PRIMETALS TECHNOLOGIES

BLAST FURNACE NO.1

JINDAL STEEL & POWER LIMITED, ANGUL STEEL PLANT, INDIA

BLAST FURNACE NO.1
JINDAL STEEL & POWER LIMITED, ANGUL STEEL PLANT, INDIA

KEY FEATURES OF BUILD

Production

- Largest furnace in India when blown-in. 4,554 m^3 inner volume to produce 3.85 million tonnes per annum
- State-of-the-art blast furnace technology

Environmental

- Process gas cleaning using cyclone technology, to maximize cost-effective recycling of process dusts

Automation

- Level 1 PLC system for the complete furnace including auxiliary plant, with Primetals Technologies level 2 system

THE CHALLENGE

Following on from the success of JSW Steel's blast furnaces No.3 and No.4, Primetals Technologies challenge was to provide to JSPL the largest furnace yet-built in India.

OUR SOLUTION

Primetals Technologies solution included the design, equipment supply, and erection/commissioning supervision of the furnace which was installed at Angul in the state of Orissa, India. This furnace was an extension of the family of Gwangyang large blast furnaces provided by Primetals Technologies.

Primetals Technologies designed a blast furnace capable of producing 11,000 tHM/day based on an inner volume of 4,554 m^3. The furnace profile and cooling system allowed operation with a variety of ferrous burden qualities, with a pulverized coal injection potential up to 250 kg/tHM.

Construction commenced in October 2013 and Primetals Technologies worked closely with a number of contractors to bring the project to a successful conclusion.

The blast furnace was successfully blown-in on the 27th May 2017 with zero lost time incidents. The furnace is complemented by the Primetals Technologies sinter plant and incorporate Primetals Technologies level 2 automation systems, ensuring that JSPL have the capability to produce a consistently high quality product for many years to come.

SCOPE OF DELIVERY

- Basic design of the process equipment
- Detail engineering of proprietary-supplied equipment for the furnace
- Basic engineering of the infrastructure – supporting local contractors to complete the project within a tight budget
- Construction and commissioning supervision
- Performance guarantees for key production and operating parameters

JSPL Angul Blast Furnace No.1

NEW BLAST FURNACE

- Furnace profile based on Primetals Technologies worldwide success with copper staves
- Carbon hearth with deep sump and ceramic pad for long life
- Closed circuit cooling using 5 closed-water circuits

HOT BLAST STOVE SYSTEM

- 3 internal combustion chamber stoves providing 1,250 °C hot blast to minimize coke consumption, incorporating waste heat recovery to minimize enrichment fuel costs

PROCESS GAS CLEANING SYSTEM

- Tangential single-entry cyclone to maximize dry dust recycle
- Triple-cone wet scrubber

STOCKHOUSE

- Twin-stockhouse with two gathering conveyors for various burdens containing a wide range of sinter, lump ore and/or pellets, plus use of centre coke
- Belt conveyor feeding a parallel hopper top

CASTHOUSE

- 4 taphole flat-floor casthouse for optimum ease of operation, incorporating Primetals Technologies taphole equipment

SCREW-DEWATERING SLAG GRANULATION SYSTEM

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

AUTOMATION

- Primetals Technologies level 1 and level 2 systems

FURNACE DESIGN PARAMETERS

Average production	11,000 t/d
Peak production	12,000 t/d
Furnace hearth diameter	13.9 m
Furnace working volume	3,803 m^3
Furnace inner volume	4,554 m^3
Top gas operating pressure	2.60 bar g
Blast pressure at furnace	4.30 bar g
Normal productivity on inner volume	2.42 tHM/d/m^2
Normal productivity per hearth area	72.5 tHM/d/m^2
Number of tuyeres	38 off
Number of tapholes	4 off

Primetals Technologies
A joint venture of Mitsubishi Heavy Industries and partners

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

primetals.com

Brochure No.: T01-0-N689-L5-R-V2-EN
Printed in Austria