

Tenova is a worldwide supplier of advanced technologies, products and services for the metal and mining industries providing innovative integrated solutions. Combined process automation and metallurgical know-how enhance the value delivered to the customers. Tenova is committed further to develop its technology in the areas that mostly impact the future of the industries it serves: quality of the products delivered by the customers, energy saving and environmental safeguard.

Tenova Pyromet is a leading company in the design and supply of high-capacity electric submerged-arc smelting furnaces and complete smelting plants for the production of ferroalloys, base metals, slag cleaning and alloy refining.

Tenova Pyromet has a long and successful history in the ferroalloy industry and also designs and supplies equipment for material handling and pre-treatment, alloy conversion and refining, granulation of metal, matte and slag, furnace off-gas fume collection and treatment, treatment of hazardous dusts and wastes.

The company has been certified to ISO 9001:2008 for "The Design and Supply of Smelting Technology and Equipment".



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Xstrata Lion Project

TENOVA is a world-wide supplier of advanced technologies, product and services for the metal and mining industries.

Project and Construction Management

The challenges associated with such large and technologically advanced systems was met by rigorous attention to the management and scheduling of project activities, and by fostering good relationships, commitment and cooperation between the project team, the client and the various sub-contractors.

Pyromet worked closely with other contractors to ensure seamless progress during erection of the furnace building. Sub-contractors for this project included Domento Mechanical services for equipment supply and erection, Oiltech for Hydraulic systems supply and installation, Voest Alpine for main scrubber venturi design and clean gas ignition systems and JCH for transportation of all supplied equipment.

Successful Start-Up of Furnaces

During September and November 2006, both 63MVA furnaces were successfully switched in to conclude the single largest expansion project of its kind in the world in terms of capital outlay and increase production to the Xstrata group.

By bringing Xstrata Lion online, production of charge ferrochrome increased by 330 000 tonnes per year. The project was a great success, characterised by excellent relations between Pyromet and our client, and by a strong desire from all parties to complete the project despite continuous delays due to excessive rainfall patterns during the civil and structural phases of the project.

Xstrata chose Pyromet as the technology and equipment supplier for the two 63 MVA furnaces including the electrodes, feed system, cooling systems and off gas handling systems.

Plant Features

At full production, the plant is the lowest cost producer of charge Ferrochrome employing the Patented Primus technology.

Using the latest in automation technology and monitoring equipment the entire plant can be managed from a single control room. The plant is almost completely automated, thereby improving efficiency of the plant as a whole. Preheated reduced pellets are fed into the furnace, thus reducing power consumption and increasing throughput of the furnaces

Using Pyromets double venturi based scrubbing systems, the scrubbed off gas from the furnaces is used on the plant primarily to fire the two 1200 ton rotary kilns.

With a zero emissions policy, extensive use is made of scrubbing systems and bag houses to minimize the environmental impact that such a large plant has

Electrode Equipment

The furnace uses the Pyromet patented electrode column system. This system has achieved remarkable results in operation on other furnaces, including on furnace 1 and 2 at ASA Metals, with a high availability demonstrated in over four years of service. The electrodes are 1,550mm in diameter, and a new system to measure electrode tip positions and to detect electrode breakages has been installed.

The electrode smoke seal is designed with a water-cooled copper base to increase the life of the rope seal, and also features remote adjustment of the clamping force as the rope material wears in services.

Project Information

Project name:	Xstrata Lion Project
Client:	Xstrata South Africa PTY (Ltd)
Site:	Steelpoort, Mpumalunga
Project description:	Design, supply and installation of 2 off furnace equipment including furnace roof, hearth cooling, complete feed system, fugitive gas system, furnace electrodes, hydraulic power packs, bustube assemblies, main and emergency off gas systems, taphole fume extraction system, feed bin fume extraction system and main venturi off gas scrubbing system
Disciplines included:	Mechanical, electrical, instrumentation and control
Produces:	Charge chrome (ferrochrome)
Furnace capacity:	63 MVA each
Production capacity:	333,000 tpy charge chrome
Project duration:	26 months
Project start:	October 2004
Commissioned:	September 2006 (Furnace B) November 2006 (Furnace A)

Project Statistics (Overall)

Concrete:	15,000 m ³
Steel structures:	8000 tons
Piping:	20'000 m (furnace A & B)
Total Man Hours:	>5 million Hours
Pyromet project team:	8 persons
Project site team:	200 persons (at peak)

