

Copper smelter expansion

Atlantic Copper S.A. in Huelva, Spain



The Outokumpu partnership

As one of the world's leading developers and suppliers of technology, Outokumpu Technology designs and delivers plants, processes and equipment tailored to each customer's needs. We provide engineering, project and support services for the minerals processing and metallurgical industries globally.

Expansion of the Huelva Smelter

The Atlantic Copper S.A Huelva smelter has been operated with Outokumpu Flash Smelting technology since the 1970's. In the mid 1990's the plant was expanded to take full advantage of the Flash Furnace potential.

The target was to increase

- smelting capacity from 530,000 to 870,000 tpy
- production of anodes from 155,000 to 270,000 tpy and
- cathodes production from 135,000 to 215,000 tpy.

The majority of the expansion project was carried out by Lurgi Metallurgie – part of Outokumpu Technology since 2001 – on a lump-sum turn-key basis. The refurbishment of the Flash Furnace was carried out by Outokumpu as a separate project.

Highlights of the project

- **New storage area for 70,000 t of concentrate**

The new covered storage area includes reception, handling and fully automated sampling facilities. In addition, the existing storage and transport facilities were integrated into the new material handling concept.

- **Two new steam dryers**

Two new concentrate steam dryers were installed in the area of the new fugitive handling system.

- **Flash Furnace**

A new concentrate burner and conveyors were installed. The water cooling system was upgraded and the furnace re-lined.

- **New converter**

In order to increase the production capacity, a fourth Peirce-Smith converter was installed to allow simultaneous blowing of two converters. The new converter was equipped with a water-cooled hood, a spray chamber, scrap and flux charging devices, blowing air supply and a Converter Control System with Bath Level Determination.

- **New DCS system**

The existing process controls for the smelter were replaced with a new distributed control system (DCS).

- **New electric furnace**

The existing electric slag-cleaning furnace was replaced with a larger unit during the Flash Smelter shutdown. The new off-gas system features a first-of-its-kind Gas-Gas-Cooler and a scrubber.

- **New anode section**

Two new 15' x 36' anode furnaces with a capacity of 400 t of blister copper were installed. Corresponding off-gas systems, as well as a new 28-mold casting wheel, were also installed. The arrangement was such that one existing anode furnace with its 16-mold casting wheel could remain in operation.

- **Tankhouse**

The existing tankhouse was converted to stainless steel cathode technology and expanded. Altogether 300 new cells were installed in a prolongation of the existing tankhouse. This also required the relocation of the existing liberator section. For electrode handling two stripping machines and one anode scrap machine were installed.

- **Acid plant**

The existing gas washing and cooling facilities were expanded and acid plants number 1 and 2 were modernized. In addition, a third new sulphuric acid plant with a production capacity of 1,300 tpd was installed.

Significant reductions in SO₂ emissions were reached due to the improvements in the acid plants.



3038EN Libris, Helsinki, Finland, January 2005.

Features of the contract

- Value of the contract: US\$ 200 million
- Expansion of the smelter was executed on a lump-sum turn-key basis
- Mechanical completion was carried out within 19 months, while the plant was in operation.

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