

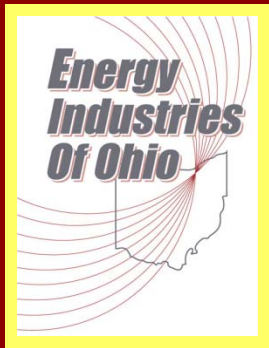


# Ohio Center for Industrial Energy Efficiency

US Dept of Commerce  
Forum on Energy Efficiency  
in Manufacturing

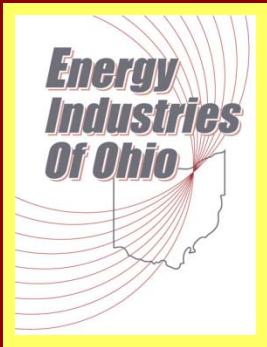
Lawrence C. Boyd Jr.  
Manager, Core Programs

Toledo, OH  
September 21, 2009

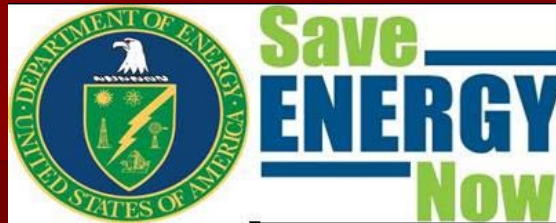


# Energy Industries of Ohio

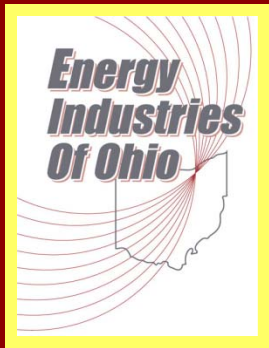
- ⇒ Non-profit 501(c).3 Corporation
- ⇒ Facilitate Technology Development
  - ⇒ Ohio's Power Generating Industries
  - ⇒ Ohio's Energy Intensive Industries
- ⇒ Foster Public-Private Collaborations
  - ⇒ State/Federal
  - ⇒ University
  - ⇒ National Laboratory
  - ⇒ Industry
- ⇒ ~ \$ 5.0 million / year Project Billings



# DOE Industrial Technology Program

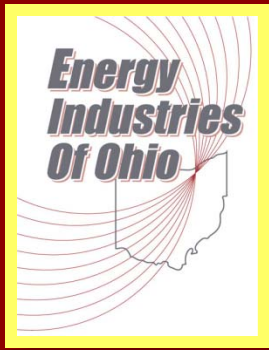


- ⇒ Manage Ohio's IOF Program since 2001
- ⇒ Focus on Large Energy Consuming Sectors
- ⇒ Best Practices Training (22 sessions)
  - ⇒ Over 500 Persons Attending
- ⇒ PHAST Qualified Specialist on Staff
  - ⇒ Performed 6 PHAST Assessments this past year
- ⇒ Successful R&D Program
  - ⇒ Patent on Aluminum Foams
  - ⇒ 2006 Governor's Award for Excellence in Energy



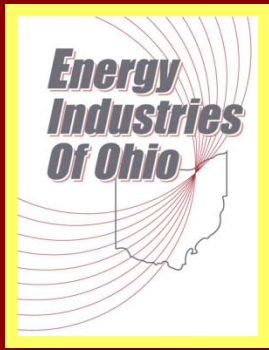
# Ohio Center for Industrial Energy Efficiency

- ⇒ Cooperative Effort between:
  - ⇒ US DOE, Ohio Energy Office, EIO
  - Investor owned Utilities (FE, AEP, Duke, DP&L), CWRU, U of Dayton
- ⇒ DOE Industrial Technology Program Focus
  - ⇒ Develop / Deliver of Industrial Energy Efficiency Programs at the State level
  - ⇒ Modeled after ITP "Save Energy Now" Efforts
- ⇒ Forty-two month program



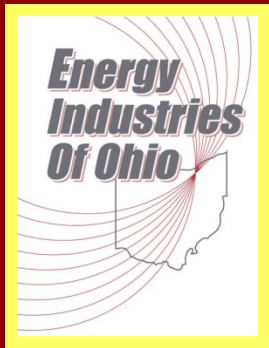
# Ohio Center for Industrial Energy Efficiency

- ⇒ Utility Participation
  - ⇒ Participate in Marketing / Outreach Efforts
  - ⇒ Support Training / Assessment / Implementation Efforts
  - ⇒ Participate in Program Design for Long Term
- ⇒ CWRU Participation
  - ⇒ SEN Assessments; Technology Demonstration Events
- ⇒ U of Dayton Participation
  - ⇒ Technical Assessments



# Ohio Center for Industrial Energy Efficiency

- ⇒ Five Components
  - ⇒ Marketing and Outreach
  - ⇒ Training
  - ⇒ Assessments and Implementation
  - ⇒ Technology Demonstration
  - ⇒ Commercialization



# Ohio Center for Industrial Energy Efficiency

## ⇒ Assessment and Implementation

### ⇒ Three part process

- ⇒ 1. Envinta One-to-Five Management Assessment (Free to Client Company)
- ⇒ 2. Develop Energy Management Plan and perform Technical Assessment (Cost-shared)
- ⇒ 3. Implementation Assistance (Cost-shared)
  - ⇒ Federal Grants
  - ⇒ Ohio Assistance Funding Mechanisms

# Implementation Examples

## ⇒ BOF/EAF Project

- ⇒ Minimize Energy, Environmental, Productivity Inefficiencies in water-cooled equipment
- ⇒ Participants – ORNL, Ohio Steel Companies, Steel Industry Service Suppliers.



Results to Date	AmeriBronze <sup>®</sup>	Carbon Steel
Life (Projected)	~ 48 Mo. (96 Mo.)	Replace at ~ 20 Mo.
# of Heats (Projected)	~ 10,000 (20,000 min.)	2,000 - 2500
Wall Loss	~ 20% @ 10,000 heats	~ 95% @ 2,000 heats
Repairs	5 in 48 Mo.	~ 80 in 20 Mo.
Productivity	26 Heats/day	18 Heats/day

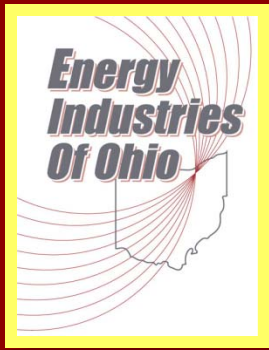




# Implementation

## ⇒ BOF/EAF Project

- ⇒ Republic Engineered Products – 2 skirts; 2 flux chutes; Engineering for entire lower hood.
- ⇒ USS Granite City – flux chute
- ⇒ USS Gary – Skirt
- ⇒ WCI – 2 Skirts
- ⇒ Algoma Steel - Skirt



# Implementation

## ⇒ Foseco

### ⇒ Lightweight Kiln Trays

- ⇒ Kiln Trays represented 68% of the Thermal Load
- ⇒ A lightweight alternative with lower specific heat was identified
- ⇒ Potential to reduce NG use by 58% in Firing Step
- ⇒ Samples have been obtained; material is under evaluation

# Implementation

## ⇒ Clow Assessment

### ⇒ Replace Furnace Doors

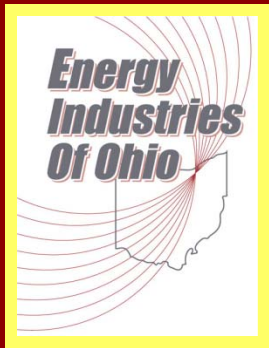
- ⇒ Significant energy losses from ends of furnace
- ⇒ New Doors and Curtains would reduce losses
- ⇒ Potential NG Reduction of 11.6%
- ⇒ New Doors / Curtains purchased and installed
- ⇒ Benefits being evaluated

# Implementation

## ⇒ Fireline

### ⇒ Employee Training in Kiln Loading

- ⇒ Excess Oxygen in flue gases from improper work practices in sealing kiln cars.
- ⇒ Developed "Best Practices" and Trained Employees
- ⇒ Anticipate reduction of 23% of NG consumption
- ⇒ Anticipate reduction of 80% of re-fired product
- ⇒ Benefits currently being documented



# Contact Information

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