Instructions:

Write weekly entries detailing the projects and duties performed that week during the internship experience. Include the following as appropriate. Each item need not appear every week but will be evaluated at each journal check.

- Describe what you learned about the engineering profession from the internship experience
- Describe what you learned about the particular industry
- Describe what you learned about the company/organization
- Describe what new technical skills that you learned during the internship experience
- Describe new professional interests that you developed as a result of the internship experience
- Describe any goals or plans regarding your future in the profession

Week 1: [January 11- January 14]

The first week at Parker Chelsea has been amazing. For the majority of the week, we have been going over safety standards. We were also given all of our needed safety equipment, safety glasses, boots, steel toe covers, and our 30-day safety vest. Parker has a vest color code system so the first is a red vest, after 60 days turns to a blue vest, and at 90 days, you get your yellow vest**. This week I learned a great amount about the engineering profession**. I am working under Michael Fink, the Division Lean Manager for the Parker Hannifin Chelsea division. I am also working alongside the other interns from the University of Memphis.

Week 2: [January 17- January 21]

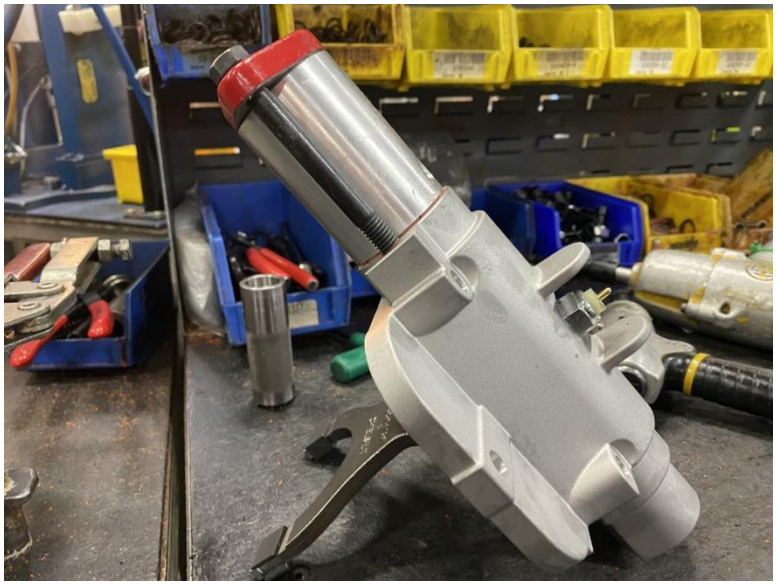
This week I conducted multiple tasks during our first kaizen event. This kaizen focused on 3 different departments in the plant, and I was a part of the receiving area group. We used methods such as 5S, 5-why analysis, fish bone diagram, and Gemba walks, which we were eventually able to conduct to ensure we learned the processes**. What I learned particularly about the industry was the importance of minor details that could change a process from taking one hour to just 10 minutes with minor adjustments.** Originally, the staging lines for the incoming packages were barely visible; as a team we decided to change the color codes to better represent incoming materials. We work heavily with all the floor technicians and take great interest in seeing the result. The goal is to sustain the implementation of the new process.

Week 3: [January 24- January 28]

This week I assisted Ms. Mary, the material handler leads, in the assembly prep area. This section of the plant is one of the most important because each job must be built in the order it is given, meaning it has to be picked perfectly every time in order to not bring the assembly line to a halt to go a retrieve the missing parts. **This method of 1 step flow was used doing this task**. **What I learned is that accuracy and quality is more highly valued than quantity**. Originally, I batched the parts that I needed together, but learned quickly that I items can easily be missed, causing down time in the cell. **The goal is now to utilize the 1 step flow method in more areas of the plant.**

Week 4: [January 31- February 4]

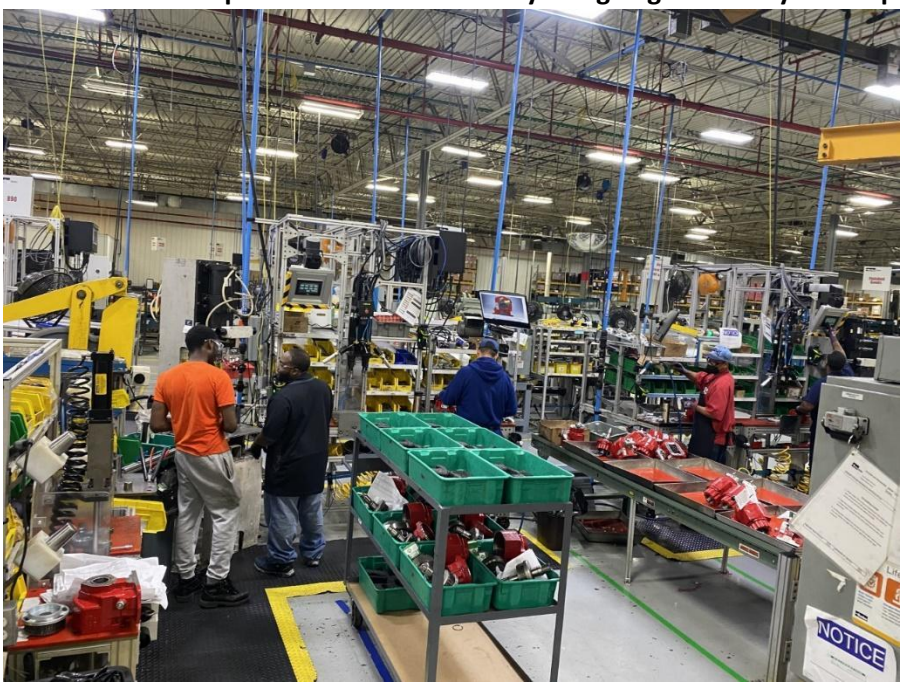
This week involved building one of the main components used in Pick-to-Light in the plant. The reason for me to work in this station is to better understand the steps of building a PTO. I learned that the company has a lot of make-to-stock parts. Even the robot cannot keep up with the amount needed sometimes. **The new technical skill I learned this week was how to build four different types of hydraulic shifters and how the automation of the component saves the company time and resources**. Seeing the implementation of robotics really sparked my interest over this past week. **I plan to learn more about automation in the near future and will hopefully get a chance to program a pick-and-place function here at the plant.**



Week 5: [February 7- February 11]

This week we were moved to kit building and PTO assembly. The kits are built in their own cell in the plant and are specific to its own order. Without the part, the PTO would not only be incomplete but also unable to mount to the transmission at the end customer. This week I also learned the method of one-piece flow as a part of the assembly line. One piece flow assures the best quality and efficient timing of all operations. Each part is also checked for any bad components**. A new skill and interest I found this**

week is how to improve the flow of work by using engineered hydraulic presses and 4 socket drills.



Week 6: [February 14- February 18]

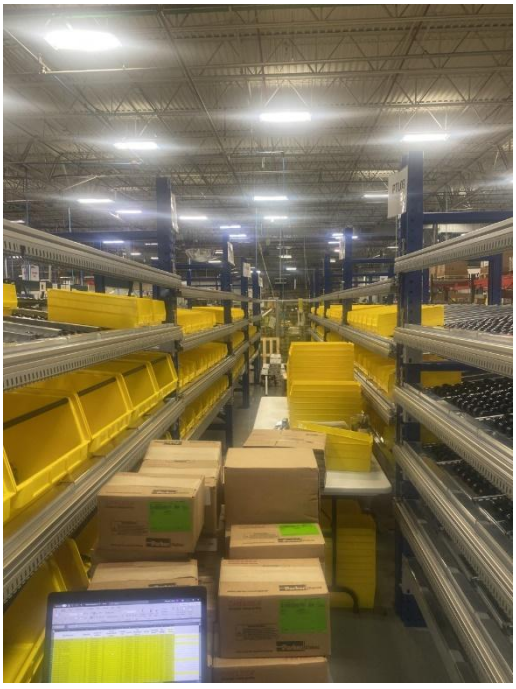
This week I assisted the manufacturing engineer over our plant to test both the modules for the system we were implementing and also the labels we will be using. **This week I learned that an institution like this starts huge projects on a very small scale before they build the entire product. The new skill I learned this week was how much the minor details matter the most.** The testing of several bar code designs and brackets for the modular had to be heavily thought of because if the dimensions were made too big, the bracket could interfere or even cut the hand of someone reaching inside the bin. **The goal throughout this implementation is that everyone stays safe, and everything functions as needed.**

Week 7: [February 21 – February 25]

This week I conducted a great volume of verification tests. The verification had to be made for the complete parts list for the area to be replaced. Many items had to be 5S'ed due to their weight or size. I learned every single part of PTL (pick to light**). I also learned from our safety lead that you must calculate weight according to the smallest person that will be operating in that section.** Due to safety standards, you cannot lift anything over your head over 40 lbs. As a solution to this, I along with the other interns were tasked to each build a platform and quote a lift that could raise up to 62 inches high. The goal is to not only save the backs of the workers but also make the job doable for anyone.

Week 8: [February 28 – March 4]

This week, the other interns and I assisted in stage one of the assemblies of the racks on the PTL**. I learned that this industry thrives off the minor measurement that I made this week. I learned a lot about drafting in Inventor, even though I had only ever used NX.** We were tasked to design a platform to eliminate the height requirement to place bins in the top row of racks. After requesting quotes and a further discussion, we all decided that it would not be necessary. As an intern, I had to learn to make professional calls and ask questions in order to gain valuable feedback. The dividers for each bin had to be measured and aluminum had to be cut to size. **The goal of this week was to think deeply into the usability of all bins in every location.**

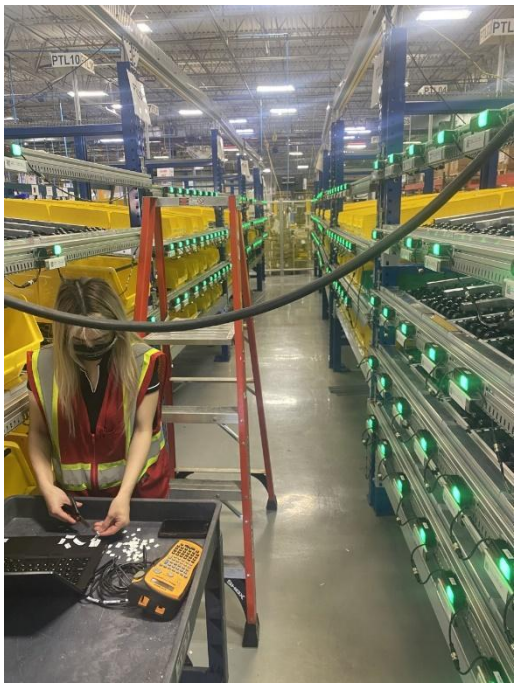


Week 9: [March 7- March 11]

This week we were tasked to install all aluminum reels. These 10-80 pieces of extruded aluminum will hold both a wire connection and will also be the mount for the module components. This week I learned that in lean, everything does not go as planned but what matters is how you handle those problems. Working alongside the manufacturing engineer and lean manager, we learned that the welding needed to be reworked, which would be very costly. **The goal of this week was to learn about cost spreadsheets, meeting appointments, and using an industrial cutter for the aluminum.**

Week 10: [March 14 – March 18]

This week I was tasked by the manufacturing engineer to properly assemble and mount 580 PTL modules. Each location has its own pick the light module on the front and the back of the rack**. A new technical skill I saw this week was the plan being executed in the real environment**. Multiple male and female connections had to be re-calculated and ordered due to supply chain issues. I learned how lead times can affect complete implementation**. My goal this week was to get all the connections and wires routed so that the electrical technician could begin to work on the programming of the modules.**

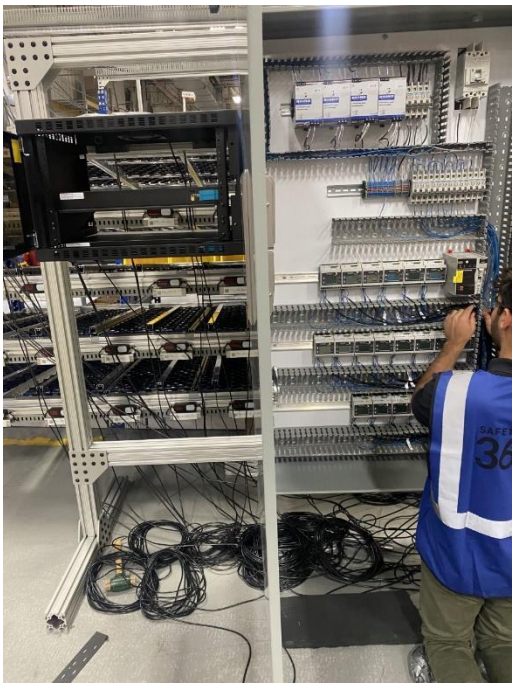


Week 11: [March 21 – March 25]

This week we were tasked to conduct a verification test on the labeling of the bin. Sizes, formats, and placement were decided in a series of meetings. **I learned that in large companies, having young minds like ours provided a middleman perspective. In a room full of engineers, they can disagree about the best solution to move forward with.** Being new to the environment, I can bring fresh ideas and values. The goal of this week was to complete planning for the implementation and to fine tune/test all of the barcodes and labels.

Week 12: [March 28 – April 1]

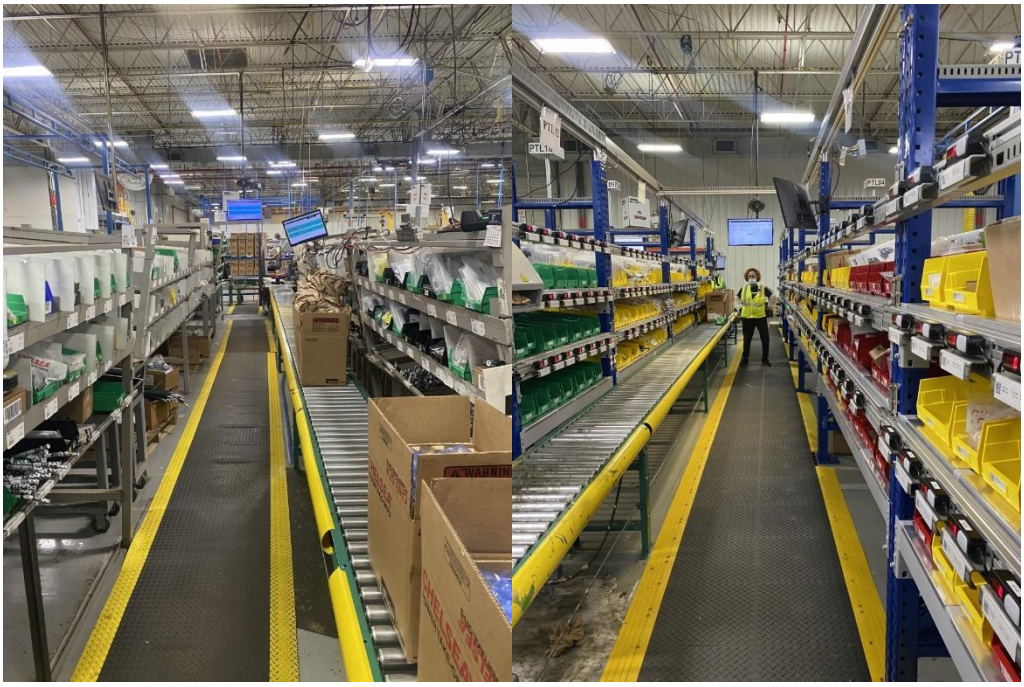
This week is the week before implementation of the new PTL system. Before we move all operations over to the new PTL location, we must verify that everything works as planned. We, along with 3 IT technicians, the manufacturing engineer, and the lean division manager, worked for three full days to install, test, and review the plan repeatedly leaving nothing untouched or unthought of. I learned that in this company some things are better to just be contracted out by a team than to do it all ourselves. When we were tasked to assemble the power case and router box we had to double, and triple check every connection we made. I learned that in a project this size there should always be someone behind you to check over your work. **The goal and objective of this week was to ensure that the people involved in the implementation are fully prepared for next weekend when the new system is installed.**



Week 13: [April 4 – April 8]

This week we did our best to break the system. We were tasked to fill the bins with the correct parts and test the system until we found a problem. No huge issues were found, and all seemed to work just as planned. We were also in charge of contacting and planning the complete staff that will work over-time this weekend. I learned this week that you do your best to never stop production. The plan was

installing the new system over the weekend in a 72-hour time span so that by Monday morning, the system will be fully operational, and production can continue uninterrupted. The goal was successful and in fact, we achieved the implementation in almost half the planned time. Production ended Thursday evening at 5:00 pm and the system was completely installed and being tested by Saturday morning. **I learned this week that planning for every possible scenario will contribute to the success of a project.**



Week 14: [April 11- Current]

In these last couple of weeks, I have only been coming back to the building as needed due to upcoming final exams and job interviews. Also, to the fact that my supervisor (Michael Fink) just recently had his first child; in his time away, he really wants us to focus strongly on schoolwork. This internship was an amazing experience and has taught me many things to take along with me into my career. My plan after this internship is to take the new skills that I've learned and bring them with me to a full-time position.