



ISACONVERT™

**Convert more matte
into metal with less
capital, less emission
and less energy**

GLENCORE TECHNOLOGY

A GLENCORE COMPANY

**ISACONVERT™ takes proven
ISASMELT™ technology and
applies it to converting to create
a lower-cost, higher-performance,
and environmentally responsible
continuous converter.**

And it works, in the real world.



ISACONVERT™ is a natural extension of ISASMELT™.

More than 14 million tonnes of feed per year are treated in 13 ISASMELT™ plants around the world. They demonstrate ISASMELT's top submerged lance smelters are low in capex and opex, low in maintenance, low in environmental impact, flexible in duty, fast to ramp up and easy to run.

ISACONVERT™ creates a continuous converter that delivers the same advantages.

ISACONVERT™

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ISACONVERT™ compared to Peirce Smith Converters

ISACONVERT™ is an ideal way to upgrade traditional batch converting plants that use Peirce Smith converters because like ISASMELT™, your ISACONVERT™ plant is compact. This delivers cost and environmental gains that are significant.

For instance, the continuous converting operation results in 100 times less fugitive emission than typical batch converters. And that environmental win also means a much smaller offgas train and lower equipment costs.

There's no need for a traditional converter aisle because the ISACONVERT™ products are transferred by launder to subsequent process steps. This means less in civil and structural works.

And if you combine ISACONVERT™ and ISASMELT™ to make a Double ISA plant then you have common equipment. That means even more savings in spare parts, reduced redundancy requirements, in training of staff and in operation controls.

The copper quality you'll produce in your ISACONVERT™ is similar to that produced in Peirce Smith converters and still low in sulphur.

ISACONVERT™ compared to Flash Converters

Unlike the relatively quiescent Flash furnace, ISACONVERT™'s compact furnace contains a highly agitated molten bath, so process reactions are quicker and there's less chance for accretion, saving lost time in maintenance and remelting.

Turndown is easier. You may want to predominantly run at 100% design capacity, but you can drop back to 40% without affecting performance.

The ISACONVERT™ furnace gives you precise temperature control and this means it can operate at lower slag temperatures than in other continuous processes. Therefore, the furnace suffers less refractory wear, less downtime in rebricking, longer campaign lives and higher profits.

This also means fewer burners and less fuel to keep the furnace hot. This further reduces your operating costs and your footprint, therefore less civil and structural work.

ISACONVERT™'s feed material is coarser than in a Flash furnace, so it means 80–90% less carryover of material, and the size and cost of equipment to capture and recycle this is reduced.

ISACONVERT™ takes solid matte as your primary feed material. Unlike in some other processes, it can simply be crushed or granulated, with no need for drying or fine particle size.

This removes the need for costly grinding and drying equipment, complex pneumatic conveying and burner systems.

The resulting quality of blister copper is actually better than that produced in other continuous converting processes, with sulphur levels similar to that produced in Peirce Smith converters.

ISACONVERT™ is easy to operate

An automated control system means just one operator can run each of the smelting and converting vessels from a single centralised control room.

The single ISACONVERT™ lance is much easier to operate than multiple injection lances used in some processes, or the finely tuned concentrate burners used in others.

All the reactions you need occur in the highly agitated molten bath, giving you plenty of time for complete reaction.

ISACONVERT™ is also decoupled from the smelting process. If one furnace is shut down for maintenance, the other furnace can continue to operate. You simply add to the matte stockpile if the ISACONVERT™ is offline, or remove matte when it's operating.

ISACONVERT™ is lower cost, flexible, easy to use, significantly better for the environment, and safe.

ISACONVERT™ is flexible in feeds

You can treat a range of matte and slag materials in your new ISACONVERT™. In fact, third party feeds, including scrap, slimes and similar high value residues, can be mixed with the matte to produce a custom blend.

This mix can change from day to day or may remain constant for weeks. It depends on your smelter's feed sources.

ISACONVERT™ is safer to use

ISACONVERT™ is very safe. There is less opportunity for toxic emissions. Automated systems with fewer workers mean less exposure to hot metal and toxic gases. There's no need for tuyere punching operators. And there's no need for crane drivers being exposed to fumes while transporting matte or copper between furnaces.

There's minimal water cooling on the furnace so there's less risk of explosions through molten metal contacting water. And fewer launders mean less work to clean them and less chance for injury.

ISACONVERT™ is proven in the real world

The first commercial scale ISACONVERT™ at the First Quantum Minerals' Kansanshi smelter in Zambia is a success. It was built to accommodate additional feed from a future expansion.

It was commissioned in 2019 and run over four short campaigns when possible and safe during the Covid-19 pandemic, and by April 2021 had satisfied all of First Quantum's requirements.

1. Successfully commissioned.
2. Met all production targets.
3. Enabled a fast ramp-up.
4. Demonstrated good blister quality with low sulphur content.
5. Proved easy to operate and control.
6. Optimised slag chemistry, resulting in low refractory wear.

How to explore ISACONVERT™ for your operation

Glencore Technology can only commence a few ISACONVERT programmes concurrently and still deliver the service you expect, so make contact early. We'll conduct a testing process and engineering study with you like any major project.



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Glencore Technology

Glencore Technology develops innovative products that help mining operations extract more from their flowsheet. ISASMELT™, IsaKidd™, IsaMill™, Jameson Cell and Albion Process™ have been developed in the real world and proven in more than 500 operations across every continent.

Many of our technologies have been developed and proven at our own sites, like ISASMELT™ and IsaMill™, which were pioneered by Mount Isa Mines and helped revolutionise mining and smelting processes all over the world.

Our approach is premised on a technology partnership to provide a full product and service offering, including process flow design, engineering, equipment supply, commissioning and operational expertise, and ongoing process and maintenance support.

Glencore

Glencore is one of the world's largest global diversified natural resource companies and a major producer and marketer of more than 90 commodities. The Group's operations comprise around 150 mining and metallurgical sites, oil production assets and agricultural facilities. With a strong footprint in both established and emerging regions for natural resources, Glencore's industrial and marketing activities are supported by a global network of more than 90 offices located in over 50 countries.

Glencore's customers are industrial consumers, such as those in the automotive, steel, power generation, oil and food processing sectors. We also provide financing, logistics and other services to producers and consumers of commodities. Glencore's companies employ around 146,000 people, including contractors.

Glencore is proud to be a member of the Voluntary Principles on Security and Human Rights and the International Council on Mining and Metals. We are an active participant in the Extractive Industries Transparency Initiative.

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