FINAL Public Report for ESA-043

Introduction: An ESA was conducted at the Boral Brick Plant in Augusta, Georgia March 13 – 15, 2006. This plant manufactures brick which is processed through dryers and tunnel kilns.

Objective of ESA: Identify areas of potential energy savings, estimate energy and dollar value of potential savings and educate plant personnel on use of PHAST software for continued energy savings investigation and analysis.

Focus of Assessment: Tunnel Kiln #1, Tunnel Kiln #2, Dryer #1, Dryer #2, Dryer #3, Dryer #4

Approach for ESA: Identify target, collect data relative to energy use and losses, input data into PHAST software, modify conditions based on plant personnel input, identify savings associated with modifications

General Observations of Potential Opportunities:
The average natural gas cost was $7.74/MMBtu.

Five potential opportunities were identified during the ESA:

1. Reduce oxygen content of flue gas – By reducing the air to fuel ratio and consequently the excess oxygen in the exhaust gases from 10.2% to 8% in kiln 1 and 8.9% to 8% in kiln 2 the PHAST calculator indicates a total savings of 11,077 MMBtu per year. The corresponding cost savings is $85,737 per year. This is a near term opportunity but operational factors must be considered.
2. Preheat combustion air – The exhaust gas temperature is sufficiently high to preheat the combustion air. PHAST indicates a potential annual savings of 15,081 MMBtu which would equate to $116,724 per year. This would be a medium term opportunity because of the engineering and purchase associated with installing a heat exchanger.
3. Insulate hot exposed parts – This is a medium term opportunity that would require insulation of exposed ductwork and fan shrouds currently radiating heat. PHAST indicates a savings of 649 MMBtu per year or $5,024.
4. Additional insulation of furnace structure – This is a medium term opportunity that would require additional engineering and investment analysis to determine the feasibility of adding insulation. There is also a form of paint that has been used in the past that may provide the necessary insulating characteristics. PHAST calculates an energy savings of 5,794 MMBtu which equates to $44,843 per year.
5. Use oxygen enrichment – This is a long term opportunity that would require engineering and testing on a pilot scale to verify the anticipated savings. PHAST calculates a savings of 12,527 MMBtu or $96,957 per year.

The percentage savings of natural gas use for near-term, mid-term and long-term opportunities is 2.5%, 4.8% and 2.8% respectively. However, the savings associated with reducing the oxygen content of the flue gas and preheating combustion air, if both are implemented, are not directly additive.

Management Support and Comments: Management very supportive of effort. Sees value in tool to help identify areas of focus and provide guidance on places for emphasis/examination. Operational and cost considerations impact the implementation of some of the recommendations.

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