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CASE STUDY

Throughput issue causes delays on production line

Kitchen appliance maker's workflow process gets an overhaul

An Implementation Engineers Engagement

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Too much inventory not available at the right time, right place

A throughput issue within two kitchen appliance production lines and an excess in WIP inventory drove a major appliance maker to seek a solution for its Tennessee facility. The lines had 340 employees led by eight supervisors. The client leadership's desires included redesigning the workflow process to improve efficiency and inventory tracking, reviewing production processes, reducing waste, and updating/managing the SAP system.

Improving the value stream efficiency by 50% to 60% to improve capacity leverage, inventory accuracy, and product costs by the third quarter or within 17 weeks was the objective. IE teams focused on the following areas: operations, warehouse, inventory management, and mixed-model flow.

3 Kaizens target WIP inventory, expediting, quality

Armed with the results of the Program Design Phase or PDP, IE team members ran a series of three Kaizens within the span of seven weeks. The Kaizens reduced WIP inventory in raw materials and metals; filled 95% of material requests within 4 hours; reduced material expediting by 50%; reduced inventory shrink to less than 5%; and reduced Cosmetic Fabrication WIP by 50%.

Kaizen 1 targeted Internal Warehouse material flow. The Internal Warehouse footprint was rearranged to add two supermarket bins. This action expanded the opportunities to bring in more materials and reduced time spent looking for parts by 50%. A weekly audit system was set up to improve inventory accuracy. In the end, material flow to the production lines was boosted, and the variation reduced by 25%.

Warehouse – Before

Warehouse – After Cleanup

Kaizen 2 optimized the Incoming Parts (IP) Warehouse flow. Lost throughput in this area was caused by material shortages, manning issues, and quality issues. Production lines missed the target output 25% to 70% of the time. Again, assembly area supervisors and leads spent more than 50% of their time searching for and gathering materials.

A supermarket system was installed, so that the right materials were delivered at the right time. This action allowed the parts required for the appliance assembly to be delivered to the line in 120 minutes or less taking confirmed requisitions from 62% to 95% in only three weeks. Through achieving same-day receipt of incoming materials into the inventory system, and faster placement and logging in the appropriate warehouse location, non-value activities of searching for materials were eliminated. The IP Warehouse achieved 95% inventory accuracy.

Kaizen 3 enhanced safety and quality in the line operations. This area was marred by line disruptions and a high percentage of units requiring rework due to incorrect or bad parts; dirt and grime; scratches; dents; bad wiring; and missing or loose hardware (See Figure 1). Also, the Overall Equipment Effectiveness (OEE) of 36% performance fell short of the 65% target.

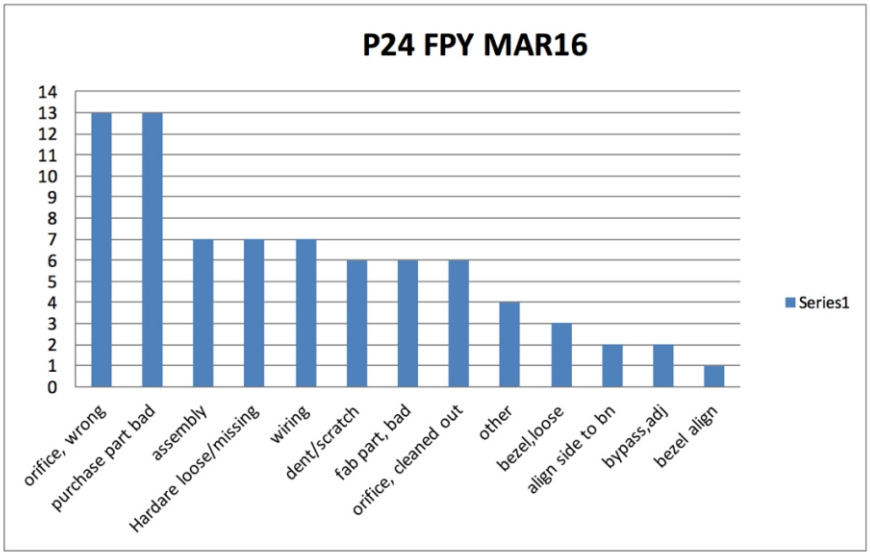

Figure 1: Number of units requiring rework

The team analyzed working conditions, standard operating procedures, material handling, inspection, actual work processes and revised assembly operation, inspection, and material handling. Six Sigma's 5S methodology was applied to minimize contamination and damage reducing the volume of rework. Through focused efforts analyzing the value stream, the team also improved average speed (avg. 2,000 fpm or greater), reduced material losses (less than 15%), and increased winder uptime (85% or greater). When OEE was increased, this area reached its target. In the span of four months, line interruptions dropped from a maximum of nine per day (Jan. 25) to one per day (April 6).

Factory rolling with few delays or errors; project ends early

We hit the targets early and the project was completed in a short 10 weeks, well before the deadline, making the client very happy.

The Kaizen events increased the average assembly output by 20%; improved on-time material flow from receiving by 25%; reduced the rework of the two assembly lines by 25%; reduced scrap waste by 50%; and 80% of the finish operators achieved 100% efficiency. The time spent with this client helped them significantly improve in areas they had been struggling for quite some time. Knowledge was transferred, and the company continues to apply the learnings from this project.

NEXT STEPS ›

- Schedule a meeting with our team to learn about our enCompass® methodology and how IE can improve your operations.
- Interested in learning more about the topic covered in this case study? Call us at 1-312-967-4162 and reference the paper you're interested in. We would love to discuss your initiatives.
- Visit www.implementation.com to find out more about our services.

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At our core, Implementation Engineers is a data-driven, global firm with a razor-sharp focus on enhancing mining and manufacturing operations.

We have volumes of success stories, and they can all be attributed to our revolutionary enCompass® methodology. This industry-first approach gives us not only the knowledge to inform you of what needs to be done, but the power to actually implement those solutions for lasting impact.

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