FirstEnergy's Ohio Utilities

Examples of Incentive Opportunities for Large Rate Code Customers
Process Equipment - Variable Speed Dry Vacuum

Overview

Measure Examples:
• Variable speed dry vacuum systems
• Injection molding machines
• Stamping presses
• Extruders

*Incentives available at $0.05/kWh saved, up to 50% of the total project cost.
Process Equipment - Variable Speed Dry Vacuum

Required Documentation

- Scope of work
- Production data
- Manufacturer’s specification sheets
- Energy savings calculations
- Existing nameplates
- Pre-metering data
- Post-metering data
Example Project Summary:
• Total cost: $714,790
• Annual savings: 3,788,360 kWh
• Incentive: $189,420

Payback with incentive: 2.13 years
Return on investment: 46.8%
Measure Examples:
- AHU scheduling
- Supply air temp reset
- Thermostat setbacks
- CHW and HW reset
- Economizer adjustments
- Convert decentralized pneumatic controls to centralized DDC

*Incentives available at $0.05/kWh saved, up to 50% of the total project cost.
Building Controls

Required Documentation

- Scope of work
- Building energy simulation model
  - Engineering drawings
  - 2 years of historic utility data
  - Set points and sequence of operation

OR

- Individual equipment savings calculations (not ideal)
- Log individual equipment (not ideal)
Example Project Summary:

- **Total cost:** $2,800,000
- **Annual savings:** 2,315,400 kWh
- **Incentive:** $115,770

Payback with incentive: 13.9 years
Return on investment: 7.16%
Variable Speed Drives: Overview

Measure Examples:
- VFDs installed on *existing* motors that drive fans, pumps, and other suitable applications
- Controlled VFD (soft start applications not eligible)
- No rebate if required by code
- $50 per horse power controlled
- Must show energy savings
- Limited to 50 percent of the total project cost
Variable Speed Drives: Required Documentation

Data
- Motor specification
  - Horse power
  - Voltage
  - Power factor
  - Full load amps
- VFD cut sheet
- Scope of work
  - Layout/operation

Motor Data - Nameplate

VFD Cut Sheet

We have 4 cooling towers 3 of which have 5HP motors, and 1 system with 2HP motors:
- System 1 - 24 fans with each fan having a 2HP motor.
- System 2 - 30 fans with each fan having a 5HP motor.
- System 3 - 27 fans with each fan having a 5HP motor.
- System 4 - 24 fans with each fan having a 5HP motor.

The units run 24/7 depending on production and outside temperatures, a little less during the winter months and always running during the late spring, summer, and early fall. Attached are photos of the 2 and 5HP motors used for each fan and unit. I don’t have any energy calculations for the units so metering them may be an option, let me know. Thank you.

Scope – Short write up
Variable Speed Drives: Financial Benefits

Example Project Summary:

- Total cost: $127,981
- Annual savings: 512,165 kWh
- Incentive: $53,750

Payback with incentive: 1.44 years
Return on investment: 68.9%
Measure Examples:
• New compressor installation
• Compressor replacement
• Leak Repairs
• Dryers
• Air Tanks

*Incentives available at $0.05/kWh saved, up to 50% of the total project cost.
Air Compressors: Required Documentation

- Scope of work
- CAGI data sheets (existing & proposed compressors)
- Manufacturer’s specification sheets
- Existing compressor nameplate photo & capacity control type
- Pre and post metering data (power=kW and air flow=CFM)
- Air storage capacity (gallons)
- Air audit/study
Example Project Summary:
• Total cost: $31,541
• Annual savings: 329,058 kWh
• Incentive: $15,770

Payback with incentive: 0.73 years
Return on investment: 135%
Injection Molding Machines

Overview

• Types
  • Hydraulic
    • Uses hydraulic pumps
  • Hybrid
    • Uses servo motors and hydraulic pumps
  • Electric
    • Servo motors

*Incentives available at $0.05/kWh saved, up to 50% of the total project cost.

• Eligible measures
  • New Construction
    • Adding new injection molding machine due to acquiring a new building, facility expansion or production demand increase
  • Retrofit
    • Replacing inefficient injection molding machine with more efficient machine
      • One for one replacement
Injection Molding Machines

Required Documentation

- Scope of work
- Pre and post metered power of injection molding machine for two weeks
- Production data that matches the power logging period
- One to two years of historical production data for each machine
- Manufacturer’s specification sheets
  - Existing injection molding machine
  - New injection molding machine
Example Project Summary:
- Total cost: $117,000
- Annual savings: 298,152 kWh
- Incentive: $14,907

Payback with incentive: 5.2 years
Return on investment: 18.9%
Lighting Controls

Overview

Measure Examples:
• Full dimming controls
• Occupancy controls
• Daylighting controls

*Incentives available at $0.05/kWh saved, up to 50% of the total project cost.
Lighting Controls

Required Documentation

- Scope of work
- Schedules and sequences
  - Dimming
  - Daylighting
- Manufacturer’s specification sheets
- Post fixture quantities & wattages
- Post trend data (if applicable)
Lighting Controls
Financial Benefits

Example Project Summary:
- Total Cost: $91,043
- Annual Savings: 313,141 kWh
- Rebate: $15,657

Payback with Incentive: 4.0 years
Return on Investment: 24.9%

Example Project Summary:
- Total Cost: $6,349
- Annual Savings: 64,452 kWh
- Rebate: $3,147

Payback with Incentive: 0.8 years
Return on Investment: 120.7%
Refrigeration Overview

**Measure Examples:**
- Walk-in coolers/freezers
- Reach-in coolers/freezers
  - Low, medium, and high temperature
  - Doors or no doors
  - New construction or retrofit

*Incentives available at $0.05/kWh saved, up to 50% of the total project cost.*
## Refrigeration

### Required Documentation
- Scope of work
- Refrigeration schedule
- Manufacturer’s specification sheets
- Refrigeration component specifications
  - Compressor
  - Fan
  - Lighting
  - Anti-Sweat
  - Defrost
  - Drain Pan

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<th>Arrangement</th>
<th>Nominal Input (kW)</th>
<th>Nominal Efficiency (kW)</th>
<th>Defrost Temp</th>
<th>Electrical Type</th>
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<th>Alarm Min</th>
<th>Trap</th>
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Example Project Summary:
• Total Cost: $155,270
• Annual Savings: 289,114 kWh
• Rebate: $14,445

Payback with Incentive: 7.49 years
Return on Investment: 13.3%
Measure Examples:
- Electric chillers
- Dry coolers
- Variable speed controls
- High efficiency motors
- Control upgrades
  - Incentives available at $0.05/kWh saved, up to 50% of the total project cost.
  - VFD controls eligible for $50/hp controlled
  - New high efficiency motors eligible for $20/hp
Process Cooling Systems

Required Documentation

- Scope of work
- Manufacturer spec sheets
- Existing equipment nameplate photos
- Metering data (power=\(\text{kW}\) or current=\(\text{A}\))
- Production data (widgets produced annually and during the metering study)
Process Cooling Systems

Financial Benefits

Example Project Summary:
• Total Cost: $112,000
• Annual Savings: 374,227 kWh
• Rebate: $24,324

Payback with Incentive: 3.9 years
Return on Investment: 25.6%