



Plastech Corporation



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Company Background

The Frandsen Corporation began as a lumber company in 1951 and has grown into a major holding and management company that spans four states and manages seven different corporations. Dennis Frandsen started Plastech Corporation in Rush City, MN 55 years ago to provide a state-of-the-art facility for custom plastic injection molding. Driven by their motto to produce “perfect parts, on time, every time” Plastech has proven to clients across the nation that they care about customer and employee satisfaction, represent a high standard of excellence, and strive to grow while moving towards sustainability.



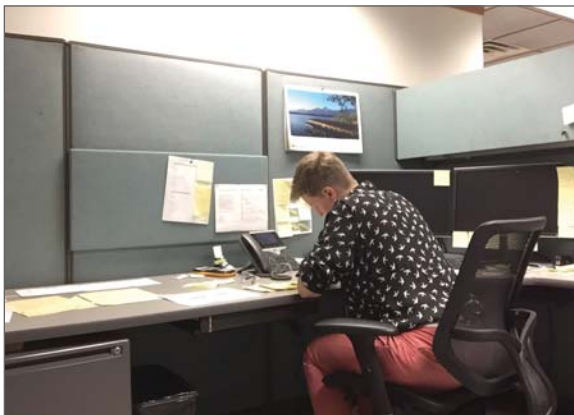
“Through this internship, I’ve learned how to better gather data and information from scratch, organize it into a cohesive manner, and analyze it against all possible solutions. This allowed me to put my engineering knowledge to practice and acquire valuable skills I would not have learned in the classroom. The great wealth of information provided by the staff at MnTAP and Plastech Corporation has taught me to internalize the concepts of energy efficiency and understand how they can be applied to any field while simultaneously giving me the experience of working in industry, and the confidence to pursue my own ideas. I am certain of my abilities to approach any problem with a new and unique perspective.” ~ ED

Project Background

With 44 injection molding machines, mold heaters, and numerous pneumatic devices, Plastech wants to reduce their energy use by finding ways to reduce motor idle time, minimize compressed air use, and improve assembly workflows to better meet customer demands. While 90% of Plastech’s scrap is reused in their process, the company is highly interested in finding ways to reduce, reuse, and recycle even more than they already do. The project focused on these areas to optimize energy, material waste, and create a leaner assembly process.

Incentives To Change

Plastech shows its commitment to staff and customers by making continuous improvement a core part of its culture. This commitment has helped reduce the cost of unnecessary material waste and increased their ability to meet demands. Plastech has corporate goals to reduce material waste to under 4% and are well on the way to achieving this. Additionally, creating a more efficient process in terms of material utilized, energy consumed, and process layouts will not only help reduce Plastech’s utility bills but also Plastech’s environmental impact.



“Plastech has an internal commitment that continuous improvement is an important part of our culture. We need to remain competitive in our respective industry and utilizing outside resources such as the MnTAP Program are a beneficial and welcomed addition to our internal capabilities. Our experience over the summer has been very positive and has gained a lot of support from all areas of the organization.”

*~ Douglas Hoffbeck,
Director of Engineering, Plastech Corp.*

Solutions

Reduce Motor Idle Time in Grinders and Presses

Currently, processes at Plastech allow for granulator machinery to run uninterrupted. Additionally, presses and mold heaters are shut down on a variable and project-dependent basis. Both require motors to idle for long periods of time and create a demand on the energy usage of the facility. Installing the Watt Wattcher 2000 on five granulators to monitor motor idle decreased the energy consumption by 556,000 kWh per year, and implementing a shift check sheet standardized the shutdown process of other equipment. These reductions will result in a total annual savings of \$82,000.



Improved Material Handling

Currently, operators are in charge of running presses, clipping excess material from finished products, and regrinding this excess material. Moving the regrinding step to a central location with one operator will eliminate the remaining granulators and translate to an energy reduction of 692,000 kWh per year. The potential for materials to be contaminated would also be reduced, resulting in material savings of 27,200 lbs on an annual basis. Working with the material handlers and external companies, Plastech intern, Emily Daniel sold 109,000 lbs of excess material stored, and determined the potential of stream separating waste material for recycling. It is estimated that up to 104,000 lbs of material could be recycled annually.

Move Assembly Process

Daniel recommended that certain processes be moved to new locations to both consolidate the inventory, assembly, and shipping of one process while improving the flow and efficiency of two others and opening up a vast amount of space for the remaining processes to be rearranged. Additionally, she recommended that purchasing new equipment to optimize another process, would reduce ergonomic and physical constraints, increasing efficiency by 22-35%, and saving between \$5,500 and \$8,700 annually. The moves would reduce forklift use and save 2,600 gallons of propane gas, and save \$26,300 from labor efficiency on an annual basis.

Reduce Compressed Air Demand

The intern found that by investing in a leak detector and scheduling semi-annual check-ups of the production equipment, as well as by implementing isolation valves on pneumatic equipment, up to 441,000 kWh could be saved annually, saving Plastech \$23,000 each year. Several processes still using pneumatic equipment could be done with electric alternatives thus lowering energy demand. Each device switched would save between 8,000 and 13,000 kWh per year or between \$400 and \$700 annually.

Recommendation	Annual Reduction	Annual Savings	Status
Resale of excess and contaminated materials	109,400 lbs (1 time only)	\$19,300	Implemented
Stream separation and central grinding	131,200 lbs	\$13,800	Recommended
Watt wattcher 2000	556,000 kWh	\$40,700	Implemented
Leak prevention program	441,000 kWh	\$23,200	In Progress
Switch devices to electric	21,600 kWh	\$1,100	Recommended
Relocate processes A, B, and C	2,600 gallons propane Labor efficiency increase	\$3,000 \$26,100	Recommended/ Implemented
Process D- improve ergonomics	22-35% assembly time	\$5,500 - \$8,700	Recommended

MnTAP Advisor: Michelle Gage, Assoc. Engineer