

# INDUSTRIAL, MANUFACTURING & SYSTEMS ENGINEERING



## SENIOR PROJECT SUMMARY



**Team members:** Mayra Acosta, Carolina Martinez, Jennifer Mendez

**Type of Project:** Practical Application

**Industrial Partner:** Johnson & Johnson

**Project Title:** Material Replenishment, OEE Standardization & Freight Cost Analysis

**Semester:** Fall 2016

## INTRODUCTION

Johnson & Johnson is a manufacturer of medical devices, pharmaceutical, and consumer health products. Ethicon Endo Surgery, the branch where the project was implemented, specializes in the assembly of medical devices. Three projects were implemented. Material Replenishment was implemented in line 120 which had an inventory cycle time of 10 hours and utilized 882 minutes per day to prepare work orders, and had excessive inventory in the production floor. OEE Standardization was intended for lines 125 & 136 because production data was captured by hand which distracted associates from their usual tasks and led to inaccurate and incomplete records for performance losses. Freight Cost Analysis was created because the company continuously exceeded the established budget, there was no control over the freight expenses, and the data regarding freight was scattered across several databases.

## PROJECT OUTCOMES

For the three projects the following emphasis areas were utilized: Methods & Industrial Ergonomics, Systems Engineering, Production & Inventory Control, Industrial Layout, and Statistical Quality Control. When creating the design solutions the following challenges arose: limited space in production floor, implementing without impacting the production process or the associate's tasks, upholding the company's ethics code, and creating solutions compatible with the company's technology. For Material Replenishment three solutions were created; material would be ordered every three hours, each component would be assigned a bin in the production line, and the material handler would be in charge of loading the components into the bins. This resulted in

less material on the production floor, better utilization of the company's transportation trucks, and more efficient material flow since smaller batches are easier to control and transport within the facility. OEE Standardization yielded two design solutions; the user interface to capture OEE data was redesigned and simplified according to ergonomics, and a record of scrap/rework data was generated and will be incorporated into the OEE data recollection system. This resulted in a simpler, more intuitive database which will facilitate the data recollection process and a better record for scrap/reworked materials. The third project, Freight Data Analysis, had two solutions; creating a detailed freight database so all the data could be found in a single place and creating a Standard Operating Procedure. Both of these solutions were aimed towards creating a better record and control for the freight expenses. With more detailed and accessible records it will be easier to identify opportunities to reduce costs and control freight expenses; it will guarantee that all expenses regarding freight are thoroughly examined before being approved.

## **INDUSTRIAL ENGINEERING PROGRAM ASSESMENT**

This project has granted students the opportunity of applying the tools learned at school in different settings. It gives students insight into what working in the industry will be like and the different responsibilities and tasks that they could encounter out of school. It also encourages the students to be creative and flexible with their design solutions, which is an aspect of engineering seldom seen in school. Overall it is a good experience that makes students grow as professionals and future engineers.