

## PROCESS REFLECTIONS

### Daily Management Control Boards

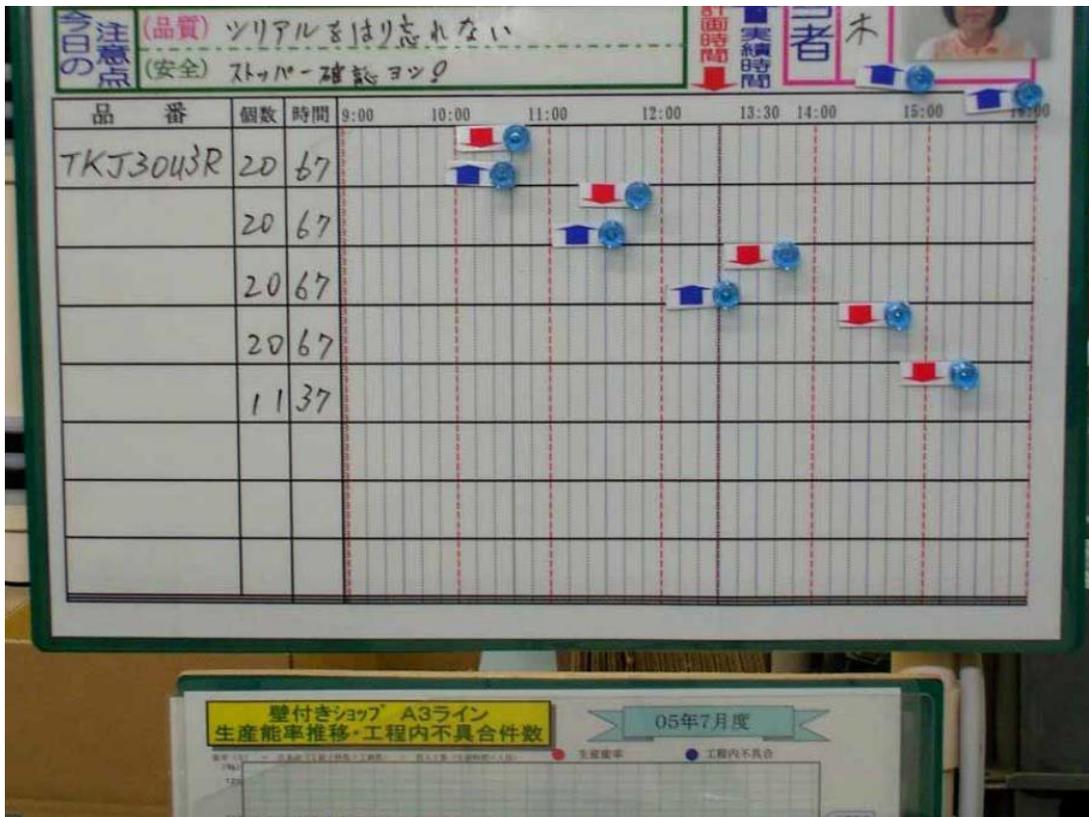
The purpose of a Daily Management Control Board is to coordinate flow of materials using kanban as determined by the “beat of the material flow heijunka” (平準化). Heijunka dictates what is made and in what order. It is a mechanism for assuring evenness of flow of materials to the daily specification of the flow of production work assignments in workstations as coordinated across the variety of products. In addition to a material heijunka, there must also be to a system of heijunka that controls beat of production demand according to customer delivery requirements. This rate for matching requirements is observed by a key performance indicator (KPI) of flow called takt time and supported by the tool of Single-Minute Exchange of Dies (SMED) which reduces changeover times for making unique variants to a minimum. An example of a weekly production control board is shown below:

Automatic Machine Weekly Production Control Board																							
Machine	2nd Week/June						1st Week/June						4th Week/May						3rd W				
Name	17	16	15	14	13	12	11S	10S	9	8	7	6	5	4S	3S	2	1	31	30	29	28S	27S	26
1																							
2																							
3																							
...																							
39																							
40																							
Total																							

Daily plans are coordinated according to the due dates of work using a color coding system where each individual week is represented by a color and each day within the week has its own unique color so the “flow” can be visualized easily by workers:

Colour	June											May								
Code	13	12	(11 S)	(10 S)	9	8	7	6	5	(4 S)	(3 S)	2	1	31	30	29	(28 S)	(27 S)	26	25
Week	Green	Green		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Blue	Blue	Blue	Blue
Day	Green	Purple		Yellow	Red	Green	Green	Purple				Yellow	Red	Green	Green	Purple			Yellow	Red

The Daily Management Control Board is then specified for each worker within the workstations so it can be made clear what is expected to be done at each time. These start times are “backwards scheduled” from the time required for delivery to the next step in the process in order to establish a start time and then the throughput time for each task is scheduled according to a standard time that is required to perform the work. Thus, in addition to other requirements for making a “visual” factory, standardized work must also be defined: process, activity flow and sequence, as well as timing of the work. The Daily Management Control Board is shown below:



Planning throughput of a productive system requires coordination of input flows, throughput flows, and output flows. Without an end-to-end system the KPIs for the system will be compromised. To maintain such a pull system involves three requirements: (1) material and production heijunka are both implemented; (2) it is possible to choose and control stock in fixed quantities across the end-to-end system; and (3) it is possible to stabilize production for a reasonable period of time.

### Reflective Questions:

1. What should be the first step in implementing such a lean production system? Is it control of the material flow, specification of the standard work, linkage of the pull signal to an end-to-end chain of production, or is it reduction of machine changeover time to reduce waste caused by a variance in production work as the variety of items produced changes?
2. How does heijunka operate in the flows of supply, production, and delivery to final customers?
3. Can you measure heijunka effectiveness using KPI's of: inventory level and turnover, work-in-process, cash flow, customer delivery? Does your demand have a clear flow?

### **Lesson to be Learned:**

Creating balance (wa) in pull-production lines requires that all of the methods of lean be designed as a system for managing throughput.

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