Minnesota Technical Assistance Program

Reduction of Water and Energy Use at Johnson Screens

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MnTAP Intern 2009

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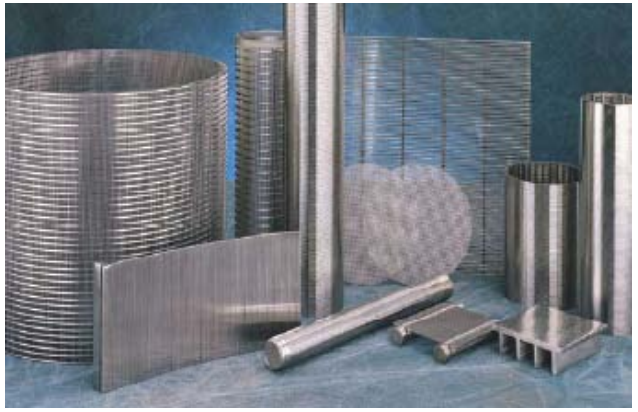
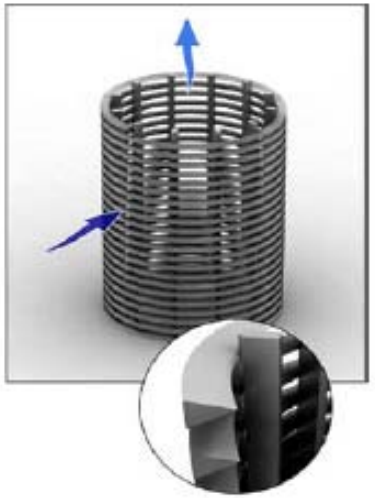
Helping Minnesota businesses maximize resource efficiency, increase energy efficiency, reduce costs, and prevent pollution

Johnson Screens Overview

- Filter/Screen Products for Industry
  - Water Treatment
  - Refining and Petrochemical
  - Pulp and Paper
  - Food and Beverage
  - Architecture and Construction
  - Water Well Products
  - Mineral and Aggregate Processing





Motivations for Change

- Reduce Energy/Water Expenses
- Continually Work to Improve Manufacturing Processes

Reasons for MnTAP Assistance

- Allow for different prospective
- Access to resources, tools, people

Approach

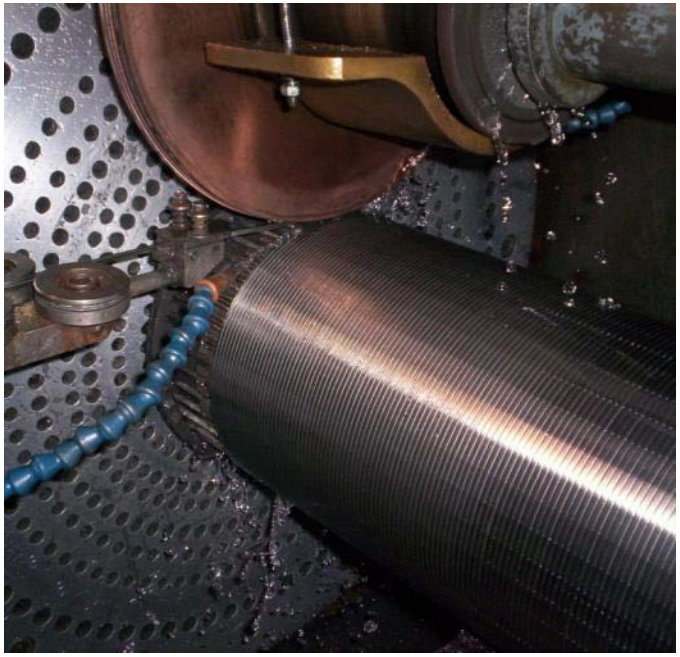
- Identify sources of energy used
  - Water
  - Electricity
  - Natural Gas
- Conduct Audits/Measurements
  - Water Audit
  - Compressed Air Leak Audit

Determining Inefficient Processes

- Water Measurements
- Air Leak Identification
- Overproduction Identification
- Equipment Age

Water Use: SFM

- Background
  - Welds wire to form cylindrical screens
- Issue
  - Consumes water for cooling weld & transformers
- Solution
  - Improve current recycling systems and integrate all SFMs
  - Reduce 2,400,000 gallons/year



Water/Air Use: Wire Mills

- Background
  - Forms wire into V shape for filter use
- Issue
  - Uses water and compressed air to clean off forming fluid
- Solutions
  - Use sponge/air amplifier to clean
  - (or) Recycle water, use electric blowers to dry
  - Save 1,750,000 or 2,150,000 gallons/year and 80,000 or 30,500 kWh/year

Compressed Air System Leaks

- Background
  - Supplies pressurized air to entire production floor
- Issue
  - Near 50% leak rate of single compressor total output
- Solution
  - Repair identified leaks
  - Add loop for better flow & even, lower pressure
  - Saves 325,000 kWh/year

Inefficient HVAC Equipment

- Background
  - Installed in early 1970's
- Issue
  - Building vacuum causing low efficiency
  - Units are inefficient due to age
  - Steam humidification
- Solution
  - Installed mist humidification
  - Replace w/ new equipment
  - Examine Geothermal

Lighting Electricity Use

- Background
  - Already efficient fixtures
  - Low watts/square foot
- Issue
  - Run time of lighting
  - Safety of operating metal halide bulbs
- Solution
  - Install timers/sensors to ensure lights off when not in use
  - Save 230,000 kWh/year

Other Electricity Uses

- Switch dryer for secondary air compressor to reduce 26,000 kWh/y
- Replace worn out motors with NEMA premium efficient
- Replace worn out TIG welders with inverter welders

Successful Process Changes

- 48,000 kWh
- 3,000 Therms
- 15 Gal. Rust Inhibiter
- Saving $8,700/year
- $1,200 in Purchased Equipment

Recommended Process Changes

Water, Air, Other Electrical

- 640,000 kWh Reduction
- 4.1 Million Gallons
- Saving $51,000/Year

HVAC

- 59,500 Therms
- 49,000 kWh
- Saving $92,500/Year

Future Considerations

- Examine installation of PV solar panels in 2 years
- Conduct compressed air audits to maintain system
  - Check new air system additions/changes as occur

Personal Benefits

- Experience in problem identification and solving
- Increase awareness of energy efficiency and pollution prevention in manufacturing processes

Questions?