In order to produce high quality hot coils at lower cost, POSCO developed CEM® process which integrates the casting and rolling processes in a single manufacturing line. This new technology is capable of producing various grades of steel products to meet the various market requirements.
Award Sulfur Loading Facility Project from Saudi Aramco

POSCO E&C got awarded from Saudi Aramco for sulfur railcar loading facility project, which amounts to USD 400 million approximately. This project is to construct branch lines of railroad and marshaling yard in Jubail Industry, Saudi Arabia for loading melted sulfur from Wasit and Berri gas plants in Khursaniyah and transporting 10,000 tons of molten sulfur per day to Ma’aden facilities at Wa’ad Al Shammal and Ras Al Khair.

The target completion date is the second quarter of 2017 and the project has been executed based on the mutual agreement of two companies since February, 2015.

The representative of POSCO E&C said, “We recently signed the contract based on a Lump Sum Turn Key (LSTK) basis and the signing ceremony was held in Saudi Arabia on January 29th, 2015. POSCO E&C mainly focused on steel plant business, and then now it is time to seek other business sectors due to the global recession as well as resource trend nowadays. We believe that successful execution of this project could give us a great opportunity to get a foothold in industrial plant markets and jump into a leading position among Saudi Arabian market.”

Particularly, this is one of the grand-scale industrial plant packages by Saudi Aramco consisting of several linked projects. With this opportunity POSCO E&C expects to consistently maintain an amicable relationship with Aramco to look for potential chances to participate in other upcoming projects in Saudi Arabia.

Also, POSCO E&C regards this project as a stepping stone for expanding new industrial plant business filed such as cement, oil & gas plants as well as natural resources projects and will put much effort to offer a well-packaged total engineering, procurement and construction solution to the wide range of customers in the long run.

Substantially, POSCO E&C has been working on cement project in East Timor and oil and gas business in Venezuelan and Mexican markets, expanding its business capabilities to the maximum. These all diversified challenges are possible due to POSCO E&C’s accumulated know-how from tons of EPC steel plant projects over 45 years and this brings about a positive circumstance for POSCO E&C to challenge the new markets.

Upgrading Raw Material Handling System for SNG Plant

Since POSCO E&C started its business in the sector of steel plant construction, POSCO E&C has built numerous raw material handling facilities such as stockpile, belt conveyor, stacker, reclaimer, etc. which are required to handle raw materials for production of steel products.

In addition to the raw material handling facilities for steel plant, POSCO E&C is widening its own EPC capabilities on raw material handling to the various applicable areas. One of the related projects is raw material handling facilities for SNG (Substituted Natural Gas) project in Gwangyang.

In this project, POSCO E&C is providing its EPC services on SILO (a structure for storing bulk materials) and belt conveyor. The height and inner diameter of each of 4 SILO are 68.6m, 41m and each SILO can save 50,000 tons of coal. Two lines of belt conveyor can transfer 6,000 tons of coal per hour.

POSCO E&C’s strong capabilities on raw material handling, from design to construction as well as revamping works, is now approaching to the new areas of where raw material handling are required.
From this year, POINT will cover the POSCO E&C’s cutting-edge technologies in steel business. The first item is CEM® process which stands for Compact Endless casting-rolling Mill.

The development of this technology starts from a number of drawbacks of the current hot coil manufacturing process. To synchronize the casting output with the upstream steelmaking process, as well as ensure slab quality, the continuous casters are designed to produce slabs with standard thickness of 230 mm.

Producing thick slabs requires large and continuous places. Rolling the slabs also requires massive rolling mills. Both of these processes are inherently capital intensive. Another drawback is a huge amount of energy consumed by reheating furnaces to prepare the cooled slabs for rolling.

Finally, the fact that each slab is rolled out into a long sheet means the head and tail of each hot coil may have inconsistent dimensional and physical properties resulting in low production yields and quality issues.

POSCO Group set out to overcome these drawbacks and found a better way to produce high quality hot coils at lower cost. The result of this ambitious challenge is CEM® process that integrates the casting and rolling processes in a single manufacturing line to continuously produce hot coil directly from molten steel.

In the CEM® process, the continuous caster sends a thin-slab casted high speed directly to the connected in-line roughing train where it is rolled into the thin bar. The bar then passes through an induction heating system on its way to the finishing train to ensure proper rolling temperatures during initial process optimization process.

To permit the casting and finishing processes to be derailed for batch rolling or linked for endless rolling, POSCO developed a changeable coil box allowing us to meet the diverse thickness requirements of customers.

The CEM® process introduces three key technologies; high speed casting, in-line rolling and direct process linking. High speed casting technology boosts casting speed from standard 5 m/min of today’s many flat mills to a maximum of 8 m/min. This dramatically improves casting productivity allowing the direct linkage with the rolling train. It also allows the slab to be immediately rolled with only minimal in-line reheating. Advances in high-speed flow control and lubrication technologies were key supporting breakthroughs in this area.

Next is in-line rolling technology. This technology allows the roughing train to be connected to the caster enabling rolling with minimal roll force to a bar thickness of as little as 10 mm with just three in-line rolling stands. This improves bar quality as well as greatly reduces the required roll force during the finishing.

The last is direct process linking technology. This direct linking of the casting and rolling processes allows the continuous rolling of the equivalent of about 60 slabs. This synchronization of casting and rolling speeds also permits rolling at low uniform speeds, improving coil quality and yield as well as supporting the production of ultra-thin gauge products.

POSCO also expects advances in cooling control to aid in the development of advanced high strength steel and other value-added product.

Through integration and simplification, we believe the CEM® process is making hot strip production more economical and significantly cheaper and greater.
POSCO E&C Completes SNNC’s No.2 Ferronickel Plant

POSCO E&C has completed the construction of SNNC’s No.2 ferronickel plant in Gwangyang. Through this completion, SNNC now has established a production system capable of producing 54,000 tons of pure nickel and has the world’s largest electrical arc furnace with the existing No.1 furnace.

POSCO E&C enhanced the production capacity of the No.2 ferronickel plant based on its own engineering efforts and successfully completed the second phase of the capability increasing project. SNNC’s ferronickel plant increased its technical competitiveness by achieving the capability to handle the entire process from the test operation of facilities to the final production of cast iron without any technical support from overseas.

Following the primary construction of ferronickel plant, POSCO E&C led the construction as a main contractor. Its’ scope in the project covered not only engineering & procurement for ore mixing, dust pelletizing and coal grinding equipment, transmission substation but also construction of the entire plant. Other renowned equipment suppliers and construction companies participated in the project as well. SNNC has now built the second electrical furnace, which is the world’s largest, representing a major contribution to the first furnace.

Prior to the completion of construction work, the Gwangyang Port was expanded with the addition of a quay exclusively for nickel ore in order to facilitate congestion-free operation.

Now SNNC has been able to expand its annual productive capacity from 30,000 tons to 54,000 tons by virtue of the second phase of the capacity building project. The new facility will not only stimulate the local economy, such as improving the competitiveness of related industries and stimulating job creation, but also contribute to improving the cost competitiveness of stainless steel through raising POSCO’s self-sufficiency in nickel by a staggering 80 percent.

POSCO’s global status will be further boosted by the construction of a stable and consistent manufacturing system from a nickel mine to nickel smelting and stainless steel manufacture.

SNNC held a comprehensive completion ceremony on 6th March at the Ferronickel Plant in Gwangyang, where it declared that it would start the second phase of operation. Photo: (from left) POSCO E&C CEO Hwang Tae Hyun, Member of Congress in New Caledonia Phillip Gomez, President of SMSP Andre Dang, representative of the French government Michelle Colin, POSCO CEO Kwon Oh Joong, Jeollanam-do governor Lee Rae Yon and Northern state governor Paul Naoutyine.

POSCO E&C Takes No.2 Position in Top International Contractor.

In December, 2014, Engineering News Record (ENR), the world-renowned construction magazine, published a list of the world’s top 10 construction companies. POSCO E&C was ranked 2nd with a revenue of $1,373.9 million in steel and nonferrous metal sectors. Compared to last year, the rank has risen from 3rd despite the current economic downturn.

POSCO E&C is the world’s only construction company that can manage the whole construction process of integrated steelworks under a PEPCOM arrangement. Therefore, POSCO E&C is more competitive than any other leading companies.

POSCO E&C’s businesses in the steelworks sector were highlighted around the world in 2011 when it won a more than USD 4.3 billion project to build the Brazil CSP steel plant Complex, the largest-ever steel plant construction order in the nation.

NEXT EVENT

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<tr>
<td>HO-SEONG LEE</td>
<td>Director</td>
<td>POSCO E&amp;C Tower 1, 241 Incheon tower-daero, Yeonsu-Gu, Incheon, 406-732, Korea</td>
<td>82 32 748 2365</td>
<td><a href="mailto:plantBiz@poscoenc.com">plantBiz@poscoenc.com</a></td>
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**Source:** ENR 2014

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SNNC was jointly established in May 2006 by POSCO and SMSP, the largest nickel ore export company in New Caledonia through investment according to a 49/51 share split. It produces and sells ferronickel, the main material of stainless steel and other by-products.

OVERSEAS

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**Source:** ENR 2014