ThyssenKrupp STEEL, Germany

Construction of the new Hamborn BF 8
2007
**Introduction**

Centerpiece of an ambitious modernization program for hot metal production for ThyssenKrupp Steel was the construction of the new blast furnace 8 in Duisburg-Hamborn. Replacing BF4 after 32 years of service, BF8 has been the first newly built blast furnace for TKS since 1993 and is today the most recent and most modern one in Western Europe.

In November 2004, ThyssenKrupp Steel awarded the Paul Wurth Group, via Paul Wurth Umwelttechnik GmbH in Essen, with the contract for the basic engineering for a complete new BF8. In March 2006, the Paul Wurth Group received the order for the turnkey supply for the blast furnace plant including auxiliaries (hot stoves, PCI plant, INBA® slag granulation, casthouse, automation system etc).

**Project Realisation**

Almost a third of the total investment of TKS was spent on pollution control equipment. Dust emissions of BFs 8 & 9 are more than 20% below the previous figures for BF 4 & 9. Noise emissions are likewise significantly reduced.

Gathering up to 1,000 workers on site, the project required comprehensive scheduling and tremendous organization in terms of procurement, logistics and task coordination. This efficient project management resulted in a record project completion time, with the blow-in performed two weeks ahead of the original schedule.

Paul Wurth’s scope also included for the first time the supply of the complete plant automation.

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<thead>
<tr>
<th><strong>Project Data</strong></th>
<th><strong>Blast Furnace Data</strong></th>
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<tbody>
<tr>
<td>Project overall duration (from engineering start to blow-in) : 21 months</td>
<td>Annual Production : 2.0 Mio tHM</td>
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<td>BF construction (from first shell section to blow-in) : 15 months</td>
<td>Hearth Diameter : 10.74 m</td>
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<td>Blow-in date : 8 December 2007</td>
<td>BF inner volume : 2,500 m³</td>
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<td>BF useful volume : 2,120 m³</td>
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<td>Top pressure : 1.8 bar (g)</td>
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<td>Number of tuyeres : 28</td>
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<td>Number of tapholes : 1</td>
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Services

- Turnkey blast furnace plant construction

Supplies

- Winch house and skip bridge
  - Modern winch drive for the skip
- Furnace top
  - Central feed Bell Less Top® charging system
  - Receiving chute with dedusting device
- Blast Furnace proper
  - Complete shell (80 - 40 mm thickness)
  - TMT - stockline recorders and in-burden probe*
- Pulverized coal injection plant
  - Coal injection capacity of 250 kg / tHM
  - 2 tank truck discharging stations
  - 28 coaxial lances
- Hot blast stoves plant
  - Hot blast temperature 1,250° C
  - 40,000 m² heating surface
- Cooling system
  - Closed loop circuits with total pipeline length of 50 km
- Casthouse
  - Changeable poolrunner
  - TMT - taphole drill & clay gun*
  - Casthouse dedusting controlled in accordance with latest fluidic knowledge
- Gas cleaning plant (cyclone, scrubber, demister, degaser)
  - 90% cleaning efficiency for top gas dust
- INBA® slag granulation plant
  - Cold water system with condensation tower
  - BAT for environmental control
- Noise insulation measures for the entire plant

Automation system

- Complete automation system for all parts of the blast furnace plant

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Paul Wurth’s Scope of Supply

Blast Furnace Data

- Annual Production : 2.0 Mio tHM
- Hearth Diameter : 10.74 m
- BF inner volume : 2,500 m³
- BF useful volume : 2,120 m³
- Top pressure : 1.8 bar (g)
- Number of tuyeres : 28
- Number of tapholes : 1
- Hot blast rate : 220,000 m³/h (STP)
- O₂ addition : 15,000 m³/h (STP)
- Slag ratio : approx. 330 kg/tHM
- PCI ratio : 250 kg/tHM
- BF top gas : up to 400,000 m³/h (STP)
International presence:
Brazil, Chile, Czech Republic, Germany, India, Italy, Japan, Korea, Mexico, P.R. China, Russia, South Africa, Taiwan, Ukraine, U.S.A., Vietnam

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