



---

## **BLAST FURNACE NO.1**

TATA STEEL LIMITED, KALINGANAGAR  
STEEL PLANT, INDIA

# BLAST FURNACE NO.1

## TATA STEEL LIMITED, KALINGANAGAR STEEL PLANT, INDIA

### PROJECT HIGHLIGHTS

#### Stoves

- Primetals Technologies largest external combustion chamber stoves incorporating enhanced cross-over

#### Casthouse

- Complete suite of Primetals Technologies casthouse equipment, guns, drills and cover manipulator
- Flat casthouse floors, with ramp access
- Forced cooling iron troughs

#### Instrumentation and Control

- Level 1 PLC system for the complete furnace including operating condition monitoring
- Primetals Technologies retractable profile meter and sub burden probe

### THE CHALLENGE

The project was to develop a 10k t/d furnace for TATA Steel for a new integrated steel works in India. The furnace requirement was to integrate proven Primetals Technologies with TATA's experience of operating conditions in India.

### OUR SOLUTION

A contract was awarded to Primetals Technologies in January 2007 to design and supply the new 14 m hearth diameter blast furnace and additional facilities as part of the overall site arrangement at Kalinganagar as part of the first phase of the project which in addition to the blast furnace included steelmaking facilities, coke plant, sinter plant.

The construction commenced in January 2012 for a challenging project of a greenfield site in Orissa. Primetals Technologies provided supervision for the construction and commissioning of the furnace, working closely with the customer and contractors.

The blast furnace was successfully blow-in on the 29<sup>th</sup> February 2016. Furnace start up was effective with production matching the SMS capacity.

### SCOPE OF DELIVERY

- Blast furnace equipment; engineering and supply to Tata's largest blast furnace
- Blast furnace proper and related plant areas; basic engineering of structures, vessels, pipework, etc
- Construction and commissioning supervision
- Performance guarantees for key production and operating parameters

### STOVE DESIGN PARAMETERS

No. of stoves	3
Type of stoves	External
Hot blast volume	478,000 Nm <sup>3</sup> /h
Hot blast temperature	1,200 °C
Heating area per stove	85,000 m <sup>2</sup>
Stove refractories	Silica/Alumina
Stove burner	Ceramic



Tata Steel Limited, KPO Blast Furnace No.1

#### NEW BLAST FURNACE

- State-of-the-art cooling water system
- Copper and cast iron staves
- Closed circuit cooling

#### SLAG GRANULATION SYSTEM

- Heavy duty screw-dewatering copes with slag surges
- Quality granulated slag generating high value product for the cement industry

#### CLEAN GAS SYSTEM

- Dustcatcher
- Tangential cyclone single entry, to maximize dry dust recycle
- Triple cone scrubber, coupled to an energy recovery turbine, for efficient and cost beneficial clean gas generation

#### STOCKHOUSE

- Separate coke and ferrous stockhouses, each with a gathering conveyor feeding intermediate batch holding hoppers
- Single main charge belt conveyor, feeding a parallel hopper top

#### FURNACE DESIGN PARAMETERS

Average production	9,150 t/d
Peak production	10,065 t/d
Furnace hearth diameter	13.9 m
Furnace working volume	3,633 m <sup>3</sup>
Furnace inner volume	4,384 m <sup>3</sup>
Top gas operating pressure	2.50 bar g
Blast pressure at furnace	4.10 bar g
Normal productivity on inner volume	2.52 tHM/d/m <sup>2</sup>
Normal productivity per hearth area	60.30 tHM/d/m <sup>2</sup>
Number of tuyeres	38 off
Number of tapholes	4 off

**Primetals Technologies Ltd**

A joint venture of Mitsubishi Heavy Industries and partners

7 Fudan Way  
Stockton-on-Tees, TS17 6ER  
United Kingdom

[primetals.com](http://primetals.com)

Brochure No.: T01-0-N694-L5-R-V2-EN

Printed in Austria

© 2020 Primetals Technologies Ltd. All rights reserved

The information (including, e.g., figures and numbers) provided in this document contains merely general descriptions or characteristics of performance based on estimates and assumptions which have not been verified.

It is no representation, does not constitute and/or evidence a contract or an offer to enter into a contract to any extent and is not binding upon the parties. Any obligation to provide and/or demonstrate respective characteristics shall only exist if expressly agreed in the terms of the contract.

These estimates and assumptions have to be analyzed on a case-to-case basis and might change as a result of further product development.

Primetals Technologies excludes any liability whatsoever under or in connection with any provided information, estimates and assumptions. The provided information, estimates and assumptions shall be without prejudice to any possible future offer and/or contract.

Any use of information provided by Primetals Technologies to the recipient shall be subject to applicable confidentiality obligations and for the own convenience of and of the sole risk of the recipient.

Primetals is a trademark of Primetals Technologies Ltd.