OPTIflame Melting Technology

- Higher Combustion Efficiency
- Lowest Oxygen Participation
- Reduced Exhaust Gas Volume
- Ultra-Low NOx
- Lowest fuel Consumption
- Highest Melting Rate
- Low CO_2 Generation
- Low Maintenance

Imagine a cutting-edge hybrid burner that could fire natural gas, hydrogen, or both, that could combine the combustion benefits of lower OpEx Air-fuel and higher productivity Oxy-fuel in one burner! Our OPTIflame Melting burner was designed to meet these goals! **Why Oxy-Fuel Combustion?**

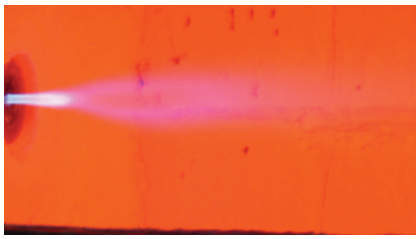
Nitrogen molecules from air don't absorb or radiate energy well, which results in ~50% of energy input to a melter being wasted, going right up the flue. Oxy-fuel nearly doubles the heat transferred to the bath compared to Air-fuel, but pure oxygen also raises OpEx, has a higher flame temperature, creates NOx, and can lower yield. Our OPTIflame burner employs both radiative and convective energies as heat transfer mechanisms, maximizing homogeneity of the bath, increasing productivity, while maintaining/improving yield. We provide our customers the most economical, most reliable, and most predictable turn down of any burner on the world market. With hundreds of references world-wide, there is a consistent theme with repeat customers: we deliver what we promise when we promise it.

While the performance of other combustion systems suffer with reduced operating performance when firing outside the design settings, our OPTIflame burner fires optimally at all firing levels, thanks to the dynamic action of our fully automated flame shape control device, within the burner itself. This is essential to deliver the heat where it needs to be regardless of firing rate. For new and existing furnaces, our OPTIflame burners fire 10 kW up to 20 MW, tailor-made to each melter. Performance is guaranteed: O2/ton, NG/ton, kg/m2/hr with realistic ROI's of 6-12 months. Our focus on operating costs is even more critical with today's economic challenges: ***If you are not watching your pennies by the day, you may not have dollars to count at the end of the month.***

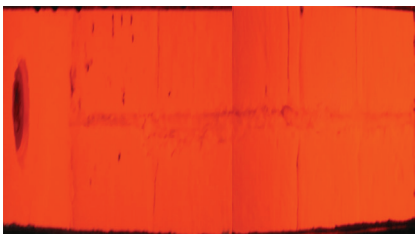
contact@hotwork.ag
www.hotwork.ag

Flameless Combustion: When in flameless mode, our OPTIflame burner fires primarily at temperatures above 900°C. The primary benefits of our Flameless Combustion mode are uniformity of heat transfer and improved homogeneity between the center of the furnace and the walls up to 75%. Our regime delivers up to 40% higher heat flux (the rate of heat actually transferred to the bath) over traditional air-fuel combustion. In addition, with lower flame temperatures, NOx emissions are reduced dramatically. From a quality and yield standpoint, our soft-flame reduces surface oxidation/dusting and thus improves yield.

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 NOx and CO_2 generation dramatically. OPTIflame operates with near perfect oxidant: an ideal mixture of pure oxygen and air, with proven results of CO_2 and flue gas reductions up to 75%. In our flameless mode, we have observed NOx reductions up to 80%, fully complying with current EU & US regulations.

Hydrogen ready:

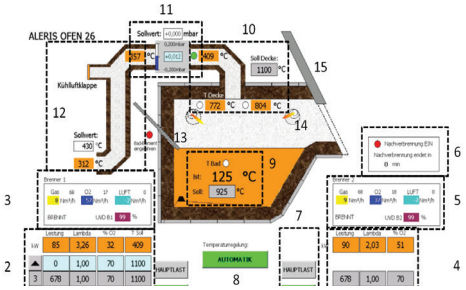
We are ready for the future! All our burners are made hydrogen ready and will operate with natural gas, hydrogen, or any combination of these two fuels.

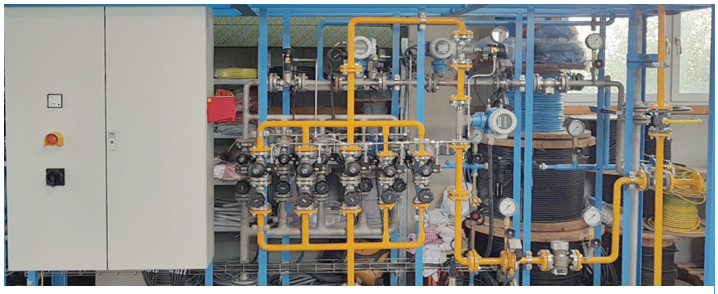
NATURAL GAS FLAME

HYDROGEN 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.

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.





Get more out of your Furnace and combine the available technologies:

- IPCU: Integrated Pressure Control Unit for reverbs
- OXIAL: Maximizing the benefits of organic-laden scrap with our novel offerings for rotaries.
- DLC: Dynamic Lambda Control, optimizing the combustion process while minimizing waste
- OPTIflame: For reverb and rotary optimization
- H2I: Hydrogen Integration: for emission transformation to a dramatically lower carbon footprint
- CCU/CCS Technologies: reducing fuel, maximizing productivity, sellable by-products, sustainable future for us all.

Hotwork
MPOT

Head Office:
Romanshornerstrasse 123
9322 Egnach, Switzerland
+41 71 649 20 90
contact@hotwork.ag
www.hotwork.ag

Worldwide Availability:

Chicago, USA
Orlando, USA
Houston, USA
Cuernavaca, Mexico
Bergen, Norway
Berlin, Germany
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