

Continuous Improvement Initiative at Pawnee Manufacturing

Initiative Owners: Ron Swanson, EVP of Operations & Leslie Knope, Director of Human Resources

Consultant: Chad Walters, Lean Blitz Consulting

Location: Pawnee Manufacturing – Main Plant, Pawnee, Indiana

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Executive Summary

Calibration of a potential continuous improvement program was initiated between Pawnee Manufacturing and Lean Blitz Consulting. From the meeting between Chad Walters of Lean Blitz Consulting and members of the executive staff of Pawnee Manufacturing from both the Pawnee Manufacturing main plant and the company headquarters in Indianapolis, program expectations from Pawnee Manufacturing were compared to the projections and offerings of a program through Lean Blitz Consulting. Based on collaborative discussions, the estimated 12-month cost of a continuous improvement program for Pawnee Manufacturing that meets the company's expectations would fall between \$500,000-\$650,000 with a potential payoff timeframe of 1 year or less.

Introduction

A meeting at the Pawnee, Indiana plant included the following participants:

Ron Swanson, EVP of Operations
Tom Haverford, Operations Director
Leslie Knope, Director of Human Resources
Ann Perkins, Production and Safety Manager
Andy Dwyer, Quality Manager
Ben Wyatt, Human Resources Manager and Improvement Committee

Pawnee Manufacturing has indicated a three-year vision of achieving the level of best in class of the prepackaged confectionary industry. Becoming the best in class means a cost effective offering (low cost + high quality), reinvestment in development of people, 98% customer satisfaction, optimal employee retention, and \$250M in sales within 5-8 years. In order to reach this level the company realizes it must institute a culture of continuous improvement. The purpose of the meeting was to discuss a strategy for implementing a continuous improvement culture starting with the Pawnee, Indiana plant.

Visit Activities and Observations

A plant tour with Production and Safety Manager Ann Perkins started in the finished goods/shipping department. Finished goods racks are labeled with warehouse management system (WMS) barcodes but a WMS does not yet exist. The company has yet to realize the cost-benefit point where a WMS makes financial sense. It is the intent to implement a WMS in the coming years but the company won't make the jump until the benefits outweigh the costs of

implementing and owning a WMS. The labels are in place on the racks so that they're ready for when a WMS is justified. Until then, inventory is managed manually.

There is also a significant collection of finished goods produced in advance of customers' orders. By Ms. Perkins's estimation there is \$10M worth of finished goods inventory. A subset of the finished goods is a result of safety stock, whether it was calculated and implemented internally by Ron Swanson and other leaders or mandated by the customer in the event of an emergency order as part of the service level agreements.

Finished goods inventory is comprised of the safety stock, product ready to be checked and loaded onto trucks, and product received from Pawnee plants in Arizona and Alabama, and warehoused in Pawnee.

The safety stock calculation is based on a 98% service level and long lead times. The long lead times are a result of long production runs with minimal product changeovers on the production lines. Changeovers are minimized because they are labor intensive, keep machines down for long periods of time, and produce significant quantities of scrap. Long lead times and long production runs lead to excess production and inventory, which are tying up about 10% of the company's revenues and consume a large portion of the plant floor space. Finished goods are double-checked and triple-checked manually by shift leaders before being loaded onto trucks.

In addition to the finished goods inventory, floor footprint and rack space is consumed by work in process (WIP). Some of the WIP is contracted rework from primary customers, while other WIP is the creation of display packages for stores. While customers include this rework as part of the production contracts struck with Pawnee Manufacturing, the resource investment in completing this rework is believed to be greater than the revenue it generates. This would be an example of goodwill investment in the satisfaction of a large customer.

Individual production lines are located between the raw materials storage and receiving area and the finished goods and shipping area. This helps provide a one-direction flow of material in and out of the building. However, internal materials transportation may be moved past multiple production lines and paths may cross on both sides of the production lines, which stems from the high raw materials and finished goods inventories being tougher to navigate than is likely necessary. Production lines go through weekly planned maintenance, which is handled by mechanics or specialized technicians. The production lines were relatively clean and orderly but organization and cleanliness standards do not appear to be established.

Scrap levels and safety metrics are displayed in a display case on the side of an internal office space (and are updated at least monthly) but daily or real-time performance metrics at the production lines are not clearly visible from a distance. Scrap rate metrics are inconsistently measured – first shift scrap rates include scrap resulting from non-production/research & development projects. If operators are held accountable for scrap rates, the first shift is being held accountable for production that is outside of their control and their metrics are thereby including inconsistent data.

Raw materials are recycled whenever possible. Packaging materials not used are collected in proper bins and sent out for recycling and reuse.

Inconsistency can be introduced to finished goods production by way of use of different production machine settings from shift to shift or user to user. Different production "recipes" approved by shift leaders can lead to variations in quality, whereas consistent use of the same production formula for machines should produce more consistent results.

Work instructions (not to be confused with standardized work) is found on computer monitors at each production line but they are not located close enough to each operator station for the operator to continue working while still reading

the documentation. Production line OE is measured and monitored, but it is unclear how OE data is used to drive improvements or flag potential breakdowns.

Operators are not required to wear PPE in the form of ear protection or safety glasses, which is abnormal for a mass production/manufacturing environment. Some machines were producing loud sounds, which could be damaging without ear protection. Operators also don't appear to have set scheduled break times, but they have to rely on fellow operators at other lines to "keep an eye out" for abnormal production activity while they are away from their lines or responsibilities.

Employee ideas are collected via suggestion box and are reviewed and implemented based on cost-effectiveness measured and determined by a committee of upper management representatives. The turnaround of the ideas from suggestion to implementation is lengthy, in excess of one month. The Pawnee, Indiana plant has a Quality Manager (Andy Dwyer) with continuous improvement experience and is a Six Sigma Green Belt, and Ms. Perkins has knowledge of continuous improvement concepts and implementations as well. The plant utilizes a continuous improvement coordinator and a CI Committee. The plant has utilized SMED techniques but the level to which they remain in place and are documented is not known.

Recommendations and Next Steps

Some of the key levels of achievement indicated by the leadership team include:

- "Best in Class" for prepackaged confectionary industry
- 98% customer satisfaction and service level, high quality, cost effectiveness
- Culture of learning, development, people investment, safety
- \$110M company revenue target with 7.5% net income
- Internal leadership development program

The current situation features some roadblocks:

- Lack of continuous improvement culture and capability
- Pawnee, Indiana plant is poised for growth but is at maximum capacity for plant footprint and machine utilization

The current situation also features some positive components necessary for culture change:

- Plant leadership is ready to invest in a long-term solution for culture change and acknowledges the need for outside knowledge and capability
- Growth of the industry and potential new product launches and contracts is apparent
- Plant is seeking space to install additional production machines to handle growing demand
- Partnerships remain strong and partners are themselves growing

A continuous improvement program should be tied to the previously-indicated corporate goals and achievement levels. Here is how the ideal CI program works with those goals:

- Use of "Best in Class" measures as part of the series of performance metrics monitored and reviewed by the plant leadership
- Identification of quantified partnership expectations for safety, quality, and delivery, along with set standards for performance for each of those metrics

- Daily application of metrics as activity drivers – where performance is falling short of expectations, deployment of improvement teams to resolve issues quickly is necessary
- Transparency of metrics and communication of quantifiable goals – shortening of the response time between communication of metrics and the resultant activity, as well as understanding how each individual employee and process contributes to those goals and metrics
- Alignment of continuous improvement training and projects as part of an internal leadership development program – leadership is cultivated and tested through change management, not by maintaining the status quo
- Data-driven decisions and continuous monitoring of production status combined with resultant activity for improvement will improve quality, machine uptime, and overall plant capacity
- Culture change happens from the top down, so the ideal CI program will begin with establishing key performance indicators with partners and training plant leadership on what continuous improvement is and how it leads to better business results

The successful outcome of a properly-implemented CI program will feature the following:

- Fully-educated plant leadership with regard to continuous improvement so that fear is removed and trust across divisions, departments, and down the organizational chart is cultivated
- Knowledgeable work force that takes ownership of work they do and the machines they operate, and has the two-way trust of plant leadership
- Monitoring of the right metrics based on partnership expectations, and data driven decisions for optimizing and improving operations to meet or exceed expectations
- Culture of doing things right, doing things better, and challenging partners to improve themselves
- Culture change from project-based improvement to continuous empowered real-time improvement – use of employee tag review program as opposed to suggestion boxes, transition from Kaizen event focus to continuous Kaizen mindset focus
- Short length of time between receipt of metrics data and proper resultant action based on metrics
- Management by value stream and transparency of ideal performance versus out-of-specification performance
- Incorporation of all plant processes on the manufacturing floor and in the offices in continuous improvement knowledge, training, application, and implementation
- Application of continuous improvement principles in front office operations through process mapping, standardized work documentation, and waste reduction strategies – all front office operations consist of processes, and processes inherently contain inefficiencies no matter where the processes are completed

The next steps for the immediate future (first three months) are the following, not in order:

- Continuous improvement training from the executive leadership level and down – the groundwork for program support begins with knowledge, awareness, and understanding from the very top of the organization
- Establishment of partnership expectations – identification of explicit expectations of customers for safety, quality, and delivery from all product lines in and out of the plant
- Initial snapshot of current state of Pawnee, Indiana plant processes through value stream mapping and measurement – evaluation of how successful plant is at meeting partnership expectations and the costs/investment the plant makes to meet those expectations
- Identification of plant goals with conversion into quantifiable, measureable, actionable goals as deemed necessary
- Identification and kickoff of first work cell/value stream “Kaizen blitz” efforts based on biggest opportunities for improvement indicated by value stream measurements – work cell design and layout based on production,

machines back to initial/basic conditions, focused problem identification/root cause analysis/optimization, best practices and optimal work process documentation, neglected machine repairs, routine maintenance and upkeep transition from mechanics to operators

- Immediate implementation and facilitation of safety culture change – gradual expectation of eye protection, scheduled sound level testing of work cells, continued review of OSHA requirements, lockout/tagout training, requisite safety equipment in work cells
- Review of and partnership with plant quality department
- Review of and partnership with plant continuous improvement committee
- Review of and partnership with plant safety program committee
- Partnership with Improvement Committee on leadership development and company expectations (*meeting already scheduled for November 12th, 2013*)

Estimated Program Implementation Costs for 12 Months (not official) and Payoff Timeframe

- Outside associates/consultants: \$150,000-\$300,000 (1-2 consultants, wide range depending on level of effort required and number of consultants needed)
- Time/salaries/overtime for internal associates: \$100,000 (time away from production for training, event participation, internal CI associate program)
- Continuous Improvement Leader position: \$50,000 (recruiting, interviewing, hiring at or after 6 month mark)
- Machine and equipment repairs/improvements: \$150,000 (repairs to neglected machines, improvements based on operator suggestions and production/quality optimization)
- Materials: \$50,000 (signage, labels, label maker, displays, communication boards, cleaning equipment, office supplies)
- 12-month full program investment: \$500,000-\$650,000
- Payoff timeframe: potentially 1 year or less (10% savings of finished goods inventory through lead time reduction due to improved machine performance and improved changeover time/investment is one example of clearing this payoff timeframe)