POSCO E&C has completed many construction works for blast furnace all over the world and now starts to gain a lot of attention worldwide through the completion of innovative technology for blast furnace renovation.
POSCO E&C’s One of the Great Technologies

POSCO E&C’s World’s Largest Blast Furnace with Innovative Technologies

A blast furnace, an inimitable symbol of steel mill and the apex of engineering technology, can only operate as intended when design, construction, operation and maintenance work together organically. A blast furnace makes pig iron with iron ore, coke and other inputs, melting the mixture with air heated to 1,200 °C. Key components of a blast furnace include a body, top equipment, cast house equipment, hot stove, gas cleaner, fuel carrier, utility and PCI unit. POSCO E&C has performed EPC projects in Iran, India and Indonesia based on its experience accumulated from the construction of blast furnaces at the Pohang and Gwangyang Steel Mills. Going forward, POSCO E&C is bringing its expertise to bear in expanding its presence as far as Central and Latin America. We, POSCO E&C, built Gwangyang Mill’s Furnace 1, the largest of its kind in the world at 6,000 m³, which has been operated successfully.

Blast Furnace Cooling System
Given the high temperatures at which a blast furnace operates, its lifetime is largely determined by the quality of its cooling system, which can come in various sizes. Depending on the causes of wear inside the blast, the optimally designed cooling system can reduce mechanical wear significantly.

Furnace Top Equipment
Furnace top equipment ensures optimized feeding of fuel and raw materials into the furnace by temporarily storing them in the material hopper when they arrive via a conveyor belt on the right time determined by the conditions of the furnace, fuel and materials.

- Consisting of a Drive Unit, a Material Control Gate and Others
  - A bell-less two bunker type is used for uniform distribution and easier control of the materials fed into the furnace.
  - Other components, including a riser and a downcomer, are used to remove blast furnace gas.

- Equipped with a Highly Productive Feed Distributor with High Degree Precision
  - This allows for vertical feeding of fuel and raw materials from the material hopper.
  - A high precision (±0.1 degree) feeding of fuel and raw materials from the material hopper.
  - A high performance material control gate is also used.
  - 10 to 30 percent more than designed capacity of feed can be injected.

Hot Stove System
The hot stove facility supplies high temperature air (1,000-1,300 °C) at a high pressure (2.5-5.5 kg/cm²) to the furnace in large quantities (1,800-7,500 N.m³/min) at a constant rate. There are generally three types of hot stoves such as internal combustion, external combustion and top combustion.

- Hot Stoves of Top Combustion Type
  - Unlike internal or external combustion type, combustion takes place in the burner (pre-chamber) at the stove.
  - This allows a compact hot stove to be built on a smaller plot of land for a smaller budget with greater efficiency.
  - Its structure is stable and minimizes related trouble.
  - Air heated to over 1,300 °C can be supplied.

Gas Cleaning Plants
The gas cleaning plant captures dust included in the gas generated from a blast furnace and comes in various types depending on the method of capture.

- Wet Collection : A Cyclone or a Dust Catcher and a Scrubber
  - The use of a cyclone can reduce space required and improve the efficiency of capturing
  - Dry capturing : a cyclone and a bag filter
  - The power generated from the gas pressure recovery turbine at the top can increase by as much as 30 percent through the wet collection system.
BF Technology Optimized for Customer’s Needs

Blast Furnace Large Block Ring Revamping Technology with Increase of the Productivity by Reducing the Construction Period

Since the lifespan of blast furnace ends due to the refractory abrasion in case of its operation over 20 years, it is necessary to do the revamping work to replace the old main body and its inner parts with new ones. Originally it is usual to dismantle the old blast furnace by dividing the block into several small parts, build and assemble the new blast furnace when performing the revamping works. On the other hand, conventional method requires substantial construction period, high labor cost and equipment expense and even leads to fatal safety issues sometimes.

To solve these existing problems, POSCO E&C developed the large block ring revamping method in Korea for the first time and made a break-through in construction by saving its construction period up to the impressive level. Large block ring revamping technology is the method to divide the entire blast furnace into 3 different blocks (Blast furnace hearth, Shaft and Top), manufacture them at a workshop and assemble all together after moving them to the site. The below pictures, currently existing blast furnaces constructed by POSCO E&C, are a comparison between original method and large block ring method.

Original Method (Gwangyang No.2 Blast Furnace)
- Block No. : 8 Levels / 8 Blocks
- Installation Equipment : 1,000 tons Crawler Crane

Large Block Method (Pohang No.3 Blast Furnace)
- Block No. : 3 Levels / 3 Blocks
- Installation Equipment : Strand Jack, Hydraulic Jack

Main events of large block ring revamping method.

1. Transfer Car
2. Taking out of Existing Blast Furnace
3. Large Block Transfer
4. Installation of New Block No.1 (Hearth)

Client-Oriented Value in Large Block Ring Revamping Method

POSCO E&C achieves the revamping works for large scale blast furnaces within the shortest amount of time. Up to now, POSCO E&C has made the utmost endeavor to provide its customers with the best and optimized solutions. Through the many experiences and technical know-hows, it is possible to make a various kind of proposal types for over 560 blast furnaces all over the world and POSCO E&C has got a great opportunity to be recognized as a company possessing important techniques in case of developing new blast furnaces. Furthermore, it is expected that the large block ring revamping method will have boundless potentials for the steel companies who have desires for reducing their operating cost and increasing productivity.

With a state of the art technology, POSCO E&C guarantees investment cost saving and through the reduction of construction period, operation is expected to start within the shortest time.
Approval of ISO 9001 Quality Management Systems to meet Global Standard of Quality Management

As a leading EPC company of quality management systems, POSCO E&C has successfully achieved certificate of Approval of ISO 9001:2015 in 7th October, to prove its quality management system to be world class.

International Organization for Standards (ISO), the managing body of ISO 9001 system, is the world’s largest developer of international standards. Developed by ISO, ISO 9001 is the standard within the range of ISO 9000 standards which is one of the most widespread standards for quality management system. To meet the demands of latest issues for quality management system, such as risk management, expectations of stakeholders, performance and etc., ISO has updated its standards for quality management system after 7 years since 2008.

To meet the global standard, POSCO E&C has busily prepared to achieve ISO 9001 certificate, analyzing differences between new and old versions and reflecting differences onto its internal process manual.

More specifically, new standard puts its focus on activities to deal with risks and opportunities. POSCO E&C, therefore, has applied cQSS+ standard, which stands for Cost, Quality, Speed and Safety, to all project sites to quickly recognize opportunities and risks and has continuously managed to prove its eligibility to meet the standards.

Utilizing its readiness for latest global standard of quality management system, POSCO E&C will focus on the best quality for project to satisfy the client and maximize its performance by continuous innovation.

POSOCO E&C to Complete Horizontal Merger of POSCO Engineering Enhancing Its Competitiveness by Feb.

POSCO Engineering & Construction Co. (POSCO E&C) will merge its subsidiary, POSCO Engineering (PEN), into one combined company. Through this amalgamation, the assets, capital, and workforce of PEN will be transferred to POSCO E&C.

This decision follows the recent downturn in the global construction market and is aimed at enhancing synergy between the two companies. Also, POSCO E&C and PEN will improve their financial solvency and global competitiveness by leveraging the strength of each company.

The representative of POSCO E&C said "POSCO E&C expects that one combined company will extend its EPC (Engineering, Procurement and Construction) capacity and diversity type of construction by building unified execution system between POSCO E&C (construction) and PEN (engineering). Also, POSCO E&C will pick out core business that could be of synergy with the strong business area (Airport, Railway E&M and Oil & Gas) of PEN and plan to strengthen competitiveness in bid price.

Henceforward POSCO E&C is going to finalize the merger through some procedure such as resolution of general meeting of stockholders, submission of creditor's objection and etc. by 1st Feb.

Overseas Medical Aid Activities for Remote Villages in Vietnam

POSCO E&C has conducted medical aid activities with the Inha university hospital and the Salvation army from 22nd to 24th November in Tinh Quang Ngai, the Vietnam.

Through this voluntary works, total 1,350 people living in Ba Dinh, Ba Dong, Ba To village of huyen Ba To nearby Danang - Quang Ngai highway construction site of POSCO E&C received medical and dental care. POSCO E&C will continue their medical aid activities in Vietnam, cooperating with Korean medical institutions from now on.

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