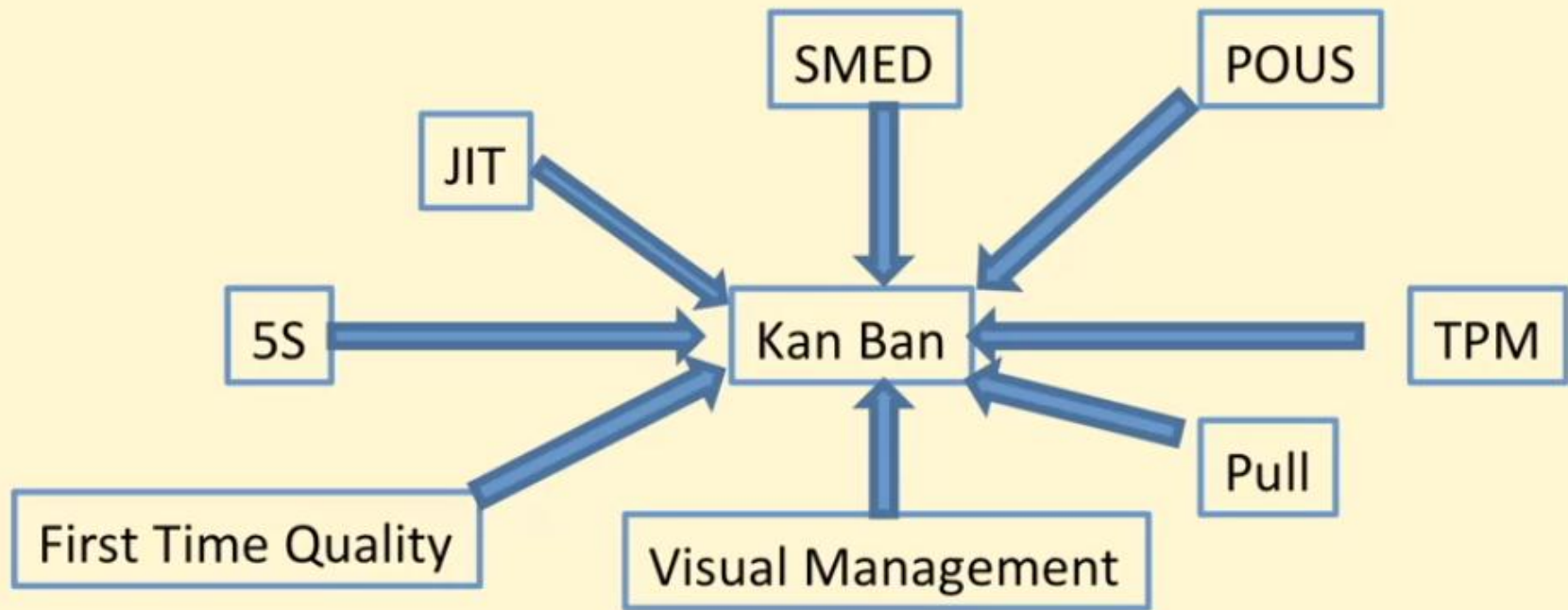
- We've referred here to a Lean System and the word system is critical.
- All of these tools have to work together.
- Some of these we've already discussed, others we will discuss in the future.
- But the key is you're all required to make this work.
- In order for Kan Ban to work, we must be able to change quickly and reliably from one product to another.

- SMED and TPM both make this possible.
- The reliability and predictability that comes from SMED and JIT also improves first time quality.
- JIT and Point of Use Storage help to reduce work in process levels so that Kan Ban is manageable.
- Kan Ban is one part of a larger visual management system.
- That allows you to determine the status of production with just a glance.

5S

- 5S is a workplace organization tool that is also part of the Visual Management system.

- The 5S pillars, **Sort** (Seiri), **Set** in Order (Seiton), **Shine** (Seiso), **Standardize** (Seiketsu), and **Sustain** (Shitsuke), provide a methodology for organizing, cleaning, developing, and sustaining a productive work environment.

| Sort | Set | Shine | Standardize | Sustain |

Pull System

- A pull signal is triggered when the number of cards in a column drops beneath the specified limit.
- This is a signal to the previous column that a new task can move further.
- Once the work in progress limit is reached, no more tasks may be pulled until an outstanding one has been completed first.
- A simple example for the pull system is that a car indicator which is a pull signal indicates the amount of fuel used by the car, and if it is nearing the reserve capacity then it indicates that we need to fill the fuel to the car.

Parts of the System

- There are three elements in the Kan Ban signaling system.
  - **KanBans** themselves,
  - dedicated space for storage (**POUS**)
  - and a **scheduling board**.

- A KanBan is simply a card with the necessary information on it for a fixed unit of production.
- You can design these cards to meet your needs.
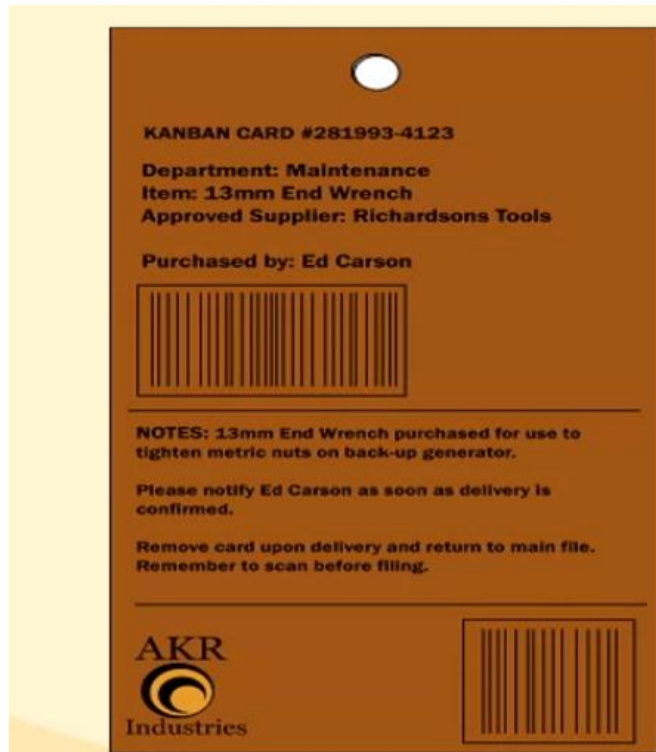
- But it does not have to be a card.
- A visual signal can be an empty tote or other standardized container.

- If cards are used they're generally collected in a scheduling board.

- When a predetermined number of cards are collected, it's a signal to start production.

- When those cards are used up, it's a signal to stop production.

Kan Ban Rules

- Downstream processes withdraw items from upstream processes
- Upstream processes produce only what has been withdrawn
- Only 100% defect free products are sent to the next process
- Establish level production
- KanBans always accompany the parts
- The number of KanBans is reduced over time.

KanBan Rules

- Downstream processes withdraw items from upstream processes.

- That is the internal customer draws from the internal supplier.

- In practice, sometimes the upstream process might deliver.

- But the supplier never delivers before it's asked for.

KanBan Rules

- The production signals are strictly adhered to.
- Never produce more than you have KanBans for.
- This is a significant shift in mindset for more traditional manufacturing models.
- Remember our principle of pursuing perfection?
- The supplier is responsible for quality.
- Only 100% defect fee products are delivered to the next process.
- When a quality problem arises, production stops until it's resolved.

Kan Ban Rules

- Establish level production
- This is not as hard as it sounds
- If your customer wants 10,000 parts in a month –
  - Produce 2500 each week
  - Or 500 each day
- Work with customers to level their orders

- Often customers order large quantities because they do not trust us to be able to meet their requirements.