

**Florence Manufacturing Company
Manhattan, Kansas**

Intern: Chelsea Renda

Major: Chemical Engineering

School: Kansas State University



The Company

For more than a century, Florence Manufacturing has provided the country with quality mailboxes. Florence Manufacturing is dedicated to improving the quality of their product and reducing their negative impact on the environment.

Project Background

Renda’s main project was to gather information on ISO 14001 certification. For this, she found out what processes they have in place by doing a “mock” gap analysis and compared their quality manual for their ISO 9000 certification to the requirements for ISO 14001. Her second project was to help with the powder-coating chemistry change that would result in using 614 kWh less energy per year and reducing chemical usage by 2,585 gallons per year. Next, Renda worked on consolidating the fabrication coolants. This project would reduce chemical usage by 110 gallons a year by just using one coolant instead of two. Finally, Renda helped with a scrap-reduction project. While this project has not led to any actual data as far as waste reduction or money saved, the research she conducted should help point out some issues that could be fixed to reduce their scrap. The table below gives a summary of the results of Renda’s projects.

Incentives for Change

As part of Florence Manufacturing’s commitment to continual improvement and being environmentally friendly, they have decided to pursue ISO 14001 certification. ISO 14001 will help the company focus on what impacts it has on the environment and create methods to reduce those impacts. This certification not only helps the environment but has the potential to save the company lots of money.

Projects Reviewed for P2 Potential

1. ISO 14001 Gap Analysis

The main focus of the internship was ISO 14001 certification. Florence Manufacturing is already ISO 9000 certified and has decided to become ISO 14001 certified as well. Since the certification process could not be completed in the short time frame the intern was with the company, Renda’s job was to give the company a good starting point and to show them what they physically do in the plant as far as their environmental impacts.

2. Powde- Coating Chemistry

The second project dealt with the chemicals in the five-stage washing system of powder coating. Modifications to this process would allow for a decrease in temperature in stage one (100 degrees from 130 degrees), and a decrease in temperature in stage three to 90 degrees instead of 130. This will save an additional \$59,000 and reduce the amount of chemicals being introduced into the environment.

3. Consolidation of Fabrication Coolants

The next project involved consolidating the fabrication coolants from two to one. The fabrication department was using Trim HD and Blasocut Universal 2000 coolants. Both have a 7:1 mixing ratio

with water, but Blasocut has a lower evaporation rate. Using just the Blasocut coolant, the company would use two fewer drums a year (110 gallons) and save \$36.60.

4. Scrap Reduction

The final project dealt with scrap reduction. The plant sees approximately \$1,000,000 worth of scrap a year. Renda's project was to find out what may be causing some of the scrap. Anodized parts accounted for approximately \$700,000 of the scrap, so Renda's first job was to figure out which anodized part was causing the most scrap. She also analyzed the fabrication process and recommended procedural changes that led to less scrap.

Project	Annual Cost Savings	Environmental Results	Status
Powder-coat chemistry change	\$143,010	641 kWh less energy 2,585 gallons less chemical waste	[In progress]
Coolant consolidation	\$36.60	110 gallons less chemical waste	[Implemented]
Relighting (suggestion to help with ISO 14001)	\$1,271.92	236,250 kWh	[Needs further research]
Scrap reduction	\$115	0.36 tons reduction of solid waste	[Recommended]

