

INDUSTRIAL, MANUFACTURING, & SYSTEMS ENGINEERING

CAPSTONE PROJECT /INTERNSHIP SUMMARY



Your Name: Ileana Rubio, Jessica Canales & Ana De Haro

Type of Capstone (research, teaching, practical application): Practical Application

Capstone Project Title: Implementation of Speed, Accumulation & Lost Time (SALT) methodology to increase USLE in production lines in Coca-Cola Refreshments Company

Year and semester: Spring 2016



Jessica Canales, Ileana Rubio, Ana De Haro (Left to Right)

INTRODUCTION

Coca-Cola Refreshments is a local bottling company that operates for one of the world's recognized brand, Coca-Cola. They run two production lines, a canned and bottled production line. Throughout the year of 2015, Coca-Cola Refreshments started experiencing several problems with their production metric, Unconstrained System Line Efficiency (USLE) measurement. They experienced a decline in their overall USLE percentages on both production lines averaging a USLE of 64.48% in Line 1 and a USLE of 56.55% in Line 2. Due to this, they've experienced significant losses in profit becoming a top priority for the plant in order to achieve the expected 2016 USLE goals of 70.73% for Line 1 and 60.83% for Line 2.

As a primary goal to increase the USLE percentage, we had the objectives to consider our constraints and factors to apply solutions and improve the production metric in order for the company production lines to achieve the target goal and increase profits. There were several objectives including increasing the USLE in each production line by 1%, continuous performance of the filler along with the implementation of the Speed, Accumulation & Lost Time (SALT) methodology to achieve our overall priority objective of having a USLE increase. The DMAIC methodology and its five stages of Define, Measure, Analyze, Improve & Control served as the foundation and guidance for this project. Coca-Cola Company has established the SALT methodology: Speed, Accumulation & Lost Time to use throughout their operations in order to maintain maximum levels of productivity and profits. SALT Line Optimization focuses on increasing output in any given production line. We implemented SALT methodology to analyze the current state of the production lines and make changes accordingly.

PROJECT OUTCOMES

Several emphasis areas of concern were targeted throughout the span of the project all of which contributed to the achievement of our primary objective. After further analysis and data collection from both production lines, we determined that the three main factors affecting the production line's USLE percentages came from accumulation problems, lack of speed standardization on machines and conveyors as well as lost time in breakdowns and minor stops. All three of these factors were discovered to directly affect the Optimum Time used to derive the USLE percentages on both production lines.

As part of the solutions derived from our analysis, we implemented an increase in cases per minute processed by each one of the packers in Line 1 of 10% and 20% and made changes to the line accordingly to adjust to the new speed. Line 2 required of Line Balancing as well as Center Lining as part of their solutions to improve the USLE percentage.

Our team effectiveness can be measured by looking at how we approached the project and course objectives. Upon the implementation of solutions, we tracked an increase per package in Line 1 and per bottle in Line 2 as well as overall USLE increase during our implementation phase in the month of April: line 1 had a total increase of 2.63%, while line 2 had a greater impact increase of 5.15%. With these implementations our primary objectives were achieved. Both of these solutions will lead to savings of up to \$21,332 in Line 1 and \$37,944 in Line 2 by the end of 2016. Overall the company was very pleased with our work as our work set out foundation for future improvements. We were able to accomplish our goals as there was a noticeable improvement there was an increase from 2-

5 %, which resulted in a big improvement in the production metric and profitability of the company. Given that Coca-Cola is an international company around the world, our project can be beneficial to other plants that may be facing the same problem in order to improve their production metrics, USLE percentages, and profits.

INDUSTRIAL ENGINEERING PROGRAM ASSESSMENT

Overall, the experience in the IE program was challenging in our coursework studies throughout our career however though these challenges made every course interesting and applicable to our capstone project. The responsibility instilled in us from early on during the career with projects, homework and test prepared the basic foundation to be a future professional engineer in the industry. The teamwork environment that the capstone project entails facilitates learning and enhanced understanding of our courses. We learn many different procedures of how to approach a problem, different methodologies that made us visualize and analyze our problem solving skills, all skills, which are invaluable in industry. Giving us an opportunity to apply our knowledge of what we knew, the capstone project truly served as the culmination of our Industrial Engineering career. Our recommendations for the program would be for senior project to be at least two semester long in order for the teams to have a greater range of time to test, implement and track results of their capstone project, making the experience even more invaluable.