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CENTUM CS 3000 for Russian Copper Smelter

Location: Chelyabinsk Region, Russia
Order Date: April 2004
Completion: December 2006
Industry: Mining

AUSMELT
GLOBAL ENVIRONMENTAL TECHNOLOGIES

Executive Summary

Russian Copper Company has modernized its Karabash smelter in the Chelyabinsk region of Russia's Ural Mountains. An Ausmelt smelting and rotary holding furnace replaced three old shaft furnaces. The new smelting system processes approximately 460,000 tonnes/year of concentrates, producing matte for subsequent conversion to blister copper in existing Peirce-Smith converters.

Ausmelt successfully completed this project with a CENTUM CS 3000 production control system from Yokogawa Australia.

Ausmelt Limited was awarded a PACE Zenith Highly Commended Award in 2008 for the technical excellence and innovation incorporated in the plant. The Karabash smelter has also won two prestigious awards from the Russian government for environmental and ecological excellence.

The Challenges and the Solutions

The project required Ausmelt to provide metallurgical and operational support to the end user, which was difficult due to the distance between Ausmelt's office in Melbourne, Australia and the Ural Mountains in Russia. The solution was a remote connection via Microsoft Terminal Services across the Internet, which enables an Ausmelt technical expert in Melbourne to log on to the Yokogawa control system at the Karabash smelter and perform investigative, consultative, diagnostic, and corrective services.

The Ausmelt top submerged lance technology optimizes critical processes such as feed material dissolution, energy transfer, reaction, and primary combustion, which all take place in the slag layer in the smelter vessel. The intense agitation in the vessel caused by submerged gas injection ensures that reactions occur rapidly and residence times are low. The degree of oxidation and reduction is controlled by adjusting the fuel to oxygen ratio supply to the lance, and the proportion of reductant coal to feed. This enables the furnace to be operated at strongly oxidizing through to strongly reducing conditions. Operating temperatures range from 900°C to 1400°C. Yokogawa's highly reliable CS 3000 production control system brings high availability to the plant operation.

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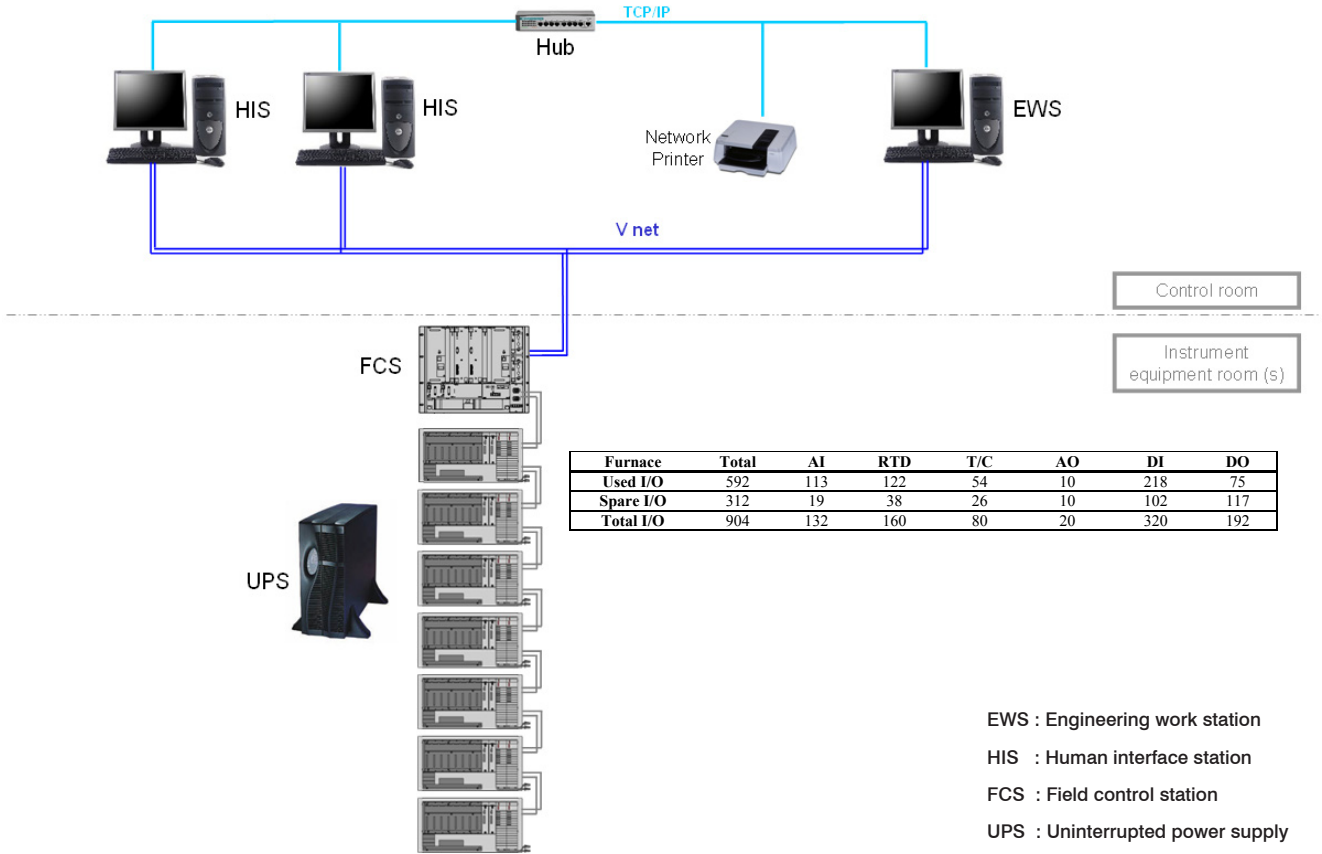
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System Configuration



Central control room of Russian Copper Company

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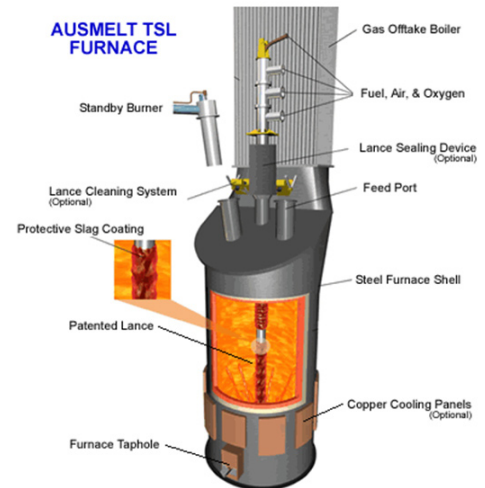
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About Ausmelt

Ausmelt Limited is a Melbourne, Australia-based supplier and developer of top submerged lance (TSL) metallurgical technology suitable for use in a wide range of applications in the non-ferrous, ferrous, and waste industries. Ausmelt has commercialized this technology globally with many applications for copper, lead, zinc, nickel, and PGM concentrates and waste materials.

There are 28 commercial furnaces in operation and three pilot plants. Three furnaces are now under construction, with a further eight furnaces in design.



About the PACE Zenith Awards

The annual PACE Zenith Awards were established by Australia's Process and Control Engineering magazine to publicly recognize and reward companies that show leadership in engineering and technological excellence and innovation in the following industries:

- Automotive and manufacturing
- Chemicals and petrochemicals
- Food and beverage
- Oil, gas, and hydrocarbons
- Metal products
- Mining
- Transport, power and infrastructure
- Water and wastewater



Right: Lindsay Hadland/YAU Major Accounts Manager
Left: Praveen Parashar/Ausmelt Project Engineer