

# INDUSTRIAL, MANUFACTURING, & SYSTEMS ENGINEERING

## CAPSTONE PROJECT/INTERNSHIP

### SUMMARY

**Your Name:** Andrea Galindo, Pedro Marquez, Javier Martinez

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

**Capstone Project Title:** Storage Project Planning and Design Layout at Fortune  
Plastic & Metal

**Year and semester:** Fall 2016



Javier Martinez - Andrea Galindo - Pedro Marquez

### Introduction

Fortune Plastic & Metal has played an important role in the reuse and recycling of metals and plastics all over twenty-five years. With twenty facilities throughout the United States, two in Mexico, and three in Asia, the Fortune Group is recognized as a leader throughout North America handling over 350 million pounds of material annually. They have also received many Quality and Supplier Excellence awards. Serving a wide variety of industries, Fortune caters to the environment as well as the proprietary concerns of its customers and can manage the total destruction of their material in its recycling process.

The scope of the project was to analyze the flow of the materials within the facility. In doing so

the following problems were identified: the warehouse layout was constantly shifted according to different quantities and types of material received and stored (physical inventory), no work standardization was ever applied, employees tended to waste time since they do not have scheduled plans, and most of the time employees work and did what they think was appropriated.

### **Project outcomes**

Throughout the project several emphasized areas were targeted, which are composed of industrial layout, safety engineering, methods and industrial ergonomics, systems engineering, simulation, and statistical quality control/reliability.

We went about our project by following the 5S step methodology which are: sort, straighten, shine, standardize and sustain. We created a new layout design for the facility taking into consideration the flows between departments, the space requirements, and the space available at the facility. We also assigned a place for each material at the warehouse so that it can be easier for workers to find the material they need to work with. Since Fortune Plastic & Metal wanted to reduce distance traveled, we decided to add a new scale near the sorting and baler department.

Furthermore, the comparison of the before and after was extremely noticeable and beneficial towards the company. After analyzing the new layout created and the actual layout at the facility it was noticed that by implementing the new layout we can reduce the distance traveled by 39.94%. This means that we reduced the distance traveled in a day by 49,294 feet.

The Sorting department productivity in the beginning was low; therefore, pre-sorting storage capacity was increasing as time passes. Consequently, the productivity in sorting department had to increase before any design was built. In order to meet the required productivity, one person was hired in the sorting department and the workers in receiving control and pre-shipping departments were relocated to sorting during their idle times. According to the SIMIO simulation, productivity increased in the facility by 15.4 percent.

### **INDUSTRIAL ENGINEERING PROGRAM assessment**

Overall it was a great experience to utilize tools learned in school, but in actual situations rather than word problems. It was an opportunity to get an introduction to the field's culture and etiquette and an opportunity to acquire new skills.