






B15280

# Regenerative System for Aluminum Melting Furnace with Oxygen Lance for Oxidation of Volatiles

## Application: Aluminum Melting Furnace

Bloom engineered a complete regenerative system with **advanced controls** for an aluminum melting furnace. In order to oxidize volatiles from the scrap, a related **oxygen lance** (and oxygen train) was included.

### Purpose/Drivers

-  Emissions
-  Reliability
-  Safety

### Scope

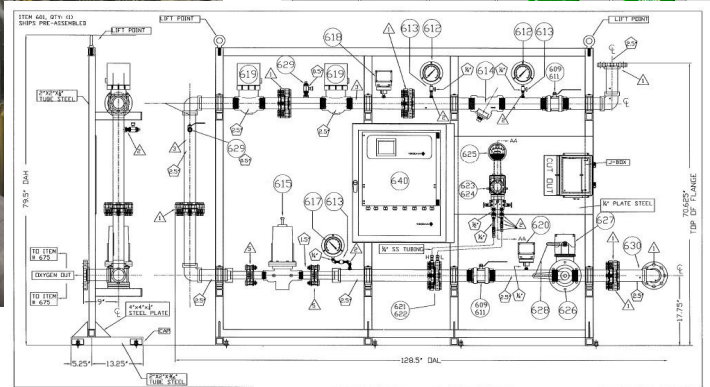
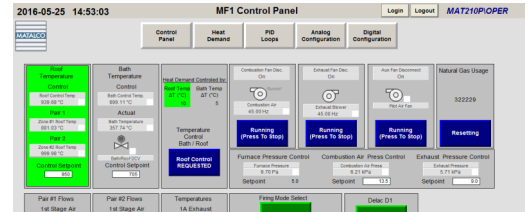
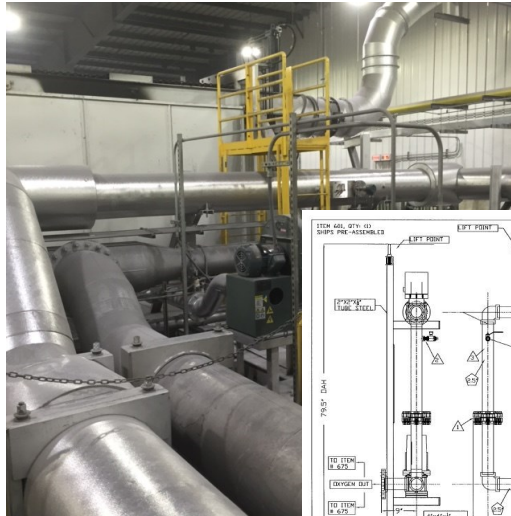
- Complete Regenerative Package
- Special O<sub>2</sub> Lance and Train
- Advanced Controls Package
- Start-up & Commissioning

### Achievements

- Safe oxidation of volatiles
- Achieved required melt rates
- Low Emissions (<120ppm@3%O<sub>2</sub>)

#### Key Points:

- 1) This system used **advanced controls** in order to minimize hardware components, and to optimize combustion. **Pressure control** is also easier to accomplish.
- 2) Supplying oxygen (through an **oxygen lance**) for combusting volatiles within the furnace made the combustion system **simpler and more reliable**.



Bloom worked with an OEM to design and engineer a combustion system on an aluminum melting furnace on a greenfield site. The feedstock for the furnace included so-called dirty scrap. In order to combust the volatiles driven off in the melting process, Bloom included an oxygen lance and pre-piped oxygen train. Use of oxygen minimized the effect on the furnace atmosphere, but also required careful engineering because there are additional safety considerations when using pure oxygen for combustion. In order to make pressure control and efficiency more reliable, Bloom employed several advanced control algorithms and upgraded hardware components.

**Keywords:** Aluminum, NO<sub>x</sub>, melting furnace, Advanced Controls

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