

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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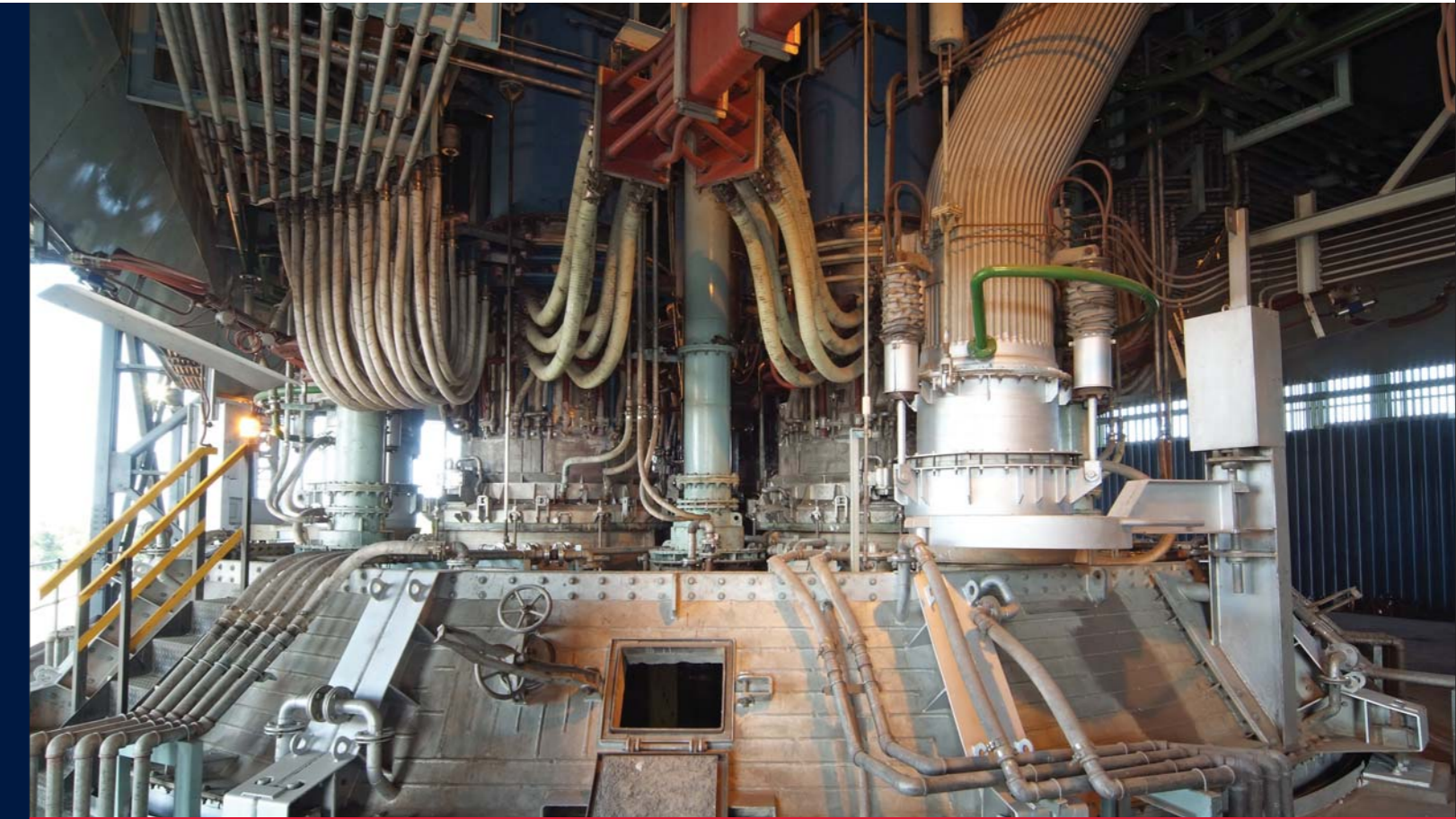
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## Tata Steel - Richardsbay Furnace Project

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

## Background

In May 2006, global steel producer Tata awarded a contract to Tenova Pyromet for the Tata KZN Project. The plant is located in Richardsbay Kwa Zulu Natal South Africa

The project was for design, supply, installation and commissioning of 2 x 36-MVA closed submerged arc furnaces.

## Scope

A complete furnace technology package for 2x 36-MVA submerged arc furnaces including the plant control system, with electrical and mechanical equipment. The scope also included the entire gas-cleaning scrubber system for the furnace off gas, as well as the tap hole fume extraction system.

## Commissioning

Commissioning of both furnaces was successful as the first furnace was commissioned in April 2008, commissioning of the second furnace in May 2008.

## Technology

The smelter incorporates the following technology

- Pyromet submerged arc closed furnace technology
- Pyromet patented electrode columns
- Complete plant automation system designed by Pyromet
- Pyromet designed furnace off-gas scrubbers, two per furnace

## Challenges overcome

One of the major challenges was the correct process design of the furnaces with the design requiring that the furnaces treat chrome ore briquettes. The ore used to prepare the briquettes would be sourced from India

The logistical challenge of doing a project in Richards Bay was that the equipment had to be designed to withstand the rigorous demands of coastal conditions. Local suppliers had to be sourced for the manufacturing and installation of equipment to save on logistical costs.

The quality of the off gas cleaning system complies with a very strict environmental requirement due to the location of the plant in close proximity to a residential area as well as the strict environmental bylaws governing the area which is an ecological preserved area.

The furnace building structure was supplied from India and the integration of the equipment to the furnace building structure had to be designed and fitted accordingly.

The site team had to endure coastal conditions where wind, rain and sandy terrain complicated planning and execution of certain tasks.

## Project Information

Project name:	Tata Steel Richardsbay Furnace Project
Client:	Tata Steel (Pty) Ltd
Site:	Richardsbay
Project description:	Complete Pyromet furnace Detail Design package Green fields Supply, installation and commissioning of the furnace shell, electrodes, feed system, Batch mixing system and conveyors, Tapping Bay Crane, Tap hole fume extraction system, furnace Controller, scrubber system, slurry system, tapping equipment, ladle heating system and furnace cooling system
Disciplines included:	Civil, structural, mechanical, electrical, instrumentation and control
Produces:	133 000 tons / annum
Furnace capacity:	142 857 tons/annum
Furnace Type:	Closed Furnace
Project duration:	24 Months
Project start:	April 2006
Commissioned:	April 2008

## Project Statistics

Concrete:	12 000 m <sup>3</sup>
Steel structures:	4800 tons
Construction Man hours:	> 1 million
Pyromet project team:	9 persons
Project site team:	25 persons

