

Water Conservation at Stylmark, Inc.

Toby Pablo

MnTAP Advisors: Kelsey Klucas, Daniel Chang

Company Supervisor: Casey Charging



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

Company Background



- **Overview**

- Fridley, MN
- 109 employees
- Aluminum finishing

- **History**

- Began in 1954 as Designware Industries
- Expanded into current facility
- Variety of customer bases



Company Background



- **Overview**

- Fridley, MN
- 109 employees
- Aluminum finishing

- **History**

- Began in 1954 as Designware Industries
- Expanded into current facility
- Variety of customer bases

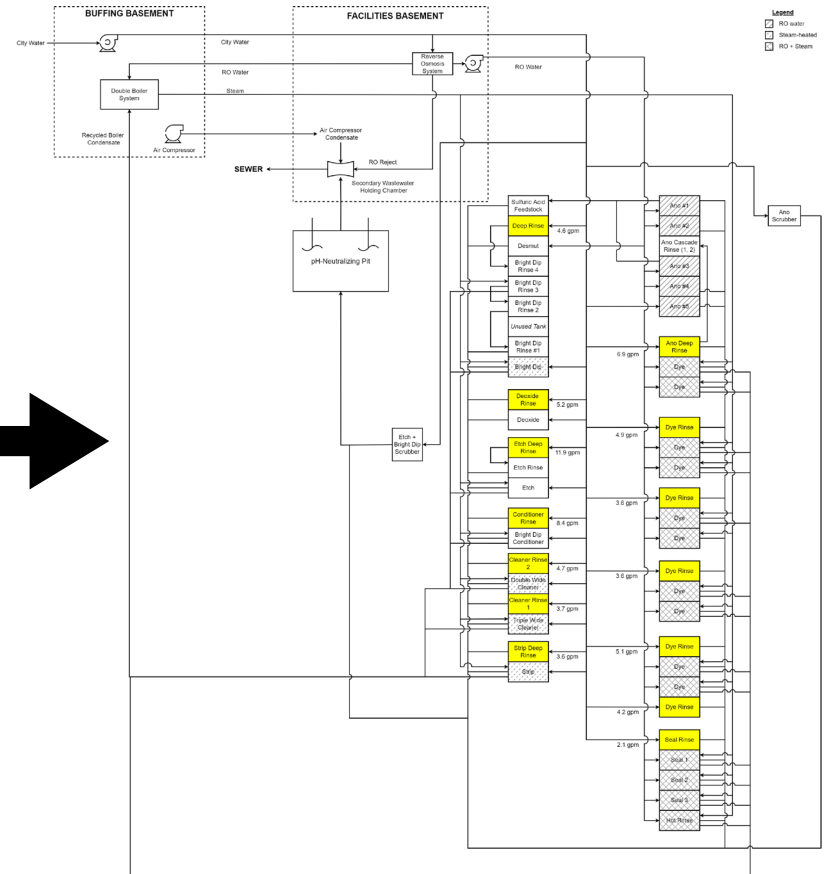


Incentives to Change



- **Water-intensive process**
- **Chemical costs and conditions**
- **Control for product quality**

Mapping Water Use



Reducing Rinse Water

- Manual control: 18.3 million gpy
- Compatibility with all process conditions
- Rinse tanks are supplied city water
- Timer system not suitable: variable process rate



Reducing Rinse Water

- **Manual control: 18.3 million gpy**
- **Compatibility with all process conditions**
- **Rinse tanks are supplied city water**
- **Timer system not suitable: variable process rate**



Conductivity-Based Rinse Control

- **Based on PRIM (P2 Research and Implementation for Michigan Metal Finishers):**

- 25% savings for constant production rates
- 75% savings for highly variable production rates

- **Verified using a steady state model**

Savings Estimate	Water Saved (gpy)	Savings (\$/yr)
Conservative (25%)	4,600,000	\$47,300
Moderate (50%)	9,100,000	\$94,600
Steady State Model (68%)	12,500,000	\$129,000
High-Variable Workplace (75%)	13,700,000	\$142,000

Conductivity Control Net Savings

- **Conductivity control for 14 tanks: \$30,000**
- **Approximate MCES strength charge increase: \$7,000/yr**
- **Return on investment: < 1 year**

Savings Estimate	Payback Period
Conservative (25%)	9 months
Moderate (50%)	4 months
Steady State Model (68%)	3 months
High-Variable Workplace (75%)	3 months

Solutions

Recommendation	Annual reduction	Total cost	Annual savings	Payback period	Status
Implement conductivity control	12,500,000 gal water	\$30,000	\$121,000	3 months	Recommended
Regulate dragout time	49,500 gal water 28,300 lb chemicals	None	\$32,800	Immediate	Recommended
Address compressed air leaks	56,300 kWh	<\$100	\$4,500	Immediate	Implemented
Insulate exposed boiler pipes	400 therms	\$1,000	\$400	2.5 years	Recommended

Personal Benefits

- Adapted to an unfamiliar field
- Learned the value of networking
- Gained insight by communicating across departments

