Ohio University Voinovich School’s Consortium for Energy, Economics & the Environment (CE3) is pleased to announce:

ENERGY CHOICES FOR OHIO:
IMPACTS OF EFFICIENCY, TECHNOLOGY & CARBON MANAGEMENT

Bradley Belden

BELDEN
THE BELDEN BRICK COMPANY
Efficiency Projects – Plant 9 Kiln

- Obvious design flaw – stack 1/3 of the way into the kiln allowed hot zone temps to escape before they reached the preheat.
- Results: 12.5% reduction in natural gas usage.
- 20,000 mcf/yr.
Residual heat from cooling bricks being sent to dryer is an old concept.

Plant 2’s efficient design requires no supplemental gas burner to the dryer and we still have residual heat.

2011 – sent this heat to kiln burners.
Plants 3 Dryer Improvement

- Dryer always used waste heat from the kiln in addition to direct heat from natural gas burners.
- Burners were on 100-120 hours per week.
- Waste heat from kiln was directed to “Pre-Dryer” before the dryer.
- 2009 - This project streamlined the waste heat ducting.
- 25% reduction in natural gas usage.
- 3-4 year payback.
Dryer NEVER used waste heat from the kiln.
Burners were on 120 hours per week.
2010 - Waste heat from kiln was ducted to soft mud dryer.
30% reduction in natural gas usage.
1-2 year payback.
Powdered glass at about 2% addition rate to clay acts as a fluxing agent.

Old science combined with recent success in UK encouraged Belden’s experimentation.

Sourced glass in Ohio as an industrial byproduct from a couple of companies.

The nature of our Plant 4 periodic plants takes the most advantage of this process.
Using FLIR technology, all plants’ gas lines had video taken of them to discover any gas leaks.

Video appears “black & white”, but the natural gas is visible on the screen.

Leaks were repaired.

Peace of mind.

1 year payback.
Natural Gas Video
Metal Halide lamps existed throughout our facilities.
Lights took time to warm up.
Lights dimmed over the years.
2010 – 2012 Installed T8 fluorescent s.
Installed motion detectors in many areas.
AEP incentive covered about 1/3 of our costs.
While the plant is only 12 years old, we are switching out the compressor because it was improperly sized.

- AEP Incentive paying for 20% of the project.
- 1-2 year payback.
Electricity Costs

- 2008: $0.064
- 2009: $0.069
- 2010: $0.076
- 2011: $0.074 – Shopped Generation
- 2012: $0.082

28.5% increase in 4 years!
Total Natural Gas Savings: 66,000 mcf/yr
Natural Gas Cost Savings: $264,000 ($4)
CO2 reductions: 3,600 metric tonnes

Electricity Savings: 1.75 million kwh
Electricity Cost Savings: $145,000 annual
AEP Incentives: $110,000
CO2 reductions: 1,200 metric tonnes