

# Energy and Water Reduction CSM Bakery Products

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**Driven to Discover<sup>SM</sup>**

# Company Overview

- World's leading supplier of bakery products
- 3 main areas of business



# Motivations for Change

- Goal to reduce energy use by 15%
- Reduce operating costs
- Decrease water consumption
- Improve the environment

# Approach

- Observed production and sanitation processes
- Noted ideas for improvement
- Worked with sanitation staff to test ideas
- Reworked ideas based on test results



# Finding Opportunities

- Notes taken during observations
- Opinions and suggestions of staff
- Research of common solutions
- Test results

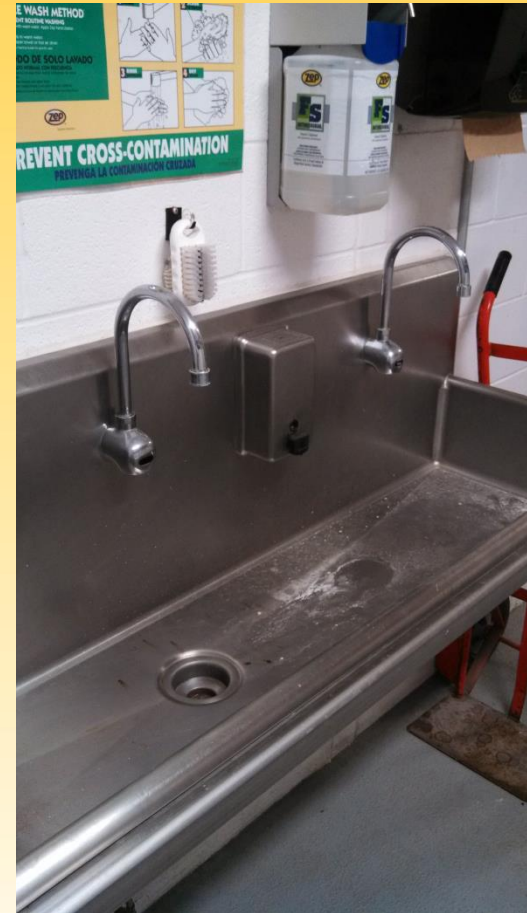
# Opportunity #1

- Employee practices
- Wasted water
- High water strength
- Simple solution:  
Training program



# Opportunity #2

- Outdated faucet aerators
- Many still 2.2 gpm
- Estimated 1.6% of water use
- Idea: Low flow aerators





# Opportunity #3

- Overused hoses
- Estimated 47% of water use
- Water wasted
- Idea: Low flow hose nozzles





# Opportunity #4

- Kettle room cleaning procedure
- 11% of water use
- 7% of energy use
- Wasted water and energy



# Kettle Room Solution

- Optimize SSOP and training
- Change filling and draining
- Reduce water by 87.5%
- Reduce energy by 96%
- More effective cleaning

# Successful Process Changes

- Employee training program
  - Save money on water
  - Reduce water strength charges
- Kettle room cleaning procedure
  - Hundreds of thousands of gallons of water
  - Thousands of dollars on energy
  - Thousands of dollars on chemicals

# Summary

Recommendation	Annual Reductions	Implementation Cost	Annual Savings	Payback Period	Status
1. Water conservation training program	Needs analysis	N/A	Needs analysis	Immediate	Needs analysis
2. Replace hand washing faucet aerators with low flow model	Gallons: 92,000 Therms: 650	\$25	Water: \$400 Energy: \$460	< 1 month	Recommended
3. Replace hose nozzles with low flow model	Gallons: 950,000 Therms: 6,200	\$3,200	Water: \$4,100 Energy: \$4,400	5 months	Delay Implementation
4. Change kettle room SSOP	Gallons: 760,000 Therms: 9,100	N/A	Water: \$3,300 Energy: \$6,400	Immediate	Continue Testing
<b>TOTALS</b>					
Water Conservation Options	<b>1.8 million gallons water</b>	\$3,225	<b>\$7,800</b>	5 months	22% of facility water use
Energy Conservation Options	<b>15,950 therms</b>	N/A	<b>\$11,260</b>	Immediate	11% of facility gas use



# Future Ideas

- Electro-chemically activated (ECA) water
  - Replaces all chemicals
  - Non-toxic
  - Non-corrosive
  - One time investment: \$25,000
  - Chemical costs: \$54,000/year

# Future Ideas

- Dry ice blasting
  - Uses no water or chemicals
  - EPA, FDA, USDA approved
  - No residue or secondary waste
  - Effective sanitizer
  - Possibility for frozen department

# Personal Benefits

- Industrial experience
- Confidence
- Knowledge



# Questions?

