

**BBOC™ minimises
metal inventory.**



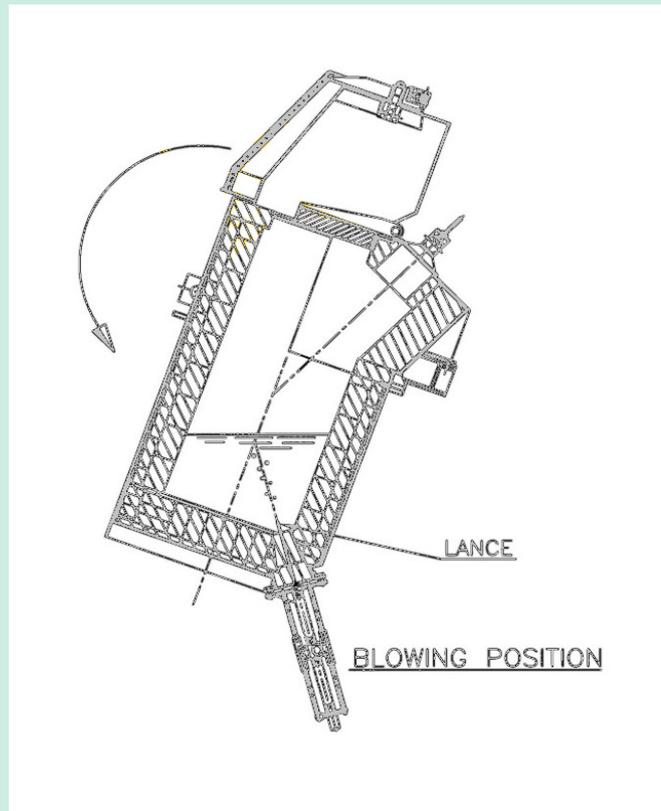
THE BBOC™ CONCEPT

The Bottom Blown Oxygen Cupel (BBOC™) represents a major and unique advance in precious metal refining technology. The ability to inject oxygen directly into the reaction zone, the area of greatest demand, means that the process achieves a quantum improvement in performance over alternative processes.

Specific reaction rate (per unit volume) is typically 15-20 times that of a conventional cupel.

Directly injecting oxygen into the molten metal eliminates the inefficiencies associated with the transport of oxygen into and through the slag layer on the metal bath and means that the slag layer can build up, enabling better slag/metal separation, without impeding the reaction.

The BBOC™ lance system effectively addresses the major problems associated with direct oxygen injection. Extended Lance life in the intense reaction environment is achieved by inert gas shrouding. Immersion control of the lance into the bath, ensuring sustained delivery of oxygen into the reaction zone, is accomplished by the automatic lance feed system.



APPLICATIONS

Applicable to practically any refining duty, where base metals and other impurities are eliminated selectively by oxidation.

- Retorted Parkes Crust (Ag, Pb, Zn, Cu)
- Lead and copper refinery slimes bullion (Au, Ag, Se, Te, Cu, Pb, Sb, As, Bi)
- PGM bearing feeds
- High purity silver refining, from 98 to 99.99%

SIGNIFICANT ADVANTAGES

- Smaller cupel volume reduces the precious metal inventory
- 100% utilisation of oxygen due to submerged injection
- Shorter cycle time (and therefore labour)
- Largely autogenous reaction, which results in fuel savings and reduced CO₂: Fuel consumption can be as low as 10% of conventional cupellation
- Improved slag/metal separation, minimising metal diversion
- Predictable process control, as differential slag layer thickness does not affect performance as in the TBRC, thereby avoiding overblowing.
- Excellent hygiene as the reduced gas injection and offgas volumes ensure that fume is minimised at source
- Fewer processes as direct casting doré into anodes eliminates holding furnaces

Licensee

ASARCO - Amarillo

Teck Metals - Trail

Xstrata Zinc - Northfleet

Nyrstar – Port Pirie

Xstrata Zinc - Belledune

MetalEurop - Noyelles Godault

Sumitomo - Niihama

Mitsui - Takehara

LMC - Onsan

Korea Zinc - Onsan

HZL - Chanderiya

Rand Refinery - Johannesburg

FEATURES

- Fully automatic lance feed operation with insertion control
- Low cost consumable lance
- Lance readily replaced during operating cycle
- Precise furnace tilting control
- Furnace body designed for fast change-over
- Integral hygiene hood which collects offgas at source

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