

Dongbu Steel

[www.dongbusteel.com](http://www.dongbusteel.com)

# DONGBU STEEL BY INNOVATION

Dongbu Steel was the first company in Korea to produce cold-rolled (CR) steel sheets in 1967. Since then, we have been selling many types of steel products at more than 4 million tons annually, including hot-rolled (HR) steel sheets, CR steel sheets, surface-treated steel sheets, steel pipe, H-Beams, and cold heading quality (CHQ) wire through our Asan Bay Works, Incheon Works, and Pohang Works.

We now boast the world's highest competitiveness in CR steel sheet products following the completion of the Asan Bay Cold Rolling Mill which has completely automated the entire manufacturing process, from raw material input to product output—a first in the world steel industry, since 1999.

In addition, we have firmly positioned ourselves as one of the nation's top 3 integrated steel manufacturing companies by completing an Electric Arc Furnace (EAF) mill, the world's largest-ever for a single plant, in 2009. The mill has been in the limelight as an innovative futuristic steelwork that fits the environmentally friendly, low carbon green growth era by radically reducing CO<sub>2</sub> emissions and energy consumption.

Going forward, we will continue to grow and develop as “the world's most competitive steel company” with an annual output of over 10 million tons through gradual expansion of our products and production volume.

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ELECTRIC ARC  
FURNACE MILL:

INNOVATIVE,  
ECO-FRIENDLY &  
FUTURISTIC



# INNOVATION

## Innovative, Eco-friendly & Futuristic Steelmaking

Dongbu Steel's Electric Arc Furnace (EAF) mill is innovative, eco-friendly and futuristic while also being the world's largest single plant. EAF steelmaking is environmentally friendly through its recycling and usage of scrap steel, which as a stable and key raw material, has high domestic self-sufficiency. The EAF steelmaking process is innovative as it has addressed all the problems that the typical blast furnace steelmaking has such as competition to secure iron ore and bituminous coal, and excessive CO<sub>2</sub> generation. In addition, it enables flexible order taking and production since its production is faster than that of the blast furnace, and it is very efficient due to its short lead-time from order to production and delivery.

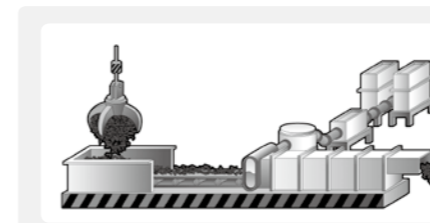
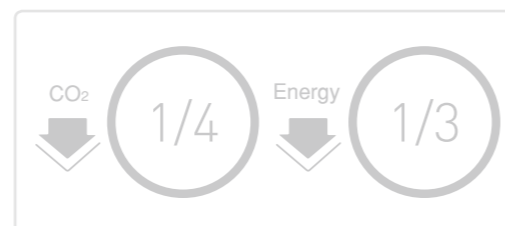
Regarding product quality, EAF has been developed to a level that compares favorably with those by blast furnaces as a result of repeated technological innovations over the past decade. One example is Tokyo Steel Manufacturing, a representative EAF steel maker of Japan. They are producing automotive steel sheets after completing an automotive steel sheet plant for Toyota Motor. Thanks to its eco-friendliness and innovativeness, EAF has been recognized as a futuristic steelmaking process that replaces typical blast furnace steelmaking; EAF steelmaking already accounts for more than half of the total crude steel production in the USA and Europe.

# ECO-FR IENDLY



## Reducing CO<sub>2</sub> emissions to one fourths and energy consumption by a third

The EAF steelmaking has been recognized as an innovative eco-friendly steelmaking method due to its reduced greenhouse gas emissions and lower dust generation than the typical blast furnace method. Particularly, Dongbu Steel's Electric Arc Furnace (EAF) mill has succeeded in radically lowering CO<sub>2</sub> emissions to one fourths and energy consumption to a third, respectively, of those by blast furnaces, by choosing the Consteel process for the first time in Korea to reduce dust, noise, and energy consumption further.



### Consteel Facilities

Contrary to the existing method of putting scrap steel in by opening and shutting the top of an electric furnace (Top Charge), the Consteel process inserts scrap steel consecutively through a conveyor from the side of the electric furnace while its top remains closed. The process is highly environmentally friendly because it generates little dust and noise since the electric furnace is sealed. It also can minimize external emissions of dust that has accumulated inside the electric furnace, while sharply lowering energy consumption by preheating scrap steel with the waste gas from the electric furnace.



# FUTURE

## Emerging as the world's most competitive steel company

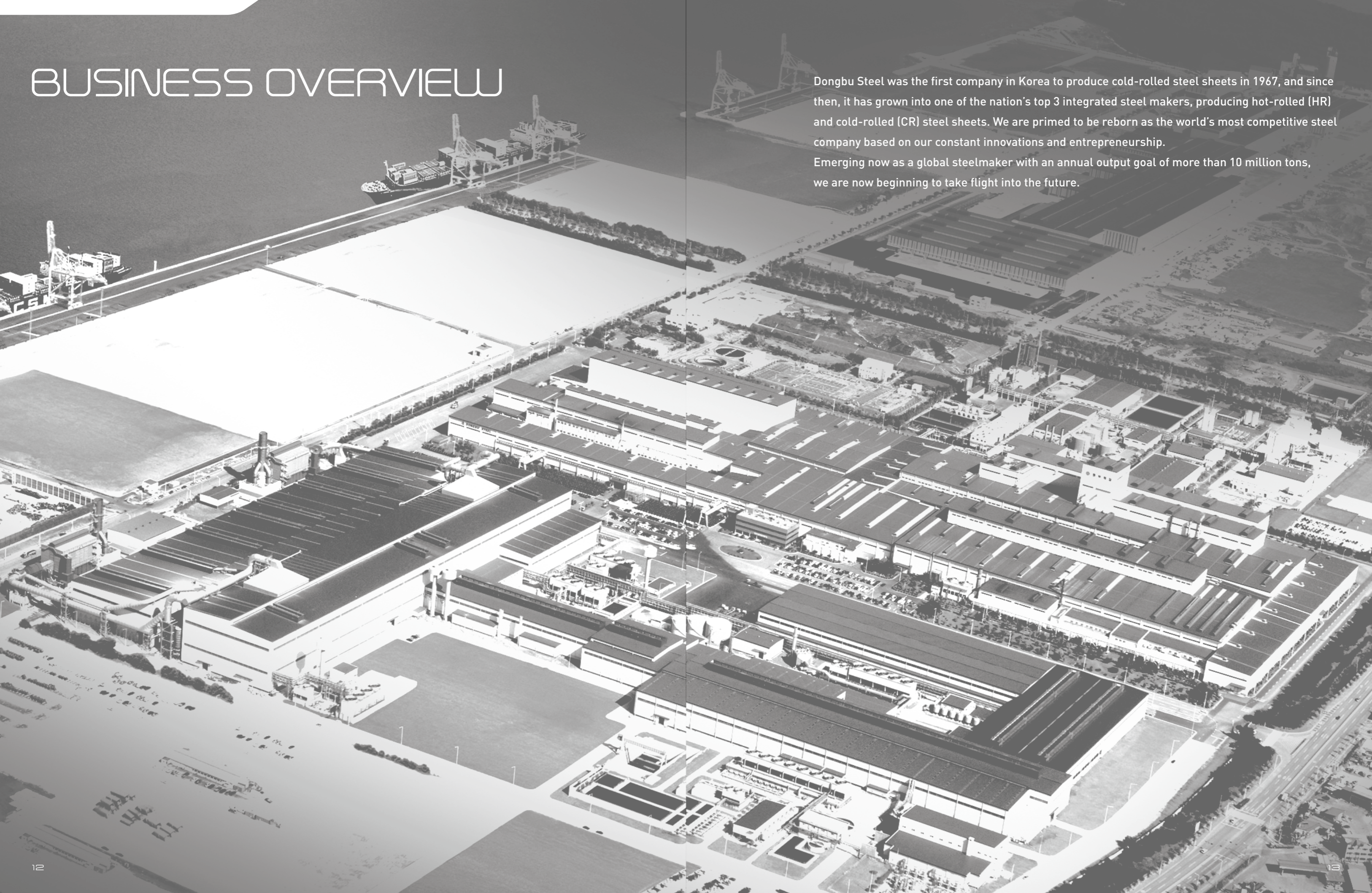
Dongbu Steel also became able to substantially enhance its competitiveness in CR products by independently procuring HR steel sheets, following the completion of an EAF mill. In addition, we are able to directly produce and sell HR steel sheets, an item that has been in such chronic short supply in Korea that 7.6 million tons were imported in 2008 alone, leading to an expectation that an import replacing effect will amount to more than USD 1.5 billion on an annual basis. Having grown into one of the nation's top 3 integrated steel makers through our advancement into the EAF steelmaking business, we are now striving to develop further into a global player with an annual output of more than 10 million tons.

Dongbu Steel plans to expand its crude steel production to over 10 million tons by 2015 (from about 3 million tons at present), by diversifying its businesses with a focus on high value added products, based on its experience in advancing into upper-level processes through the successful operation of its EAF mill, and know-how in operations. We will also build an independent global network by increasing raw material procurement, production, and sales bases in various parts of the world. Through this, we will take a leap forward into being "the world's most competitive steel company."



# BUSINESS OVERVIEW

Dongbu Steel was the first company in Korea to produce cold-rolled steel sheets in 1967, and since then, it has grown into one of the nation's top 3 integrated steel makers, producing hot-rolled (HR) and cold-rolled (CR) steel sheets. We are primed to be reborn as the world's most competitive steel company based on our constant innovations and entrepreneurship. Emerging now as a global steelmaker with an annual output goal of more than 10 million tons, we are now beginning to take flight into the future.





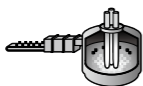
# HOT-ROLLED PRODUCTS

Dongbu Steel is supplying its HR products to more than 100 domestic companies primarily in the form of steel pipe, H-Beams, construction materials, shipbuilding, and automobile industries, receiving favorable reviews for its high quality and on-time delivery. Overseas, from our very first sales to Vietnam, we are now exporting HR steel sheets to over 25 countries including those in Asia, the Middle East, the Americas, and Oceania. Currently, we are using about 60% of our total production for our own materials and about 40% selling the remainder through domestic consumption and export markets, while flexibly adjusting these ratios according to market conditions.



## Hot-rolled products manufacturing processes

Steel making



Smelting raw materials including scrap iron and pig iron into a liquid state, using electrical energy



Ladle refining



Adjusting chemicals from molten iron by removing impurities and adding alloy elements



Vacuum refining



Performing refinery in a vacuum when manufacturing high-purity products (for the manufacture of clean steel only)



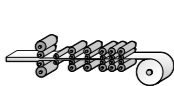
Continuous casting



Transforming liquid molten iron into a solidly formed slab



Hot rolling



Rolling stock into thin boards and forming them into a coil through the use of a rolling mill

HOT-ROLLED PRODUCTS

# HOT-ROLLED STEEL

As one of the nation's top 3 integrated steel companies, Dongbu Steel is producing HR steel sheets that are utilized for diverse purposes such as CR steel sheets, general structures, and steel pipe, through the innovative eco-friendly EAF steelmaking method, using scrap steel as the raw material.

In addition, we are continuously endeavoring to supply HR products that meet the needs of our customers in a timely manner by expanding our production items to include such high value products as automotive steel sheets.

**HR steel sheet production possibility range**

Thickness	Width	Packing	Internal Diameter	External Diameter
1.2 ~16.0mm	900~1,650mm	Max 30ton	762mm	Max 2,100mm

**Product Types**

**Steel sheets for cold rolling**

For materials such as CR steel sheets, galvanized steel sheets, and pre-coated metal sheets

**Hot Rolled Mild Steel**

C-shapes and general pipes

**Steel sheets for oil well pipes/oil pipelines**

Mainly for line pipes and submarine oil field drilling/production that require high strength, excellent cryogenic temperature toughness, and weldability

**Steel sheets for pipes**

For structures and special piping

**Steel sheets for automotive structures**

High strength steel sheets with excellent drawing nature and weldability, mainly used for automobile frames and wheels

**Steel sheets for structures**

For general structures (that are used for the manufacture of steel structures, bridges, ships, and vehicles), and for welding structures

**Hot-rolled special steel**

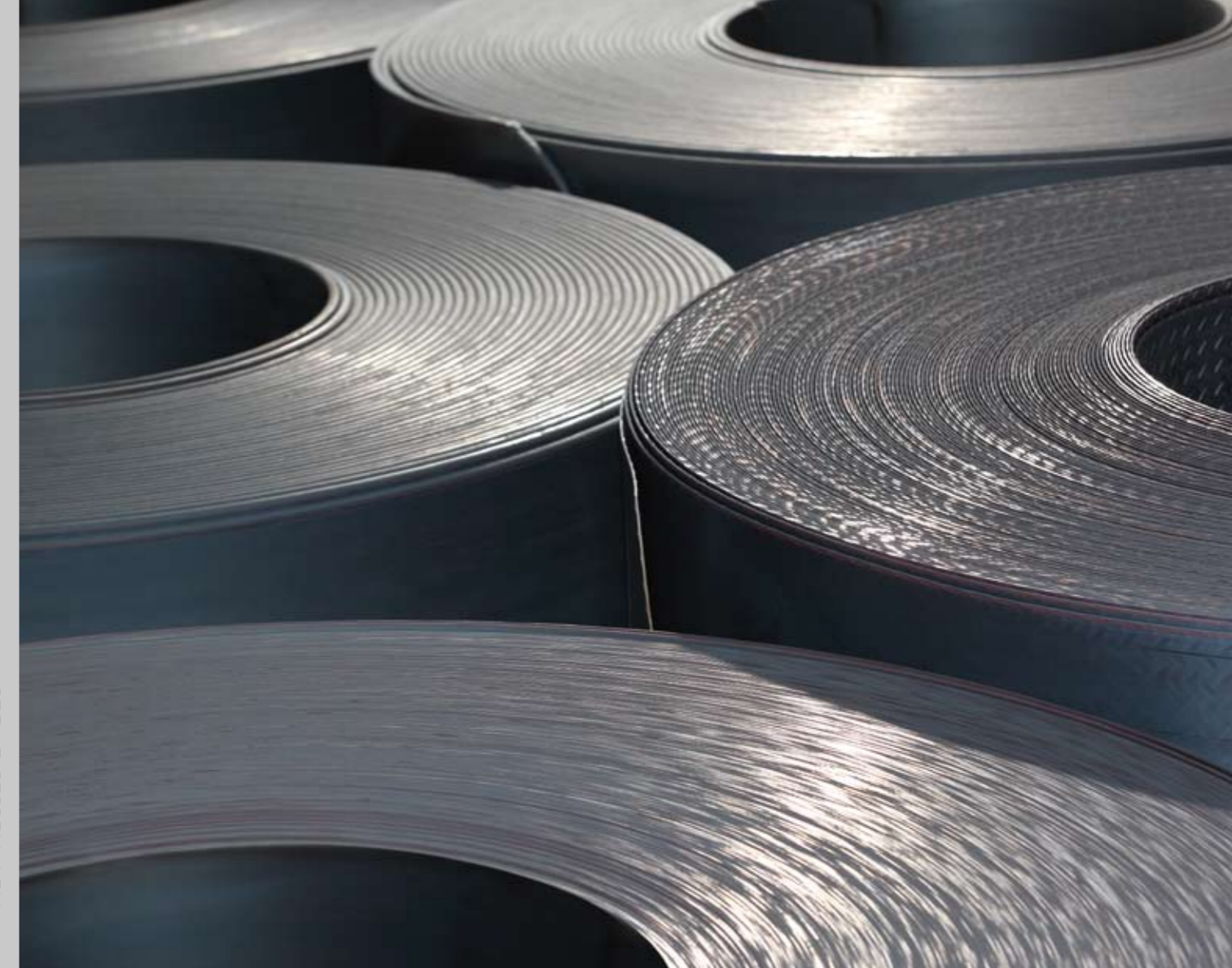
For all types of machinery parts following heat treatment, including carbon steel for general machine structures, alloy steel, and tool steel

**Atmosphere corrosion resisting steel**

Maintain excellent corrosion resistance and weatherability by adding special elements (such as P, CU, and NI), used for building structures and the manufacture of special vehicles

**Checkered Plate**

Used as footings for vehicles mainly at construction sites and parking lots



HOT-ROLLED STEEL

AUTOMOTIVE FRAME

# COLD-ROLLED PRODUCTS

Dongbu Steel has been producing such high value-added steel products as cold-rolled (CR) steel sheets and other types of surface-treated steel sheets through its Asan Bay Works and Incheon Works, since the start of CR steel sheet production in 1967. Moreover, we have achieved the world's highest competitiveness, following the completion of Asan Bay Cold Rolling Mill in 1999 that has completely automated the entire process from raw materials input to product delivery - a first in the world steel industry. Based on our experience and know-how accumulated over the past 40 years, we now enjoy great reviews from our clients for our automobile, home appliance, and can manufacturing companies at home and abroad.



CR products  
manufacturing processes



COLD-ROLLED PRODUCTS

# COLD-ROLLED STEEL

CR steel sheets are made by applying pressure to HR steel sheets upward and downward in order to be compressed to the desired thickness. Due to outstanding surface shape and excellent mechanical properties, they are widely used as base materials primarily for automobiles, home appliances, furnishings, and interior construction materials. They can be manufactured in diverse products, including plated products that plate the surface by melting zinc, or by using the electric method, and pre-coated products that are made by applying paint to the surface. The forms include "coil" products that are packed by rolling up steel sheets, and "sheet" products that are packed by overlapping many sheets after cutting steel sheets in appropriate lengths and processing them.

## Product Types

### General CR / Bright Steel Sheets

High value products with a smooth surface and good processability, widely used in automobiles, home appliances, machine parts, accessories, and stationery

### Inner Shield

Steel sheets used inside monitors or the interiors of TVs to assist the projection of video images by preventing the effects of magnetism [developed and produced for the first time in Korea by Dongbu Steel]

### Mill Clean

Thick gage CR steel sheets with a thickness of 2.3mm or more

### Sunboss

Steel sheets that are ideal for home appliances and furniture that are frequently handled, due to their soft feel from embossing on one side as well as their anti-fingerprint properties

### Hi-Carbon

Products with strong solidity that are mainly used for auto parts, knives, and tapelines

## Applications



Automotive bodies, TV cathode-ray tube and computer monitor parts, refrigerator and air conditioner parts, decorative mirrors, etc



COLD-ROLLED STEEL



REFRIGERATOR

COLD-ROLLED PRODUCTS

# GALVANIZED STEEL

The most widely used among surface-treated steel sheets, galvanized steel sheets are made by plating CR steel sheets with zinc and do not corrode easily. These are largely classified into hot-dip galvanized steel sheet (GI) and electro galvanized iron (EGI) according to the manufacturing method.

They are frequently used as interior and exterior construction materials because they endure both sunlight and rainwater for long periods while resisting rust, and recently their uses are being expanded to include automotive parts and home appliances. They have also become the most universal raw material for pre-coated steel sheets, widely used as construction materials.

EGI features high corrosion resistance by creating thin and delicate zinc coated layers on the surface through the electroplating method. It also boasts excellent processability as it maintains the properties of original sheets intact with even surface roughness (as compared to continuous galvanized steel sheets) since it is plated by the electrolysis method. Above all, it has excellent plateability and corrosion resistance as they are evenly and intricately plated with a small adhesion of zinc.

### Product Types

#### Hot-dip Galvanized Steel Sheet (GI)

Features an elegant surface and excellent quality through its manufacturing in the latest continuous hot dip galvanizing method

#### Fe-Zn Galvanized Steel Sheets (GA)

Features excellent weldability and paintability by heating galvanized steel sheets to form a layer of alloy between iron and zinc

#### AFP GI

High-quality galvanized steel sheets with excellent durability, lubricity, and anti-fingerprinting, due to an organic film treatment (1~2 $\mu$ m) on the surface of GI

#### Super Galum

55% aluminum and 45% zinc alloy coated steel sheets mainly utilized for home appliances and exterior construction materials due to high corrosion

#### Electro Galvanized Iron (EGI)

CR products that have high versatility for the interior and exterior of home appliances due to the elegant appearance of elaborately plated layers and excellent processability. Dongbu Steel was the first company in Korea to produce 0.2mm products with independently developed facilities, following the Restriction of Hazardous Substances (Home Appliances: RoHS, Automobiles: EU ELV)

#### Hot Dip Aluminum Coated Steel Sheets (ALCOT)

Features excellent heat resistance and heat reflection by plating CR steel sheets with aluminum (Developed and produced for the first time in Korea by Dongbu Steel)

### Applications

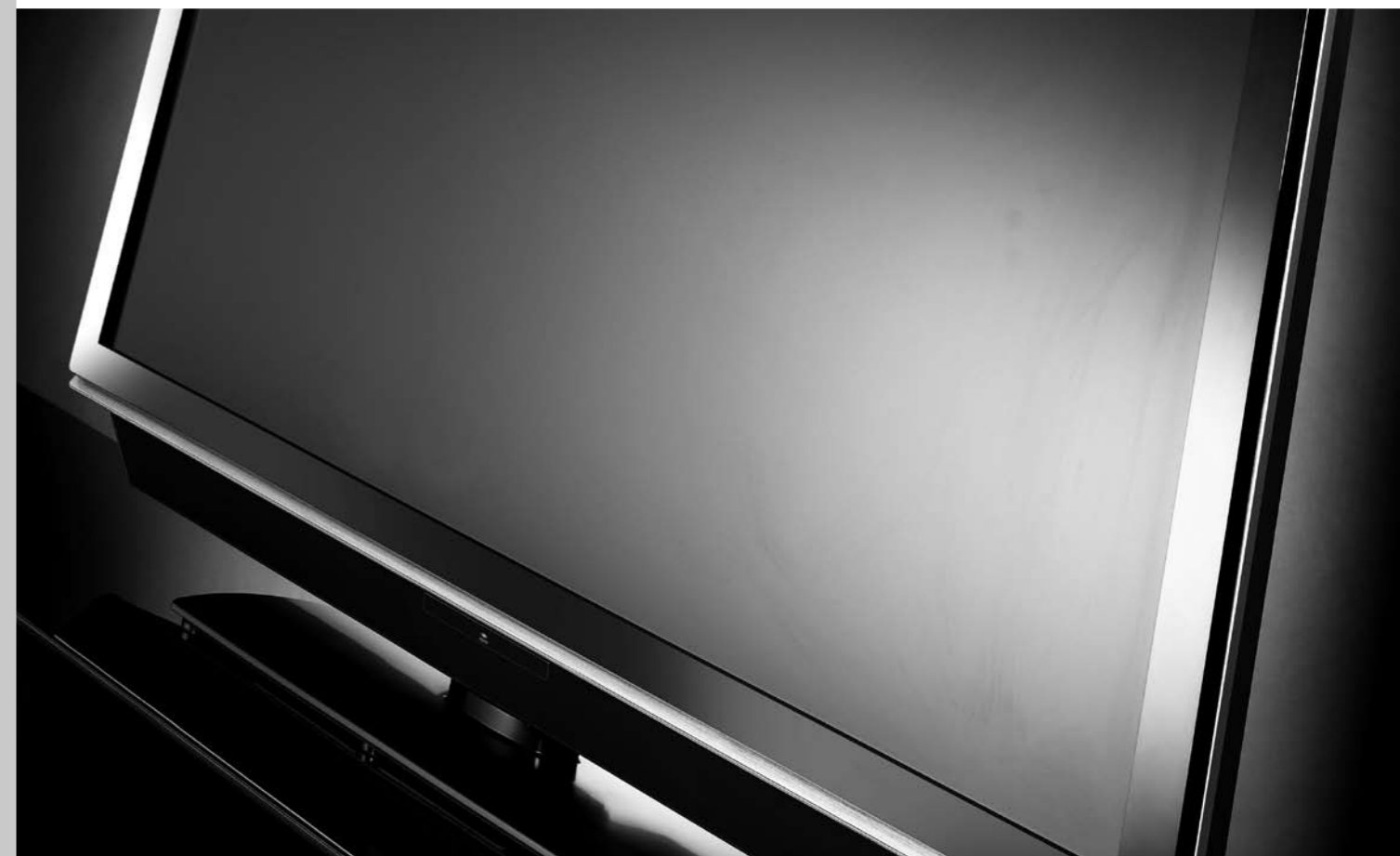


Automobile interior and exterior materials, LCD TV chassis, general construction materials (roofs and walls), refrigerator and washing machine parts, internal and external plates of automobiles and home appliances

GALVANIZED STEEL



TV CHASSIS



COLD-ROLLED PRODUCTS

# PRE-COATED METAL

Boasting the highest value among CR products, these are paint-coated or film-coated CR steel sheets, galvanized steel sheets, and aluminum steel sheets, enabling patterns and designs to be created on the surface. They are mainly used to make buildings and home appliances look sharp and elegant. They are also produced to have diverse features including resistance to pollutants and antibiosis according to their needs.

### Product Types

#### Polyester / Silicon

Mainly used in construction materials due to excellent weather-ability

#### Sun Clean

Features excellent resistance to contamination

#### Hi-Poly

Used in home appliances such as refrigerators, VTRs, microwaves, and deep drawing, which especially requires flexibility

#### Sun Ever

Pre-coated Metal sheets with polyurethane resin

#### Printech

Pre-coated metal sheets with beautiful patterns and colors realized in the Gravure Offset method, used for construction materials and home appliances

#### Laminated

Steel sheets with an attached film of various and beautiful colors and patterns

#### Al-Color / Super Galum Color

Aluminum steel sheets or 55% aluminum-zinc alloy steel sheets (super galum) coated with various resins to meet user needs

#### Green Board

Pre-coated Metal sheets for blackboards

#### Emboss

High-quality steel sheets made by adding a cubic embossing effect to pre-coated metal sheets

#### Antibiotic Silver Nano

Functional pre-coated metal sheets, provided with antibiotic, sterilization, deodorization, sun protection, anti-electromagnetic, antistatic, temperature control, and insulation functions by adding particles

#### Sun Luce

Three-dimensional color-patterned steel sheets with a lively cubic effect

#### Sun Stone

New-concept pre-coated metal sheets with differentiated surfaces, developed by a special coating method

#### P.V.D.F / Sun Dura

Ultra-weather-ability poly Vinylidene Fluoride resin steel sheets with excellent weather and corrosion resistance for the exterior of buildings (Dongbu Steel's patented brand)

#### Anti-static

Materials for clean rooms, capable of preventing attachment and fires by static

### Applications



Bodies of home appliances such as refrigerators and air conditioners, and building panels, doors and shelters

PRE-COATED METAL

EXTERNAL STRUCTURE MATERIAL



COLD-ROLLED PRODUCTS

# TIN PLATE

Tin plate (TP) products are made by coating tin using electrolysis on the surface of thin cold-rolled steel sheets (black plates) with a thickness of 0.14 ~ 0.6mm. Due to their shiny surface finish, superb corrosion resistance and formability, they are widely used for food and beverage containers and electronic components.

Dongbu Steel is supplying a variety of high quality TP and TFS products to be used by numerous can manufacturing companies at home and abroad for the production of 3-piece and 2-piece (D&I, DRD) cans, car lids, steel easy-open end (EOE), toys and electronic parts.

We are also producing high-value ultra-thin TP and TFS products that are capable of reducing the weight of containers.

### Product Types

#### SR TP / DR TP

DR is produced by re-rolling using double cold reduction to make it highly rigid and thin. It can producers use this for its lightweight and cost effectiveness.

#### TFS

Chrome-coated steel sheets with similar properties to tin plates. They are in the limelight as substitutes for TP / TFS because they are less expensive and boast excellent corrosion resistance and paint adhesion

### Applications



Beverage cans, food cans, oil cans, paint cans, aerosol cans, butane gas cans, fancy goods, bottle caps, optical cable protectors, electronic components, industrial containers, etc



TIN PLATE



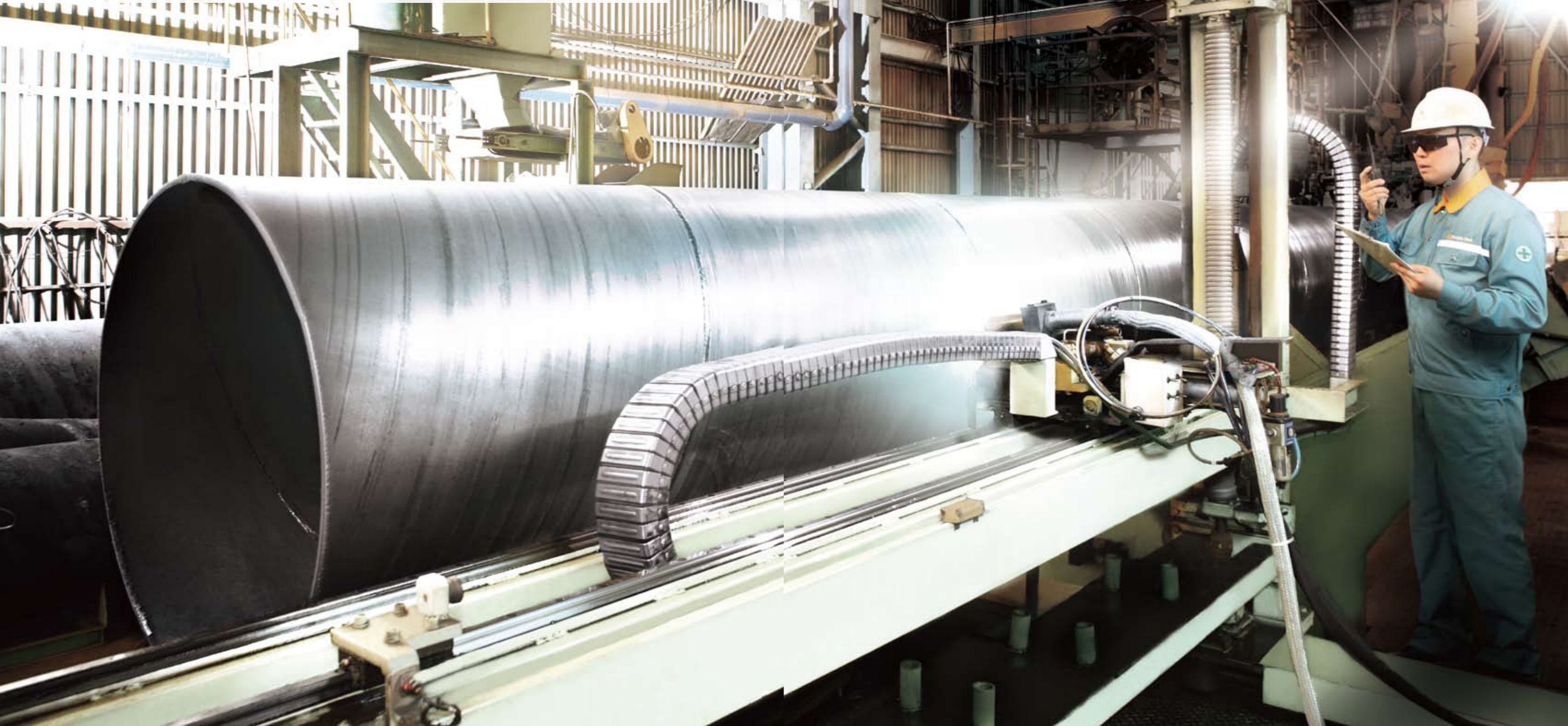
CAN

# PIPE & STEEL STRUCTURE

Dongbu Steel was the first company in Korea to launch the steel pipe business, and by installing the medium-diameter pipe system at Incheon Works in 1977, the large-diameter pipe system Unit 1 in 1991, and the large-diameter pipe system Unit 2 in 1996, we provided a new turning point in the domestic steel pipe industry.

The nation's first welded light H-Beam system that we installed in 1973 has been playing a leading role in the lightweighting of steel materials, while producing and supplying diverse H-Beam products.

We introduced the Pre-Engineered Metal Building (PEB) System that displays excellent performance in the design and manufacturing processes under a 1994 technological partnership with Varco-Pruden, a premier PEB manufacturer of the USA, and are providing total building solutions from designing to manufacturing and installation.





# STEEL PIPE

Dongbu Steel has been leading the development of the Korean steel pipe industry for more than half a decade, based on its know-how in the production of steel pipe products. Currently, we produce steel pipes in the Electric Resistance Welding (ERW) and Spiral methods for various purposes such as steel pipe piles, building structures, and all kinds of piping (including general piping and pressure piping), oil pipelines, and oil wells. We also offer the finest products to our customers through quality certification systems and by obtaining many types of product standards at home and abroad. In particular, we are receiving favorable reviews in both domestic and overseas markets by producing and marketing American Petroleum Institute (API) steel pipes that require exceptional quality.

### Applications



Piping works, oil pipelines, bridges, harbor facilities, steel towers, pipes for structures mainly used for utility poles, and steel pipe piles used for the foundations of structures such as civil and building works

# LIGHT WELDED H BEAM

Dongbu Steel has been in the vanguard of the domestic H-Beam market with more than 30 years of know-how since the first production of welded H-Beams in the high-frequency ERW method in Korea. Particularly, our welded beams boast the world's highest quality as well as excellent economic efficiency and customer support as compared to general roll beams. We supply H-Beam products of various sizes, shapes, and quality that cannot be produced with Roll Beams by producing incongruent flanges, H-Beams that have different thicknesses and widths of flanges, Web off center H-Beams, TH-Beams for trusses, and small-size light gauge H-Beams.

### Applications



Materials for roofs, sculptures, containers, trailers, glasshouses, supports for machinery, piles for simple frame structures



STEEL PIPE



LIGHT WELDED H BEAM

# PEB

The PEB system, in which Dongbu Steel's advanced technologies are integrated, is a cutting-edge steel frame construction system in which the entire construction process from planning to manufacturing are executed and managed by an integrated design program, while exhibiting outstanding economic efficiency and spatial utilization. When constructing buildings, it allows us to create the most ideal customer-centered spaces with perfect interpretation of structures, automated production lines, top-notch technologies and quality, and differentiated services.

### Applications



Factories, warehouses, large-scale logistics centers, buildings that require pillar-less spaces, gymnasiums, aircraft hangars

# STEEL STRUCTURE

General steel structures are used in versatile ways for many buildings such as low-and medium-rise buildings and skyscrapers. Dongbu Steel can provide optimum designs through engineering technologies, and accurate and speedy construction by utilizing cutting-edge machinery.

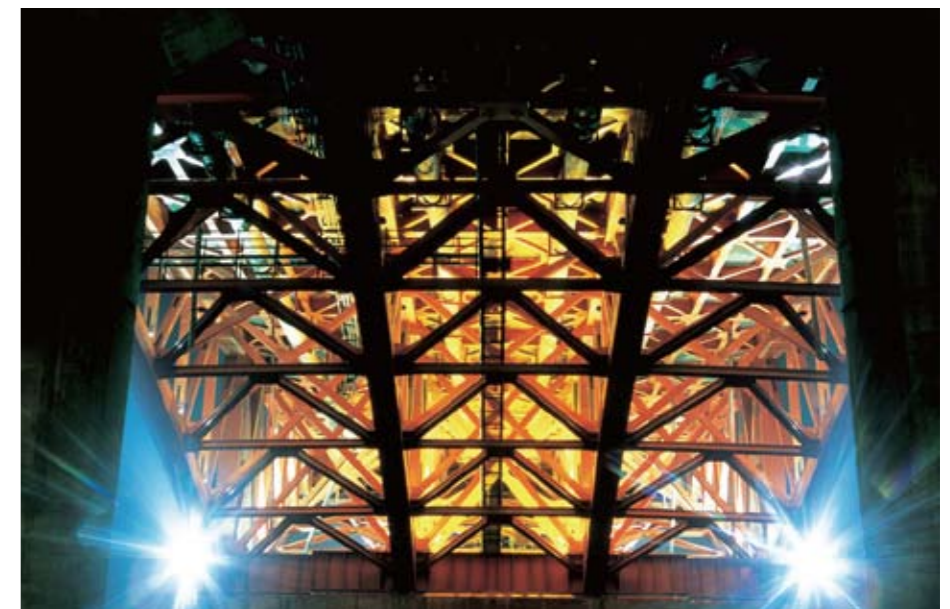
### Applications



# BH BEAM

Dongbu Steel's BH Beams can be supplied in both specific and appropriate sizes that are desired by customers after computing structures by specialized engineers. We are not simply manufacturing BH Beams but offering and manufacturing optimal products that are necessary for customers, based on our technologies.

### Applications



# CHQ WIRE & CD BAR

Dongbu Steel was the nation's first company to begin producing CHQ Wires in 1984, and we are now producing and selling the nation's largest-diameter CD Bars. About 70% of our total production volume is used for all types of automotive parts. In addition, they are utilized in diverse industrial areas such as home appliances, construction, and industrial machinery. Our CHQ products are supplied to major auto parts makers at home and abroad, winning recognition for their outstanding processability based on excellent heat treatment and film quality. CD Bar products are also recognized for their domestic high-level competitiveness in straightness, surface quality, and available sizes.



CHQ & CD BAR

# CHQ WIRE

CHQ wires are used in the production of fasteners including bolts, nuts, and screws, and they are designed to improve the productivity of finished goods and enhance the accuracy of their dimensions by securing satisfactory processability and superb surface quality. Dongbu Steel is producing a variety of CHQ Wires that can reduce cost and raise productivity.

### Applications



All types of parts for fasteners (including bolts, nuts) in automobiles, industrial machines, and aircrafts

# CD BAR

CD Bars are made by processing hot-rolled CHQ Wires in high temperatures to improve the accuracy of their dimensions and add straightness by cutting them at regular length. CD Bars are cold-rolled drawn steel bars, and like hot-rolled drawn steel bars, they boast such superb surface roughness, straightness, and dimensional precision that they are widely used in the manufacturing of industrial parts and home appliances. They are sheared to the length of finished goods for easy processing.

### Applications



Shafts of Automobiles, industrial machines, and OA machinery and equipment

COLD HEADING QUALITY WIRE



COLD DRAWN BAR



# WORKS

Dongbu Steel enjoys favorable responses from its customers at home and abroad for its excellent quality and technologies, supplying high value products at its work sites with cutting-edge facilities mainly located in Dangjin, Incheon, and Pohang, Korea.

1,652,000m<sup>2</sup>

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## ASAN BAY WORKS

Asan Bay Works produces steel products of all types including cold-rolled steel sheets, galvanized steel sheets, and tin plate (TP) and tin free steel (TFS) sheets through state-of-the-art facilities, based on its experience and know-how amassed over the past four decades. Importantly, it was the first in the world steel industry to completely automate the entire process, from raw materials input to product delivery, by investing KRW 1.3 trillion in 1999. It also boasts the world's highest competitiveness in cold rolling and surface treatment.

Meanwhile, our hot rolling mill is producing 3 million tons of HR steel sheets annually, the world's largest output as a single plant. This is thanks to an innovative, futuristic, and eco-friendly Electric Arc Furnace mill that we built inside Asan Bay Works in Dangjin by investing over KRW 1 trillion in 2009. The completion of this mill enabled us to position ourselves as one of the top 3 domestic integrated steel makers in the nation while preparing foundations to grow and develop into a global player with an anticipated annual output of more than 10 million tons in the future.



## INCHEON WORKS

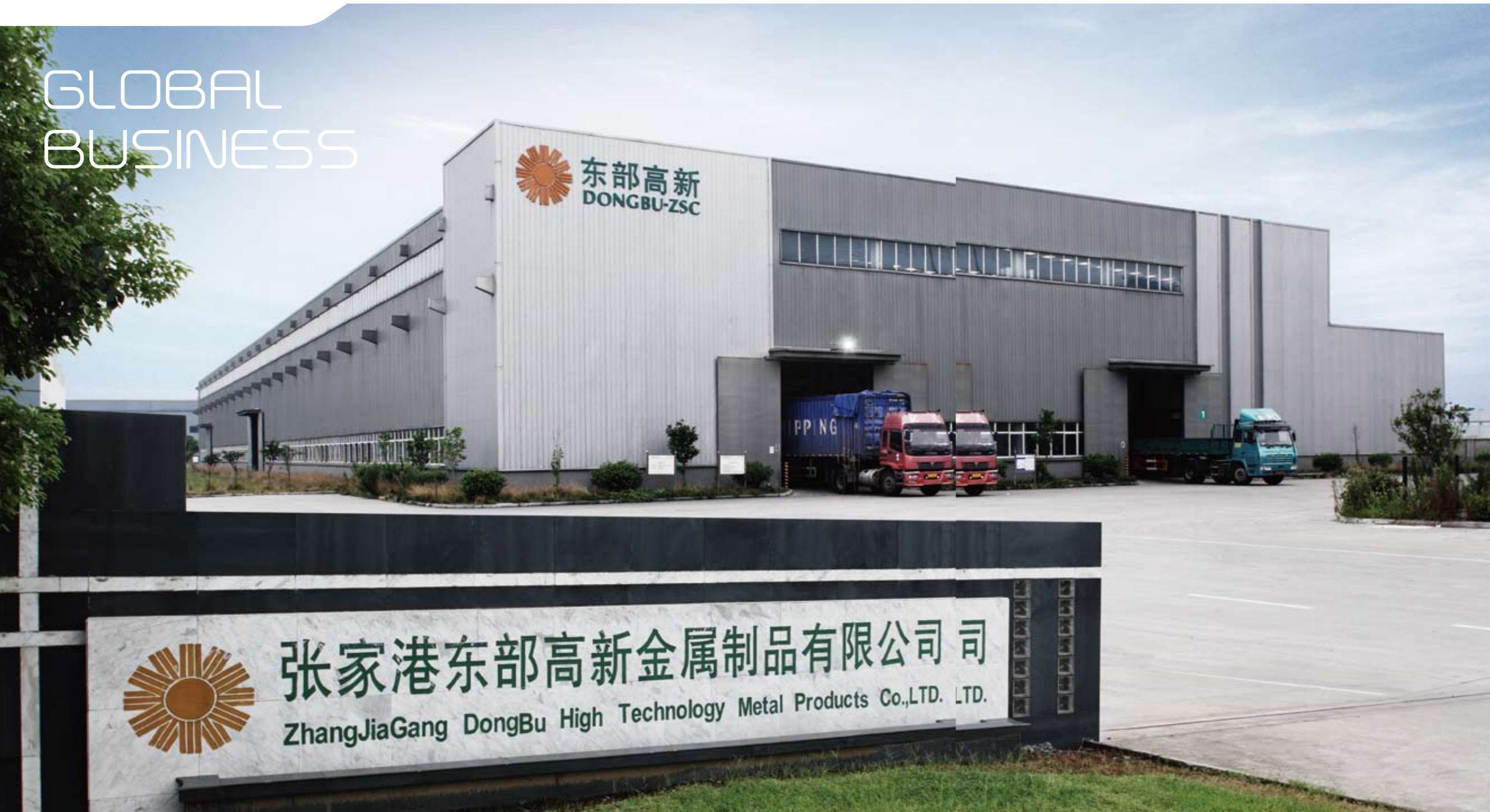
Incheon Works is meeting the diversifying needs of customers by manufacturing a broad array of differentiated high-value products including HR steel sheets, galvanized steel sheets, TP and TFS steel sheets, steel pipes, and H-beams. It was the first steel works in the domestic industry to be titled a green business, and it is also contributing to the development of communities as a pleasant and safe green plant by practicing environmentally friendly and safety management.



## POHANG WORKS

Pohang Works specializes in the production of materials for all types of components used in diverse sectors including automobiles, heavy industries, and industrial machinery, while manufacturing cold heading quality (CHQ) wires and cold drawn (CD) bars. Boasting the nation's highest-level competitiveness, it plans to lead future markets for CHQ wire and CD bar products through active facility construction and extension and technological investments.

# GLOBAL BUSINESS



## Promoting strategic partnerships with overseas advanced steel companies

Dongbu Steel strives to enhance its capabilities to respond to the rapidly changing global market needs. As part of such efforts, we have achieved strategic alliances with overseas players such as JFE Steel of Japan, Baoshan Iron & Steel of China, and BlueScope Steel of Australia. Through these, we are building an extensive cooperative structure, ranging from the supply of HR steel sheets to technology and marketing, while hosting exchanges with their management and technical teams.

In addition, we are striving to strengthen our global network. For example, in 2008 we opened the ZhangJiaGang steel service center (ZhangJiaGang Dongbu High Technology Metal Products Co. Ltd.) in Jiangsu, China. Established as our first overseas invested company through the cooperation of all involved parties from steel materials production to purchasing, it is supplying products and providing processing services in a stable manner. Located on a site of 30,000 m<sup>2</sup>, it is also capable of processing 120,000 tons of CR steel sheets annually from such facilities as Slitter, Rotary Shear, and Mini Shear.

## Seeking steel substitutes through resources development

Dongbu Steel is carrying out a steel substitute project to build foundations for the stable supply of raw materials and secure cost competitiveness, following its advance into the Electric Arc Furnace (EAF) business. Designed to diversify the supply of pig iron that is essential to adjust the grades of EAF steel, the project aims to secure pig iron with economic efficiency and develop a process which is capable of supplying pig iron as a by-product. To this end, we are making multilateral efforts to develop resources in areas that are rich in iron ore and underground resources including South Africa, Russia, and Indonesia.

In addition, for the stable supply of steel scraps, a key material for EAF steel, we plan to import a scrap mine concept and advance into major export nations including the USA and Japan. In preparation for our growth into a global steel maker with an annual output of 10 million tons and an extensive expansion of our EAF steel business, the project also aims to cope with demand by ensuring scrap-generating sites in advance.

# RESEARCH & DEVELOPMENT



Launched in 1985 to ensure technological competitiveness through the development of new products and technologies, Dongbu Steel's Technology Research Center is dedicated to research in high-performance and high-value products and eco-friendly technologies, based on its expertise accumulated through independent technology development and industry-research-academy collaborations in the steel area.

In addition, the center is promoting vigorous technological exchanges with the world's advanced steel companies. In the technical planning area, it is focusing its efforts on increased knowledge capacity mainly by establishing mid- to long-term technology development strategies, investigating information on new technologies for steel and new materials, introducing overseas technologies, and exchanging technologies. In terms of technical services, it is supporting our production and sales divisions, and the development of technologies and applications by customer companies.

Taking responsibility for the creation of future technologies at Dongbu Steel, the center is committed to developing new products and technologies by defining 5 major strategic products (high-performance surface treated steel sheets, steel sheets for automobiles, steel sheets for structural uses, bar steel/H-beams, and steel pipes) and 3 key strategic technologies (steel production process, measurement/control, and environment/energy).

Dongbu Steel has secured a competitive edge with strategies in product, technology, and service areas. Based on these, we received the Jang Yeong-sil Award and the ISO 9001, QS 9000, and ISO/TS 16949 quality certificates. Moving forward, the center will continue growing into a world-class technological institute leading the global steel technologies with constant technology development and investments to develop high value products.

## Major results of technological development

- Developed Zn-Al-x series of Hot-dip Galvanized Steel Sheet with Higher Corrosion Resistance
- Developed vibration detection system in the second refining (TruStir) and EAF bottom blowing technology, a first in Korea
- Developed ultra-thin CR steel sheet manufacturing technology (one-time roll products: 0.12mm, double roll products: 0.07mm)
- Developed color line oven heating temperature setting system
- Developed Non-Cr organic and non-organic post-treated galvanized steel sheets, a first in Korea
- Developed Cool Roofing Pre-coated Metal for heat resistant panels
- Developed stainless ALCOT steel sheet production technology and integrated plating volume controlling technology in the hot-dip zinc plating line
- Developed Electron beam hardened pre-coated metal sheets (STARCOAT) (Won Steel Technology Award from the Korea Iron & Steel Association in 2005)
- Developed Braun tube inner shield steel sheet for TV / computer with high magnetic permeability
- Developed powdered, pure iron for metallurgy used as basic material for electric and electronic products for automobiles, a first in Korea



# SUSTAINABILITY

Dongbu Steel is committed to fulfilling its corporate social responsibilities.

Placing top priority on customer and shareholder value, we put transparent, ethical and environmental management into action.

In addition, we seek harmonious development of individuals and society by training and fostering excellent human resources at home and abroad, while striving to create a great workplace through an advanced labor-management culture.





## A.M.O.R Service



Dongbu Steel began to provide the customer-centered AMOR service by affirming customer satisfaction (CS) in August 2009 in order to instill a customer-centered mindset into all its employees. The AMOR Service contains our will for CS as our unique customer service brand that originated from the French word “amour,” meaning “love.”

AMOR is also an acronym for Action, Management, Oriented, and Relationship. Specifically, the A (Action) represents our support for the success of our customers, while the M (Management) symbolizes our customer-centered process innovations. The O (Oriented) and the R (Relationship) show our will to build a customer-oriented culture and aim for systematic customer service by strengthening our network with customers, respectively. With this customer service program, we are determined to do our best for and realize the ultimate in customer satisfaction.

### Major Cases of the AMOR Service

#### Action

We offer various educational curriculums, as part of our support for the success of our customers, such as 6 Sigma training, lectures by distinguished professionals, and opportunities to join our Mini MBA courses.

#### Management

The voice of customer (VOC) is registered with our customer relationship management (CRM) through various channel management, followed by response from our customer support team and then through the cooperation of related divisions. Such effective VOC management process enables us to give feedback in a speedy and efficient manner, leading to the improvement of customer satisfaction levels.

#### Oriented

We are implementing CS proclamation, CS performances, AMOR Service campaign broadcasts, and CS news clippings in order to inform all our employees of the importance of a customer-centered culture.

#### Relationship

We build trust and satisfaction in our customers through diverse mutual help services including the celebration of their anniversaries. In order to strengthen our network of customers during ordinary business times, our customer care services are generating positive impacts mainly by solidifying customer loyalty and maintaining stable sales bases.



Pledging the AMOR Service



Presentations on market conditions for customer companies



CS proclamation



# COMPANY CULTURE

COMPANY CULTURE



Dongbu Steel announced its charter of “family-first” management in June 2001. As our management policy, it signifies that “employees are our family.” Families and the company can never be separated, and family stability is the basis of the company’s development, which is the basic premise forming our labor-management culture today.

The idea that “the company’s development is also my development” contributes to creating a positive workplace due to our employees’ voluntary participation in their duties while uniting the visions and goals of both the company and individuals, thus promoting efficient mutual development.

We have proven to be “a company that thrives in crises” by changing problems into opportunities with our unique family-first spirit. For example, we built the Asan Bay Cold Rolling Mill during the foreign exchange crisis in the late 1990s, and completed the EAF mill despite the recent global financial crisis that was triggered by a liquidity shortfall in the US banking system.

We announced our declaration of harmony between labor and management in 1996, were selected “Good Company for New Management-Employees Culture” in 2006, and were recognized as an exemplary company for advanced labor-management culture in 2009. Particularly, we have set a prime example for other companies with an impressive record of collective bargaining agreements without dispute for the past consecutive 15 years. We also received the president award at the “New Labor Management Culture Awards” from the Ministry of Labor in September 2009, thereby winning official recognition for our distinguished labor-management culture.



Family-first labor-management culture

Won president award at the “New Labor Management Culture Awards”

Summer camp for children



# HUMAN RESOURCE



HUMAN RESOURCES

While discovering excellent talent and fostering them into top-notch human resources, Dongbu Steel is helping the development of individuals by using reasonable personnel systems and operating well-organized programs for corporate development and future growth. In addition, we are stepping up the quality of our employees' lives further with diverse employee benefits.

#### Dongbu Steel's philosophy of talents

Ideal Dongbu Steel employees are top-tier experts who are creative and assertive while bringing their full commitment to the company's management ideas.

- **Creative people** : Those who develop new capabilities and pursue innovations
- **Assertive people** : Those who maintain positive attitudes and seek changes
- **Devoted people** : Those who are loyal and trustworthy, and lead in social development

#### Rational personnel systems

We utilize open and reasonable personnel systems, based on performances and capabilities.

- **Evaluation** : Performance evaluation (based on management by objectives, or MBO) and capability evaluation (on self-development and growth)
- **Promotion** : Candidates with achievements, capabilities, and growth potentials are selected for promotion, and quality employees are given open opportunities for promotion.
- **Compensation** : Differential compensation programs are in operation according to achievements and abilities, based on MBO

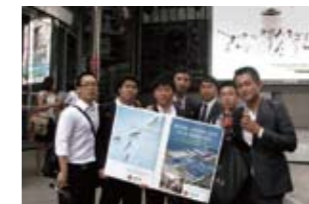
#### Various employee benefits

We are realizing employee satisfaction through benefit programs to reward working careers.

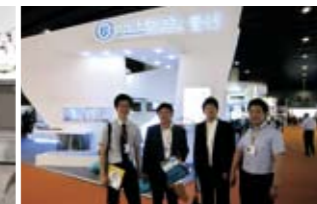
- **Support for housing security** : Operate Company housing at Asan Bay Work
- **Support for financial well-being** : Operate in-house labor welfare funds, assist tuition fees for children
- **Support for leisure activities** : Operate sports and recreational facilities; assist all kinds of club activities
- **Support healthy living** : Operate a fitness center at each company location, implement medical check-ups, and provide group accident insurance
- **Others** : Support all kinds of congratulatory and compassionate events, and pay subsidies for childbirth and pre-school educational expenses

#### Talent Cultivation

- **Global talent cultivation** : In-house language institutes, global challenge programs, strategic language programs, cyber training programs, foreign language speaking tests
- **Fostering professional development (specialization)**
  - Implement mandatory training for employees by job grade and position to enhance the company's core competencies
  - Implement external and online training related to duties
  - Develop steel-related knowledge by duty and level through the Steel Academy
- **Fostering next-generation managers**
  - Preliminary manager program and Dongbu DNA program
  - Utilize 4 major cultivation programs (Career Development/Challenges/Education & Training/Mentoring)
  - 6 Sigma and Innovation Training



On-site training for new recruits



Global challengers visiting China



Dhamul global training for new recruits



# ENVIRONMENT- MENT MANAGEMENT- MENT

ENVIRONMENT MANAGEMENT



Dongbu Steel was selected as a "Green company" in April 2010, following the enactment of the Basic Act on Low Carbon Green Growth. The green company is a newly reorganized idea after the environmentally friendly company designation system was abolished, and it refers to outstanding companies with low-carbon environmentally friendly management that are leading green growth and responses to climate changes in pollutant reduction efforts.

The first and only green business in the domestic steel industry, Dongbu Steel's Incheon Works has been designated as an environmentally friendly business for the fourth consecutive year, the first being in June 1996. Having recognized the importance of environmental safety, the company is contributing to community development by achieving the ISO 14001 and KOSHA 18001 System certificates and practicing green management as a leading green business.

Meanwhile, Dongbu Steel is also actively responding to greenhouse gas emissions control that is being magnified as a core task because the seriousness of climate changes has been emerging as a recent worldwide concern. We have participated in pilot greenhouse gas inventory and emissions trading projects since 2008, while realizing our dream of energy-saving and dustless steel works by becoming the nation's only steel maker to introduce the Consteel facility to the EAF mill that we completed in 2009.

In addition, we are monitoring greenhouse gases and the usage of energy, based on inventory systems, in order to take the initiative of practicing green and sustainable management. We are also fulfilling our responsibilities and obligations to prevent global warming. This is being done by securing Certified Emission Reduction (CER) through continuous greenhouse gas reduction and energy saving efforts and the clean development mechanism (CDM) project, in line with the government's greenhouse gas and energy MBO and emissions trading.



A signing ceremony for the voluntary agreement on green purchasing in the industry

Prize awarding ceremony by the government at the National Environmental Management Awards

"Green Business" signboard hanging ceremony

# HISTORY & RECORD



Oct. 1982 Launched Dongjin Steel Co.

Nov. 1984 Awarded "USD 100 million Expert Tower" and "Silver Tower Industrial Medal"

Jan. 1985 Company name changed to Dongbu Steel Co., Ltd.

Feb. 1985 Established Technology Research Center

Feb. 1986 Initial public offering

Jul. 1989 Completed first facility rationalization

Sep. 1991 Completed Spiral Steel Pipe Works

Dec. 1991 Began operating Coil Service Center

Sep. 1992 Awarded 39th Jang Yeong-sil Prize (for ALCOT)

Oct. 1994 Launched Pre-Engineered Building System (PEB)

Jun. 1995 Began operating No.3 CCL (succeeded in facility localization) / Developed ERW STS pipes

Feb. 1996 Received grand prize at 6th Grand Steel & Iron Awards

Jun. 1996 Incheon Works named environmentally friendly business

Nov. 1997 Obtained ISO 14001 certificate

Nov. 1999 Completed Asan Bay Works

Jul. 2000 Incheon Works named Best Company For New Management-Employees Culture (Ministry of Labor)

Dec. 2000 Awarded USD 500 Million Export Tower

Aug. 2002 Obtained ISO 9001, QS 9000 and ISO / TS 16949 quality certificates

Oct. 2003 Began operating Metal Copper Clad Laminate (MCCL) at Incheon Works

Feb. 2004 Opened Steel Gallery at Incheon Works

Sep. 2004 Received grand prize at Korean Green Management Excellence Award (in the green management category)

May. 2005 Extended Hot-Dip Galvanizing Line No. 4(independent technology)

Nov. 2005 Awarded USD 900 million Export Tower

Dec. 2005 Newly established electro galvanizing line

Apr. 2006 Opened pier accommodating vessels of up to 50,000 tons at Asan Bay Works

Sep. 2006 Asan Bay Works named Good Company For New Management-Employees Culture (Ministry of Labor)

Oct. 2006 Received 2006 CRM Award in the manufacturing category

Jan. 2007 Opened Steel Academy

Nov. 2007 Began construction of Electric Arc Furnace mill

Feb. 2008 Completed ZhangJiaGang steel service center (ZhangJiaGang Dongbu High Technology Metal Products Co. Ltd.) in China

Mar. 2008 Changed Korean language company name

Apr. 2008 Received Prime Minister's citation for fair trade on 7th Fair Trade Day

Sep. 2009 Received president award at Industrial Culture Award from the Ministry of Labor

Nov. 2009 Completed EAF mill

Nov. 2009 Tin Plate Products Division received Hazard Analysis and Critical Control Points (HACCP) certification

Apr. 2010 Named Green Business, the only in the domestic steel industry

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