

Scrap Remelting Plant U.S. – Hybrid Air / Oxy Fuel



Overview

Investments in scrap re-melting facilities are paying off across the entire spectrum of the aluminum industry, including primary and secondary cast houses and the foundry/die casting sectors. Recycling utilizes resources, and scrap is a low-cost feedstock alternative compared to primary reduction, providing high energy savings.

The key profit drivers for scrap melting are low energy, high productivity and, most notably, maximum metal recovery. As scrap is a highly complex and varied material, to achieve desired outcomes, the furnace and its process technology must be tailored to the individual operator's specific needs.

In January 2020, ALTEK acquired Melting Solutions Limited, gaining its years of experience and a proven track record melting scrap and delivering many cost-effective melting plants worldwide for all types of scrap. Today, the ALTEK Tilt Rotary Plants deliver outstanding outcomes for customers, achieving exceptional results on both oxy fuel and air fuel furnaces.

Approach

For a U.S. scrap remelting plant, the ALTEK 30T Capacity Tilting Rotary Furnace (TRF) was installed as the primary melting unit, transferring metal to a 20T ladle furnace or a 150T side well melter. Production of foundry ingot met all international specifications. The TRF is fired by a nominal 6.0 MW hybrid oxy/air combustion system.

At this plant, all types of scrap are melted, including castings (with and without iron attachments), taint tabor, profiles, swarf/chips, used beverage cans (UBCs) and drosses (pressed and loose). Energy released from organics on the scrap (plastic oils, etc.) are liberated by direct-controlled oxidation in the furnace and used to heat the charge. During this phase of the melt cycle, the gas flow is reduced, resulting in a direct cost savings.

Outcome

Results of the ALTEK 30T Capacity TRF installation include:

- Charge input: 30 tonnes
- Pure melt time: 3.5 hours
- Gross melt rate: 8.57 tonnes per hour
- Cycle time: 4.5 hours tap-to-tap, including all non-melting activities (charging, pouring and tipping slag)
- Energy usage: 35-kilowatt hour per tonne (running 100% oxygen/natural gas)
- Productivity: Per 24-hour cycle, 160 tonnes (input)

The ALTEK Difference

ALTEK Melting Solutions provides a full service from standalone furnaces to complete melting plants, ensuring compliance with environmental standards. This is backed and supported by a full installation and commissioning service, which often includes extended site periods to train and optimize equipment, working closely with the customer.

ALTEK is an expert partner for the supply of industry proven furnaces for effective scrap melting. The ALTEK Melting Solutions Tilt Rotary Furnace represents the most effective melting furnace technology available for processing mixed scrap and drosses.

The TRF technology bridges the gap between dross presses and ALTEK's AluSalt™ salt slag processing technology. Pressed dross skulls are recycled in a TRF, and the by-product (salt slag) is recycled and processed in ALTEK's AluSalt process.

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