

ecowair

LEAD BATTERY RECYCLING

LEAD INGOT CASTING LINE

BSB – Brightening Surface Burner

LEAD BATTERY RECYCLING

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Ecowair develops and creates burners and complete combustion systems (turn key systems) applied in many industrial sectors.

By adopting an approach which is strongly aimed at innovation, and constant research for more efficient technology, the company has been able to change its activities throughout the years, in particular, offering important support to its customers on a plant and process level.

Since this service is one of its main strong points, promoted along with its own real production activity, Ecowair has become one of the main interlocutors, both for furnace manufacturers as well as for final users, as to the optimization themes of heat process efficiency.

Introduction



Lead ingot surface skimming is a necessary activity to be accomplished, due to several reasons but in particular because an excess of dross is not tolerate by Batteries Makers.

The drosses generated during the casting process are mostly related to the oxidation reaction between lead and oxygen present in air, so in general a “zero-dross” formation is a target impossible to reach.

The Oxy-gas burner Ecowair implemented, the BSB series, has the following tasks:

1. Promote dross reduction thanks to high flame temperature and excess of “hot reducting media” (tested with NG but same result is expected with LPG)
2. Increase molten lead surface temperature to obtain a better separation between drosses and metal

Both target increases the metal’s yeld of the process, limiting the amount of lead lost because of oxidation or mechanically removed (skimming).

Customer requirement



BSB burner has the following features:

1. Linear flame shape, with length sized according Customer's ingot shape
2. External mixing of O₂ and Gaseous fuel, to avoid risks of flashback
3. Water cooling to extend lifetime over 4 months operation in very hard operating conditions (first unit already daily operated since 6 months)
4. Robust execution: the burners is manufactured out of an AISI310 steel bar

Solution implemented



BSB burner control system has the following features:

Because the specific place of installation, it has been observed that BSB burner ignition, in order to be reliable, can be accomplished only manually with an external torch/flame by the operator.

The presence of molten lead droplets, operators movements and so on doesn't allow to design a system to preserve neither ignition electrode or pilot burners.

Flame control via UV scanner is possible and the control system can be designed to allow automatic shut off in case of flame failure.

The system therefore can be considered as a semi-automatic device

Solution implemented



During the first period of use, the operators reported the following results:

1. No needs for skimming when pouring Soft Lead (because of the relatively low dross generation in common operation)
2. Minimized droos formation and removal when pouring other alloys (i.e. PbCa)
3. Reduced molten lead losses (metal removed during skimming) due to better separation between liquid (lead) and solid (dross) phases.

Results achieved



Electrical control panel designed to control in semi-automatic mode the BSB burner



**Installation:
Electrical control panel**



Burner installed on casting line, right after the metal pouring in the moulds



Installation: BSB burner

Burner in operation



Installation: BSB burner

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Soft lead – ingot surface before BSB burner



**Ingot surface
before treatment**

Soft lead – ingot surface after BSB burner – **NO SKIMMING**



**Ingot surface
after treatment 1**

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PbCa lead – ingot surface after BSB burner – **SKIMMING
REQUIRED**



**Ingot surface
after treatment 2**



Thanks for your kind attention.

In case of any further interest, feel free to contact us at

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