Your Personal Guide For Business Optimization

Project Summary

So That Is How The Cell Operates

"I've been the second shift manager for three months and never figured this out."

"I've never seen 'the beer game' simulation applied in real life" ... Third level manager

Situation

A manufacturing cell in one company produced parts for four product lines, delivering over 635 finished part numbers. Flow consisted of two stages. First, all products flowed through *a single line* filled with 'monument equipment' (big capital machinery that cannot be moved). Then production branched into the *separate lines*, one for each family. TAKT time for the single line was twice of any one of the parallel lines.

The company conducted many KAIZEN events (many using Shingijutsu Global Consulting): part presentation, tool shadow boards, standard work instructions, Kanban Boards, First Time Through Perfect exercises, Work-In-Process (WIP) reduction, Single Minute Exchange of Die (SMED), and much more. Each event produced many improvements.

However, with all this great improvement work, the cell was experiencing significant overtime and missed delivery dates. An equipment and manpower study showed processes were operating at less than 30% of capacity. All the Lean improvement 'tools' had been exhausted and both the internal and external consulting groups had no other ideas for improvement or how to achieve daily production rates.

Time to invite new knowledge from outside the existing paradigm.

Action

Cell technicians (workers), leads, managers and support people were interviewed while standing in the cell. The purpose was to understand all concerns and viewpoints. Cell activities were mapped by observation, reviewed by those in the cell, then the map was revised. Mapping/remapping continued until a consensus was created about how the cell operated, even if some people considered it an over simplification.

A "Tabletop Dynamic Modeling Simulation" of the cell was developed (using Lego® pieces). The simulation visually demonstrated how the cell operated throughout each shift. All managers, supervisors, technicians, and support people participated in several simulations.

A 'Break Through' issue was identified. Daily production for a single part family was run through the cell at one time, then the next part family, then the next, and next. Maximizing the efficiency of the *single line* processes.

However, the slower part family lines would be overwhelmed with inventory, piling up on the floor, making for an unsightly mess of cosmetically sensitive products. Also, on every

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shift one part family did not have material until ¾ the way through the shift. Which was not enough time to process the products.

The Dynamic simulation allowed testing of different production sequences. Eventually a sequence was agreed to, allowing parts from each part family to trickle to the parallel processes throughout the shift. While the new sequence initially placed a minor strain on the *single line* flow processes, the overall effectiveness of the cell greatly improved. There was no appreciable cost associated with the change.

Results

The new part sequencing was implemented almost immediately. On the first full shift the cell performed to delivery requirements. With no extra effort, confusion, or stress. Mandatory overtime was no long needed, which the workers appreciated. And finished products were delivered on time.

Secondary benefit: managers and workers commented how they *finally* understood the way the cell behaved throughout their shift.

Lessons

Manual simulations provide a powerful means:

- For people to understand how they fit into the success of the group
- Bringing together diverse elements for a better communication
- Overcoming assumptions from different groups
- Going beyond flowcharting to dynamic desk-top simulation brings new insights
- Demonstrated that a complex concept, such as Systems Thinking, can be applied in a practical manner at the most fundamental level of the organization.

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