



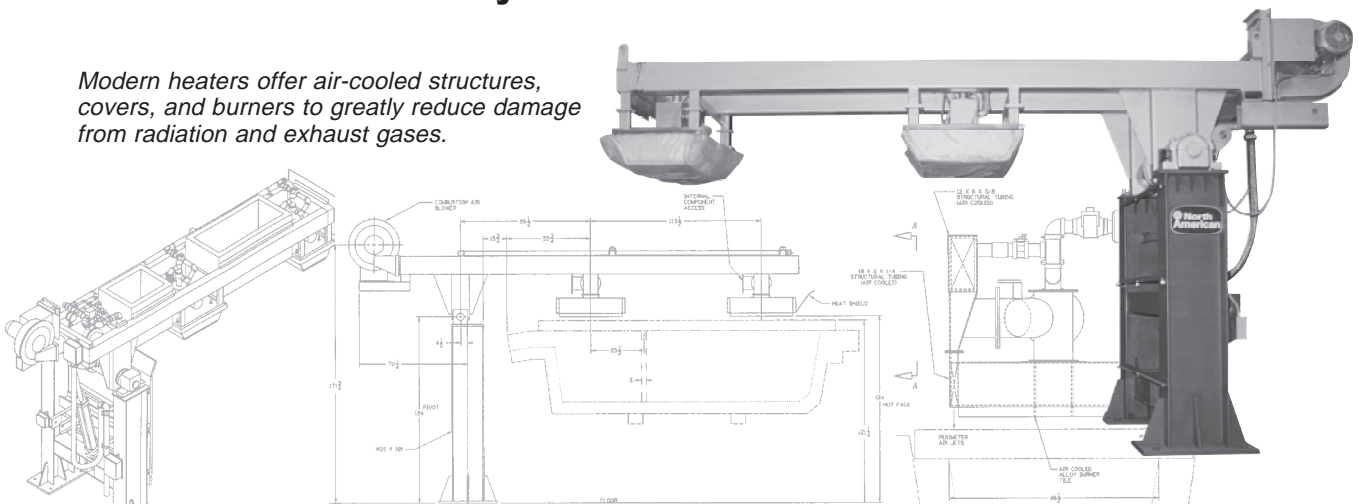
North American Manufacturing Company

Increase Caster Profits with *state-of-the-art* Tundish Heating

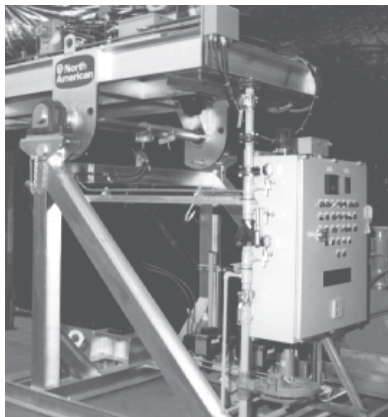
North American's combustion expertise and knowledge of melt shop practices has resulted in a leading edge technology that allows new tundish heating and drying systems to perform as never before. Let us help you reach a profitable solution to your tundish heating, curing, or dryout problems.

- **Improve safety**
- **Reduce steel heat loss**
- **Lower tap temperatures**
- **Reduce inclusions**
- **Extend refractory life**
- **Reduce electric costs**
- **Increase productivity**
- **Aid tundish metallurgy**
- **Improve casting quality**
- **Reduce total EAF costs**

Modern heaters offer air-cooled structures, covers, and burners to greatly reduce damage from radiation and exhaust gases.



This is but one of many designs available to solve tundish heating or drying problems.



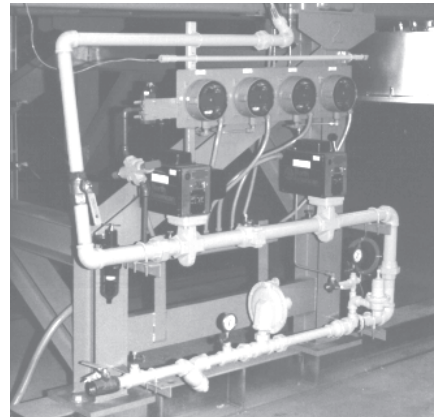
Control panels may be relay or PLC based, but always with flame safeguard and combustion system safety per NFPA.

SAFETY

All combustion systems are designed to meet or exceed the safety requirements of NFPA, CGA, FM, IRI, and NEC for field acceptance by OSHA or other jurisdictional authorities.

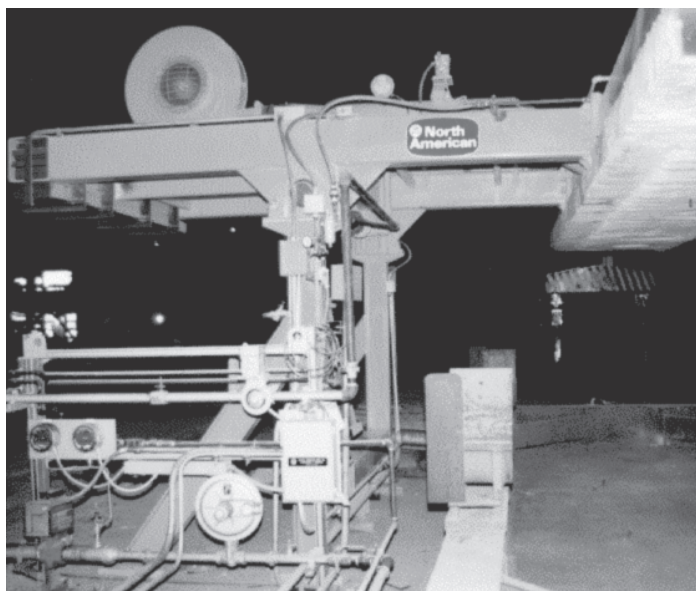
LOW NOx

Where emissions are a concern, ask about our new ultra-Low NOx burners for tundish heating.



Fuel trains can be completely shop assembled, wired to the control panel, and fully tested before shipment. All meet NFPA/FM/IRI with CGA optional.

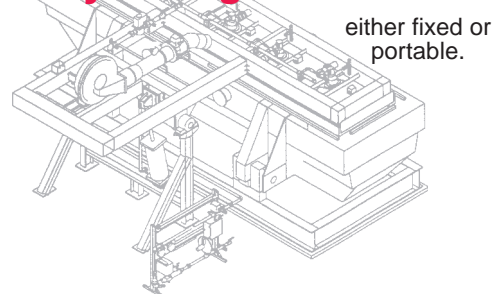
Optimized Customer Solutions



This tundish dryer utilizes 5 burners to dry a multi-compartment tundish. It easily meets the precise temperature ramps required. Any refractory supplier dryout specifications can be met.

In addition to our standard systems, we can provide customized systems utilizing standard modules. CAD selection of computer-generated segments assures fast engineered solutions for fuel trains, burners, blowers, control panels, and structural steel.

Tundish Dryers Can Be Built in Many Configurations...

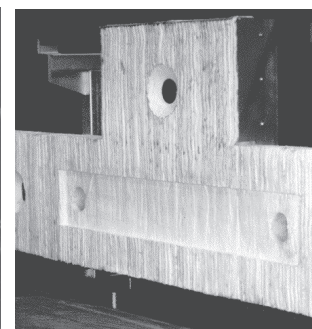


either fixed or portable.

Long Life – Quick Change Walls and Covers



Firing cover "by others" uses 12" x 12" blocks. The blocks shrink, causing gaps that allow deep heat penetration. Damage is obvious.



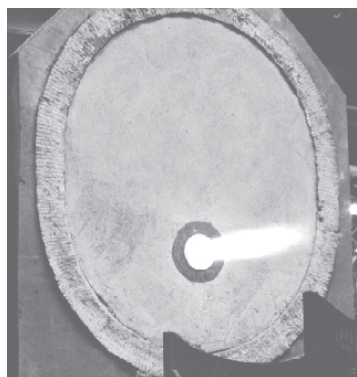
North American "quick change" covers are built with high density ceramic fiber. These appear monolithic with NO GAPS to absorb heat. These walls or covers could last for years without repair.

Optional Oxygen Solutions for Ladle Heating

Oxygen-fuel systems for ladles, with or without blower air, are a viable option for many mills.

Let North American prepare an objective analytical comparison.

We meet or exceed the critical O₂ and fuel gas code specifications for component cleanliness to enhance safety and quality.



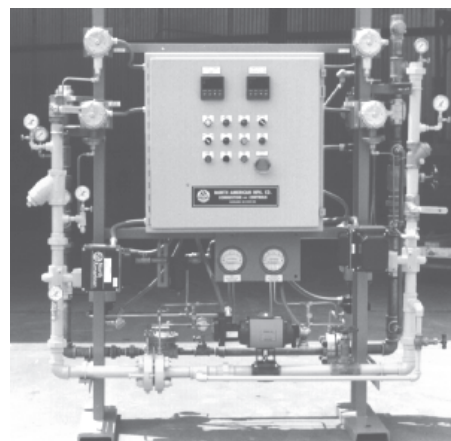
With HIRAM® LNI, the chemistry, configuration, or appearance of a flame can be shaped to suit using simple, reliable controls for ultra low NO_x.

System features include:

- 100% oxy-fuel or any air-oxy-fuel combination
- no cooling water required
- ultra-clean piping for O₂ flow
- simple burner design
- direct spark ignition
- ultraviolet flame scanner
- microprocessor-based firing controls
- meets NFPA/FM/CGA requirements

Among the benefits:

- heat or dry with the same system
- potential fuel savings up to 50%
- higher temperatures in shorter times
- elimination of recuperators
- lower emission volumes



Ultra-compact 20,000 scfh oxygen and 10,000 scfh natural gas are ratio controlled through this 6' x 6' x 2' pipe train with programmable temperature controls.

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