ST Specialty Foods: Lean Manufacturing Project Intern: Rahul Dhuria MnTAP Advisor: Paul Pagel January 3, 2013

Minnesota Technical Assistance Program



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)

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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



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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)



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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



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- Compressor Maintenance
 - Equipment Install (Zero Loss Air Drain, Mist Eliminator
 - Compressed Air Leak Study

		• •	Leak Survey Report - :	Sorted By Leak Number		
Date:				Contact:		
Compan	y: Biy	ps m	STS	Phone:		
Plant:				Hours of Operation:		
Brabazo	n Job No:		·	kW:		
Leak #_	dB Level	PSI	Building / Machine Location	Problem		
1	38	100	H-line	Tube to pushlos		
2	60		G-line Carton makes	Solewoid bleeds		
3	50		G-Inc Film Srink tunnet	Tube to Pushloc		
4	45		C-line Bagger	Air Cyl, Shaft Seal		
5	50		C-line II	Filter chin bleeds		
6	45		Coline	Regulator body to base		
7	60		C-Im-	Tibe Holes in it by belt		



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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



- 5S System Implemented
 - Checklist for Cleaning and Changeovers
 - Shadow Boards Installed
 - Standard Operating Procedures
 - Centerlining on Case Packers



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<u>Group</u>	<u>Material #</u>	Material Description	Jog Speed (RPM)
DRYCH	SCH401534	BULK CHS ORGANIC 4015-34 - 1600 LBS/TOTE	
DRYCH	SCH401529	BULK CHS ORGANIC 4015-29 - 1400 LBS/TOTE	
DRYCH	S432116	CHEESE BULK 432116 - 1400 LBS/TOTE	
DRYCH	S4208	CHEESE BULK 36586 1400 LB TOTE	
DRYCH	SCH7632	BULK CHEESE 7632 - 1400 LBS/TOTE	
DRYCH	S170054	CHEESE PWDR NONBL OVR FOR MW	
DRYCH	SCH0601	BULK CHEESE 0601 - 1600 S. TO1	
DRYCH	SCH72147	NON-BOIL OVER PWDR FC LQD MICRC UPS	
DRYCH	SCH36585	BULK CHEES 585 - 00 S/TOT.	
DRYCH	SCH36499	IEES 31 19-1 10 LBS/TOTE	
DRYCH	SCH8221	BULK HEE 100 16 LBS/TOTE	
DRYCH	S450,	B SESF 04990 00 LBS/TOTE	
DRYCH	S2907	C EESE V 30595555 1600 LBS/TOTE	
DRYCH	SCH1010	E LK CHEESE 10109 - 1600 LBS/TOTE	
DRYCH	SCH72255	BULK CHEESE 722558 - 1600 LBS/TOTE	
DRYCH	S1724548	CHEESE POWDER THICK N CREAMY	
DRYCH	SCH723357	BULK CHEESE 723357 - 1600 LBS/TOTE	
DRYCH	SCH6863	BULK CHEESE 30496863 1600 LBS/TOTE	
DRYCH	S724300	WHOLE GRAIN ANTI BOILOVER POWDER	

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Summary

• Project Summary:

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

*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

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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



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time



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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?



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