CHASE NEDROW
INDUSTRIES

IRON & STEEL

Enhance Efficiency.
Maximize Performance.

CUTTING-EDGE SOLUTIONS FOR A SUSTAINABLE FUTURE. | CHASENEDROW.COM

Emisshield®
CONSERVE ENERGY. ENHANCE PRODUCTION.

SPACE FOUNDATION CERTIFIED SPACE TECHNOLOGY

CHASE NEDROW
INDUSTRIES

Chase Nedrow Industries specializes in supplying refractory products, refractory special shapes, refractory installation services, and Emisshield High Emissivity Coatings. Our offices, warehouse, and manufacturing facilities are located in Wixom, Michigan, approximately 40 miles northwest of Detroit. Our team has extensive experience in the refractory industry across a wide range of applications, including steel, foundry, heat treating, power generation, process boilers, biofuels, biomass, and kilns.

In 2024, Chase Nedrow became the official North American Distributor for Emisshield, the industry's leading High Emissivity Coating technology. Developed initially under NASA licensing, Emisshield significantly improves heat transfer, reduces fuel consumption, and enhances production efficiency in high-temperature industrial settings. Emisshield Systems utilize advanced ceramic nanomaterials with high emissivity and heat re-radiation properties, delivering measurable performance across temperatures up to 3100°F. Our partnership brings a new level of efficiency and durability to iron and steel operations, offering proven results in extending furnace life, improving throughput, and reducing overall maintenance demands.

Main Table of Contents

Why Chase Nedrow?

Unlock the Full Potential of Your Iron & Steel Operations

Efficiency is everything in the metal processing industry. Emisshield's High-Emissivity Coatings (HECs) provide a cutting-edge solution that transforms your production process. With our advanced technology, you can achieve unparalleled thermal efficiency, reduce energy consumption, and extend the life of your equipment.

Enhance Efficiency.
Maximize Performance.

- **Uniform Temperature Distribution**
  Achieve consistent heat across your processes
- **Resists High-Temperature Corrosion & Abrasion**
  Protect your equipment from excessive heat
- **Reduced Maintenance & Downtime**
  Minimize maintenance interruptions by prolonging substrate life
- **Optimized Energy Efficiency**
  Lower fuel consumption and reduce costs
- **Improved Heat Transfer & Production**
  Improved combustion efficiency
- **Improved Returns from Existing Equipment**
  Results can often be seen after your next scheduled down-day

Versatile Applications & Proven Results

- Reheat Furnaces
- EAF
- Galvanizing & Annealing
- Preheating
- Tundish & Ladle Preheaters
- DRI Plants
- Rolls
- Flares
- Radiant Tubes
- Heat Shields
- TO / RTO
- Boilers

NASA TECHNOLOGY
BUILT FOR THERMAL PERFORMANCE

As both a Space Certification Partner and a member of the Space Technology Hall of Fame, Emisshield continues to challenge the status quo across heat-driven industrial applications.

The extreme temperatures and highly abrasive environments common to the Iron and Steel industry provide numerous ideal applications for Emisshield. Emisshield Coating Systems enable steelmaking operations to significantly extend refractory lining life by enhancing thermal efficiency and re-radiation performance. Chase Nedrow Industries applies Emisshield coatings directly in the field onto existing refractory or metal surfaces, following rigorous surface preparation and inspection during scheduled maintenance shutdowns.

When Emisshield is applied to the hot face of furnaces, ladles, and other metal processing equipment, radiant and convective energy from burners and molten metal are absorbed by the coating and re-radiated uniformly throughout the unit, creating a more consistent temperature distribution and optimizing overall production efficiency.

Serving all Industry Market Areas **Worldwide**

Emisshield®

CONSERVE ENERGY. ENHANCE PRODUCTION.

BENEFITS

Developed By NASA

Reduce Carbon Emissions

Production Increases

Protect Refractory and Steelwork

Energy Savings

Reduce Maintenance and Downtime

CHARACTERISTICS

Thermal Stability	Thermal Shock Resistance	Adhesion Strength
3100°F	-392°F to 2732°F	> 5,000 PSI

Hemispherical Emissivity	Applied Thickness
0.85 - 0.95	50 - 100 µ (2 - 4 mils)

ASSET PROTECTION

Quality Controlled Application

Chase Nedrow and Emisshield certify that proper QA/QC is followed at each step of the application process. Chase Nedrow provides a QA/QC officer to ensure proper application and strong adhesion to the substrate

Abrasion Resistance Properties

Chase Nedrow confirms the coating goes through proper mixing to achieve maximum particle distribution when it is applied to the refractory ceramic fiber and burner tile. Abrasion-resistant properties provided by the coating protect the fiber from high-velocity gases.

Maximum Adhesion

The utilization of airless spray systems allows the coating to penetrate into the refractory ceramic fiber, which maximizes adhesion and protects the fiber from overheating and devitrifying throughout its service life. Emisshield is applied at 4-6 mils thick by a certified installer.

Walking Beam Reheat Furnace

Overview

- **Furnace Type:** Bricmont Walking Beam Reheat Furnace
- **Fuel Type:** Natural Gas
- **Substrate:** Hard Refractory/ Castable
- **Operating** Temp: 1425 – 1830°F

Application Information

Emisshield was applied from the top heat zone down, slightly below the billet line. Total area of refractory coated was approximately 2000ft^2 (186m^2). The customer's goal was to improve energy efficiency of the furnace.

Emisshield Benefits

Improved energy efficiency & reduced natural gas usage per ton with Emisshield technology applied.

4.5%

Increased energy efficiency with Emisshield utilized across product lines

Direct Savings in Natural Gas Usage Per Ton of Product Produced

Precious Metal Recovery Furnace

Overview

- **Furnace Type:** Electro Melt 9PT: 1,000,000 watts
- **Heating Source:** Electric Imbedded Resistance Heating
- **Substrate:** Kala Brick
- **Operating Temp:** 2400°F

Emisshield®

Application Information

Emisshield was applied to the roof of the furnace in order to improve substrate life and reduce hot spots. Under normal conditions, the roof on this Furnace starts to “heave” and cracking appears on the outer surface. Hot spots occur on the outer surface ranging from 300°F to 600°F.

Emisshield Benefits

- **Uniform Roof Temperatures with No Hot Spots**
- **Delayed Onset of Cracking by Several Weeks**
- **Extended Furnace Run Time**
  Eight weeks of run time before scheduled maintenance
- **Doubled the Life of the Kala Brick**
- **Reduced Frequency of Roof Replacements**
- **Reduced Material and Labor Costs**
- **Minimized Downtime**
- **Improved Overall Productivity**

Radiant Tube

Overview

- **Location:** Oxelösund, Sweden
- **Facility Type:** Integrated Steel Mill
- **Fuel Type:** Natural Gas
- **Substrate:** Chrome / Nickel Tube

Emisshield®

Application Information

The tube was shipped to an Emisshield preferred installer in Sweden for the application. The tube was cleaned with a light grit blast and then coated with Emisshield on the outside surface.

Emisshield Benefits

18%

Exit gas temperature was reduced from 1022 °F to 842 °F

Increased Thermal Flux Across Tube to Product

Increased Operational Life

Tube will run at a lower temperature.

Outperformed Exotic Radiant Tube Types

Reduce Hotspots

Provided uniform temperature profile

Reduced Downtime

Reduction in Thermal Oxidation of the Tube

Rolls

Overview

- **Location:** USA
- **Facility Type:** Austenitizing Steel Plate Furnace
- **Fuel Type:** Natural Gas
- **Substrate:** Duraloy MO-RE 1® High Carbon Austenitic Heat Resistant Alloy
- **Operating Temp:** 1750°F

Emisshield®

Application Information

High temperature furnace rolls manufactured by Duraloy Technologies were coated with Emisshield and installed in an Austenitizing Steel Plate Furnace to eliminate scale pick-up on the roll surface at the exit end of the furnace.

Emisshield Benefits

- Eliminated Pickup on the Roll Surface
- Eliminated Plate Surface Defects
- Increased Product Quality
- Extended Roll Life
- Increased Production
- **Reduced Downtime**

Intermittent Heat Treat Furnace

Overview

- **Furnace Type:** Heat treating furnace used to heat high alloy castings.
- **Location:** Confidential
- **Substrate:** The Sidewalls & Hearth: Insulating Firebrick (Plastic Repairs)
  The Crown: Refractory Ceramic Fiber
- **Operating Temp:** 2230°F

Emisshield®

Application Information

All broken pieces of refractory were removed and two baffle tiles were replaced. The remainder of the walls and hearth were vacuumed to remove construction dust, but no cracks or spalls were repaired. The fiber crown was vacuumed to remove broken fibers and dust. Emisshield was applied to the walls and crown however the hearth was not coated.

Emisshield Benefits

After three months service, the furnace operator reported:

15%

Fuel savings

30%

Increase in top temperature recovery

Production Increase

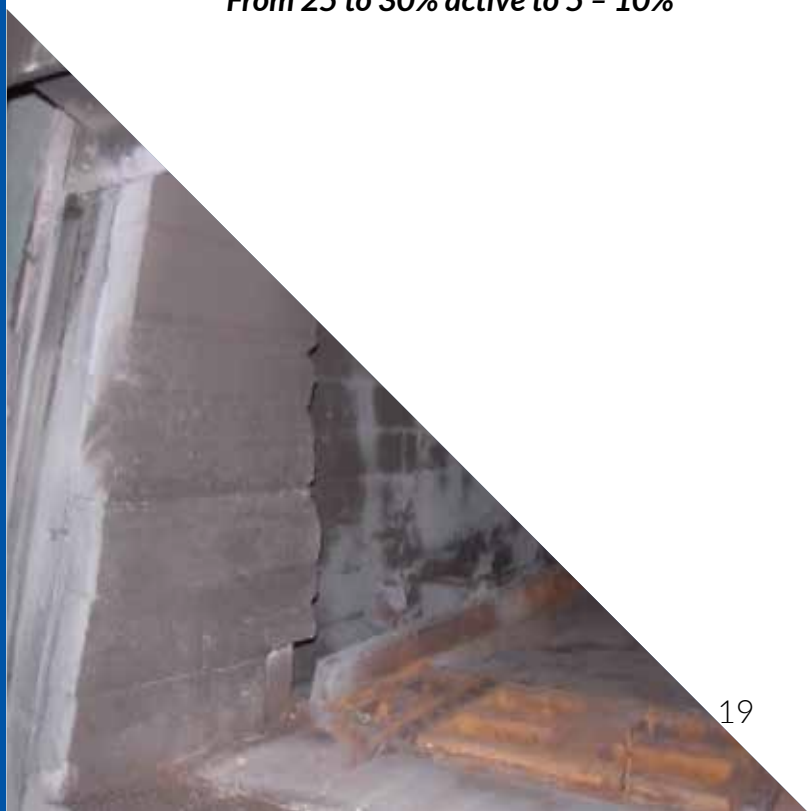
1 to 2 additional heats per day

30°F

Decrease in shell temperature

Burner Cycling Decreased

From 25 to 30% active to 5 – 10%



Auto-pour Ladles

Overview

Ladles in contact with molten aluminum begin to wear down because of its abrasive environment and high heat. These ladles are repairable and get 20,000 runs before repairs are needed.

- **Location:** Confidential
- **Operating Temp:** 1300°F
- **Substrate:** Stainless Steel Auto-pour Ladles

Application Information

Emisshield was applied to the ladles to help increase the life. All ladles were grit blasted and cleaned with an alkaline cleaner.

Emisshield Benefits

Emisshield doubled tool life and reduced thermal wear in steel ladles.

40,000

Runs before repair

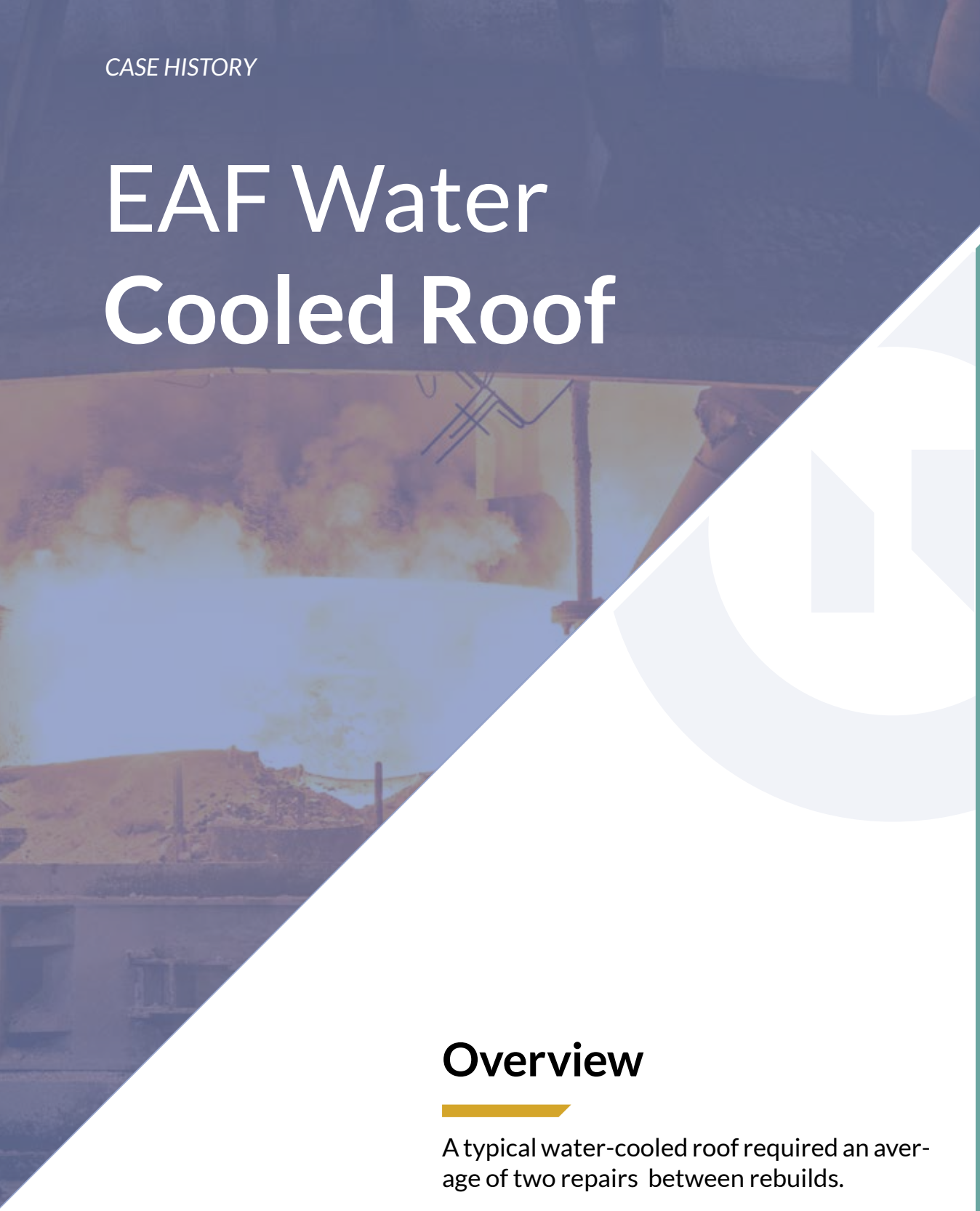
100%

Increase in ladle service life

Reduced Heat Impact on Stainless Steel

- Minimized Slag Buildup
- Extended Life of Refractory Tools

EAF Water Cooled Roof



Overview

A typical water-cooled roof required an average of two repairs between rebuilds.

- **Location:** Confidential
- **Furnace Roof Type:** Water-Cooled Roof
- **Substrate:** Metal
- **Operating Temp:** 2850 - 3000°F

Emisshield®

Application Information

The furnace roof was shot-blasted to remove slag and scale from the roof and water tubes. After pressure testing the water tubes, the roof was cleaned and sprayed with Emisshield.

Emisshield Benefits

Emisshield reduced energy loss and extended furnace roof life in steelmaking.

940

Extended roof life from 500 to 940 heats

Eliminated Four Expected Water Leak Repairs

Maintained Full Emissivity Over 940 Heats

Reduced Energy Consumption Per Heat

Reduced Arc Time by Three Minutes Per Melt

88%

Reduction in major rebuild costs

CHASE NEDROW
INDUSTRIES

chasenedrow.com

Exclusive North American Distributor and Installer of Emisshield High Emissivity Coatings

Chase Nedrow Industries | 150 Landrow Drive | Wixom, MI 48393 | (248) 669-9886