

INDUSTRIAL, MANUFACTURING, & SYSTEMS ENGINEERING

Evaluation of manufacturing processes SUMMARY



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

Project Title: Evaluation of the manufacturing and inventory processes at Sunrise MFG.

Year and semester: Fall 2018



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INTRODUCTION

Sunrise MFG, is a leading manufacturer of honeycomb dunnage materials serving Fortune 500 companies since 1981. With **5 locations across the United States, including California, Washington, New Mexico, Texas, and Georgia.** Additionally, they have remote warehousing and

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have created partnerships with other companies to build their patented products. They provide load securement solutions and transit protection products. Their patented products help reduce or eliminate damage to products during transit. Ever changing competitive markets have dictated that they are flexible and nimble in their response to new ordering trends and customers' demands. Recently added machinery has automated processes allowing broader participation in value added engineered products in the marketplace. However, with the addition of new processes come new challenges. Labor rates run slightly higher in the Santa Teresa facility compared to other locations. In 2017 the average was 9.1% vs 4.4% in the CA. facility and 5.4% in the TX. facility. Additionally, increasing business has put a strain on the process of ordering material. In the past material was ordered based on common knowledge of what may be needed, and customer lead times were potentially affected by stock outs. Difficulties in forecasting has created instances where the possibility of running a customer purchasing \$3.2 annually out of material puts the plant at risk.

PROJECT OUTCOMES

Our implementation plans consisted on (in order and as mentioned before) trying to set the inventory minimum and maximum inventory levels, general plant 5s system, time studies, standardized workstations, and standard operator procedure. For the inventory levels (Max, and min,) the main struggles we had was to come up with the correct formula, due to the lack of experience we had, we came up with the most basic formula, which was to take the average of demand and set it up as the inventory minimum. This of course did not work at all and we even started to have inventory problems for those products. We came of short of product and over produced. Researching the formulas and implementing them was also part of the problem because we did not understand them to well. In the end everything worked out fine and we were able to reduce inventory levels by 20 to 30%. For the general 5s the problem we had was that the facility had many tools and material that are in use in a daily basis, so we were not able to assign a specific space because we did not know where were they stored in the first place. Also, many information that we asked the workers was not provided because of our time constrain. So it took a great amount of time to perform the general 5s because everybody was very busy and not able to pay enough attention. In the end we were able to sort and set everything in order, that being accomplish we were able to standardize everything in paper without having to ask for more information from the operators and supervisors. For the time studies the struggles we had was that not all of the team members were able to be there for more that two hours, so sometimes it was difficult to collect time data because of the long production runs. In the end a team member sacrificed not going to the other classes and by luck there was production scheduled for the top three products and was able to get the times for each one of them. For the standardized work- stations we mainly had problems because the checklist was not to clear operators and supervisors were not completing it on a daily basis as required. The results from implementation were that we were able to bring inventory levels down by 20% because of the inventory minimums and maximums. With the facility 5s we were able to improve operator and forklift movement throughout the plant. Reducing times to get materials, walking and forklift routes. With the time studies and standardized work stations we were able to

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measure the worker capacity compared to the standard production rate, meaning that workers now are aware of how much they have to be producing per day for the main part numbers at least. The SOP helped us reduce raw material and operator inputs that affect product performance.

INDUSTRIAL ENGINEERING PROGRAM ASSESSMENT

Compared to our objectives it can be safely said that the problems were solved we successfully we able to improve the transportation of materials throughout the plant with the general 5s and inventory minimums and maximums, we improved inventory and ordering inadequacies by setting bringing inventory levels down by twenty percent because of the minimum and maximum and were able to keep track of how much inventory was being stocked for future orders. We improved motion of plant personnel processing orders at each work stations with the standardized checklists for operator in supervisor. This helped keep plant personnel well aware of exactly what they needed to do without loosing any time. We tackled operator and raw material inputs that affect product performance by creating the standard operator procedures (SOP), so we also brought down the levels of bad core performance by 10% because we also had a time constrain for this project and were only able to analyze some products and defects.