



# Foamfrax



for  
**Metal Industries**

*greener  
cleaner  
safer*

*specialty products that  
save energy, reduce pollution and improve fire safety*

# Overview

- Technology
- Foamfrax Process
- Benefits
- Product Forms
- Case Studies
- Target Markets & Applications

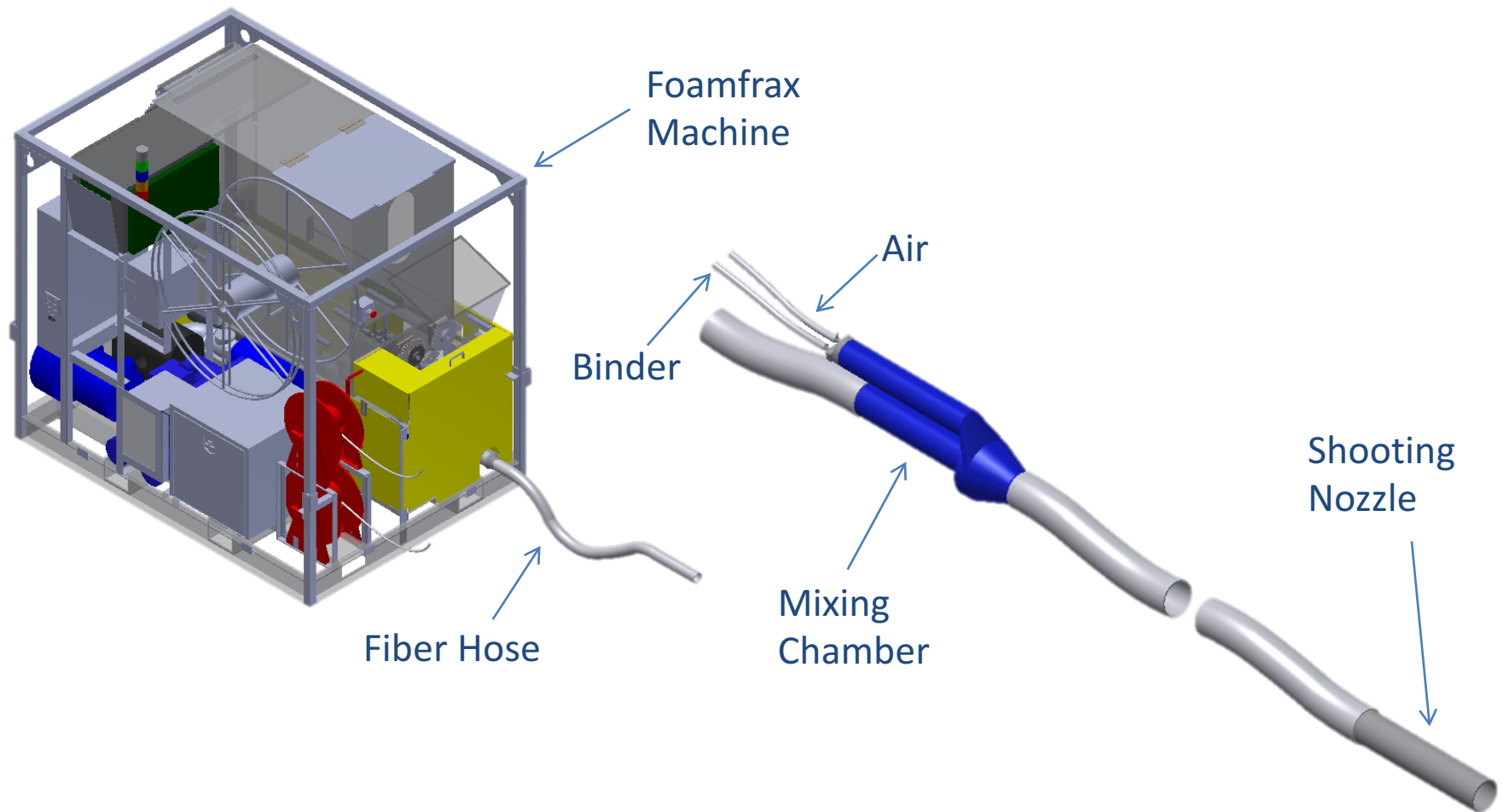




# Technology

- **Proprietary Technology Encapsulates Fibers in Foam Binder Matrix**
- **Unifrax Holds the Technology License for the Refractory Market, Global Agreement**
- **Foamfrax Utilizes Proprietary Binders and Equipment.**
- **Installed by Unifrax Licensed Distributor/Contractors**

# Foamfrax Process





# Benefits

- **Speed of installation**
- **Low airborne fiber levels**
- **Fuel/Energy efficiency**
- **Lining upgrades over existing hard refractory and RCF linings.**
- **Backup lining for gunnite and rammed plastics**
- **Lighter (8pcf – 25pcf) than dense refractories**
- **Monolithic ceramic fiber lining system**
- **Well suited for intricate geometries**



# Product Forms

- **Foamfrax Grade I (2300° F)**
- **Foamfrax Grade II (2600° F)**
- **Foamfrax Grade III (3000° F)**
- **Foamfrax RG (1800° F)**
- **Foamfrax RG+ (2300° F)**
- **Foamfrax HD (2300°, 2600° & 3000°)**
- **Isofoam (2300° F) Low Bio-Persistent Fiber**
- **Isofoam RG (1800° F) Low Bio-Persistent Fiber**



# Foamfrax Veneer Applications

## Advantages



- Increased Efficiency
- Rapid installation speed, minimum down time
- Lining upgrades
- Postpone major capital investment
- Maintenance tool



# Case Study (Veneer)

- Unit: Roller Hearth
- Operating Temperature: 2300°F
- Scope: 2" thick veneer over fiber modules
- Lining System: Foamfrax Grade II





# Results

- Because there is a regular thickness lining within the tunnel kiln the result is less temperature variation and a consistent/controlled burn.
- Fuel savings of 5%-10%.
- Increased output.
- Increased safety.
- Quick installation time.



# Case Study (Veneer)

- Unit: Ladle Pre-heat Stand
- Operating Temperature: 2100°F
- Scope: 2" thick veneer over brick
- Lining System: Foamfrax Grade I





# Results

- Reduced pre-heat times as much as 30%-40%.
- Fuel savings of 10%-15%.
- Increased output due to quicker turnaround.
- Increased safety.
- Less wear and longer life on the original brick structure.
- 4 to 8 month life on veneer.



# Full Thickness Linings

## Advantages

- Installation Speed, Minimum Downtime
- Monolithic Construction
- Composite Lining System
- Anchors Unexposed





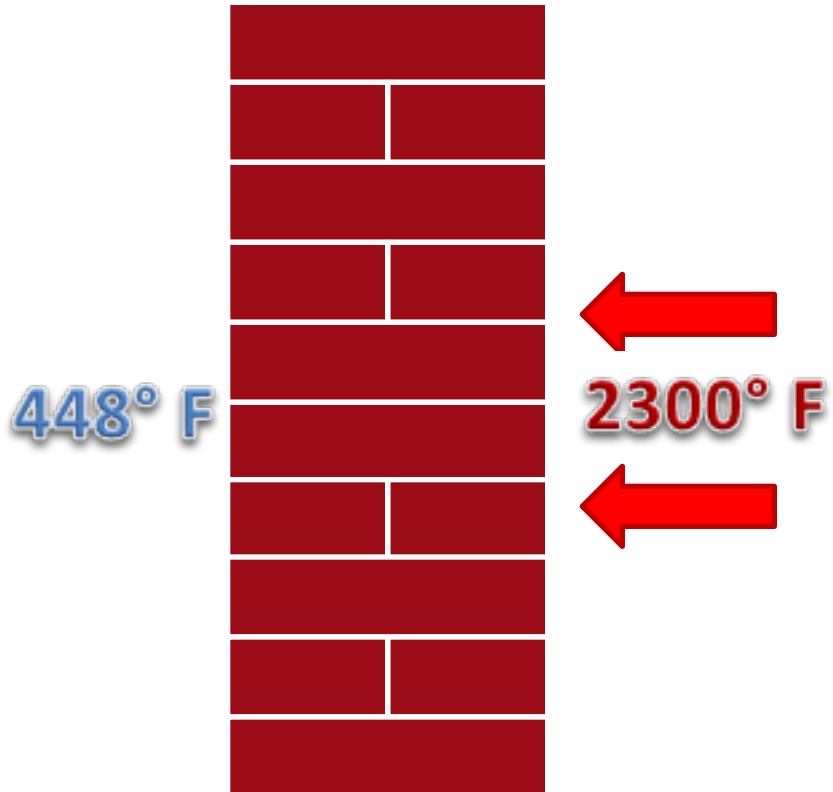
# Case Study (Full Thickness)

- Operating temperature:  
2300°F
- Scope: 13-1/2" Composite Sidewall Lining
  - 7" Foamfrax Grade I
  - 6-1/2" Foamfrax Grade II
- Anchoring System
  - Inconel 601 "V" Anchors

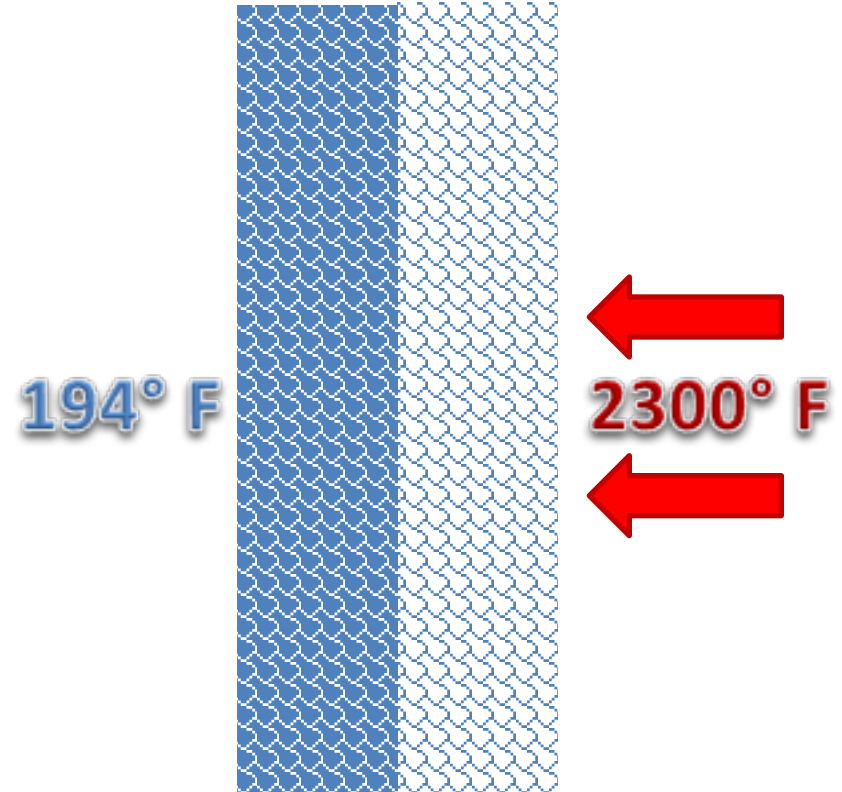


# Comparison

13-1/2" Firebrick



7" Grade I & 6.5" Grade II

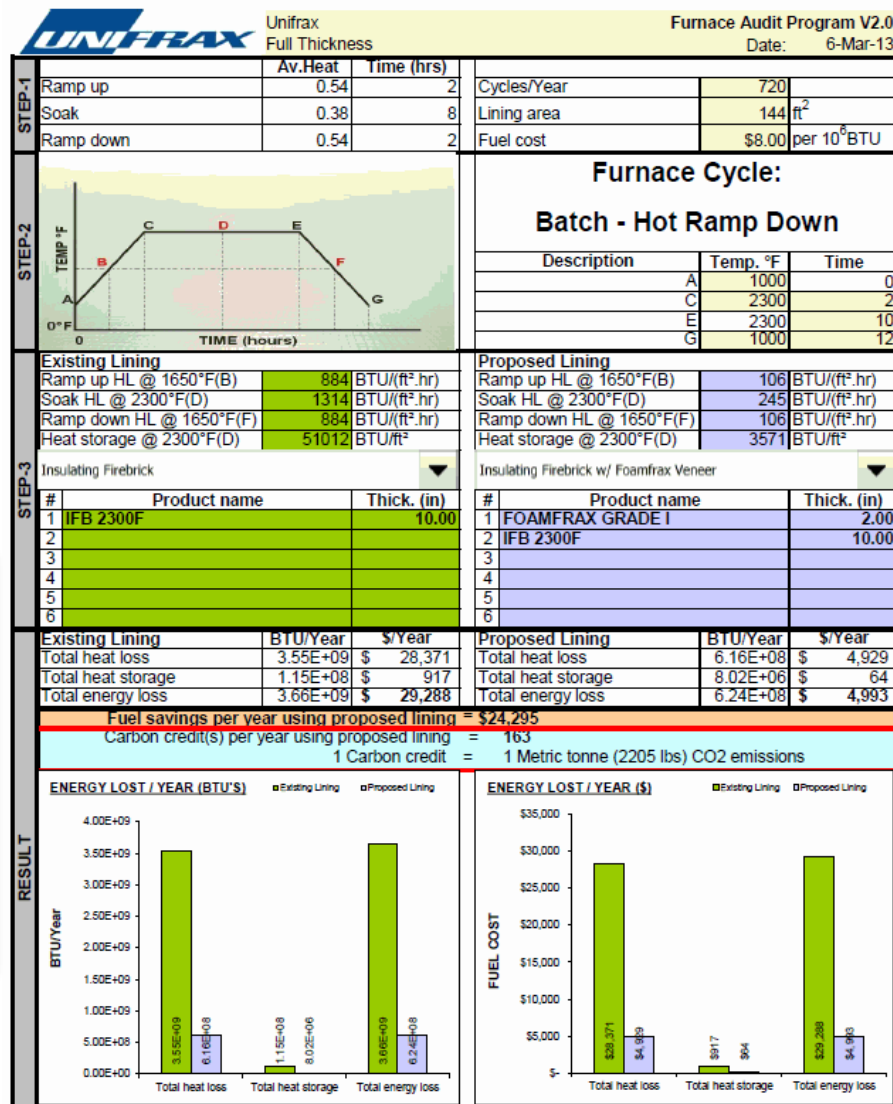


# Results

- Improved throughput due to reduced heat loss.
- Potential for shorter firing cycles due to reduced heat storage.
- Fuel Savings of \$24,295 per year.



2 years into service



Disclaimer: The results of this program are not guaranteed. Unifrax shall not be held liable for any actions taken as a result of this program.

# Foamfrax RG Applications

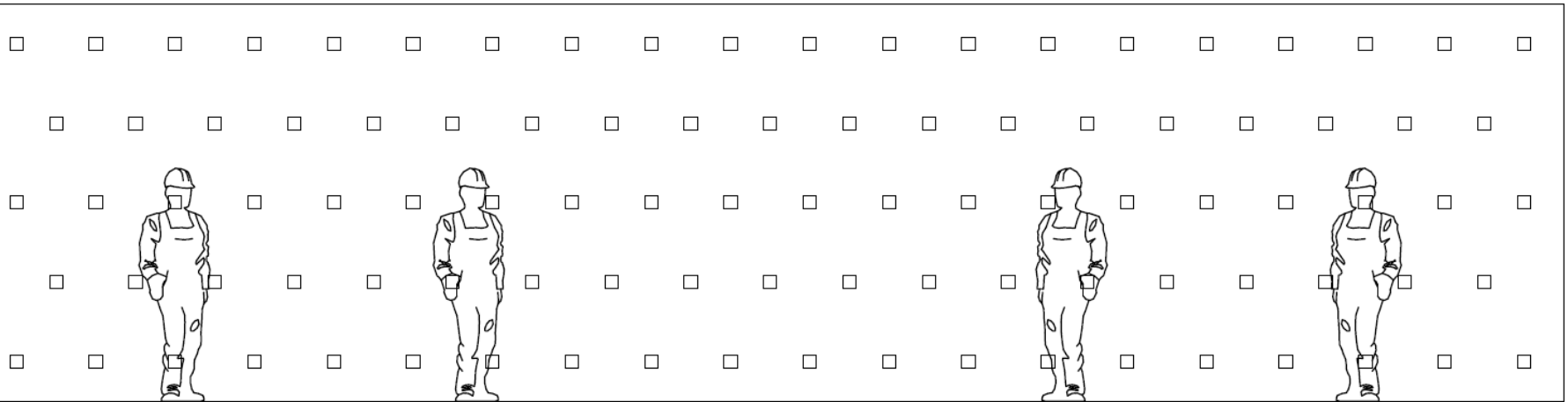
## Advantages

- Installation Rates of up to 900 Board Feet/Hr.
- Monolithic back-up material.
- Reduced material handling & cutting issues.
- Reduces Lining cross section
- 50% less dense and 3X more efficient than Light weight Castable.
- 1/6 the density and 10X more efficient than gunnite.





# Quicker Rates



Can a crew of 4 men cut and install 2" of backup board on this wall in 1 hour?

***You can with Foamfrax!***

# Case Study (RG Full Thickness)

- Unit: Aluminum Re-heat furnace.
- Operating Temperature: 1200°F.
- Scope: 4"-6" RG with "V" anchors and Steel mesh. Interior and duct work.
- Lining System: Full thickness RG replacing fiberwall



# Results

- Reheat times reduced from 4 to 2 hours.
- Reduced fuel costs.
- Increased thermal efficiency.
- Improved durability.
- In service since 2013





# Case Study (RG Backup)

- Unit: Steel Re-heat furnace.
- Operating Temperature: 2450°F.
- Scope: 5" RG backup on shell with ceramic anchors.
- Lining System: Gunitite with RG backup





# Results

- Reduced fuel costs.
- Increased thermal efficiency.
- Lower shell temperatures.
- Quicker installation time.
- Thinner lining, increased furnace width.





# Foamfrax University



You 



# QUESTIONS ?

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# Thank You For Considering Foamfrax & Foamfrax RG as a Heat Management Solution

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