

# Energy Reduction at MWV

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# Agenda

- MWV Energy Overview
- Energy Reduction Approach
- Resources
- Three Projects
- Challenges

# Energy at MWV

<b>Business</b>	<b>% of Energy</b>	<b>% of Spend</b>
P&P Operations (3 mills)	95%	82%
Specialty Chemicals (5 plants)	4%	13%
Folding Ctn (4 plants)	1%	2%
Cons & Office Prod (12 plants)	0%	2%
Calmar (2 plants)	0%	1%
	100%	100%

# Approach to Energy Reduction

- **Benchmarking**

  - Internal and External

  - Theoretical (pinch analysis)

- **Understanding the cost of energy**

  - Steam Pressures

  - Marginal Energy Source

  - Seasonal Costs

  - Market Prices for Fossil Fuels

- **Instrumentation**

  - “You can’t improve what you can’t measure”

# Resources

- U.S. Government
  - Website tools
    - Process Evaluations
      - Air, HVAC, Paper Machine Energy
  - Save Energy Now Leader Program
    - Specialty Chemicals Division
  - Site Audits
- Consultants
  - Benchmarking
  - Pinch Analysis
- Suppliers

# Energy Benchmarking Data

- **Pulp and Paper Industry Energy Bandwidth Study**  
**(Jacobs / IPST / DoE)**
- **Pulp and Paper Energy Best Practice Guidebook**  
**(Benjamin Thorp and others)**
- **“Chemical Pulping” TAPPI Press**  
**(Gullichsen & Fogelholm)**
- **Dick Reese – Paper Machine Energy Scorecard**
- **“Energy Cost Reduction in the Pulp and Paper Industry”**  
**(Francis, Towers, and Browne)**
- **Unit Process Mass and Energy Balances**
- **Consultants**

# Energy Focused Projects

- Energy Project Capital Fund, 2006-2008
  - \$16M for over 20 projects
  - Returns > 40%
- 2010 Project Portfolio
  - Over \$10M planned for Energy Projects
    - Lime Kiln Mud Drying & Heat Recovery (Evadale PRG)
    - Paper Machine Water & Heat Recovery (Mahrt PRG)
    - Improved Controls to reduce Evaporator Load (Covington PRG)

# Key Projects Underway

## Mahrt Water & Energy Reduction

- **~\$6M Project, >40% IRR**
- **25% Reduction in river water use**
- **5-10% Reduction in Energy Use (~25% reduction in natural gas)**
- **10-15% Reduction in Mahrt GHG**

## Evadale Kiln Upgrade

- **~\$7 M Project, >45% IRR**
- **25% Reduction in Lime Burning Energy**
- **>40% Reduction in Evadale fossil fuel GHGs**

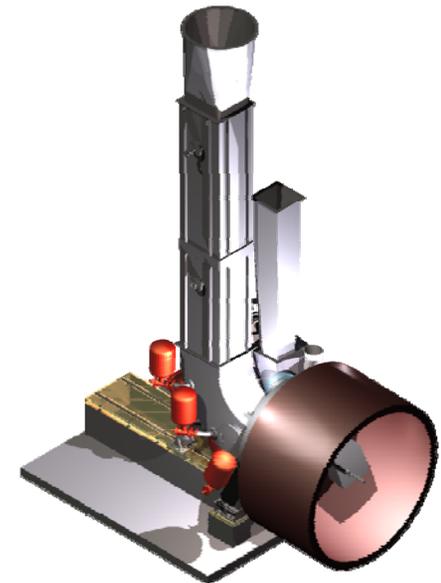
## Evadale Pulp Cooking Liquor Optimization

- **\$1.2M Project, >90% IRR**
- **Sponsored by NCSU Research**
- **50% funded by DoE**
- **15% Reduction in Lime Burning Energy**

# Lime Kiln Improvements

## Evadale Kiln Upgrade

- \$6.9 M Project, >45% IRR
- 25% Reduction in Lime Burning Energy
- >40% Reduction in Evadale fossil fuel GHGs
  
- Efficiency motivated project
  - Shut down a second kiln



# Water Re-Use

## Mahrt Water & Energy Reduction

- **\$6.6 M Project, >40% IRR**
  - **25% Reduction in river water use**
  - **5-10% Reduction in Energy Use (~25% reduction in natural gas)**
  - **10-15% Reduction in Mahrt GHG**
- **Improvements:**
    - **Evaporator Condenser Effectiveness**
    - **Cooling Water Process**
    - **Paper Machine White Water Re-use**

# Fiber Washing Improvements

## Covington Brownstock Washing

- **Non-Capital, >\$350,000yr savings**
- **~15% reduction in shower water usage and evaporator steam demand**
  
- **Improvements:**
  - **Controls Improvement**
  - **Defoamer Improvement**

# Challenges

- **Instrumentation**
- **Energy Pricing**
- **BoilerMACT**

**Questions?**