



**Intern:** Hyeonggeun Bak  
**Major:** Mechanical Engineering  
**School:** University of Nebraska-Lincoln



### Company Background

Perrin Manufacturing was founded in 1978 and merged with Dynasys in 2014. The company designs, manufactures, and distributes HVAC (Heat Ventilation Air Conditioning) systems and APUs (Auxiliary Power Units) for trucks and automobiles, but primarily for heavy-duty construction and agricultural vehicles. The company is in Alliance, Nebraska. Currently, Perrin has 37 employees and over 100,000 ft<sup>2</sup> of manufacturing space.

### Project Description

During the summer of 2020, Hyeonggeun Bak, a P3 intern, worked at Perrin Manufacturing to assess potential Pollution Prevention (P2) opportunities. The intern investigated ways to reduce both energy consumption and the waste produced during the manufacturing process. He also focused on improving the packaging of products so that the process would become more environmentally friendly.

### Pollution Prevention Benefits

By implementing the intern's recommendations, Perrin can expect to significantly lessen its usage of electricity, natural gas and non-biodegradable packaging materials.

### Results

**Potential Pollution Prevention Results**

	<b>Expected Annual Reduction of Usage</b>	<b>Expected Annual Cost Saving</b>	<b>Expected Annual Reduction of Greenhouse Gas</b>
<b>Installing a Recycling Bin</b>	20,808 lbs. of general solid waste	0*	29.82 MTCO <sub>2</sub> E
<b>Replace Existing Lights with LEDs</b>	11,402 kW	\$2,762	10.89 MTCO <sub>2</sub> E
<b>Packaging Solutions</b>	2,794 lbs. of general solid waste	\$18,162	1.94 MTCO <sub>2</sub> E
<b>Powder-Coating Solution</b>	774therms	\$638	19.3 MTCO <sub>2</sub> E
<b>Total</b>		\$21,562	61.95 MTCO <sub>2</sub> E