

Caitlin Tegels

Malt-O-Meal



Improving Utility Efficiency Malt-O-Meal

Caitlin Tegels

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Minnesota Technical Assistance Program



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM



- Campbell Mill in Northfield, MN
- Ready-to-eat cereals
- ~800 employees at that location

Motivations for Change

- High cost of utilities
- Environmental impact
- Operational difficulties
- Food safety

Approach

- Thought in terms of systems
- Identified challenges with each system
- Came up with a series of solutions for each problem
- Evaluated solutions for fitness, feasibility, KISS principle
- Laid out plans for improvement

Finding Opportunities

- Familiarized myself with the plant
- Evaluated processes identified
- Difficulty was in getting to the root of the problem

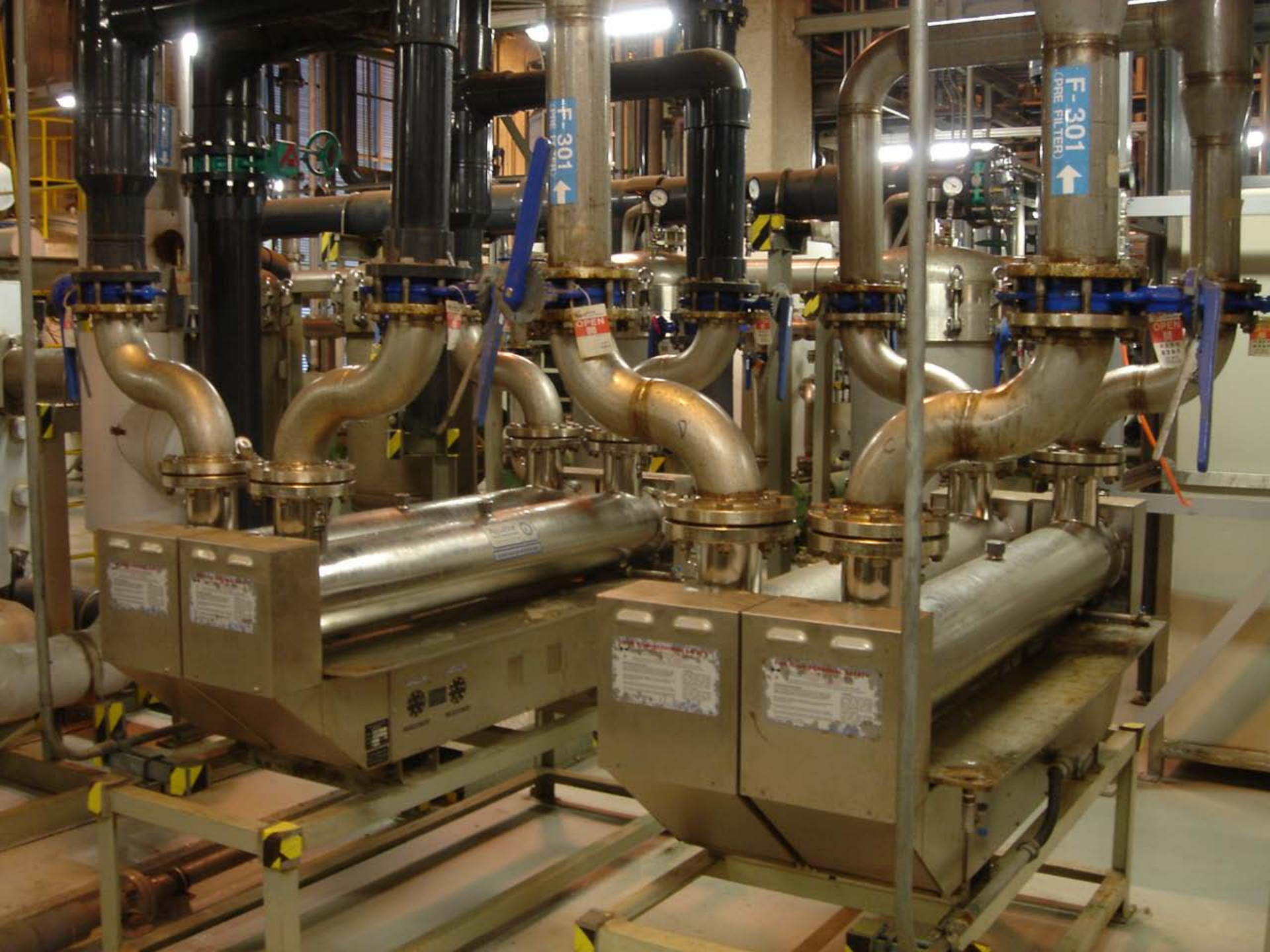
Non-Contact Cooling Water

- Cools cooker blowdown
- 26 MM gal/yr hot, softened water
- Boilers reused ~2.5 MM gal last year
- Changes to boiler water system allow 22.5 MM gal to be reused

Maximizing boiler room reuse

- Ultraviolet disinfection system
- Thermostatic mixing valve
- Clean tank
- Tank instrumentation





F-301
↑

F-301
(PRE FILTER)
↑

OPEN
↑

OPEN
↑

Labels on the left cylindrical unit, including a warning label with a skull and crossbones symbol.

Labels on the right cylindrical unit, including a warning label with a skull and crossbones symbol.

Status

- Planned
- \$11,700 to implement, 1 mo payback
- \$1,720 annual maintenance
- Benefits
 - 20.0 MM gal water, \$120k
 - 6,683 MMBTU natural gas, \$34k
 - Better water quality

Boiler Water Treatment

- Remove chloramines, DO, etc
- Better treatment=less blowdown
- Wastes heat, water, chemicals
- Easier on the equipment
- 1% blowdown is worth \$15k

More efficient treatment

- Swap sand filter media with activated carbon
- Reverse osmosis system changes
- Additional storage

Status

- In progress
- \$19k to implement w/ 3 mo payback
- \$3k/3 yrs maintenance
- Benefits
 - 4 MM gal less concentrate, \$24k
 - 4% blowdown reduction, \$60k
 - 24 barrels less dechlorinator, \$9k
 - 7,500 MMBTU less natural gas, \$41k

Steam

- Four boilers
 - Two 600 hp, two 1200 hp
- Avg 44 KPPH steam @ 210 psig
- A variety of process uses
- ~50% condensate recovery

Reducing purchased power

- Backpressure turbine
- Worthy of further investigation
- ~640k to implement
- ~195k annual savings
- Benefits
 - 6.9 MM kWh less purchased power
 - Better electrical reliability

Monday, August 16, 2010


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Video by David Henke

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Shane Kitzman

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Corey Butler Jr. and Shane Kitzman

Power outage likely cause of Malt-O-Meal fire (UPDATED)

By: COREY BUTLER JR., cbutler@northfieldnews.com

Posted: Tuesday, July 20, 2010 11:12 am

[Email](#) [Print](#)

Watch video from the scene of the Malt-O-Meal Campbell Mill fire.

UPDATE: The print version of this story precedes the initial web version.

* * * *

A late morning fire at the Malt-O-Meal Campbell Mill on Tuesday was quickly extinguished by the Northfield Fire Department.

Fire Chief Gerry Franek said the blaze was a cyclone fire, part of the cereal manufacturer plant's system on the third floor that expels heat to the outside of the building. Franek believes residue built up in the system and ignited, starting the fire.

All lines went down at about 10:15 a.m. because of a power outage, according to company spokesperson Linda Fisher.

The lines started up shortly thereafter and employees of Malt-O-Meal's adjacent distribution center saw black smoke billowing from the Campbell Mill's smokestack and notified officials in the building.

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Personal Benefits

- New industry, new challenges
- Hands-on engineering experience
- Worked with good, knowledgeable people
- Free breakfast, baseball