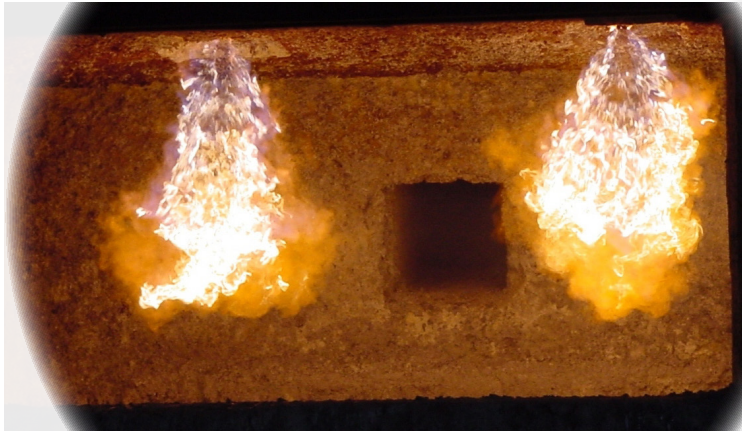


Quadraflo® Sweep Burner



Proven energy saving from 15 - 60 %
Typical heat dross reduction 20%+
High bath coverage / sweeping flame
Low NO_x / reduced CO₂ emissions
Custom configuration
Low Maintenance

The original QUADRAFLO® Automatic Sweep Burner was developed by XOTHERMIC specifically for the Aluminum Industry. Instead of applying a burner used in other high temperature applications like glass, steel, copper or other industries, XOTHERMIC researched aluminum melt applications and developed, through field trials, an optimal design. This resulted in the highest energy efficiency, lowest dross formation for the best economics.

With XOTHERMIC having their head office in the USA, Hotwork International bought the rights on the Quadraflo® Burner technology in order to provide a local service. We are cooperating very close with XOTHERMIC on all projects.

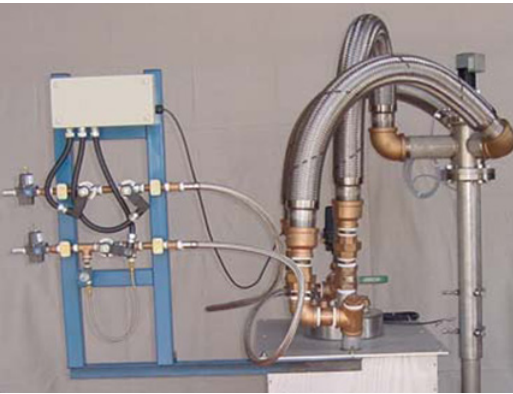
Initial start into the aluminum market was the traditional aluminum Reverberatory furnaces. A heat source from the combustion system transfers heat into the cold metal with sufficient force to cause the metal to retain the heat until the melting point is reached, on average 657°C. Further heating is required to provide sufficient energy to maintain the aluminum in a molten state during the final end process of the production cycle, on average 750°C. During this process it is most desirable to do this heat transfer with minimum amounts of oxidation to the aluminum.

The Quadraflo® Sweep burner system minimizes the generation of a hot spot on the charge material. This was achieved with the use of a flat fishtail shaped flame that moved or swept across the charge. Another requirement is that burner velocities are low momentum to eliminate disturbing the molten metal bath. The flame movement is up to a 30 degree angle. Moving the flame over a period of several seconds allows the heat to be transferred over a significantly greater area than a fixed flame. Fixed flame burners heat an area of the charge to excessive temperatures in an effort to transfer heat to other parts of the pile. This creates significant hot spots and greater dross formation.

Also provided are flow control systems that maintain a very close tolerance on the oxygen to fuel ratio. Because pure oxygen is used does not mean the dross will go up. It is the excess temperature that has a greater effect. In fact putting a blanket of pure oxygen over an undisturbed bath of molten aluminum at 657 degrees C and no flame will show little or no increase in dross over a blanket of air at 21 percent oxygen. Using the Quadraflo® Sweep reduces heat dross by a minimum of 20% of what is produced by the combustion.



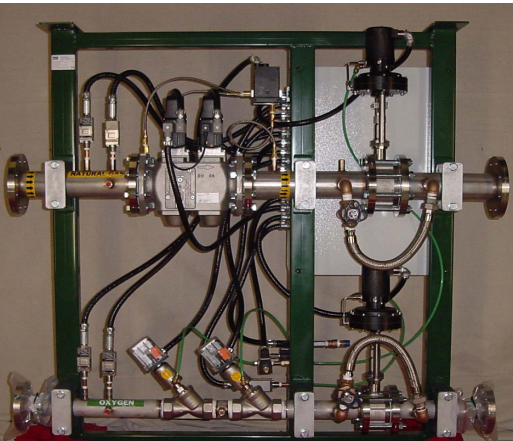
QUADRAFLO® Automatic Sweep Burner



- Roof mounted QUADRAFLO® Sweep Burner in 3 sizes 600, 1200, 1800kW
- Flame dynamically sweeps from side to side in an angle of approx. 30°
- Sweeping angle can be programmed for constant sweeping or dynamic position
- Use the burner flame up to your current production requirements
- Colliding gas streams resulting in a low momentum flame

RANGE in kW	OXYGEN FLOW Nm ³ /h	FUEL FLOW Nm ³ /h
300 to 1200 kW	60 to 230	30 to 115
600 to 2400 kW	120 to 460	60 to 230
900 to 3600 kW	170 to 685	85 to 342

Oxygen and Natural Gas Safety & Flow Control Pipe Train

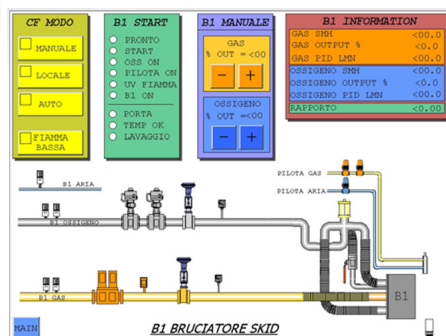


- Compact pipe trains for fully automatic oxygen/fuel gas safety & flow control
- Automatic pressure control
- Automatic leak check during each start sequence
- UV flame supervision and automatic ignition system
- Precise Flow ratio control, SCADA communications and data recording with PLC
- All piping components are stainless steel and brass
- Redundant safety circuits in hardwiring/software with safety PLC
- System meets CE and EN norms

Burner & Furnace Control System



- Human - Machine interface touch screen
- sweep start / stop, speed settings, pressure indication, Oxy-fuel ratio etc.
- Hardware and Software packages are designed specifically to customers
- System meets CE and EN norms
- Control solutions for a variety and furnace control applications



- > Material charging
- > Molten metal pump control
- > Furnace temperature display
- > Furnace Camera system
- > Chlorine injection
- > Nitrogen Bubbling
- > Furnace door opening and closing
- > Furnace pressure control

Swiss Quality and German Reliability complete engineering and supply



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