Packaging – Low Cost CI Deployment

A five plant continuous improvement deployment, with only one full time resource, delivers $2.48M in annual savings in just eight months

Improvement Initiative

Between 2008 and 2010, a plastic bottle manufacturer lost 25 percent of their sales due to the slow economy. In response, four plants were closed going from a total of nine plants to five. Even with the plant closings, they were not earning their cost of capital. This was due to production inefficiencies and the resulting inventory levels required to compensate for the poor performance.

Deployment plan:

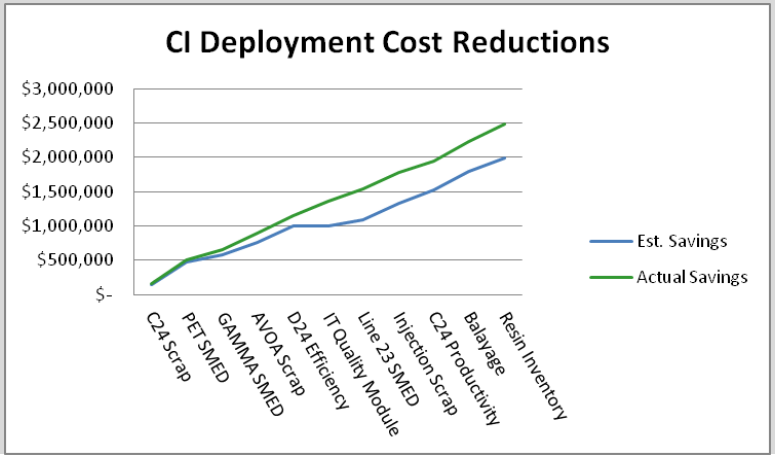
- Corporate Director of Continuous Improvement named to develop and execute a CI strategic plan
- The plan focused on reducing inventory levels by eliminating waste
- Execution of the plan completed through an infrastructure consisting of twelve green belt training candidates
  - Each plant had at least one green belt candidate
  - Four green belts were assigned to corporate functions
- The Director was the only full time resource.

Improvements

- Eight of the twelve green belt candidates were certified within one week of completing training
- As part of the training, each candidate participated in two value stream mapping events and two rapid improvement kaizens
- A TPM based maintenance management system was developed

Breakthrough Results

- Green belt projects deliver over $2.4M in annual savings. Twenty five percent higher than the projected savings at the start of the deployment.



Food Manufacturing - Productivity Improvement

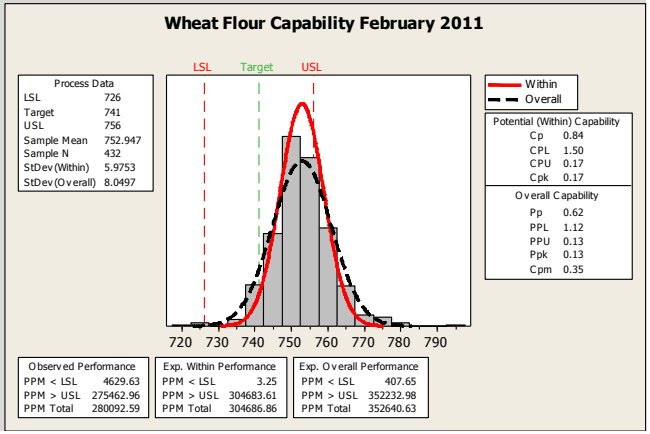
A six month improvement project increases cracker production, reduces scrap, and results in an annual savings of $2.75M

Improvement Initiative

Cracker production at an industrial bakery was performing ten percent below the standard; making it difficult to keep pace with customer demand and resulting in excess overtime cost.

Targeted areas of investigation included:

- Capability of ingredient delivery systems
- Audit of the work methods to ensure consistency with current standard work
- Identify best practices
- Audit of the measurement systems
- Review of the preventative maintenance practices and frequencies
- Pareto analysis of the scrap and downtime

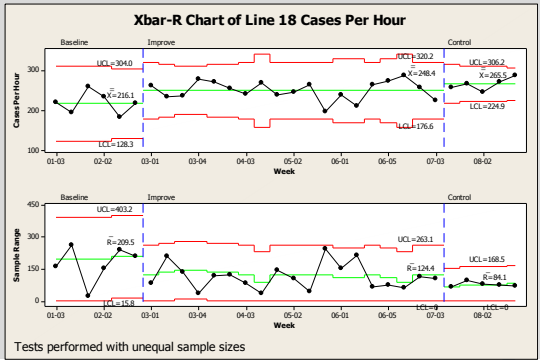


Improvements

- Corrected the flour delivery equipment capability issues detected during MSAs
- Updated the standard work based on the identified best practices
- Modified the post-oven lane conveyors to reduce scrap, downtime and rework
- Added andon lights and poka-yoke system for controlling laytime in the mix room
- Modified equipment PMs to sustain the improvement

Breakthrough Results

- The average number of cases produced each hour is increased from 216.1 to 265.5
- The cases per hour variance is reduced by 81%
- The improvements produce an annual savings of $2.75M



Food Manufacturing – Startup Losses Reduced

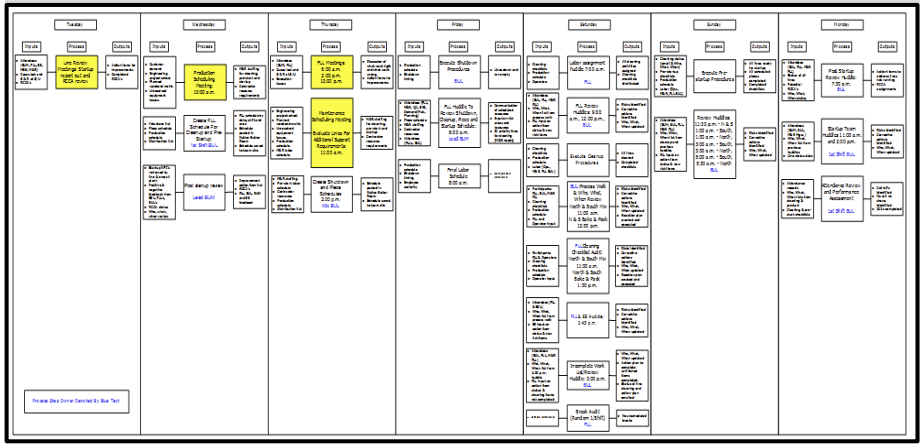
Using TPM Focused Improvement tools, startup losses at the largest bakery in the world are reduced by 28 percent in only 60 days producing an annual savings of $1.3M

Improvement Initiative

Poor execution of the process startup was costing the client over $5.25 million dollars a year.

Analysis showed that the startup issues stemmed from inconsistent coordination of the information and resources required to execute the startup.

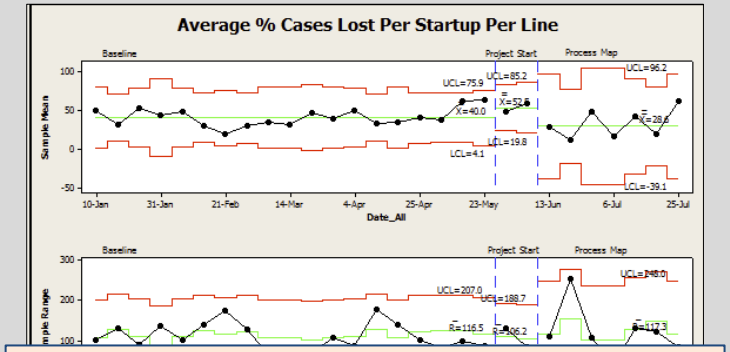
Focused Improvement tools were applied across Sanitation, Quality, Production, and Management to create a detailed startup and shut down Management System.



Improvements

- Process Mapping – Process Mapping was used to determine what needed to be done and when
- Standard Work – The best practices were standardized and detailed instructions, checklists, and training guides were created
- Program Management – All management levels were trained on the new process and review meetings for process compliance were instituted
- Project Continuation —Cross functional teams were implemented to continue the improving processes

Breakthrough Results



Average Cases Lost, per Line, per start up was reduced by 28%!

Food Manufacturing – Weight Variation

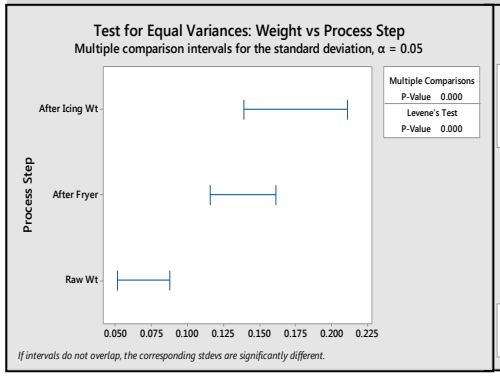
Test for equal variance identifies the source of weight variation that was costing a bakery $2M annually in material variance

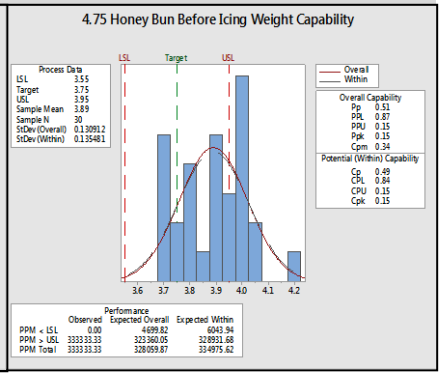
Improvement Initiative

Excessive weight variation at an industrial bakery forced the company to target product weights above the stated label weight in order to comply with the Department of Commence regulations. This resulted in an annual material variance of $2M.

Targeted areas of investigation included:

- Capability of ingredient delivery systems
- Measurement Systems Analysis of the weight and temperature measurement systems
- Identification of the best process setup
- Detailed analysis of weight variation at critical process points



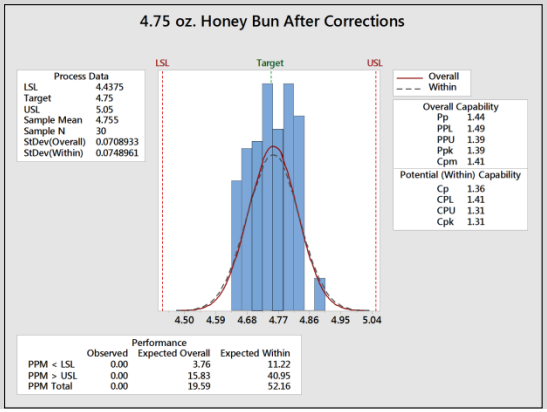


Improvements

- Corrected the fryer oil temperature control and measurement systems
- Updated the process setup sheets with the optimum oil temperature settings
- Modified the weight charting method to provide a binary signal of when to adjust the weight
- Modified equipment PMs to check, and tune if needed, the fryer PID temperature controllers

Breakthrough Results

- The weight variance is reduced by 75.6%
- The targeted product weight now matches the label weight



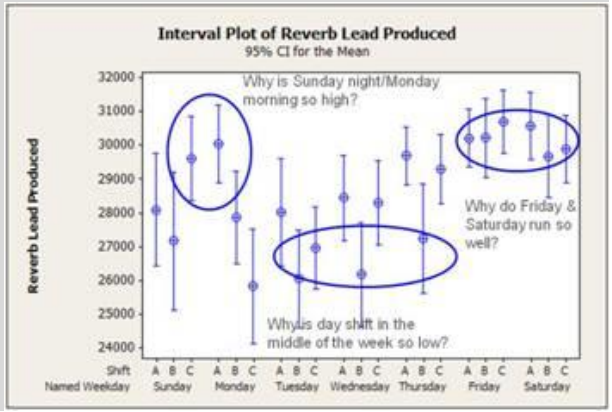
Reverbatory Furnace Variance Reduced by 97%

The primary plant of a lead acid battery recycling company was experiencing excessive day-to-day variation in the lead recovered through its reverbatory furnace

Improvement Initiative

A chart of lead production by day and shift revealed that production was highest Friday through Sunday and dropped off during the middle of the week. It was suspected that additional high lead bearing material called grid was added into the feed on the weekend.

The project team identified that, since batteries are not processed on the weekends, the last of the grid material normally runs out on Saturday. Since grid is the highest lead bearing component used in the feed material, material made on the weekends will produce less lead when processed in the furnace. Since there is normally nine to eleven days of feed material in inventory, materials produced on the weekends are processed through the furnace during the low producing middle of the next week.

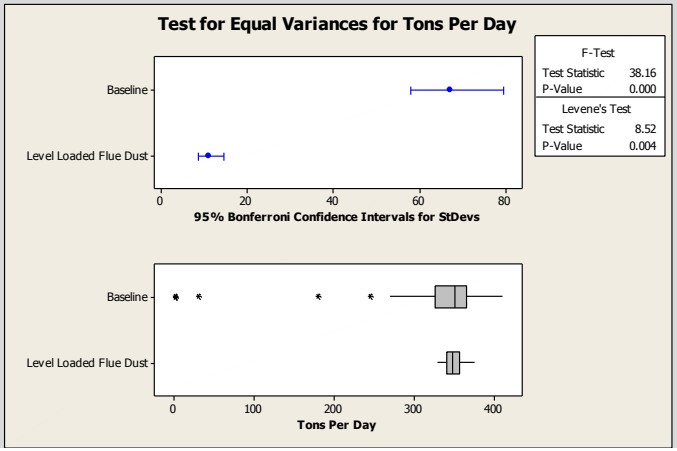


Improvements

- Run rules were put in place prohibiting the mixing of feed material when grid is not available
- Component materials produced during battery processing downtime were segregated and stored
- A mix ratio was developed to level load the segregated material back into the feed material
- Run rules were developed for the storage and mixing of all component and feed materials

Breakthrough Results

- The day-to-day variance in lead recovered through the reverbatory furnace was reduced by 97 percent



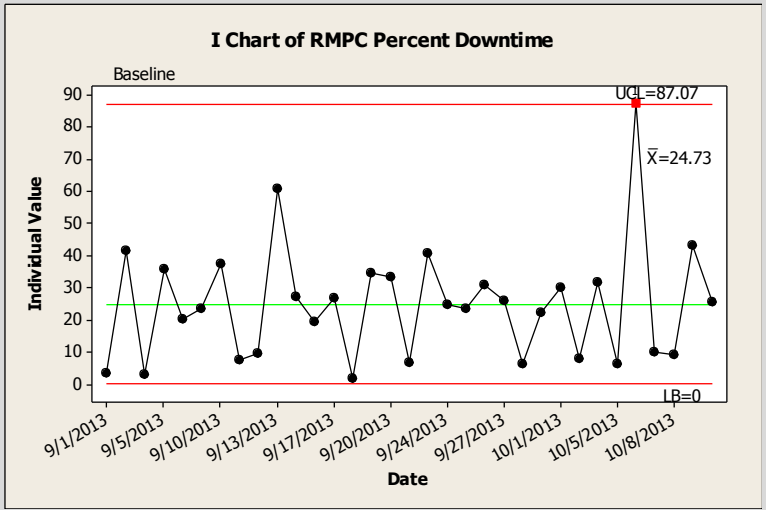
Downtime Reduced by 77 percent in 90 days

A cross functional team utilized pareto analysis to reduce a battery recycler's unplanned raw material processing center downtime from 24.7 percent to 5.7 percent in 90 days

Improvement Initiative

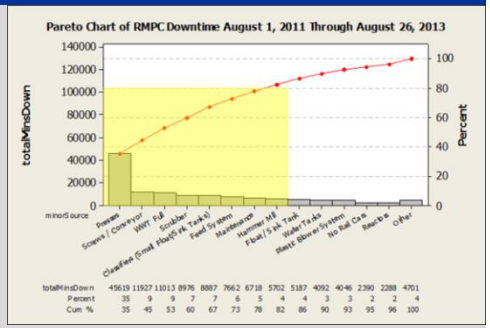
There are two RMPC reactor input materials; battery paste and flue dust. When the RMPC battery breaking process experiences downtime, battery paste is not available and the flue dust percentage increases. Since the flue dust requires higher temperatures to process, the increased percentage will reduce the furnace lead production.

From September 1, 2013, to October 14 2013, the RMPC unplanned downtime was 24.7 percent. The project goal was to reduce the unplanned downtime to 8.2 percent.



Improvements

- Created a measurement system to predict filter cloth failures
- Analyzed two plus years of downtime data using pareto analysis



- Implemented a cross functional team to review downtime data and execute solutions
- Modified equipment and PMs to address failures

Breakthrough Results

- Downtime is reduced from 24.7% to 5.71%.