Case study: Solum Tread

Solum's mission goal is to reduce the use of petroleum products in the creation of the sole and tread of shoes. By using a completely biologic compound, they find they can remove the need for petroleum products in the creation of shoes. Founded by Thomas Bogle in 2021 after years of research, his first factory was opened in 2025 after a few years of leasing equipment from other companies. He hopes to expand to many simple factory layouts in the future, but for no,w there is only the one facility in Bozeman. He hopes that by having a small footprint as far as manufacturing goes, fewer resources can be used to create a useful product that creates less reliance on petroleum.

Internship experience:

This internship was different from almost any other P2 internship as far as i can tell. The technical expertise required for the tasks given far outstripped even my Air Force-trained technical ability. The formatting of most of the P2 projects were to analyze an existing process and suggest changes to implement over a period of time from immediate to years later, detail the costs, research how to make these processes more efficient, in water usage or CO2 and then to outline the cost to the manufacturer vs the money saved by said manufacturer. None of this framework was applicable to what i was asked to do. This internship started with machines to process straw into a fine material that was then mixed by another machine with added reagents and then this dough was pellatized and shipped to a customer. Over the course of the internship, I was asked to take each of the four machines required in this line and assemble, repair, optimize and effectively run each of them. I did my best to find cost-effective fixes for each of the issues I discovered with each of the machines.

The primary challenges:

Beyond the issues that faced each machine, the primary challenges for this manufacturing process were dust control due to the fine particulate size that the straw was turned into as well as how to optimize the process to be done by a single person. These challenges were dealt with by creating seals and covers for the machinery to limit dust creation. Other concepts put into place were fans to limit dust buildup in certain areas and containers better suited to collecting the material that limited dust pluming.

After each of the machines was put in working order, i created a system for feeding each machine that created an efficient flow for each machine. The constraints each machine faced

were different and through observation and constant interaction, i was able to settle upon a flow that works best for each one to produce the required outcome of each.

Cost analysis:

Over all i spent close to 1000 dollars on various improvements and repairs to the system as a whole. Many of them were small purchases, like a soft hammer to clear a storage silo carefully and productively, shelving to organize tools and stock items, and parts for the machines that needed to be installed or replaced.

Future Recommendations:

I believe that the company has room to expand its autonomous workings. A conveyor to deposit material into the first machine, the hammer mill, a diverter and hopper for the second machine, the shaker table, stand legs to increase the third machine, ribbon blenders height and its ability to feed out. Pumps to move material for better mixing. Lastly, a better collection adn cooling method for the pellets formed by the last machine the pelletizer.

Conclusion:

My time at Solum has shown me that there are many challenges facing companies across the life span of companies. The experience was off script for my current education and interests, but it reminded me that there are many working parts to the creation of any product and being able to keep those pieces in mind and coordinate their operation is a great asset to any company and individual.