### PONGSAN ANNUAL REPORT 2017



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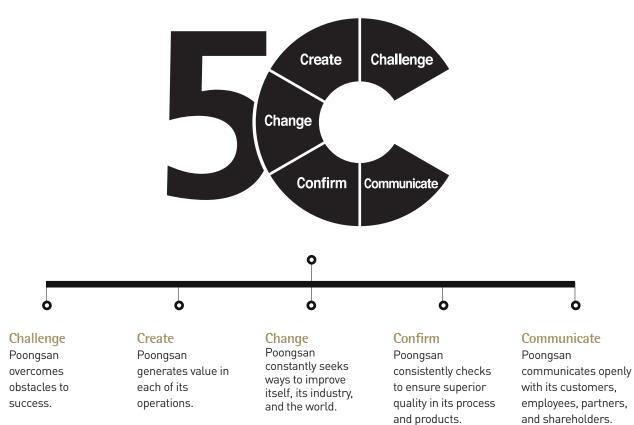
Poongsan Corporation contributes to human progress through its superior products, employment opportunities, and uncompromising service.

VISION

Poongsan sets the industry's global standard for excellence.



### **CORE VALUES**



#### CHAIRMAN'S MESSAGE



### To Our Valued Customers, Partners, and Shareholders:

In 2017, the global economy showed signs of recovery as the economic indicators of major countries improved. Rising raw material and oil prices also led to a positive change in numerous economic indicators.

Exports continued to be brisk due to the semiconductor boom, and domestic demand showed a gradual recovery in private consumption, which resulted in a higher-than expected 3% growth rate of the South Korean economy.

Poongsan Group achieved increases in sales and income. Overall sales increased 10.9% in 2017 to KRW 2.3 trillion (US\$ 2.1 billion). By division, our copper alloy and defense operations posted sales of KRW 1.5 trillion and KRW 0.8 trillion, respectively.

Profits increased by 14% to KRW 199 billion (US\$ 186 million). This increase is attributed to rises in copper prices and in sales of copper alloy products for semiconductor, electric, electronics, and automotive materials.

Entering 2018, the copper alloy sector is experiencing high demand for high-quality materials for a wide range of applications. In response, Poongsan is concentrating on supplying high performance copper alloy components and materials to the rapidly growing automotive, electronics, semiconductor, and IT industries. We are also preparing for the expected infrastructure investments led by the United States and China.

With respect to the defense industry, our superior production and quality control processes coupled with our dedication to our customers continue to strengthen Poongsan's reputation and role as a reliable, responsible leader in the global munitions industry.

Poongsan has renewed its commitment to build upon the foundation of growth and success that has been laid in the preceding decades. We will focus on competitiveness and profitability in each of our divisions through efficiency, teamwork, and innovation without losing sight of our core values.

I would like to take this opportunity to express my personal gratitude for your confidence, trust, and loyalty. All of us at Poongsan appreciate your continued feedback, guidance, and support.

We wish you, your families, and your colleagues good health and happiness.

gai

Jin Roy Ryu Chairman and Chief Executive Officer Poongsan Group

## PRODUCT INFORMATION

#### COIN BLANKS

#### ■ FABRICATED NON-FERROUS METAL PRODUCTS

- Sheets & Strips Leadframe Alloys Rods, Bars & Wires Titanium & Stainless Steel Tubes Stainless Steel Strips Precision Forgings
- DEFENSE PRODUCTS
  Military Ammunition
  Components of Ammunition
- **COMMERCIAL AMMUNITION**
- MACHINERY
- **RESEARCH & DEVELOPMENT**

## **Coin Blanks**

"One Stop Service" from melting old coin scraps to producing new coin blanks enables Poongsan to be an undisputed world leader in the coin blank industry.

Over the past fifty years, Poongsan has earned a reputation as a trusted supplier of coin blanks to the global market. In 1970, the company was designated as the sole coin blank manufacturer of the Republic of Korea by the Korea Minting and Security Printing Corporation. In 1973, Poongsan first exported its coin blanks to Taiwan. Since then, it has supplied over 60 countries in 6 continents with its coin blanks. As a recognized participant in the production of Euro coins, Poongsan not only continues to supply coin blanks to the EU market, but also has expanded to include Slovenian Euro coin blanks in 2006, Cyprus Euro coin blanks in 2007, Latvian Euro coin blanks in 2013, and Lithuanian coin blanks in 2014. Poongsan has continued its global market expansion with sales to Poland, the Czech Republic, Chile, and Peru. Today, forty-five years after its first export, it is the world's largest coin blank manufacturer, accounting for more than half of the world's coin blank trade volume.



Poongsan casts over 50 different types of coin blank materials - from brass, nickel silver, cupronickel, and aluminum bronze to other special copper alloys. In recent years, it has concentrated on meeting the global demand for bi-metal, clad metal and nordic coin blanks. It has also expanded its coin blank production to include stainless steel coin blanks.

Poongsan also operates special facilities dedicated to the production of precious metal coin blanks for commemorative coins and medallions. With its expertise of fifty years, it is a leader in the global market for precious metal blanks. Poongsan has supplied them for a variety of domestic and international events which include the 1988 Olympic Games, the 2002 FIFA World Soccer Game, the Asia-Pacific Economic Cooperation(APEC) in 2005, and the 2014 Asian Games.



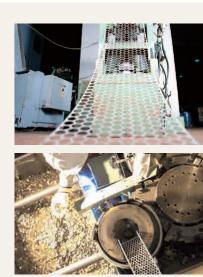


Coin Blanks

A large part of Poongsan's success in supplying its customers with superior products in a timely manner lies in its integrated production system. A sophisticated automatic gauge control system precisely manages the thickness of strips used to produce coin blanks and simultaneously manages the weight and surface of the coin blanks to meet the particular specifications of each of Poongsan's customers. Similar automated production systems are used for the processes of melting & casting, rolling, blanking, testing and packing. Poongsan performs rigorous tests at each stage to ensure exceptional quality in each product.

To further enhance its efficiency and effectiveness of production and delivery, Poongsan works closely with a global production network that spans Asia and the Americas. Established in October 2000, Siam Poongsan is strategically located in Thailand to improve Poongsan's ability to supply coin blanks to countries in Southeast Asia. It has a production capacity of 20,000 tons of copper alloy products. PMX, Poongsan's affiliate in the United States, manufactures materials used for minting coins in various countries, including coin blank strips for the dollar coins in the United States. With an annual production capacity of 120,000 tons of copper and copper alloy strips, PMX has emerged both as a trusted supplier of coinage strips and as an important supplier of industrial-based material.

With sophisticated technology and uncompromising dedication to excellence, Poongsan prides itself on consistent and timely delivery of its products at competitive prices. With uncompromising focus on superior products, reliable performance, and customer satisfaction, Poongsan has cultivated strong and loyal relationships with each of its customers. The ability to network globally coupled with an effective "one stop service" approach to production strategically positions Poongsan to further strengthen its global presence and to safeguard its place as the world's premier manufacturer of coins.





## **Sheets & Strips**

Poongsan's rolled products vary in size ranging from 630mm to 9.2mm in width and from 2.4mm to 0.05mm in thickness.

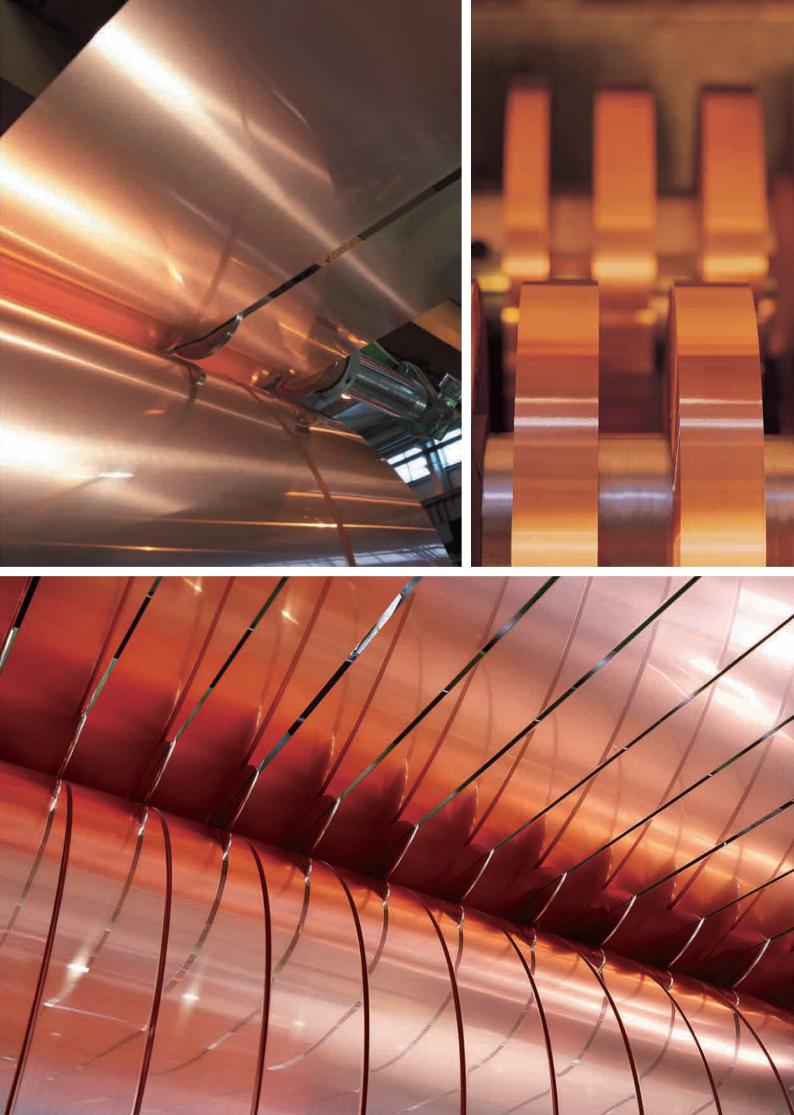


Fabricated Non-Ferrous Metal

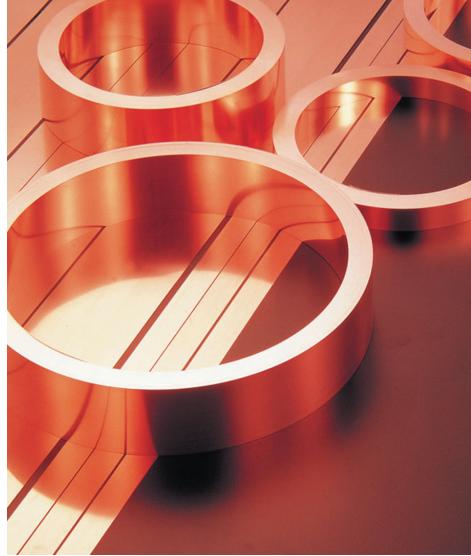
Poongsan takes pride in its efficiently and effectively integrated production system that includes the world's largest shaft furnace, hot mill, cold rolling mill, and slitting processing station. Housed in Poongsan's Ulsan plant, this system manufactures high quality, competitive products. Each of these products undergoes rigorous quality inspection using the latest equipment available in order to ensure accuracy in size and superior quality in both physical and surface properties. This detailed attention to quality results in Poongsan's ability to consistently meet the specific, individual needs of its customers.

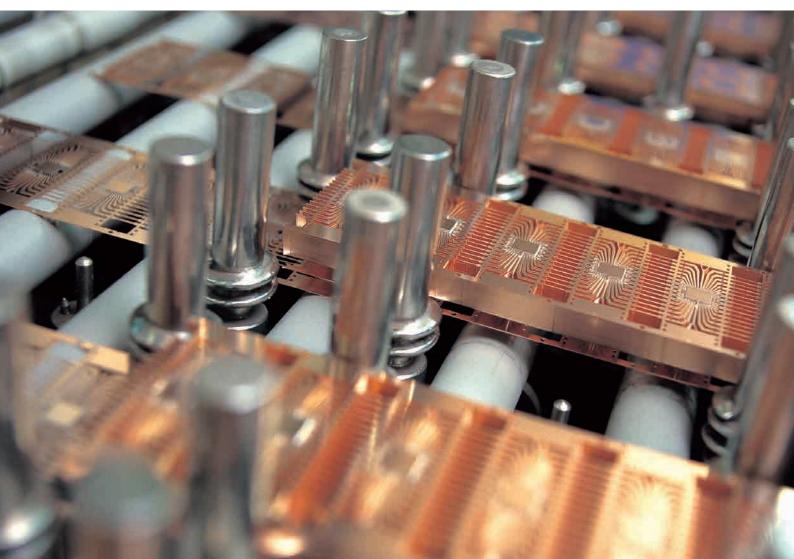
Poongsan produces a diverse range of copper and copper alloy sheets and strips for use across many industries. This includes use in interior and exterior applications for both commercial and residential real estate as well as use in construction, machinery, automobiles, electronics, semiconductors, and telecommunication. These rolled products are available in copper, brass, cupro-nickel, phosphorous deoxidized copper, phosphor bronze, nickel silver, aluminum bronze, and other high performance alloys.

In addition to copper and copper alloy products, Poongsan produces tin-plated strips, multi-gauge strips, and stainless steel strips. As with rolled products, these strips are manufactured using state-of-the-art methods to ensure the highest quality products for customers. Poongsan's tin-plated, multi-gauge, and stainless steel strips boast uniform plating thickness, superior surface brightness, excellent welding and corrosion-resistant property factors, and a long-lasting plating layer that resists deterioration. As a result, they are widely used in switches, connectors, terminals, and other various electronic parts.



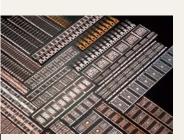






## **Leadframe Alloys**

Using its forty years of experience in fabricated copper, Poongsan now offers new high-tech materials for use in semiconductor leadframes and connectors.



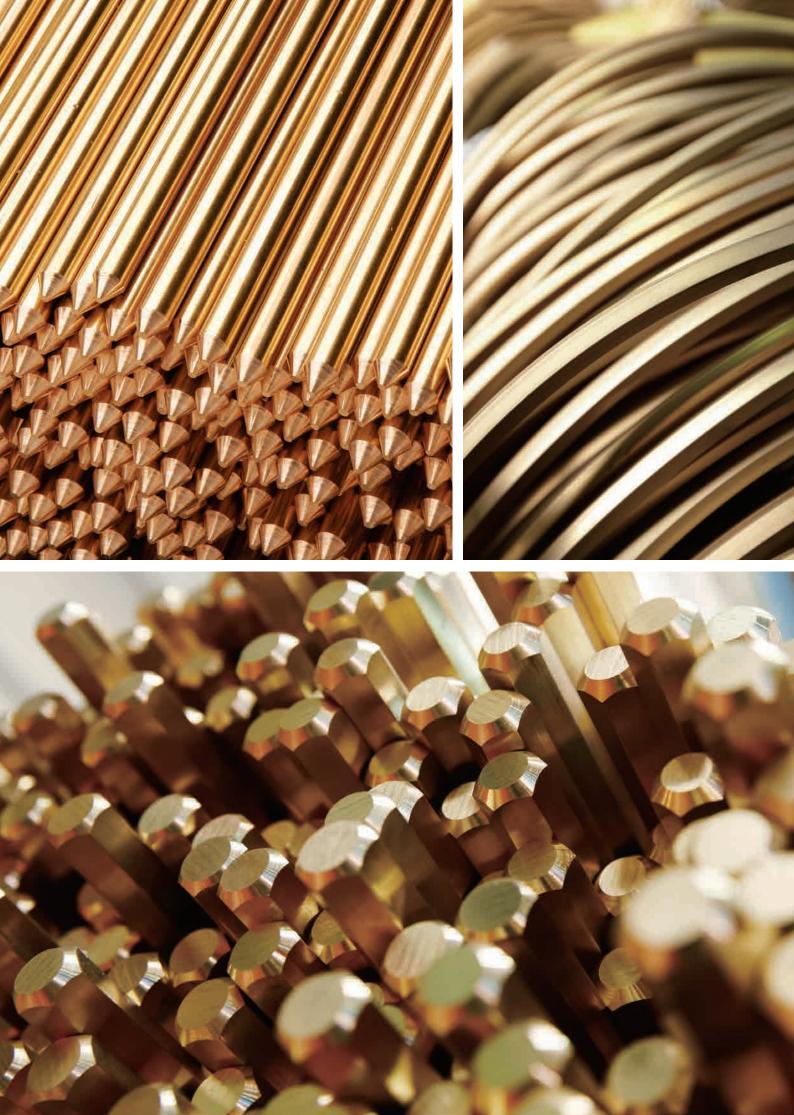
icated Non-Ferrous Meta

Having already developed various copper alloys, Poongsan is now offering new copper alloys - PMC 102 and PMC 102M - that contain nickel, silicon and phosphorus. These alloys contain the ideal properties required in semiconductor leadframes - superior electrical and thermal conductivity as well as high strength and thermal resistance at high temperatures. Poongsan maintains patents for these alloys in the U.S., Japan and the United Kingdom.

In addition to PMC 102, Poongsan offers other copper alloys such as C194, PMC 90, PMC 90 (multi-gauge), C1100 and C1220. The properties of these versatile materials are ideally suited for use in leadframes, transistors, power-transistors and heat sink components.

In order to ensure the production of high quality leadframe alloys, Poongsan maintains dedicated production lines equipped with a casting furnace, rolling mill, tension leveler, tension annealer and slitting station at its Ulsan plant.





## Rods, Bars & Wires

Using a 4,000 ton extruding press, rod blocks and a combined drawing machine, Poongsan produces bars, rods and wires with diameters that range from 2.0mm to 105mm.

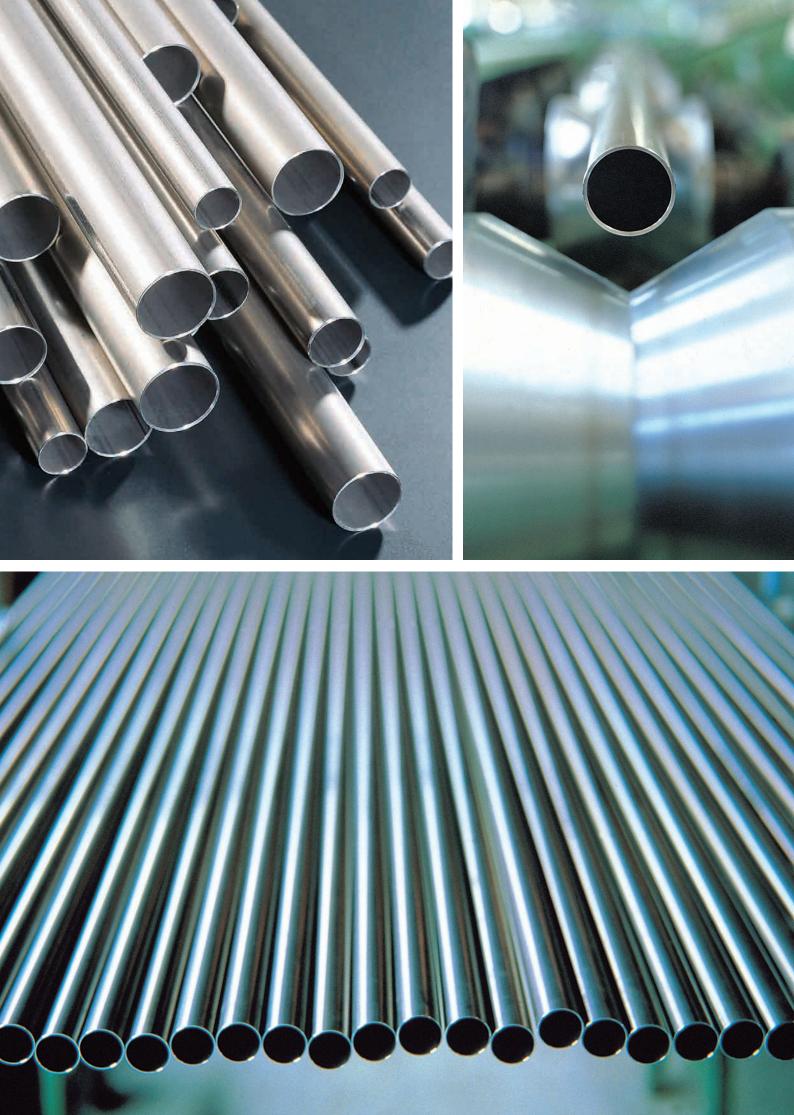


Fabricated Non-Ferrous Meta

Poongsan produces a full range of high-quality copper and copper alloy rods, bars, and wires. In 2006, Poongsan developed and obtained a patent for the production of lead-free brass bars and wires. Bars are widely used in nuts and bolts, valves, various machinery, electrical parts and accessory components for automobiles and industrial equipments. Poongsan's free cutting brass bars boast superior welding and cutting capabilities and are popular for use in nuts and bolts, connectors, and electrical and electronic parts. Additionally, Poongsan brass wires are used in specialty products such as EDM wires. Currently, Poongsan is expanding its presence in the high-purity oxygen-free copper rods market.

Poongsan prides itself in the high quality products that it delivers to its customers. Its automated production line by product type ensures that the exact specifications requested by each of its customers are always achieved. Through strict quality control procedures from casting to chamfering to inspection, Poongsan focuses on quality from start to finish.





## Titanium & Stainless Steel Tubes

Partnering with Neotiss SAS of France, Poongsan supplies defect-free welded titanium and stainless steel tubes to meet the ever changing needs of the most demanding customers throughout the world.



Poongsan Neotiss, a joint venture established in 2004 with Neotiss SAS(France), operates a tube mill dedicated exclusively to the production of titanium and stainless steel tubes. Since its inception, Poongsan Neotiss has supplied high-quality welded titanium and stainless steel tubes to domestic and international customers. With state-of-the-art technology and quality, Poongsan Neotiss is an emerging player in the production and supply of titanium and stainless steel tubes to the global market.

Poongsan Neotiss's titanium tubes are lightweight with superior strength and great resistance to heat and corrosion. As a result, they are used in a wide range of plants such as nuclear power, desalination, chemical and petrochemical refining and shipbuilding. These titanium and stainless steel tubes are subject to a comprehensive quality assurance system that has been refined through several decades of experience in the manufacturing of these products. This system is thorough and extensive, overseeing each production stage from cold roll forming, tungsten inert gas welding, annealing, non-destructive testing to product shipping. To further guarantee the specific mechanical and chemical properties and dimension specifications requested by its customers, all of Poongsan Neotiss's welded titanium and stainless steel tubes undergo rigorous testing.

In 2007 & 2008 Poongsan Neotiss acquired ISO 9001 and ISO 14001 certifications respectively. These two certifications were awarded in recognition of Poongsan Neotiss's commitment to environmental protection and excellence in the production of titanium and stainless steel tubes. Poongsan Neotiss is committed to meeting the changing needs of the most demanding customers of titanium and stainless steel tubes.

## **Stainless Steel Strips**

A long history in metal rolling technology combined with new capabilities enables Poongsan Special Metal Corporation to produce superior stainless steel strips.

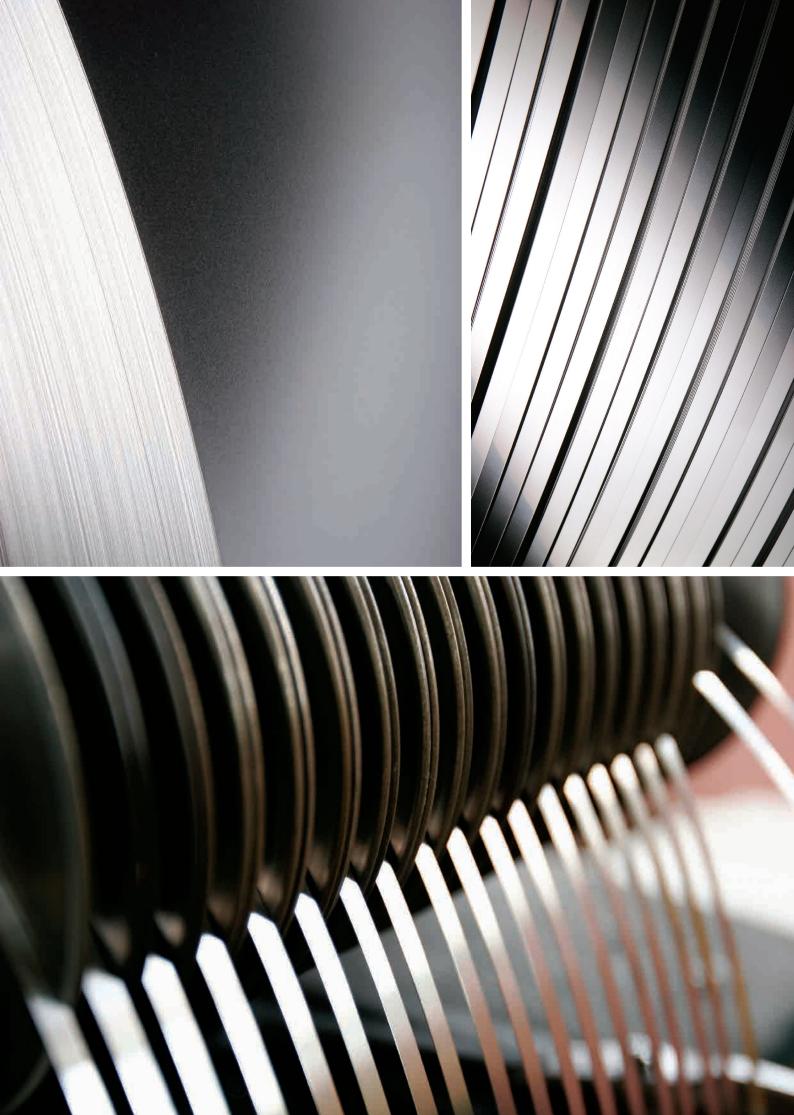


<sup>-</sup>abricated Non-Ferrous Meta

Poongsan Special Metal's precision slitters, tension leveler, tension annealing furnace and computer control systems such as Automatic Gauge Controls and Automatic Flatness Control System all contribute to ensure superior processing of stainless steel strips for a wide range of industrial purposes.

As with all of its other products, Poongsan Special Metal takes pride in its commitment and ability to meet the specific needs of its customers. The thin-gauge, narrow-width stainless steel strips that Poongsan Special Metal produces can be made as thin as 0.03mm and as narrow as 3mm. Poongsan Special Metal's superior rolling and heat-treatment technolgies yield a range of desired properties and consistent quality. These Poongsan Special Metal's stainless steel strips statisfy standard specifications set by KS, JIS, and AISI. Poongsan Special Metal's stainless steel strips for spring products are particularly popular and widely used in lightweight, high-strength components such as switches, relays and ITs that require strong spring capability.







# **Precision Forgings**

Through aggressive investment in equipment and technology, Poongsan continues to expand and supply its line of large-scale and precision-forging products to many different industries ranging from shipbuilding and automobiles to high tech, space and aviation.





With the completion of the Angang plant in the early 1970's, Poongsan began operating its own forging facility. Soon thereafter, the Korean government designated Poongsan as a national precision technology plant and calibration center. Today, the Angang plant is globally recognized as an international certification test center.

Over the past four decades, Poongsan has demonstrated that it is a dedicated and dependable supplier of parts to its customers in various industries. It has diligently invested in the acquisition and development of technology in the field of precision forging. Poongsan acquired certification in the ISO/TS 16949 and SQ Mark, enabling it to supply parts to the automobile industry. It has also received similar approval to produce and supply parts to the shipbuilding industry. Additionally, Poongsan has supplied small scale body parts for military weapons to the defense industry. Since the incorporation of two hydraulic presses (with capacities of 6,000 tons and 12,000 tons) into its production line in 2004, the Angang plant has had the capacity to produce larger scale products such as aluminum wheels for tanks, body and metal parts for warheads, guided missiles, and torpedoes. In 2012, Poongsan installed a 4,000 ton hydraulic press in order to enhance medium-sized forging capability. Since Poongsan has obtained certification of the AS9100 compliant turbine blades and aerospace components that are used by aircraft manufacturers.

The Angang plant is fully equipped with a complete quality assurance system required by domestic and global automobile and shipbuilding manufacturers. To that end, the plant is organized to maintain independent production systems for different forging product categories. It is equipped with sophisticated and comprehensive test centers to further ensure the superior quality of its products. In addition, the DEFORM (Design Environment for Forming) system and Material Data Base Software for forging process design have enabled Poongsan to provide superior forging products at reduced costs and to shorten delivery times to its customers.

Poongsan is committed to ensuring a continued supply of high quality, competitive products to its customers. Poongsan's R&D is currently focused on enhancing cold and hot precision forging and other processing technologies in an effort to develop and mass produce essential parts for the transportation industry.

# **Military Ammunition**

With forty years of experience and expertise in utilizing copper and copper alloy production technologies in the manufacture of defense products, Poongsan is a leader in the production and supply of high-tech precision ammunition to the military worldwide.



Products

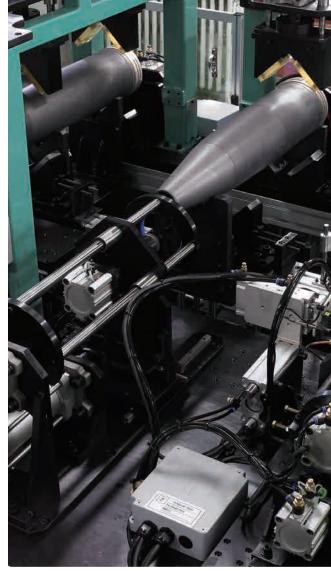
Poongsan operates two defense product plants, one in Busan and the other in Angang. These two plants develop and supply a wide range of small to large caliber ammunition, ranging from 5.56mm cartridges to 155mm projectiles for howitzers. Poongsan's defense products include ammunition used in small caliber arms, anti-aircraft guns, mortars, howitzers, tank guns, recoilless guns and naval guns.

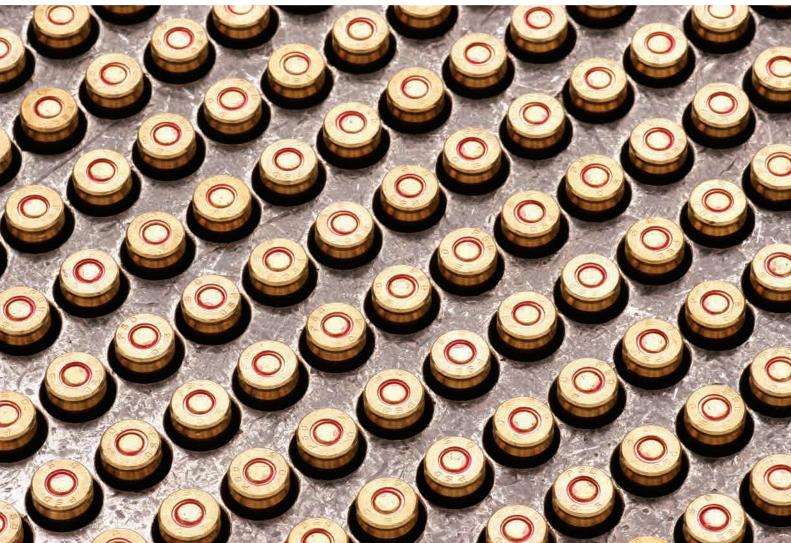
The Busan and Angang plants employ a vertically integrated production system that ensures reliable management of the production process from raw material to finished product, which, as a result, produces superior quality defense ammunition and components. Furthermore, Poongsan's defense products undergo ISO9001-2008 certified performance tests and inspections.













## Components of Ammunition

In response to the growing market, ammunition components and semi-finished defense products have become some of Poongsan's principal export items.



Defense Products

Poongsan manufactures semi-finished products and components used in the production of ammunition. They include primers, fuzes, bullet jacket cups, case cups, discs, cones, rotating bands, links, tungsten penetrators and shell bodies. Poongsan FNS produces and supplies fuzes for use in naval ammunition, mortar shells and multiple launch rocket systems. In addition to these components, Poongsan produces chemicals, such as nitrocellulose and nitroglycerine, contained in propellants. Today, Poongsan produces and supplies both domestic and international customers with single-, double- and multiplebase propellants.



## Commercial Ammunition

Poongsan develops and exports over 40 different types of sporting ammunition.



nercial Ammunitior

Poongsan's commercial ammunition, PMC (Precision Made Cartridges), is widely used throughout the world for recreational hunting and shooting and has earned a reputation for excellence in quality.

Poongsan is committed to providing high performance, competitively priced commercial ammunition to its customers. Its commercial ammunition plants have vertically integrated manufacturing systems that allow for strict and precise management of the production process from raw materials to finished cartridges. To further ensure customer satisfaction, Poongsan's commercial ammunition undergoes quality inspections and tests that are as stringent as those for its military ammunition.

In addition to providing high quality products at competitive prices, Poongsan is dedicated to developing environmentally friendly ammunition using frangible projectiles and nontoxic primers. These primers contain no heavy metals such as lead, mercury, halogens, boron, barium, bismuth or strontium, and actually exceed current EPA standards. Spectrographic analysis of primer residue shows only trace amounts of potash, which is harmless and actually acts as a fertilizer.







### Machinery

# Machinery

Poongsan builds metal processing machineries and other customized equipments for the steel, automobile and defense industries.



In the early 1970's, Poongsan Machinery began as a maintenance shop for Poongsan Corporation. Over the following four decades, it not only has transformed into a supplier of machinery and customized equipment, but also has become a leading producer of machinery and tools. Poongsan Machinery specializes in rolling related products (such as annealing, pickling, degreasing, buffing, tin plating, and slitting machineries), scalping lines, and rolling oil coolant systems. Currently, it is developing and manufacturing high-capacity Force, Mass, and Torque Standard Machinery in partnership with the Korea Research Institute of Standards and Science. Poongsan Machinery is renowned throughout the industry as the best provider of quality tools, multi-gauge strips, gauges, and fixtures.

Today, Poongsan Machinery continues to maintain strong relationships with prominent domestic companies such as Korea Electric Power Corporation.



## **Research & Development**

Dedicated to meet customer needs, Poongsan remains committed to research and development.



From its inception, Poongsan has aggressively pursued initiatives to enhance technology and to develop and improve both new and existing products. Today, Poongsan continues to emphasize and invest in research and development of fabricated copper and copper alloy products used in both the commercial and defense industries.

Through its tireless dedication to research and development over the past fifty years, Poongsan takes pride in its ever expanding intellectual property portfolio. To date, Poongsan has registered many patents worldwide that include patents for high performance copper alloys such as PMC102M, PMC26 and defense products. Poongsan invests and strategically allocates resources to develop value-added products, to optimize manufacturing processes and to invest in products with future growth. To this end, Poongsan actively recruits and trains core talent, integrates existing technologies with new ones, and selects and manages projects that meet market and customer demands.

Looking to the future, Poongsan is ever more committed to research and development. Poongsan has built a results-driven R&D organization that benefits from global networking and collaboration among the various research laboratories at Ulsan, Poongsan Special Metal, PMX and Siam Poongsan. In June 2011, it invested more than 30 billion KRW to open its Research Institute in Daejeon to centralize its R&D. In May 2014, Poongsan partnered with the Korea Advanced Institute of Science and Technology (KAIST) to found the Poongsan-KAIST Future Technology Research Center to pursue further development in business and technology.

Armed with the latest ammunition technology, Poongsan is quickly emerging as a global specialist in manufacturing high performance missile warheads and smart ammunition with stronger fire power, longer range, and greater accuracy. Poongsan is working to develop the next generation of high tech materials such as functional materials for information technology and leadframe materials for LED & semiconductors. Poongsan's commitment to R&D focusing on environmentally friendly products is evidenced by its dedication to developing environmentally friendly processes for the manufacturing of these products.







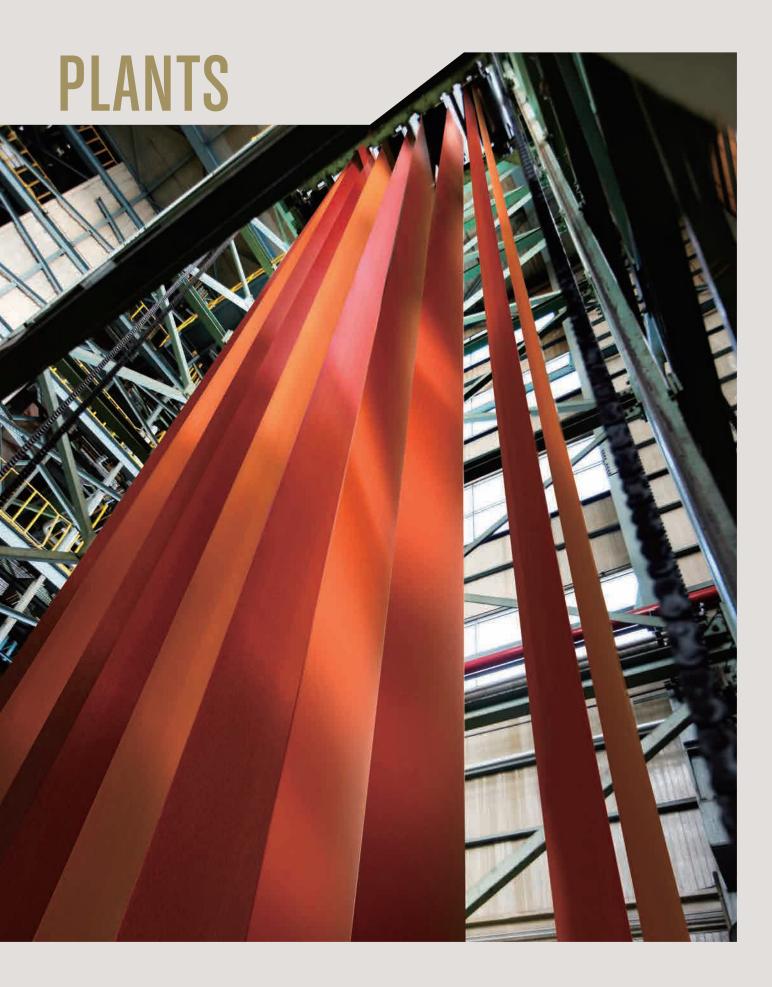
## **COMPANY & FINANCIAL INFORMATION**

#### **COMPANY INFORMATION**

Plants Domestic Affiliates Overseas Affiliates Company History

**FINANCIAL INFORMATION** 

ORGANIZATION & BOARD OF DIRECTORS
 OVERSEAS & DOMESTIC NETWORK



## ULSAN PLANT

Poongsan's Ulsan plant began operations in 1980. Since then, the Ulsan plant has continually increased its production output. Today, the plant boasts the world's largest production capacity and is unrivaled in product quality. It continues to be dedicated to efficient production and superior products. To help maximize operational efficiency, the plant has implemented Poongsan's ERP system. It has also completed the installation of a new state-of-the-art shaft furnace to further enhance competitiveness and meet the rising demand for high-value alloy products. In addition, its casting capacity for semiconductor leadframe and automobile connector materials has been improved to allow for increased downstream production capacity and improved product quality. Furthermore, a new breakdown mill, bell furnace and precision CNC slitter have been installed. In order to meet the specific demands of its customers with regard to product quality and service, the Ulsan plant actively enforces the Six-Sigma Initiative.



LOCATION : Ulju-gun, Ulsan PRODUCTS : Copper and copper alloy sheets, strips, rods, wires, raw materials for leadframes, tin-plated strips and coin blanks

## **ANGANG PLANT**

Established in 1973, Poongsan's 1,068-acre Angang plant was Korea's very first facility exclusively dedicated to manufacturing ammunition and is regarded as the birthplace of Korea's domestic defense industry. Today, the Angang plant produces an array of military and sporting ammunition, defense components and precision forging products ranging from 5.56mm small arms to 155mm extended range artillery rounds. Since its establishment, the plant has successfully contributed to the strength of the Korean armed forces and self-reliance of our national defense. Its manufacturing process is vertically integrated beginning with raw materials and ending with complete rounds of ammunition. Its defense and commercial products are superior in quality and competitive in price in the global market. Recently, the plant released new conceptual munitions for the next generation weapon platforms. Currently, it is focusing on the production of smart ammunition with selective precision attack capability designed for digitalized future battlefields.



LOCATION : Angang-eup, Gyeongju PRODUCTS : A complete line of ammunition for small arms, medium- to large-caliber arms and sporting arms

## **BUSAN PLANT**

Poongsan's Busan plant is located in Korea's second largest city. The Busan plant not only concentrates on production and quality, but also focuses on maintaining good labor relations. In 2011, it received a government award commending Poongsan's effort and success in maintaining good labor relations. Originally, it produced a variety of small caliber, sporting and hunting ammunition and tracer products. Today, it is also developing environmentally friendly ammunition such as frangible ammunition, green bullet ammunition and EPR (Enhanced Performance Round). Exports account for more than 80% of the Busan plant's total volume of sales.



LOCATION : Haeundae-gu, Busan PRODUCTS : Small arms and sporting ammunition

# **DOMESTIC AFFILIATES**

LOCATION : Changwon, Gyeongnam Haeundae, Busan PRODUCTS : Multi-gauge strips, ammunition parts, machinery, equipment, and metal powders **POONGSAN HOLDINGS CORPORATION** 

Poongsan Holdings Corporation is the parent company of the Poongsan Group and includes two manufacturing plants—the Changwon plant produces a wide range of high-quality and high-tech products such as ammunition parts, multi-gauge strips for leadframes and metal powders, while the Busan plant builds metal processing facilities for the steel, automobile and defense industries.

LOCATION : Gyeyang-gu, Incheon PRODUCTS : Stainless steel strips, nickel alloy strips and precious metal coin blanks

## **POONGSAN SPECIAL METAL CORPORATION**

Drawing on our 40 years of experience and world-class facilities, Poongsan Special Metal Corporation specializes in stainless steel strips, nickel alloy strips and precious metal coin blanks. We take particular pride in our automated production system and superior rolling and heat treatment technologies that enable us to meet the specific needs of our valued customers. Recently, Poongsan Special Metal strengthened its competitiveness in the market by developing core materials, including nickel and nickel alloy products for high-tech electronics products.

LOCATION : Pyeongtaek, Gyeonggi PRODUCTS : Copper & copper alloy sheets, strips

## **POONGSAN METAL SERVICE CORPORATION**

Poongsan Metal Service Corporation was founded in February 2007 to meet the various requirements of our customers. With its modern slitting equipment, Poongsan Metal Service supplies a diverse range of copper and copper alloy sheets and strips in a prompt manner. It also manages warehousing of copper and copper alloy tubes, rods and wires.

Over the past decade, the worldwide construction of new desalination plants, the replacement of aging facilities, the construction of new power plants, and the upgrading of industrial materials have greatly increased the demand for titanium and stainless steel tubes. As a result, Poongsan Neotiss Corporation was established in May 2004 as a joint venture between Poongsan and Neotiss SAS. In response to the steeply rising demand for titanium tubes, Poongsan Neotiss invested in production facilities to dramatically increase productivity. Additionally, product diversification was achieved by the completion of production facilities for stainless steel tubes. By joining its tube-manufacturing technology with Neotiss SAS' material procurement and worldwide marketing, Poongsan created new synergies and economies of scale.

## **POONGSAN FNS CORPORATION**

Poongsan FNS Corporation was established in 1973 to produce precision machinery products. In particular, it specialized in fuze products and sensors for the defense sector, as it produced nuclear fuel assembly (WH-type top and bottom nozzle) parts and specialty tools for the nuclear power plant sector. Poongsan acquired Poongsan FNS Corp. in February of 2004 to connect its traditional ammunition production expertise to Poongsan FNS's precision fuze manufacturing and develop state-of-the-art ammunition. Additionally, Poongsan FNS entered the aerospace industry by forming industry-education cooperation agreements with the Agency for Defense Development and the Korea Institute of Science & Technology, enabling research, development and production of precision machinery parts.

LOCATION : Pyeongtaek, Gyeonggi PRODUCTS : Titanium tubes and stainless steel tubes

LOCATION : Nonsan, Chungnam PRODUCTS : Fuse products, accelerometers for inertia navigational systems, and core products for top and bottom nozzle assembly

## **PNT CORPORATION**

PNT Corporation is a joint venture established in June 2001 with JX Nippon Mining & Metals Corporation, one of the largest non-ferrous metal companies in Japan. Responding to the rising demand from the various industries such as electronics and information technology, PNT specializes in tin-plated copper alloy strips.

LOCATION : Ulju-gun, Ulsan PRODUCTS : Tin-plated copper alloy strips

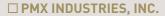
## **POONGSAN HWADONG**

Poongsan Hwadong is a numismatic company that has been distributing collectable numismatic items in Korea for over 40 years. Previously established on March 27, 1972 under the name "Hwadong," it joined the Poongsan Group in January 2012 and adopted the new name "Poongsan Hwadong". Poongsan Hwadong has distinguished itself as one of the world's major numismatic company with an industry-wide recognition as the first and the largest numismatic company in Korea. Serving as the authorized distributor of more than 20 major mint bureaus in the world, Poongsan Hwadong also has been designated as the official domestic distributor of most major world events' commemorative coins since the Olympic Games Seoul 1988.

LOCATION : Seocho-gu, Seoul PRODUCTS : Coins, Bank Notes and Medals, Gold and Silver

## **OVERSEAS AFFILIATES**







LOCATION : Cedar Rapids, Iowa, USA PRODUCTS : Copper and copper alloy strips

Incorporated in 1989, PMX Industries is a fabricated rolled-copper producer with an annual production capacity of 120,000 tons of copper and copper alloy strips. PMX has earned a strong reputation as a reliable supplier of copper and copper alloy strips for use in ammunition, automotive and electrical connectors, coinage, and high performance alloys, and as a result, plays a crucial role in supporting many different industries in North America. PMX has received patents for EPA-approved alloys under the trademark MicroGuard, with additional patents pending. MicroGuard, strictly governed by U.S. EPA regulations, kills six types of antibiotic resistant bacteria in less than two hours of contact. This product will be critical in the fight against hospital-acquired infections in the U.S. and overseas. PMX's Production, Sales and Marketing Teams work closely with one another to develop and promote cutting edge products that meet the changing needs of their customers and communities.

## POONGSAN (H.K.) LTD.

Recognizing the importance of a distribution base for the Chinese and Southeast Asian markets, Poongsan established an affiliate company in Hong Kong in 1991 followed by a slitting center in Dongguan. In 2010, Poongsan Hong Kong closed its Dongguan slitting center and opened a newer and larger scale slitting center in Songgang (Shenzhen, China). This new facility will enable Poongsan to expand and increase sales of high value-added products both in Southern China and in other Southeast Asian markets.

LOCATION : Kowloon, Hong Kong PRODUCTS : Copper and copper alloy sheets and strips, brass rods, and stainless steel strips

## **POONGSAN (SHENZHEN) CO., LTD.**

Poongsan Shenzhen opened for business in 2010. The slitting center supplies copper alloy strips including leadframe materials as well as stainless steel strips to customers in China and Southeast Asia. This facility is strategically located to be able to provide on-time delivery and better service to our customers in this region.



LOCATION : Yanchuanshequ, Songgang, Shenzhen, China PRODUCTS : Copper and copper alloy sheets and strips, stainless steel strips

## POONGSAN (SHANGHAI) CO., LTD.

Poongsan established an office inside the Shanghai Free Trade Zone in order to gain access to the Chinese copper market in 2002. Since its inception, Poongsan Shanghai has steadily grown its sales of high value fabricated copper products to the high-tech and automotive industries. It supplies copper and copper alloy sheets and strips, ACR tubes, brass rods and stainless steel strips to local customers throughout China as well as to U.S. and Japanese companies with operations in China.



LOCATION : Hongkou District, Shanghai, China PRODUCTS : Copper and copper alloy sheets and strips, brass rods, and stainless steel strips

## **POONGSAN (LIANYUNGANG) CO., LTD.**

Poongsan Lianyungang was established in July 2012 to develop new business and to stay closer to existing Poongsan customers expanding into the world's most populous nation. Poongsan Lianyungang also operates its own slitting center to supply leadframe material and general rolled products. It supplies copper and copper alloy sheets and strips, ACR tubes, brass rods, and stainless steel strips to local Chinese businesses as well as to U.S. and Japanese companies operating in China.



LOCATION : Dapu Industrial Park, Lianyungang, China PRODUCTS : Copper and copper alloy sheets and strips, brass rods, and stainless steel strips



LOCATION : Laemchabang, Chonburi, Thailand PRODUCTS : Copper and copper alloy sheets and strips, coin blanks

## □ SIAM POONGSAN METAL CO., LTD.

Established in October 2000, Siam Poongsan Metal is the only manufacturer of rolled copper and copper alloy products in Southeast Asia. Products manufactured at Siam Poongsan range from sheets and strips and coin blanks to other copper and copper alloy products. Siam Poongsan is a major supplier of coin blanks to the Thai government. With its completely integrated copper and copper alloy production facilities – from melting and casting to slitting – Siam Poongsan has contributed significantly to the development of the Southeast Asian region by providing alternative sources of fabricated materials for key industries. As a result, it has become a recognized and reliable supplier of copper and copper alloy products not only to Thailand, but also to the other nations in the region. Siam Poongsan is aggressively working to expand its facilities in order to meet the anticipated increase in demand for fabricated copper products in Southeast Asia.

## POONGSAN JAPAN CORPORATION



Saitama, Japan PRODUCTS : Copper and copper alloy sheets and strips, brass rods, and stainless steel strips

(Kawaguchi Office) Kawaguchi,

address the demanding product specifications and service required by the Japanese market. Poongsan Japan processes and sells phosphor bronze, copper, brass and tin-plated strips and high-value copper rolling products. Through prompt delivery, consistent and reliable quality assurance, and effective customer service, Poongsan Japan continues to grow its domestic market share of not only copper rolling products but also stainless steel strips.

In April 2002, Poongsan Japan Corporation was established in Kawaguchi City, Japan to



LOCATION : Kota Kemuning, Shah Alam, Selangor, Malaysia PRODUCTS : Copper and copper alloy sheets and strips, brass rods, and stainless steel strips

## POONGSAN (M) SDN BHD

Poongsan (M) SDN BHD, which also operates its own slitting center, was established in November 2001 to promote Poongsan products throughout Malaysia, Singapore and other ASEAN countries. It sells copper and copper alloy sheets, strips, rods, bars and wires as well as stainless steel strips, offering its customers reliable quality, on-time delivery and customer service.



LOCATION : Los Angeles, California, USA

## **POONGSAN AMERICA CORPORATION**

Incorporated in 2002, Poongsan America plays a critical role in supplying Poongsan Corporation with copper and copper alloy scraps, machinery and spare parts, and chemicals and other sub-materials. Poongsan America also promotes Poongsan products to overseas customers, especially in the Americas and in developing countries.

## **COMPANY HISTORY**

Oct.	1968	Poongsan Metal Corp. founded
Dec.	1969	Bupyung Plant completed
Apr.	1970	Poongsan designated as coin blank producer for the Mint of Korea
Mar.	1973	Angang Ammunition Plant completed
Jul.	1980	Ulsan Plant Phase One completed
Jan.	1982	Busan Plant completed
Jan.	1983	Precision Dies Manufacturing Shop at Busan Plant completed
Aug.	1985	Leadframe Manufacturing Shop at Busan Plant completed
-	1988	Ulsan Plant Phase Two completed
	1989	Poongsan Metal Corp. renamed Poongsan Corporation
	1992	PMX Industries, Inc. in Cedar Rapids, Iowa, U.S.A. established
	1993	Quality Standard Certificate ISO 9002 for copper and copper alloy products awarded
	1996	Quality Standard Certificate ISO 9002 for titanium tubes and stainless steel strips awarded
	1997	Poongsan Metal Plant in Dongguan, China completed
	1999	Quality Standard Certificate ISO 9001 and ISO 9002 for defense industry products awarded
	2000	Siam Poongsan Metal Co., Ltd. established in Thailand
	2001	PNT Corporation JV established in Ulsan
	2001	Poongsan (M) SDN BHD established in Johor, Malaysia
	2002	Poongsan (Shanghai) Co., Ltd. established in China
	2002	Poongsan Japan Corp. established in Saitama, Japan
Jul.	2002	Poongsan America Corp. established in Los Angeles, California, U.S.A.
	2003	Environmental Standard Certificate ISO14001 awarded to Poongsan for its copper and copper alloy products
	2004	Acquisition of fuse and precision machinery parts maker Hyopchin Industrial Co., Ltd.
	2004	Poongsan Valinox Corporation JV established in Bupyung
-	2004	Angang Plant acquires international accreditation as certification and inspection body
	2004	Poongsan honored with Productivity Innovation Award at National Quality Management Convention
	2005	Hyopchin Industrial Co., Ltd. renamed Poongsan FNS Co., Ltd.
•	2005	Ulsan Plant obtains KOSHA18001 (Occupational Safety and Health Management System)
Apr.	2006	Poongsan designated as the first environmentally friendly company among national nonferrous metals industries
	2006	Poongsan obtains patent for its Lead Free Brass Bars
Feb.	2007	Poongsan Metal Service Corporation established
May	2007	Poongsan honored with Korean System Management Grand Prix Award at International System Certification Convention
Nov.	2007	Poongsan received Bronze Tower Order of Industrial Service Merit at National Quality Management Competition
	2007	"\$700 Million Export Tower" awarded on the 44th Annual Trade Day
Jul.	2008	Establishment of Poongsan Holdings Corporation
Dec.	2008	Poongsan honored with Korean Ministry of National Defense Award in recognition of its defense product exports
Dec.	2009	Poongsan honored with Defense Quality Management Grand Prix Award
Dec.	2010	Poongsan Microtec Corp. sold to a local IT company Hidis
Jun.	2011	Poongsan R&D Institute opened in Daejeon
Dec.	2011	Poongsan headquarters moved into the new Poongsan Building
Jan.	2012	Poongsan acquired Poongsan Hwadong
Jul.	2012	Poongsan(Lianyungang) Co., Ltd. established in China
Feb.	2013	Angang Plant obtains ISO27001 (Information Security Management System)
		and AS9100 (Aerospace Industry Quality Management System)
Jun.	2013	Angang Plant honored with Total Productive Management Grand Prix Award
	2013	PMC Ammunition Inc. established in Texas, USA
	2014	Ulsan Plant obtains ISO/TS 16949 (Automotive Industry Quality Management System)
	2014	Poongsan made an agreement with KAIST to found Future Technology Research Center
	2015	Angang Plant honored with a Presidential Award at National Quality Management Convention
	2017	Poongsan Valinox Corporation was renamed Poongsan Neotiss Co., Ltd. and moved to Pyeongtaek
•		

## Results of Operations

The global economy enjoyed a strong recovery in 2017, resulting in measurable improvements in a number of economic indicators. Prices for raw materials and oil rose due to healthy growth in the United States and other advanced economies.

Poongsan Group achieved healthy profits in this environment by increasing its sales volumes. Our strategy included maximizing our exports and boosting our competitiveness through our timely delivery of our products and our focus on customer satisfaction.

By sector, sales in the copper alloy segment increased following a rise in copper prices and a rise in demand from the automotive, electrical, and electronics industries. Sales in the defense segment also increased to a record breaking high as a result of expanding our major export markets.

Poongsan's overall sales in 2017 totaled KRW 2.3 trillion (US\$ 2.1 billion), a 10.9 percent increase from 2016. Sales from the Nonferrous Metal Division comprised 62.9 percent of the total, while returns from the Defense Products Division accounted for the remaining 37.1 percent.

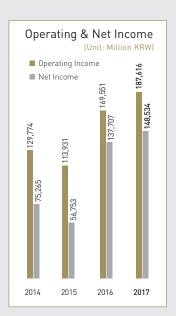
Yearly Sales (Poongsa	an Corporation)			Unit: Million KRW
	2017	2016	2015	2014
Nonferrous Metal				
Domestic	511,085	459,892	481,392	516,185
Export	909,546	763,884	808,449	994,003
Sub-Total	1,420,631	1,223,776	1,289,841	1,510,188
Defense Products				
Domestic	515,788	517,138	526,308	531,333
Export	320,844	293,550	224,668	201,829
Sub-Total	836,632	810,688	750,976	733,162
Total	2,257,263	2,034,464	2,040,817	2,243,350

## Operating Income

In 2017, the company's operating income was 187,616 million KRW, up by almost 10.6 percent on 2016. The ratio of operating profit to revenue was 8.3 percent, same as the previous year.

## Net Income

Net income for 2017 increased to 148,534 million KRW. The company recognized 39,409 million KRW in equity method income, an increase of 11,587 million KRW from the previous year. Net profit ratio decreased from 6.77 percent in 2016 to 6.58 percent in 2017.



Operating & Net Income Unit: Million						
	2017	2016	2015	2014		
Operating Income	187,616	169,551	113,931	129,774		
Net Income	148,534	137,707	56,753	75,265		

Note) Based on Separate Financial Statements

## Capital Expenditure

In 2017, the company recorded 70,408 million KRW in capital expenditures, a 18.1 percent decrease from 2016.

Capital Expenditure & D			Unit: Million KRW	
	2017	2016	2015	2014
Capital Expenditure	70,408	85,989	76,058	65,978
Depreciation Expense & Amortization Amount	68,890	64,738	62,305	56,377

Note) Based on Separate Financial Statements

## Financial Position

## Assets

The company's total assets as of December 31, 2017 were 2,449,953 million KRW, an increase of 4.5 percent from the previous year. Current assets in 2017 were 1,054,005 million KRW, an increase of 9.4 percent from 2016 Non-current asset increased 1.1 percent over 2016.

## Liabilities

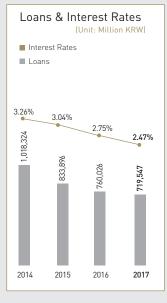
Total liabilities as of December 31, 2017 stood at 1,142,897 million KRW, up 3.1 percent or 34,324 million KRW from the previous year. Current liabilities were 776,542 million KRW, an increase of 16.3 percent from 2016. Non-current liabilities, meanwhile, were 366,355 million KRW, a decrease of 16.9 percent from 2016.

Short-term borrowings for 2017 comprised 31.2 percent of total current liabilities for an amount of 246,884 million KRW. This represented a decrease of 6,364 million KRW from the previous year.

Long-term borrowings of non-current liabilities decreased in 2017 to 54,123 million KRW. The balance from bond issues increased by 48 million KRW to close at 199,462 million KRW. The debt to equity ratio was 87.4 percent, a decrease of 2.4 percent from the previous year.

Loans & Interest Rates	5			Unit: Million KRW
	2017	2016	2015	2014
Loans	719,547	760,026	833,896	1,018,324
Interest Rates(%)	2.47	2.75	3.04	3.26

Note) Based on Separate Financial Statements



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## Shareholders' Equity

The ratio of stockholders' equity to total assets was to 53.4 percent by end of year 2017, an increase of 0.7 percent from 2016. Total stockholders' equity was posted at 1,307,056 million KRW, an increase of 72,248 million KRW from the previous year.

## Key Performance Indicators

		2017	2016	2015	2014
Stability	Debt Ratio(%)	87.44	89.78	104.25	131.84
Profitability	Net Profit to Sales(%)	6.58	6.77	2.78	3.36
Activity	Receivables Turnover(%)	5.03	4.56	5.05	5.03
Growth	Increase in EBIT Over Last Year(%)	9.81	78.30	(18.39)	0.58
Productivity	Value-Added per Person (Million KRW)	170	158	131	136

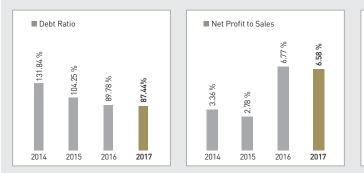
Note) Based on Separate Financial Statements

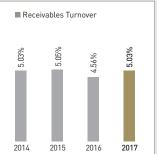
## Share Value Analysis

	Unit	2017	2016	2015	2014
EPS(Earnings per Share)	KRW	5,302	4,916	2,026	2,687
EBITDA	Billion KRW	284.8	261.0	171.7	192.9
BPS(Book value Per Share)	KRW	46,640	44,062	39,174	37,386

Note) Based on Separate Financial Statements

## Key Performance Indicators







## Non-Consolidated Statements of Financial Position

	Exchange Rate : ₩1,071.40=US\$1[End of Exchange Rate : ₩1,208.50=US\$1[End of				
	Millions of Korean Won		Conversion into of United State		
	2017	2016	2017	2016	
Current Assets					
Cash and Cash Equivalents	5,298	7,100	4,945	5,875	
Trade Receivables, Net	448,686	446,397	418,785	369,381	
Inventories, Net	575,390	482,978	537,045	399,651	
Other Current Assets	24,631	26,875	22,990	22,238	
TOTAL CURRENT ASSETS	1,054,005	963,350	983,765	797,145	
Non-current Assets					
Investments	282,114	266,510	263,312	220,529	
Invest Property	111,586	113,204	104,150	93,673	
Property, Plant and Equipment & Intangible Assets, Net	1,001,254	998,941	934,528	826,596	
Land	359,267	355,011	335,325	293,762	
Buildings	201,763	196,159	188,317	162,316	
Structures	40,493	37,188	37,794	30,772	
Machinery	311,588	311,908	290,823	258,095	
Others	88,143	98,675	82,269	81,651	
Other Non-current Assets	994	1,376	928	1,139	
TOTAL NON-CURRENT ASSETS	1,395,948	1,380,031	1,302,918	1,141,937	
TOTAL ASSETS	2,449,953	2,343,381	2,286,683	1,939,082	
Current Liabilities					
Trade Payables	134,266	79,907	125,318	66,121	
Short-term Borrowings	246,884	253,248	230,431	209,556	
Other Payables	48,556	36,074	45,320	29,850	
Current Portion of Long-term Borrowings, Net of Discount	219,078	160,887	204,478	133,129	
Other current liabilities	127,758	137,399	119,244	113,694	
TOTAL CURRENT LIABILITIES	776,542	667,515	724,791	552,350	
Non-current Liabilities					
Debentures, Net	199,462	199,414	186,169	165,009	
Long-term Borrowings, Net	54,123	146,476	50,516	121,205	
Accrued Severance Benefits, Net	60,780	39,024	56,730	32,291	
Deferred Tax Liabilities - Non Current	42,307	50,417	39,488	41,719	
Other Non-current Liabilities	9,683	5,727	9,038	4,739	
TOTAL NON-CURRENT LIABILITIES	366,355	441,058	341,941	364,963	
TOTAL LIABILITIES	1,142,897	1,108,573	1,066,732	917,313	
Shareholders' Equity					
Capital Stock(Common Stock)	140,121	140,121	130,783	115,946	
Capital Surplus	494,520	494,520	461,564	409,201	
Capital Adjustments	(152)	(152)	(142)	(126)	
Other Comprehensive Income	(10,298)	13,165	(9,612)	10,894	
Retained Earnings(Accumulated Deficit)	682,865	587,154	637,358	485,854	
TOTAL SHAREHOLDERS' EQUITY	1,307,056	1,234,808	1,219,951	1,021,769	
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	2,449,953	2,343,381	2,286,683	1,939,082	

Note) These financial statements are made and reported based on K-IFRS(Korean International Financial Reporting Standards). These financial statements include equity method income and loss.

## Non-Consolidated Statements of Operations

			ate : ₩1,071.40=US ate : ₩1,208.50=US	
	Millions of Ko	Millions of Korean Won		Thousands es Dollars
	2017	2016	2017	2016
Revenue	2,257,263	2,034,464	2,106,835	1,683,462
Cost of Goods Sold	1,946,942	1,761,474	1,817,194	1,457,570
Gross Profit	310,321	272,990	289,641	225,892
Selling General Administrative Expenses	122,705	103,439	114,528	85,593
Operating Income	187,616	169,551	175,113	140,299
Others Gains	65,987	70,572	61,590	58,396
Gain on Foreign Currency Transactions & Translations	29,944	38,589	27,949	31,931
Gain on Transaction of Derivative Instrument	18,039	16,482	16,837	13,638
Gain on Valuation Derivative Instrument	4,489	3,513	4,190	2,907
Others	13,515	11,988	12,614	9,920
Others Losses	73,322	69,205	68,436	57,265
Loss on Foreign Currency Transactions & Translations	41,465	34,211	38,702	28,309
Loss on Transaction of Derivative Instrument	16,259	20,460	15,175	16,930
Loss on Valuation Derivative Instrument	3,711	7,424	3,464	6,143
Others	11,887	7,110	11,095	5,883
Net Financial Expenses	20,233	23,365	18,885	19,334
Equity Method Profit & Loss	39,409	27,822	36,783	23,022
Profit(Loss) before Tax Expense	199,457	175,375	186,165	145,118
Tax Expense	50,923	37,668	47,530	31,169
Net Profit(Loss)	148,534	137,707	138,635	113,949
Other Comprehensive Income(Loss)	(56,677)	17,636	(52,900)	14,593
Total Comprehensive Income(Loss)	91,857	155,343	85,735	128,542

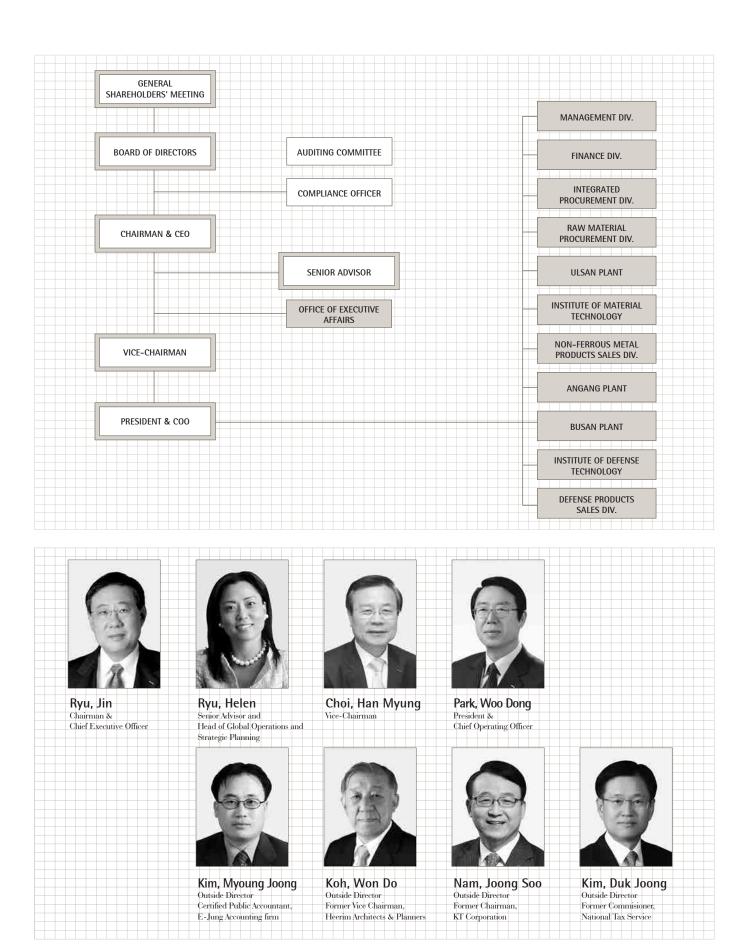
Note) These financial statements are made and reported based on K-IFRS(Korean International Financial Reporting Standards). These financial statements include equity method income and loss.

## Non-Consolidated Statements of Cash Flows

			ate : ₩1,071.40=US ate : ₩1,208.50=US	
	Millions of K	Millions of Korean Won		Thousands es Dollars
	2017	2016	2017	2016
I. Net Cash Flows from Operating Activities	106,087	180,443	99,017	149,311
1. Cash Flows from Operating Activities	189,580	240,301	176,946	198,842
1) EBT(Earning before Tax)	199,457	175,375	186,165	145,118
2) Addition of Expenses of Non-cash Transactions	148,995	152,121	139,066	125,875
3) Deduction of Revenues of Non-cash Transactions	(68,295)	(69,749)	(63,744)	(57,715)
4) Changes in Assets and Liabilities from Operating Activities	(90,577)	(17,446)	(84,541)	(14,436)
2. Income Tax Paid	(45,831)	(22,959)	(42,777)	(18,998)
3. Interest Paid	(18,385)	(23,135)	(17,160)	(19,144)
4. Interest Received	60	20	56	17
5. Dividend Paid	(19,608)	(14,005)	(18,301)	(11,589)
6. Dividend Received	271	221	253	183
II. Cash Flows from Investing Activities	(70,971)	(110,335)	(66,241)	(91,299)
1.Cash Inflows from Investing Activities	23,815	4,051	22,228	3,352
2.Cash Outflows from Investing Activities	(94,786)	(114,386)	(88,469)	(94,651)
III. Cash Flows from Financing Activities	(36,918)	(76,555)	(34,458)	(63,347)
1.Cash Inflows from Financing Activities	2,212,583	2,212,459	2,065,133	1,830,748
2.Cash Outflows from Financing Activities	(2,249,501)	(2,289,014)	(2,099,591)	(1,894,095)
IV. Net Increase(Decrease) in Cash and Cash Equivalents(I+II+III)	(1,802)	(6,447)	(1,682)	(5,335)
V. Cash and Cash Equivalents at Beginning of Period	7,100	13,547	6,627	11,210
VI. Cash and Cash Equivalents at End of Period	5,298	7,100	4,945	5,875

Note) These financial statements are made and reported based on K-IFRS(Korean International Financial Reporting Standards). These financial statements include equity method income and loss.

## **ORGANIZATION & BOARD OF DIRECTORS**



## **OVERSEAS & DOMESTIC NETWORK**

## POONGSAN CORPORATION

Poongsan Bldg., 23, Chungjeong-ro, Seodaemun-gu, Seoul Phone : 82-2-3406-5114 Fax: 82-2-3406-5400 http://www.poongsan.co.kr

94, Sanam-ro, Ulju-gun, Ulsan Phone : 82-52-231-9114 Fax: 82-52-231-9400

Angang Plant 2606-10, Hoguk-ro, Angang-eup, Gyeongju-si, Gyeongsangbuk-do Phone : 82-54-760-6114 Fax : 82-54-760-6400

Busan Plant 230, Seonsuchon-ro, Haeundae-gu, Busan Phone : 82-51-520-8114 Fax : 82-51-520-8400

266, Techno 2-Ro, Yuseong-Gu, Daejeon Phone : 82-42-609-7777 Fax : 82-42-609-7870

RM708, 21Century Bldg., No.207 Tun Hwa North Road, Taipei, Taiwan Phone : 886-2-2545-5311/2 Fax : 886-2-2546-0081

456 Oakmead Parkway Sunnyvale, CA 94085, U.S.A Phone : 1-408-733-1910 Fax : 1-408-733-1922

Graha CIMB Niaga 26th Fl. Jl. Jend. Sudirman Kav.58 Jakarta Selatan, 12190, Indonesia Phone : 62-21-8067-1236 Fax: 62-21-8067-1237

Villa #26, Abdullah bin Khamis Street, Olaya Tahila Street, Riyadh, 11497, KSA Phone : 966-11-462-4040 Fax: 966-11-462-4040

Poongsan FNS Corporation 893, Deugandae-ro, Nonsan-si, Chungcheongnam-do Phone : 82-41-740-5500 Fax : 82-41-741-7780

## PNT Corporation 94, Sanam-ro, Ulju-gun, Ulsan Phone : 82-52-231-9981 Fax : 82-52-239-9940

5300, Willow Creek Drive S.W., Cedar Rapids, Iowa 52404, U.S.A Phone : 1-319-368-7700 Fax: 1-319-368-7701

Unit1907B 19/F Exchange Tower 33 Wang Chiu Road Kowloon Bay Kowloon, Hongkong Phone : 852-2735-6330 Fax : 852-2730-7396

Poongsan (Shenzhen) Co., Ltd. 8 Dahualu, Yanchuanshequ, Songgang, Baoan, Shenzhen, China Phone : 86-755-3323-8916 Fax : 86-755-3323-8912

Room 1325, No.289, Wujin Road, Hongkou District, Shanghai, 200080, China Phone : 86-21-5868-0881 Fax: 86-21-5868-0882

20-3, Jinqiao Road, Dapu Industrial Park, Lianyungang City, Jiangsu, China Phone: 86-518-8108-9568 Fax: 86-518-8108-9778

38/14 Moo 5, Laemchabang Industrial Estate, T. Tungsukhla, A. Sriracha, Chonburi 20230, Thailand Phone : 66-38-400-056 Fax : 66-38-490-328

ACN Yotsuya Building 3rd floor 2-4-1, Yotsuya, Shinjuku-ku, Tokyo, 160-0004, Japan Phone : 81-3-5269-6570 Fax: 81-3-5269-6571

(Kawaguchi Office) Angyo-Kitaya 628, Kawaguchi, Saitama 334-0054, Japan Phone : 81-48-297-6931 Fax : 81-48-297-6933

No. 16, Jalan Anggerik Mokara, 31/59, Kota Kemuning, Seksyen 31, 40460 Shah Alam, Selangor, Malaysia Phone : 60-3-5122-0001 Fax : 60-3-5122-0002

601 South Figueroa St. Suite No.4600, Los Angeles, CA 90017, U.S.A Phone : 1-213-236-0300 Fax : 1-213-236-0308

PMC Ammunition, Inc. 10777 Westheimer Road, Suite 1101 Houston, Texas 77042, U.S.A Phone : 1-281-407-5655 Fax : 1-281-407-5654

## **POONGSAN HOLDINGS** CORPORATION

Poongsan Bldg., 23, Chungjeong-ro, Seodaemun-gu, Seoul Phone : 82-2-2278-6700 Fax: 82-2-2278-6790

670, Gongdan-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do Phone : 82-55-239-0700 Fax: 82-55-267-0701

230, Seonsuchon-ro, Haeundae-gu, Busan Phone : 82-51-520-8900 Fax : 82-51-522-0117

Poongsan Special Metal Corporation 57, Anaji-ro, Gyeyang-gu, Incheon Phone : 82-32-540-7114 Fax: 82-32-540-7400

134, Pyeongtaekhang-ro, 156beon-gil, Poseung-up, Pyeongtaek-si, Gyeonggi-do Phone : 82-31-371-3200 Fax: 82-31-371-3209

134, Pyeongtaekhang-ro 156beon-gil, Pyeongtaek-si, Gyeonggi-do Phone : 82-31-650-7500 Fax : 82-31-650-7511

Poongsan Hwadong 351, Hyoryeong-ro, Seocho-gu, Seoul Phone : 82-2-3471-4586 Fax: 82-2-597-8741



POONGSANANNUAL REPORT 2017POONGSAN BLDG., 23, CHUNGJEONG-RO, SEODAEMUN-GU, SEOUL, KOREATEL: 82-2-3406-5114FAX: 82-2-3406-5400

www.poongsan.co.kr