OPTIflame: Ladle Pre-Heating Technology

- Fuel Savings of up to 75%
- Time reduction of up to 65%
- CO_2 reduction of up to 75%
- ROI in less than 1 year
- Maximize Refractory life
- Ultra-Low NO_x
- Reduced Exhaust Gas Volume
- Low Maintenance

Our OPTIFLAME technology has proven significant improvements for Ladle Pre-heating and Drying, showing reduced fuel consump-tion by up to 75%, as well as reducing CO_2 Emissions by up to 75% and reducing the heating time by up to 65%. With a flame-less operation, where the flame operates in the invisible spectrum for our human eyes, not only drastically reducing the NO_x emis-sions by up to 80% but also improving the heating of the refracto-ry lining and maximizing refractory lifetime, resulting in optimized utilization of your investment.

Why Oxy-Fuel Combustion?

Nitrogen molecules form air don't absorb or radiate energy well, which results in 50% of energy input being wasted, going right up the flue. Oxy-fuel nearly doubles the heat transferred compared to Air-fuel. Our OPTIFLAME Lade Pre-heating Technology employs these advantages to maximize the energy transfer and to reduce the total heating time. This improves not only the heating rate, but also the way how the ladle heats through and thus reduces temperature shock on the refractory and maximize the refracto-ry lifetime. Holding the temperature inside a ladle consumes much less energy as well, reducing CO_2 at the same time. Reducing the heating time allows a reduction of pre-heating stations and to better utilize your assets.

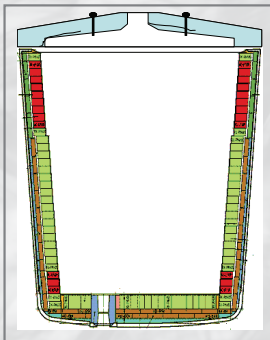
Refractory Drying Station option:

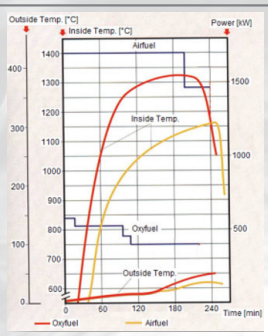
Drying newly lined Ladles can be improved with our dedicated drying station, applying Oxy-Fuel Technology to improve the efficiency, and reducing fuel consumption along with the CO_2 emissions. Also available as Hybrid System, all in one Drying and Heating station.

Pre-Heating Sample:

Air-Fuel: Reaching 1150°C (internal temperature) after 240 minutes with 1700kW

Oxy-Fuel: Reaching 1320°C (internal temperature) after 190 minutes with 500kW





Duration	Air		Oxy-fuel	
[min]	[kW]	Temp [°C]	[kW]	Temp [°C]
75	1700	910	530	1150
120	1700	1050	400	1290
210	1470	1140	400	1320

Savings	[%]
Natural Gas (NG)	70
Duration (up to 1150°C)	65

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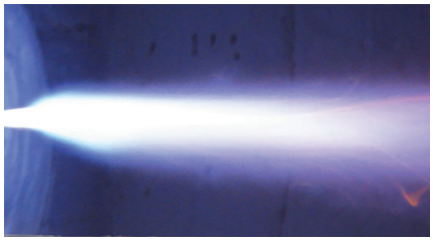
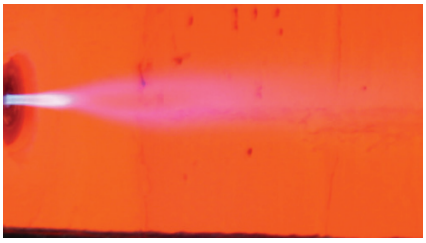
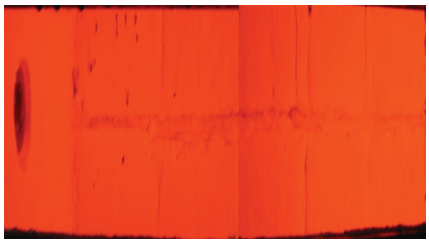
Flameless Combustion: When in Flameless mode, the flame is not visible to human eyes. The flame turns into Flameless mode above 900°C. The primary benefits of our Flameless Combustion are uniformity of heat transfer and improved homogeneity between the center of the ladle and the walls. Additionally, it delivers up to 40% higher heat flux (the rate of heat actually transferred) over traditional air-fuel combustion. Flame temperatures decrease with better uniformity, which reduces NO_x emissions drastically.



Cold furnace 3 % primary O2



Furnace temperature 900 °C 3 % primary O2



Furnace temperature 900 °C (O2sec. = 100%)
Flameless Oxidation Mode

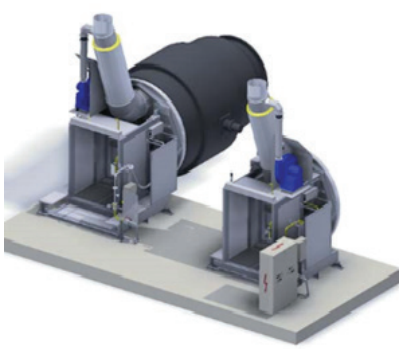
Less Emissions: The uniqueness of OPTIflame combustion reduces both NO_x and CO_2 generation dramatically, with proven results of CO_2 and flue gas reductions.
In our flameless mode, has provem NO_x reductions up to 80%, fully complying with current EU & US regulations.

Hydrogen ready:
We are ready for the future! All our burners are made hydrogen ready and will operate with natural gas, hydrogen, or any combination of these two fuels.

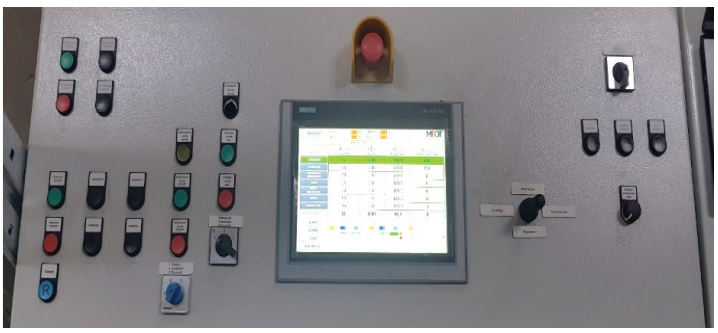
HYDROGEN FLAME

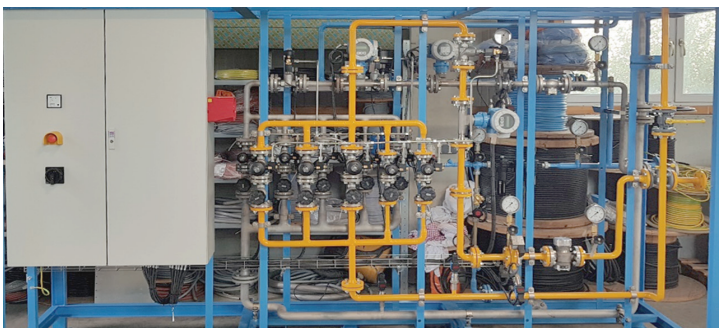
NATURAL GAS FLAME

Automation: Our regulation skids come complete with a Burner Control Unit (BCU) or can operate with SIL devices slave to a higher-level CPU. Whatever a customer needs, we will design to meet that requisite interface. From standard to tailor-fit solutions. Lade Pre-Heating Station (vertical) and Drying Station (e. g. horizontal) is part of our supply scope as well, and will be designed custom made based on clients needs including all automatic heating features needed for a smooth process.



Burner Control: Compact single or multi-burner regulation skids with high-end components, fully compliant with the EN 746-2, NFPA86 and ISO13577 meeting required SIL level and are CE compliant. All skids are made in Austria, Germany, and Switzerland.





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