

Process Conveyor Belt

As a Lean Practitioner you should view your PROCESS as being accomplished on a conveyor belt. At stations along the conveyor belt people will be performing a series of operations and within those operations tasks and sub-tasks are being accomplished.

The amount of work to be accomplished within an operation is dependent on the amount of customer demand. Here we define the TAKT time or the rate that the customer is expecting a product. However within a process there are natural losses such as breaks, normal employee fatigue and delays ...hence our Total Production Process Pace will need to be faster than the TAKT time.

A true Lean Practitioner will always be looking to increase the velocity of through-put or how can we speed up the conveyor belt without increasing fatigue on our employees.

We will begin by looking at every operation, task and sub-task to determine if these actions add value that the customer is willing to pay for ... typically you would use the tool of Enterprise Value Stream Mapping to assist you in creating "eyes for flow" and "eyes for waste".

Next we really need to focus on the true crux of Lean ... allowing our employees access to the resources they need within a 30 inch reach ... this means tools, jigs and parts. For this and to create muscle memory we reach to the strong power of 5S. We truly want to allow our employees to remain focused on their assigned tasks without interruption.

To assist with this we need an excellent component replenishment system. This typically consists of a combination of accurate and visible Kanban's supported with a Timed Delivery System. Since we do not want to interrupt our employees having to wake up to seek replenishments we typically suggest that you keep twice the amount of materials at the station than the route frequency. So if your replenishment route runs hourly you should size your station inventory at 2 hours.

If you have your Process Conveyor Belt running at a good speed and at the proper velocity can things go wrong? Of course they can ... and these can then become amazing Learning opportunities or a call for action from all levels of support.

First we need to empower our employees that they can stop the Process Conveyor without retribution until a problem is resolved. This Is called Jidoka.

Combining automated processes with human intelligence and problem-solving is necessary in industrial-scale manufacturing. That's why *Jidoka* is a key part of the Toyota Production System.

If you always do what you have always done, then you will always get what you have always got.

Where Lean Thoughts can become Reality

Excellence Accelerator Ideas
you can use

Process Conveyor Belt ... Jidoka, Hansei, Genchi Genbutsu

Jidoka (English: *Autonomation — automation with human intelligence*): The principle of designing equipment to stop automatically and to detect and call attention to problems immediately whenever they occur (mechanical *jidoka*). In the Toyota Production System, operators are equipped with the means to stop the production flow whenever they note anything suspicious (human *jidoka*), thereby preventing the waste that would result from producing a series of defective items. It also liberates operators from controlling machines, leaving them free to concentrate on tasks that enable them to exercise skill and judgement instead of monitoring each machine continuously.

Employing *Jidoka* principles throughout the production process is a vital element of the Toyota Production System, forcing imperfections to be immediately addressed by self-inspecting workers and thereby reducing the amount of work added to a defective product. Some automated machines can also function in the detection process, allowing human operatives to only be engaged when alerted to a problem.

Full application of *Jidoka* means that the process which created any issue is subsequently evaluated to remove the possibility of re-occurrence.

Hansei describes the continual reflection on production in order to remove problems.

Recognising and reflecting on mistakes is the key to not repeating them. That's the principle behind Hansei.

Hansei (English: *Self-reflection*): To recognise mistakes and take appropriate action to avoid re-occurrence.

Even if a task is completed successfully, Toyota recognises the need for a hansei-kai, or reflection meeting; a process that helps to identify failures experienced along the way and create clear plans for future efforts. An inability to identify issues is usually seen as an indication that you did not stretch to meet or exceed expectations, that you were not sufficiently critical or objective in your analysis, or that you lack modesty and humility. Within the process, no problem is itself a problem.

The best way to make sure a production line is working at maximum efficiency is to go and see it for yourself. This is the idea behind *Genchi Genbutsu*, part of the Toyota Production System.

Genchi Genbutsu (English: *Go and see for yourself*): The best practice is to go and see the location or process where the problem exists in order to solve that problem more quickly and efficiently. To grasp problems, confirm the facts and analyse root causes.

The Toyota Production System requires a high level of management presence on the factory floor, so that if a problem exists in this area it should be first of all correctly understood before being solved. The nature of the phrase is less about the physical act of visiting a site but more to do with a personal understanding of the full implications of any action within an environment as a whole.

Lean Thoughts