Agenda

• Background
  – Personal Background
  – Company Overview
• Motivation for Change
• Approach and Methods
• Project Focus
• Summary and Conclusions
• Lessons Learned
Personal Background

• Previous Work Experience
  – Cummins, Summer 2013 (Industrial Engineering Intern)
  – Accenture, 2008-2011 (Consulting Analyst)

• Attended University of MN – Twin Cities
  – Master’s of Industrial Engineering (Dec 2013)
    • Focused on human factors/ergonomics and supply chain/operations management
  – Bachelor’s of Chemical Engineering (May 2007)
Company Overview

• ST Specialty Foods: manufacturer of pasta/rice products
  – Acquired in October 2010

• Parent Company (Treehouse Foods) is one of largest private label and foodservice companies
Company Overview

• Located in Brooklyn Park, MN and in Kenosha, WI
  – Brooklyn Park: 3.24 acres - 75,450 square foot building
• 3 pasta production lines - 8 packaging lines
• Approximately 469 SKUs (30 Pasta & 3 Rice types)

Macaroni & Cheese  Add-Meat Skillet Dinners  Pasta Side Dishes  Rice Side Dishes
Motivations for Change

• The ST Specialty Foods management team is striving to implement a lean manufacturing program
  – Currently in early stages of lean journey
• Changeovers lead to excessive downtime
• Material loss due to process inefficiency
Approach and Methods

• Used methods engineering tools to gather and analyze data
  – Observations (i.e. walkthroughs)
  – Interviews (spoke with operators/mechanics)
• Identified problem areas and potential projects
  – Worked with production manager and supervisors
  – Focused on areas from company’s Pareto Analysis
• Analyzed information and proposed solutions
Project Focus

• Two main project areas:
  – Franklin Energy Audit Recommendations
  – Lean Manufacturing Projects

• Goal: Improve efficiency and reduce energy
  – 5S initiatives
  – Setup time reduction
  – Process improvement
Project Focus: Franklin Energy Audit

- Equipment Inefficiencies
  - Compressors
  - Motors
- Implement Exterior Lighting project
Successful Process Changes

- Compressor Maintenance
  - Equipment Install (Zero Loss Air Drain, Mist Eliminator)
  - Compressed Air Leak Study
Project Focus: Lean Manufacturing Operations

• Excessive Downtime due to:
  – Frequent changeovers (Individual changeovers vary considerably, ~30-180 min)
  – Insufficient tools/equipment
  – Lack of standard process for machine setup

• Negative affect on plant overall efficiency

• Implement 5S system and standardize procedures and tools
Successful Process Changes

• 5S System Implemented
  – Checklist for Cleaning and Changeovers
  – Shadow Boards Installed
  – Standard Operating Procedures
  – Centerlining on Case Packers
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## Summary

### Project Summary:

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Waste/Energy Reduced (Yearly)</th>
<th>Implementation Cost</th>
<th>Net Savings (Yearly)</th>
<th>Payback Period</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Lighting Upgrade</td>
<td>10,731 kWh</td>
<td>$8,190</td>
<td>$972</td>
<td>7.4 years</td>
<td>Completed (Nov 2013)</td>
</tr>
<tr>
<td>Air Compressor Maintenance</td>
<td>18,030 kWh</td>
<td>$7,190</td>
<td>$1,622</td>
<td>1.32 years*</td>
<td>Completed (Dec 2013)</td>
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<tr>
<td>Air Leak Study</td>
<td>~33.1 CFM</td>
<td>-----</td>
<td>$3,827</td>
<td>-----</td>
<td>In Progress</td>
</tr>
<tr>
<td>Lean Operations/5S Initiatives</td>
<td>~20 min/shift</td>
<td>$8,514</td>
<td>$14,280</td>
<td>0.60 years**</td>
<td>In Progress (Ongoing)</td>
</tr>
</tbody>
</table>

*Inclusive of total air compressor upgrade and leak study

**Estimated based on 20 minutes saved/line per shift and $63/hour (total cost), 340 operating days
Conclusions

- Plant goal is Goal at 72% overall efficiency next year, up from 69% in 2013
- Increased efficiency by 1-2% based on estimated saving by implementing reduced changeover time
Conclusions

• Company is early in lean operations journey
  – Support from Plant Leadership and overall corporate team is promising

• Need to build more accountability and ownership among the operators

• Many quick wins realized in short term

• Recommendations left for future projects
Lessons Learned

• Real life industrial environment exposure
• Energy-related projects in manufacturing operations
• Operator and 3rd Party Vendor Relationship Management
• Technical understanding with food manufacturer (R&D, pasta/rice)
• Opportunity to spend time on production floor
Questions?