



GRAIN & FEED INDUSTRY CONFERENCE



Energy Savings Measures for Feed Mills

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Overview



Areas of Opportunity

- Mills & Dust Collection
- Lighting
- Compressed Air
- Steam & Hot Water

Utility Programs

Mills & Dust Collection

Mill Replacement

- Hammer Mill to Roller Mill – 30% to 50% energy savings

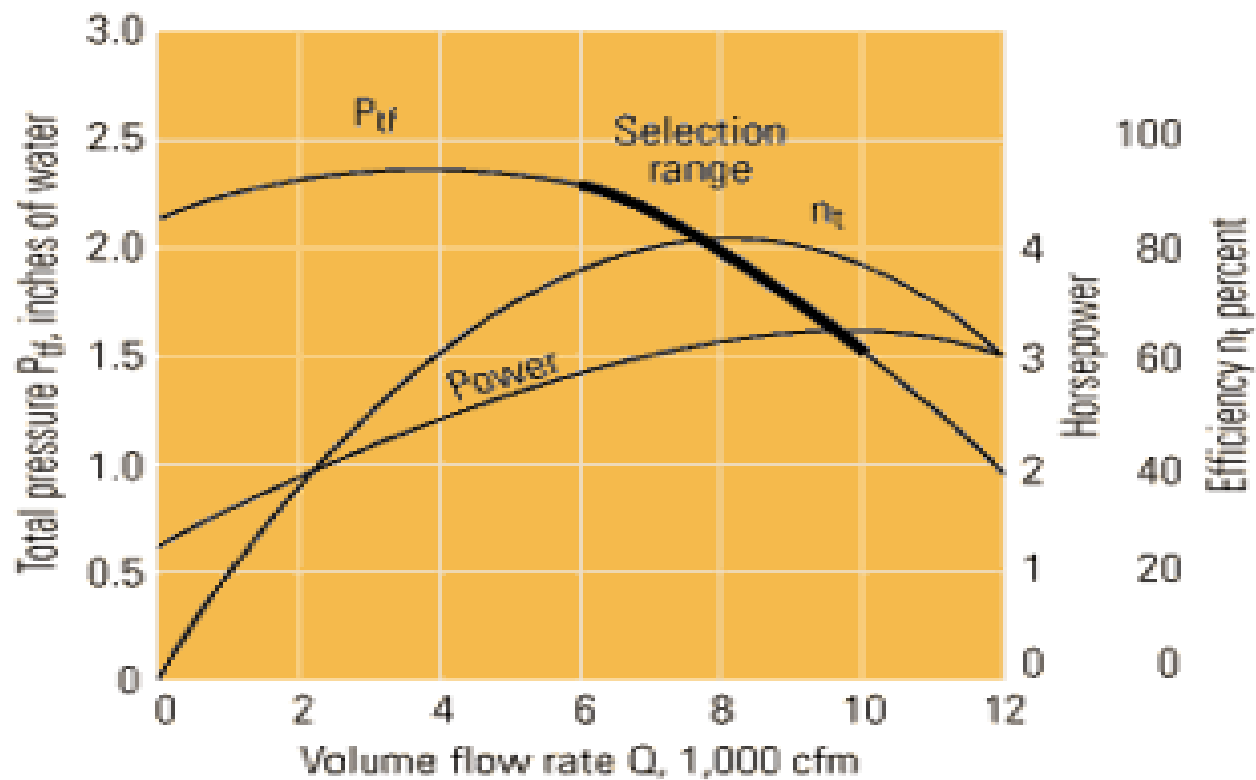
Baghouse Fans

- Install Inlet Guide Vane Controls – 5% to 15% energy savings
- Or Install VSD Controls – 15% to 25% energy savings



Mills & Dust Collection

<http://www.ksre.ksu.edu/bookstore/pubs/mf2048.pdf>



Lighting



Interior Lighting

- Occupancy Controls – 10% to 50% Energy Savings
- Day-lighting Controls – Energy Savings Dependant on application
- High Efficiency Linear Fluorescent (T5 or T8) or LED (DLC or Energy Star) fixtures – 5% to 25% Energy Savings compared to T12



Exterior Lighting

- Bi-Level Occupancy Controls – 10% to 50% Energy Savings
- Photo Cell, Time-clock, or EMS Controls – Energy Savings Dependant on application
- High Efficiency Linear Fluorescent (T5 or T8) or LED (DLC or Energy Star) fixtures – 25% to 50% Energy Savings compared to HID (HPS, MV, or MH)



Compressed Air



Equipment Replacement

- Replace Standard Load Unload compressor with Variable Displacement compressor – 5% to 15% Energy Savings
- Or Replace Standard Load Unload compressor with VSD compressor – 15% to 25% Energy Savings

Operations Changes

- Pressure Reset Controls or System Pressure Reduction – 0.5% Energy Savings for every 1psi reduction
- Lead Lag Sequencer or Cascade Pressure Setting (Multiple Compressors) - 2% to 10% Energy Savings



Steam & Hot Water: Steam System Opportunities



Condensate Return

- ~60,000 Btu/hr/gpm Energy Savings

Feed Water Economizer or Combustion Air Heater

- 2 to 3% Energy Savings

Feed Water Economizer (2- Stage Condensing)

- 5 to 10% Energy Savings

Blowdown Heat Recovery

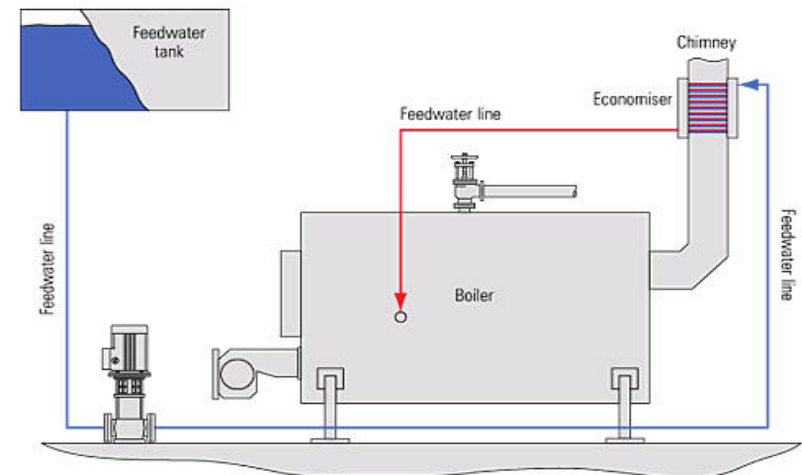
- 0.5 to 3% Energy Savings

Flash Condenser on Feed Tanks

- 0.5 to 2% Efficiency Savings

Insulation

- 0.5 to 2% Efficiency Savings



Steam & Hot Water: HW System Opportunities



Equipment replacement

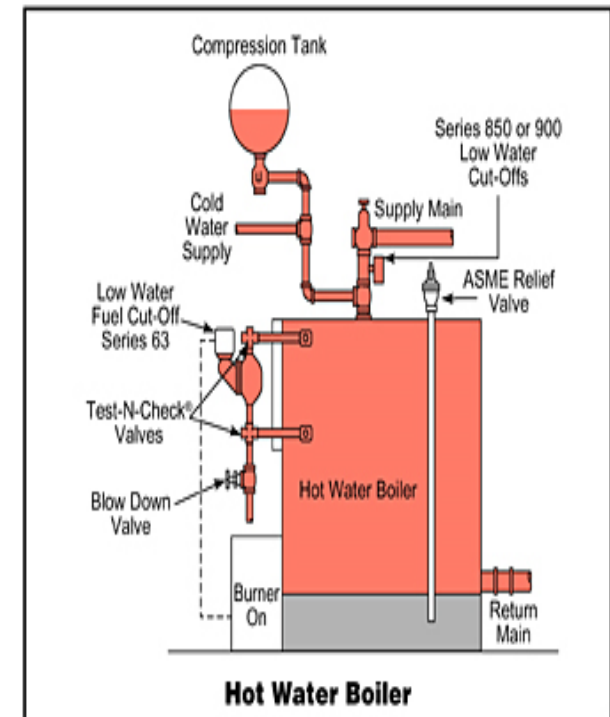
- Replace Steam to Water Heat Exchanger with Dedicated Hot Water Boiler.
 - Hot Water Boiler 5% to 10% Energy Savings
 - Condensing Hot Water Boiler or Direct Contact Water Heater 15% to 20% Energy Savings
- Replace Open Tank Steam Sparging with Dedicated Hot Water Boiler.
 - Hot Water Boiler 10% to 15% Energy Savings
 - Condensing Hot Water Boiler or Direct Contact Water Heater 20% to 25% Energy Savings
- Replace Hot Water Boiler with Condensing Hot Water Boiler or Direct Contact Water 5% to 10% Energy Savings

Controls

- Lead Lag Sequencer 2-7% on part load efficiency

Insulation

- 0.5 to 2% Efficiency Savings



IOU Energy Incentive Programs



Incentive rates paid on first year energy savings of measures completed

2014 Incentives Rates

- Basic Lighting \$0.03 / kWh
- Targeted Lighting \$0.08 / kWh
- Basic Non-Lighting \$0.08 / kWh
- Targeted Non-Lighting \$0.15 / kWh
- Natural Gas \$1.00 / therm
- Peak Demand \$100 / kW

You must be a CA IOU customer and pay the Public Goods Charge on your electric and/or natural gas bill.

****Check with local utility representatives for applications and project eligibility****