Energy Conservation and Waste Reduction at Balchem/SensoryEffects

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Company Supervisor: Byron Currier
Company Background

- Manufactures ready to eat powders
- < 40 Employees
- ¼ of a city block
- Highly flexible
- Built in 1940s
- Expanded 1970s, 1990s, 2000s, 2010s
- Acquired by Sensory Effects/Balchem in 2014
Project Overview

• Product output has increased
• Employees are focused on making product

• Company desires to:
  • Conserve energy
  • Reduce waste
  • Set groundwork for future sustainability projects
Approach

• Learned facility processes
• Developed project ideas
• Researched potential solutions
• Contacted experts
• Collected data
• Calculated costs and savings
• Mapped utility usage
Primary Recommendation

• Reuse Pasteurizer Cooling Water in Scrubber Tank
Primary Recommendation

<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>Reuse pasteurizer cooling water in the Scrubber Tank</td>
<td>600,000 gal water 3,000 therms heat</td>
<td>$2,300</td>
<td>$1,900</td>
<td>8 months</td>
<td>Recommended</td>
</tr>
</tbody>
</table>

• Other Benefits:
  • Improve plant sanitation and safety
  • Improve scrubber water performance
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<td>8 months</td>
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<tr>
<td>Solenoid Valves</td>
<td>240,000 gal water</td>
<td>$550</td>
<td>$800</td>
<td>8 Months</td>
<td>Implementing</td>
</tr>
<tr>
<td>Piping water to Surge Tank</td>
<td>24,000 gal water</td>
<td>$1,300</td>
<td>$130</td>
<td>10 years</td>
<td>Implemented</td>
</tr>
<tr>
<td>LED lights and Motion Sensors</td>
<td>48,400 kWh</td>
<td>$16,400</td>
<td>$5,100</td>
<td>3.2 Years</td>
<td>Recommended</td>
</tr>
<tr>
<td>Foot Sanitizing Powder Mats</td>
<td>600 lbs powder</td>
<td>$600</td>
<td>$3,800</td>
<td>2 months</td>
<td>Recommended</td>
</tr>
<tr>
<td>Dryer Exhaust Heat Recovery</td>
<td>93,600 therms heat</td>
<td>$650,000</td>
<td>$50,000</td>
<td>13</td>
<td>Not recommended at this time</td>
</tr>
</tbody>
</table>
Personal Benefits

• Understanding company operations
• Technical Experience
• More willing to ask questions
  • Asking Experts vs. Online Research