Combating Run Waste at a Flexographic Printing Company

Joshua Kirk
MnTAP Advisors: Michelle Gage
Company Supervisor: Ann Warzecha
Company Background

- AWT Labels and Packaging - Based out of Minneapolis, MN
- Result of a merger between Advanced Web and Web Label
  - Advanced Web - 1991
  - Web Label - 1976
  - Combined facilities - May of 2006
  - Second facility in South Elgin, Illinois
- Employees: 164.5
- AWT Labels and Packaging is a printing company specializing in flexographic printing
  - High quality labels and flexible packaging
  - For some of the largest consumer goods manufacturers in the nation
What is Flexographic Printing?

• Flexography uses a flexible relief plate to apply ink to a substrate
• Each plate applies different ink color
What is Flexographic Printing?

• Often there are multiple layers of material that are adhered together to make the final product
Project Overview

• **Project 1: Run waste reduction of the four P-Series presses**
  • Material waste
  • Energy waste
  • Time waste

• **Project 2: Chemical inventory and VOC alternative cleaning products**
  • Inventory current cleaning chemicals
  • Assess VOC quantity and hazard
  • Suggest and test alternative solutions
Approach

• Quantifying Run Waste:
  • Green sheet study – operator-driven waste logging
  • Core waste study – measuring expended material cores
  • Unflagged waste study – measuring operator fidelity in identifying waste

• Studying Major Sources of Waste:
  • Analyzing results of the three studies
  • Identifying most significant buckets
  • Deciding which sources to tackle
Run Waste Logger Results

Roll Change (RC) = 30%
RC + Other Troubleshooting (OTS) = 57%
Approach

• Understanding Roll Changes
  • Spaghetti diagrams
  • Dozens of observations
  • Find the best practices

• Create Standard Work Procedure
  • Gather best practices
  • Confer with operators
  • Formalize SOP
  • Measure efficiency of implementation
Primary Recommendation – Roll Change Standard Work Procedure

• **Main Objectives:**
  - Standardize best practices – every operator is best operator
  - Reduce unnecessary movements
  - Offload time-consuming, non-essential tasks from roll change event

• **Recommendations:**
  - Have everything staged for the roll change
  - Be at the unwind end to manually stop press
  - Put off ink refills or unnecessary paper work

• **Savings:**
  - Work loss time
  - Cost of material, labor, and energy
<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Annual reduction</th>
<th>Total cost</th>
<th>Annual savings</th>
<th>Payback period</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll change standard work</td>
<td>12,000 kWh and 300 hours</td>
<td>$4,000</td>
<td>$153,000</td>
<td>&lt;1 Months</td>
<td>Implementing</td>
</tr>
<tr>
<td>Manually stop press</td>
<td>18,700 lbs stock</td>
<td>$2,000</td>
<td>$61,000</td>
<td>&lt;1 Months</td>
<td>Implementing</td>
</tr>
<tr>
<td>Press helper roll change</td>
<td>2,400 kWh and 62 hours</td>
<td>$4,000</td>
<td>$30,000</td>
<td>&lt;2 Months</td>
<td>Recommended</td>
</tr>
<tr>
<td>Standardize cleaning products</td>
<td>13,000 lbs chemical</td>
<td>$0</td>
<td>$1,400</td>
<td>Immediate</td>
<td>Recommended</td>
</tr>
<tr>
<td>Use stand-off</td>
<td>200 lbs stock</td>
<td>$0</td>
<td>$640</td>
<td>Immediate</td>
<td>Recommended</td>
</tr>
</tbody>
</table>
On a Personal Note...

• The experience working at a company has been invaluable to me
• Learned how to operate in a professional work environment
• Exercised and bolstered my communication and writing skills
• Made connections and learned from mentors