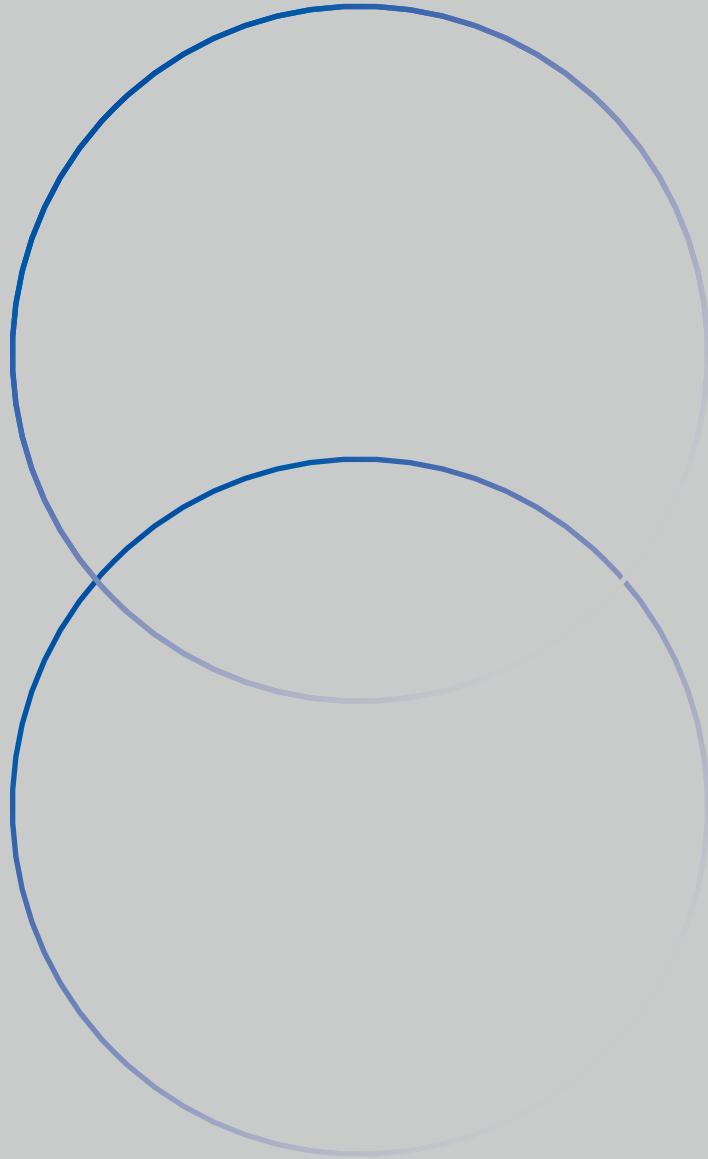


# HYUNDAI SUNGWOOCASTING



EXPANDING OUR STAR



# HYUNDAI SUNGWOOCASTING

## OVERVIEW

CHAIRMAN'S MESSAGE	03
VISION & PHILOSOPHY	04
JOURNEY of HYUNDAI SUNGWOOCASTING	05
COMPANY ORGANIZATION	07
SALES & PARTNERS	09

## CORE COMPETENCE

<b>IRON CASTING BUSINESS</b>	<b>12</b>
AUTOMOTIVE PARTS	13
INDUSTRIAL PARTS	15
MANUFACTURING PROCESS	17
RESEARCH & DEVELOPMENT	19
<b>ALLOY WHEEL BUSINESS</b>	<b>21</b>
ALLOY WHEEL STRENGTH	22
ALLOY WHEEL PRODUCTS	23
MANUFACTURING PROCESS	25
RESEARCH & DEVELOPMENT	27

# EXPANDING OUR STAR

A bigger stage awaits Hyundai Sungwoo Casting. We make new history with devotion for a greater tomorrow. Driven by our vision and dedication for the future, we will leap forward as a shining star of innovation.



# CHAIRMAN'S MESSAGE

**Committed to the fundamentals, we will continue to challenge and innovate for greater customer satisfaction.**

**Integrity is our Priority**

Evolved from Seohan Precision Machine Co., Ltd, established in 1987, Hyundai Sungwoo Casting has undergone constant development by manufacturing technology-intensive products such as casting and alloy wheel essential to the automotive industry.

In today's global era, Hyundai Sungwoo Casting's overriding proposition is to 'stick with the basics'. We believe conquering challenges and delivering customer satisfaction derive from two fundamental basics - quality and trust. Hyundai Sungwoo Casting will continue to commit to these priorities in order to maximize customer satisfaction with technologically advanced products and solidify corporate reputation as a trusted high-performance leader.

**We Promise a Better Future**

Having achieved consistent and robust growth both in manufacturing capacity as well as quality through technological advancement and sales growth since inception, Hyundai Sungwoo Casting is preparing another leap forward for a 'better tomorrow' for advanced mobility solutions.

With societies on the brink of the 4th industrial revolution, change and innovation are no longer an option but a necessity. In the midst of rapidly changing paradigms, Hyundai Sungwoo Casting aims to focus on developing cutting-edge technologies and pioneering new businesses. We will closely observe the fast-changing markets and answer customer needs to enable them not only to adapt to the rapidly changing business environment but also to lead change. Our efforts to transform ourselves to lead the future market and to infuse value into mobility lifestyle will push us forward.

**'We' Before 'Me' - We Believe in Growing Together.**

Hyundai Sungwoo Casting fulfills social responsibilities with deep care to promote respect for humanity. As a global corporation, We pursue sustainable growth through environmentally-conscious ethical management, and win-win labor management based on cooperation. We envision growing together by creating economic and social values in connection with local communities and the nation as a whole.

It is our aim to uphold our promise for continued growth as well as to challenge ourselves as a company so that we make positive influence on our customers, businesses, local and national communities, and the global village. Thank you.

Hyundai Sungwoo Casting Co., Ltd.

**Chairman Chung, Mong Yong**

# VISION & PHILOSOPHY

**Corporate philosophy rooted in respect for humanity. Mission to satisfy the needs of customers. With our vision and philosophy, we will further enrich lives and enhance technologies.**

**MISSION - Pioneering New Technologies & New Business for Future Growth**

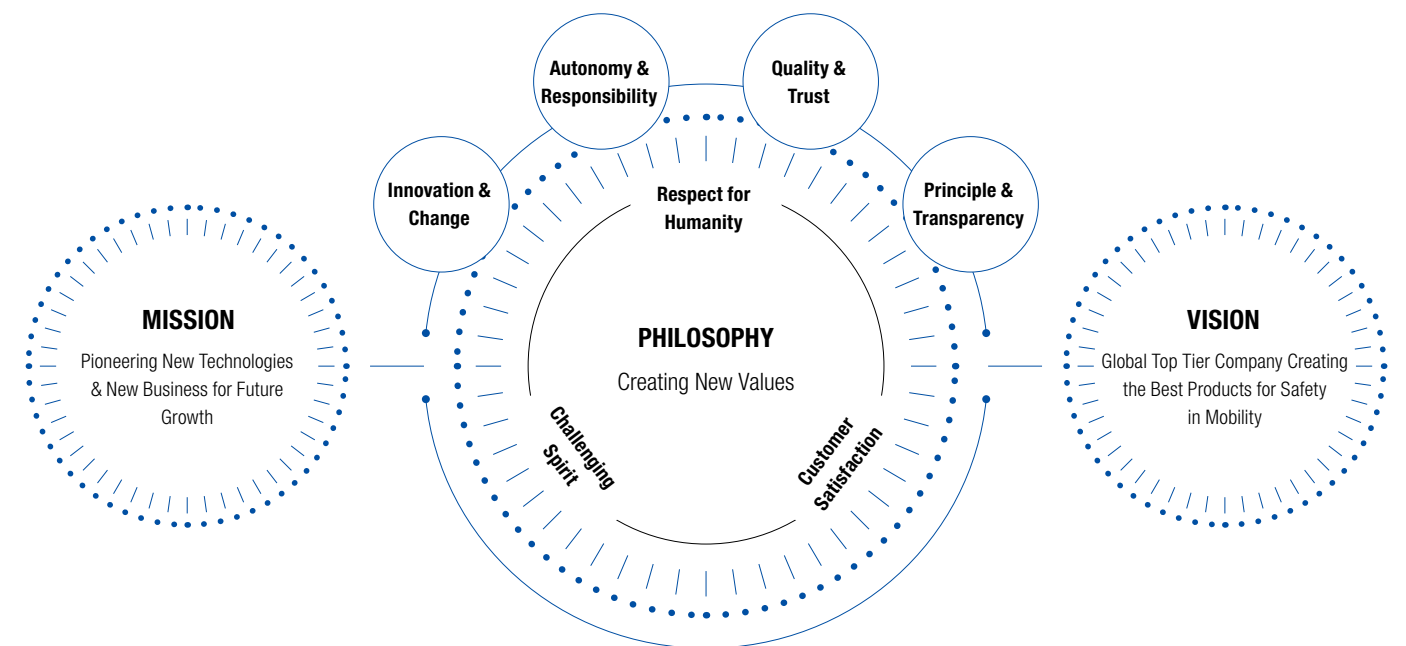
Hyundai Sungwoo Casting is preparing for a new leap forward in the time of rapid technological changes in the global automotive industry. Committed to develop new technologies to lead the changing world and to explore new business opportunities, Hyundai Sungwoo Casting is transforming into a company that creates new values for our customers and shareholders.

**PHILOSOPHY - Creating New Values**

Hyundai Sungwoo Casting realizes customer satisfaction with a spirit of challenge and effective talent management. We develop innovative technologies that benefit humans and the environment alike, and through that technology make products that create new values of happiness and prosperity. Albeit unseen, our philosophies form the solid foundation of our corporation and are infused in Hyundai Sungwoo Casting's technologies and products.

**VISION - Global Top Tier Company Creating the Best Products for Safety in Mobility**

The first and foremost mission of Hyundai Sungwoo Casting is customer safety. Hyundai Sungwoo Casting is constantly investing in research and development to become a leading automotive parts company, and to ultimately create the best products that ensure customer safety.



# JOURNEY of HYUNDAI SUNGWO CASTING

Hyundai Sungwoo Casting has undergone constant change and innovation to become a leading automotive parts manufacturer today. We will continue our journey of persistent growth by taking on bigger and newer challenges.

## IRON CASTING

- 1987.05 · Established Seohan Precision Machine Co., Ltd.
- 1988.07 · Constructed casting plant in Pohang
- 1995.05 · Renamed as Sungwoo Precision Co., Ltd.
- 1995.08 · Constructed 2nd casting plant in Pohang
- 1996.10 · Merged with Sungwoo Special Equipment Co., Ltd (Machining part)
- 1998.08 · Acquired ISO 9002 certification
- 1999.10 · Acquired QS 9000 certification
- 2000.10 · Renamed as Sungwoo Automotive Co., Ltd.
- 2003.10 · Acquired ISO/TS 16949 certification
- 2005.05 · Constructed 3rd casting plant in Pohang
- 2005.10 · Expanded machining plant in Pohang
- 2006.05 · Acquired ISO 14001 environmental system certification
- 2010.11 · Enhanced productivity of line 3 in 2nd casting plant
- 2011.11 · Enhanced productivity of line 2 in 1st casting plant
- 2012.12 · Enhanced productivity of line 1 in 1st casting plant
- 2013.05 · Renamed as Hyundai Sungwoo Automotive Korea Co., Ltd.
- 2014.06 · Established Frankfurt office in Germany
- 2015.05 · Renamed as Hyundai Sungwoo Casting Co. Ltd.
- 2016.09 · Expanded cooling line facilities in 1st casting plant
- 2017.06 · Expanded core line in Pohang plant
- 2020.01 · Hyundai Sungwoo Casting Co., Ltd. merged with Hyundai Sungwoo Metal Co., Ltd.
- 2020.11 · Renewed facilities in 1st casting plant to enhance productivity

## ALLOY WHEEL

- 1995.03 · Established Kyungwon Metal Co., Ltd.
- 1996.05 · Constructed alloy wheel plant in Chungju
- 1998.10 · Merged into Kyungwon Industrial Co., Ltd.
- 2000.06 · Established Hyundai Sungwoo Auto USA Corporation
- 2000.12 · Established Sungwoo Metal Tech Co., Ltd.
- 2003.03 · Merged into Sungwoo Automotive Co., Ltd.
- 2004.12 · Acquired TS16949/ISO14001 certification
- 2005.01 · Started Business with HMMA
- 2005.10 · Signed technology-license contract with Asahi Tech Corporation
- 2006.05 · Expanded line B in alloy wheel plant
- 2008.09 · Constructed alloy wheel plant in China  
(Longkou Hyundai Sungwoo Automotive Co., Ltd.)
- 2009.03 · Mass produced flow forming products in Chungju plant
- 2010.11 · Constructed 2nd alloy wheel plant in Chungju
- 2010.12 · Awarded the Minister of Employment and Labor Award for job creation
- 2011.06 · Started Business with BMW
- 2012.03 · Constructed R&D Center in Chungju
- 2013.05 · Renamed as Hyundai Sungwoo Automotive Korea Co., Ltd.
- 2015.05 · Renamed as Hyundai Sungwoo Metal, Co., Ltd.
- 2019.12 · Constructed FSW (Friction Stir Welding) building in the Chungju
- 2020.01 · Hyundai Sungwoo Metal Co., Ltd. merged into Hyundai Sungwoo Casting Co., Ltd.

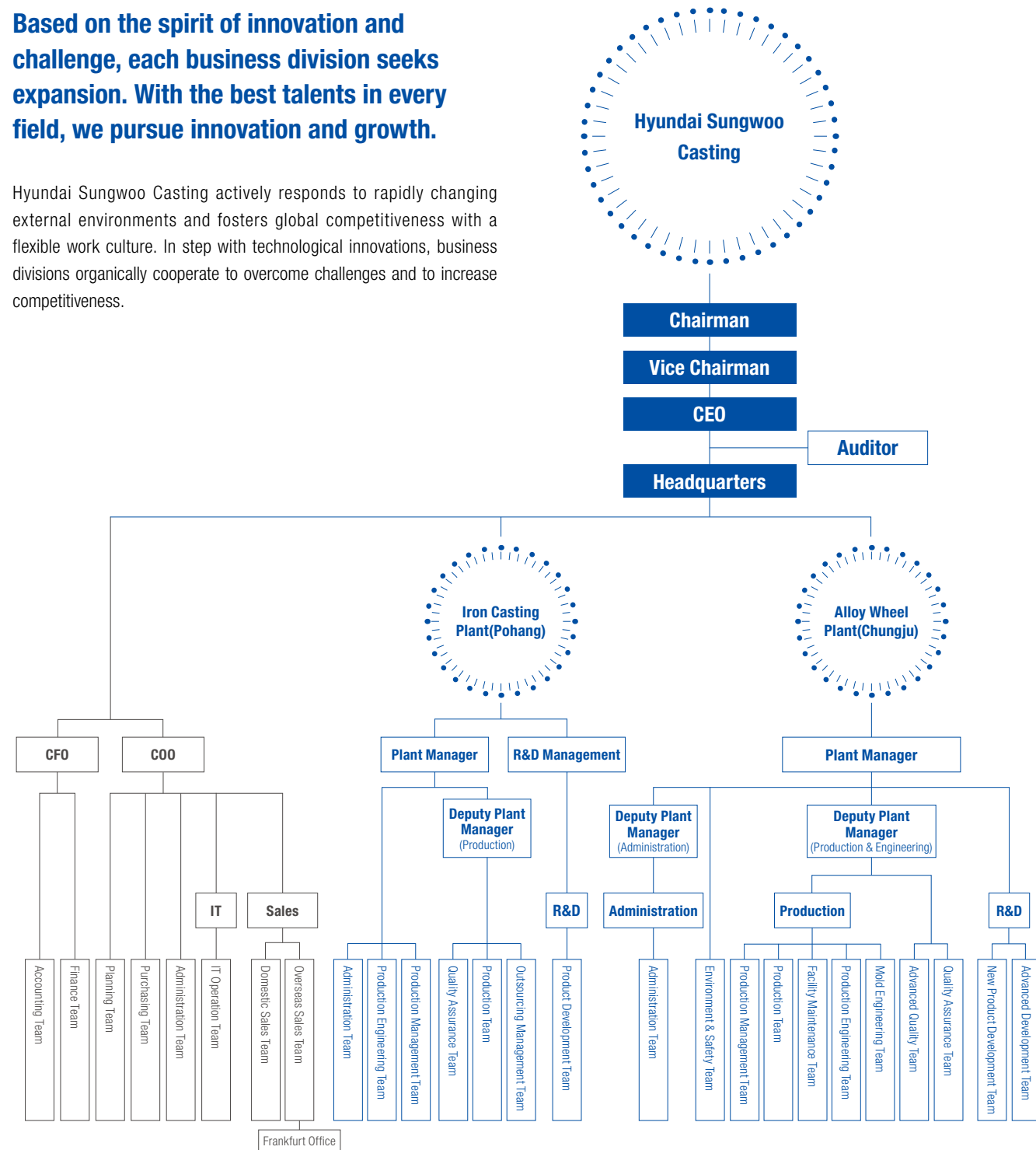
To become a global top tier, we will not settle upon past successes, and constantly search for valuable insights and technology solutions.



# COMPANY ORGANIZATION

Based on the spirit of innovation and challenge, each business division seeks expansion. With the best talents in every field, we pursue innovation and growth.

Hyundai Sungwoo Casting actively responds to rapidly changing external environments and fosters global competitiveness with a flexible work culture. In step with technological innovations, business divisions organically cooperate to overcome challenges and to increase competitiveness.



## Domestic Offices



### Hyundai Sungwoo Casting (Headquarters)

Hyundai Sungwoo Holdings Building, 609 Bongeunsa-ro (Samseong-dong), Gangnam-gu, Seoul South Korea



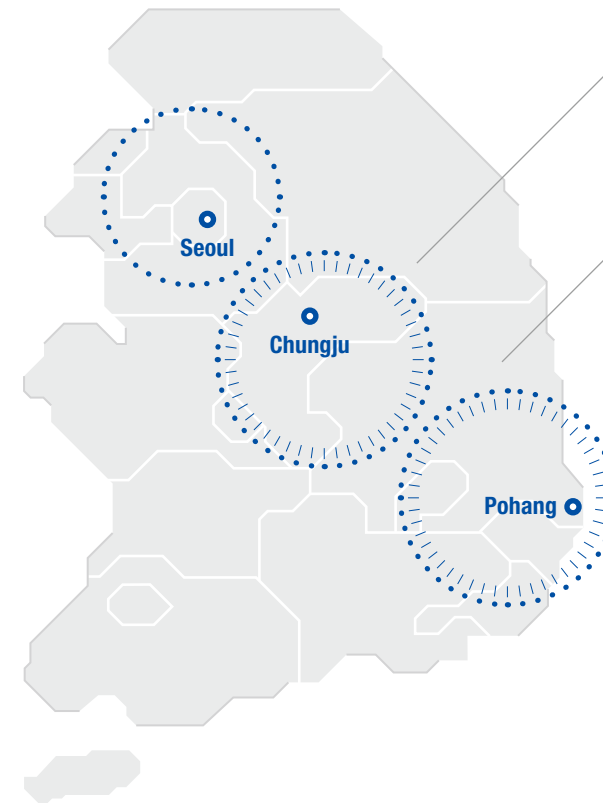
### Hyundai Sungwoo Casting (Wheel plant)

334 Chungjuhosu-ro (Yongtan-dong), Chungju-si, Chungcheongbuk-do South Korea



### Hyundai Sungwoo Casting (Casting plant)

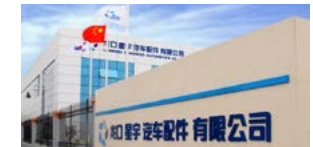
459 Cheolgang-ro (Jangheung-dong), Nam-gu, Pohang-si, Gyeongsangbuk-do South Korea



## Overseas Branch



USA  
Hyundai Sungwoo Auto USA



China  
Longkou Hyundai Sungwoo Automotive



Japan  
Hyundai Sungwoo Tokyo Branch



Germany  
Hyundai Sungwoo Frankfurt office

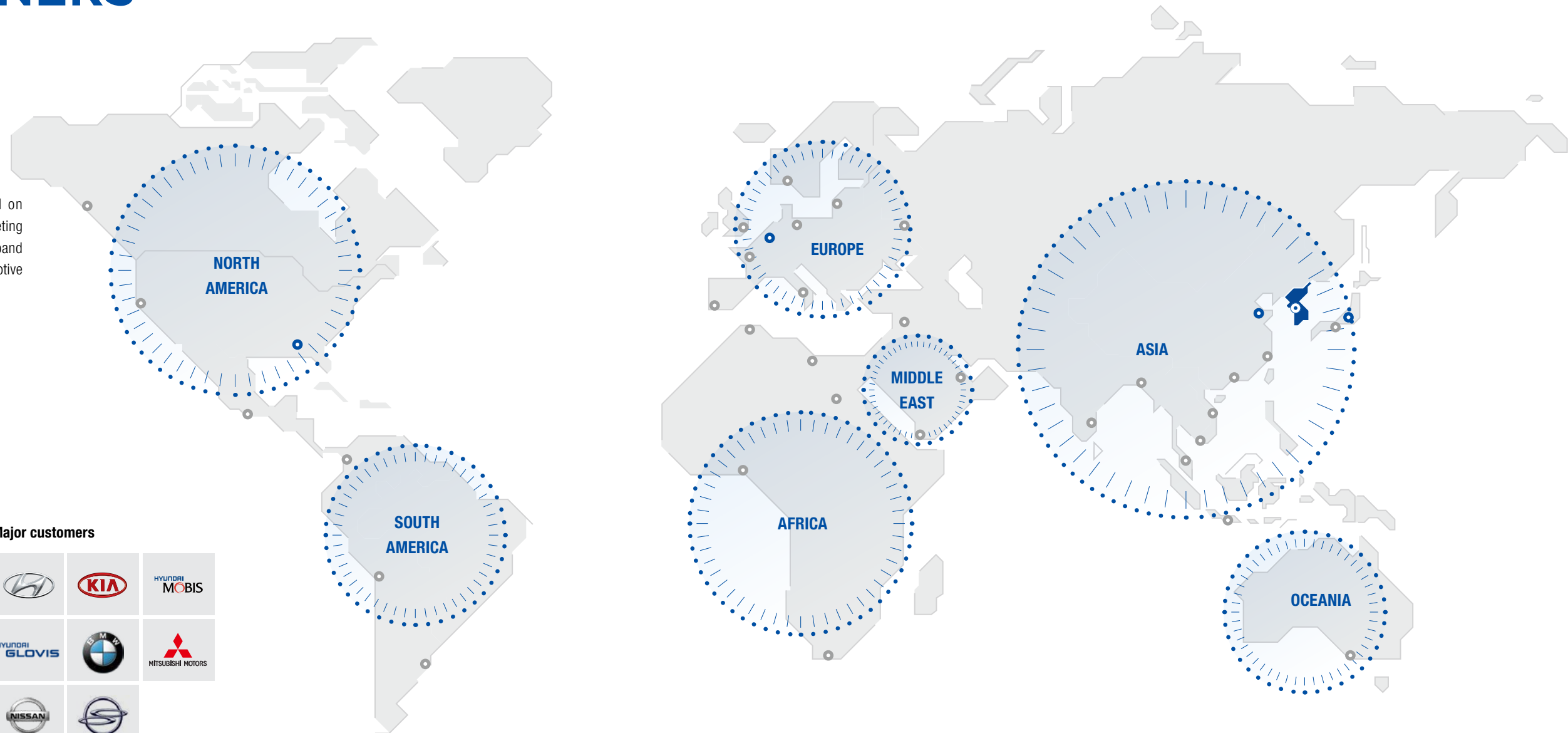




# SALES & PARTNERS

## Expanding our star with change and innovation

Hyundai Sungwoo Casting is opening a new future based on successful growth of the past. With technology and quality meeting global standards, Hyundai Sungwoo Casting will continue to expand its competitiveness and spread its influence in the global automotive industry.



### Alloy Wheel Business (Korea)

	Domestic clients	<b>3</b>
	Overseas clients	<b>4</b>
	Exporting countries	<b>3</b>

### Major customers


### Alloy Wheel Business (China)

	Domestic clients	<b>2</b>
	Overseas clients	<b>5</b>
	Exporting countries	<b>5</b>

### Major customers


### Casting Business

	Domestic clients	<b>6</b>
	Overseas clients	<b>6</b>
	Exporting countries	<b>6</b>

### Major customers




# CORE COMPETENCE

Hyundai Sungwoo Casting aims to lead the world's casting industry with state-of-the-art facilities and manufacturing process, as well as with new materials and technologies.

# IRON CASTING BUSINESS

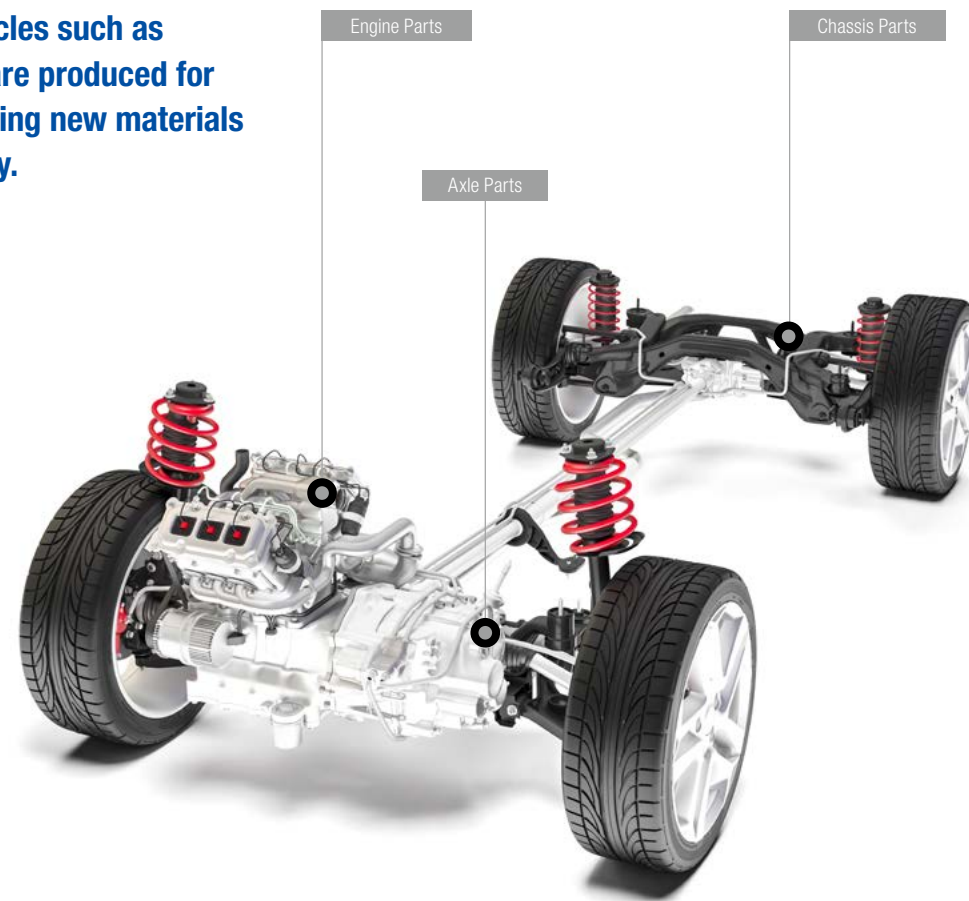
Beyond performance and efficiency, life and safety of customers are our utmost concern. Hyundai Sungwoo Casting will continue to build trust based on advanced technology and deep consideration for customers.





# AUTOMOTIVE PARTS

Core components of vehicles such as brake systems, engines are produced for optimum performance using new materials and innovative technology.



## Engine Parts

The main components of the engine parts require high durability and precision that can withstand constant explosion combustion, pressure, and high-speed rotational motion of the engine. Being the biggest domestic producer, Hyundai Sungwoo Casting develops and manufactures various engine parts according to their use and characteristic.



- Flywheel

- Ring Gear

- Bearing Cap

## Chassis Parts

Hyundai Sungwoo Casting manufactures key parts of brake systems such as brake disc rotors, drums, and wheel hubs. The brake disc, our signature component, radically improves vibration and noise, and contributes to weight reduction and optimum intensity.



- Reinforcement

- Brake Disc

- Front Wheel Hub

## Axle Parts

Hyundai Sungwoo Casting produces major axle parts such as gear housings and housing covers. Hyundai Sungwoo Casting is in constant pursuit of technological innovation to develop parts with high strength and long lifespan to make our products more reliable.



- Differential Gear Housing

- Differential Housing Cover







# INDUSTRIAL PARTS

Industrial parts for global use are required to meet strict quality standards. With advanced technologies, Hyundai Sungwoo Casting produces industrial components essential to ship engines and rolling stocks while meeting all international standards.

## Marine Parts

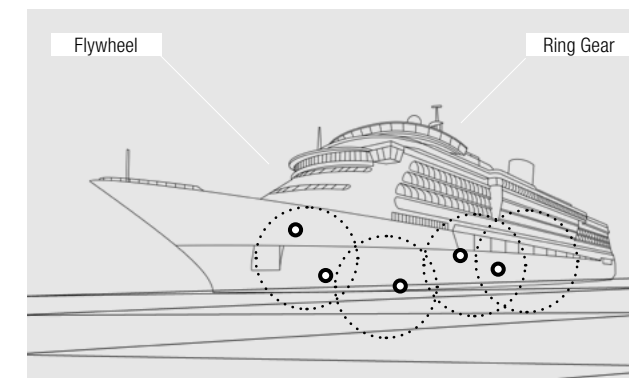
Marine flywheels require capabilities to withstand high torque and instantaneous shocks, and have to minimize fluctuation in engine motion by easing the force generated on the crankshaft. Hyundai Sungwoo Casting produces one of the best marine components that meet all of these requirements. We also provide highly durable Ring Gear that supply additional power and can cope with irregular engine starts.



- Flywheel



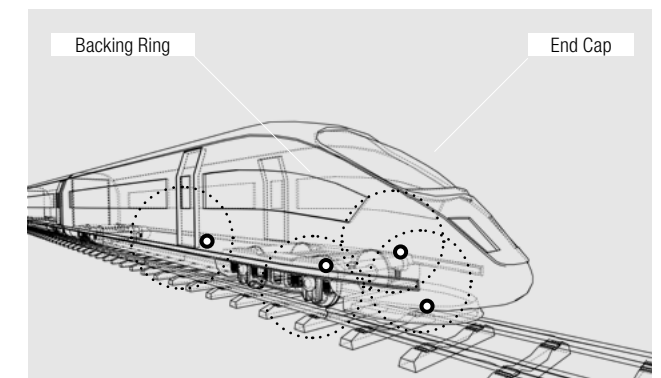
- Ring Gear



- End Cap



- Backing Ring





# MANUFACTURING PROCESS

**State-of-the-art facilities and automatic machining line are the pride of Hyundai Sungwoo Casting.**

Hyundai Sungwoo Casting has been generously investing in manufacturing high-quality products and stabilizing the supply of auto components since inception. Hyundai Sungwoo Casting has been playing a leading role in the domestic and global casting-material industry with auto processes and state-of-the-art facilities.

### Melting

Scrap iron such as pig iron, compressed metal, and reusable iron is induced by electricity in a certain proportion, then changed into metal alloy after checking and analyzing its composition.

### Molding

A mold cavity is constructed by combining two parts. The upper and lower parts are made with casting sand inserted into a mold which is then applied with pressure.

### Auto Pouring

Molten metal is automatically poured into the cavity, then in order to stimulate graphitization inoculation treatment is conducted.

### Cooling

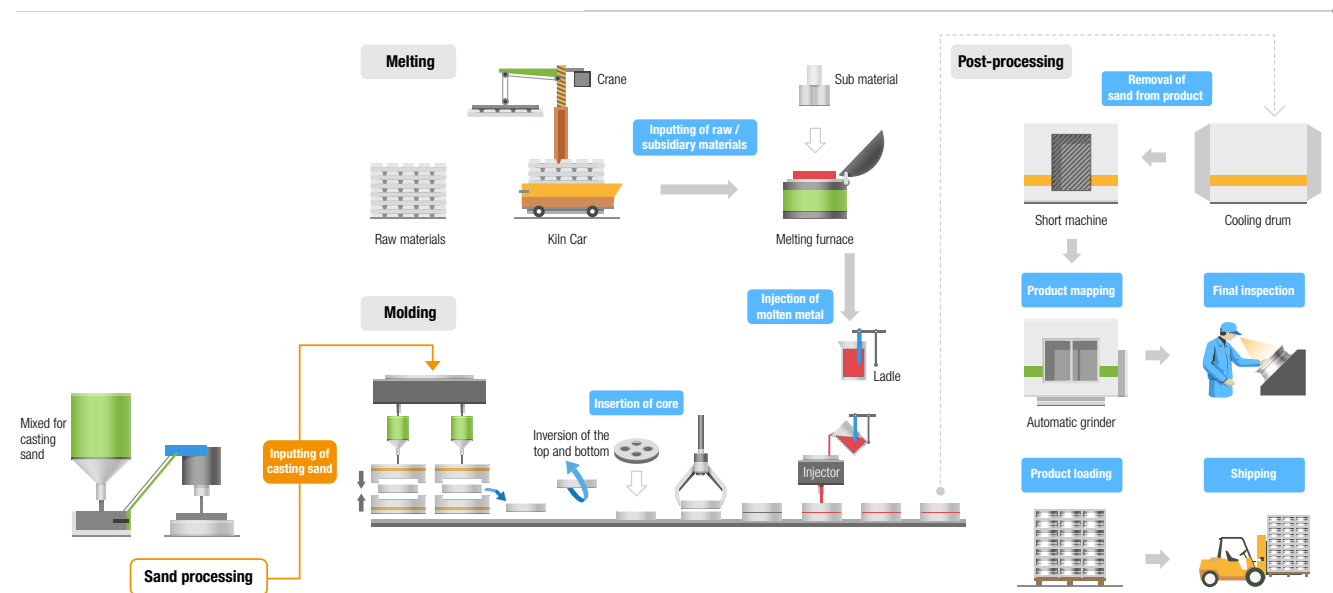
This process is to adjust the cooling rate of the molten metal according to the characteristic of each product.

### Machining

This final step includes the process of sculpting and polishing the surface according to the product's use.



### Process drawing





# RESEARCH & DEVELOPMENT

**To be prepared for the future, Hyundai Sungwoo Casting encourages development in new materials and technology.**

Hyundai Sungwoo Casting has constantly invested in its R&D to lead the casting industry. We constantly develop new materials and advanced technologies, such as new molding development through pre-simulations tools, and always focus on improving functions and safety of material parts. We also invest heavily on our talents as well as facility in order to increase competitiveness.

## Casting Technology

- Largest volume of production in Korea, 150,000 tons on an annual basis
- Possession of core technologies and improvement of manufacturing processes such as melting, casting, post-processing
- Increase in manufacturing capability with automated processes such as automated injection system and automated inoculation treatment
- Zero loss in distribution through analyzing and improving operation processes
- Implementation of eco-friendly processes including reduction of fume, dust, and waste from sand molded casting

## International Standard Certification



IATF16949

ISO 14001

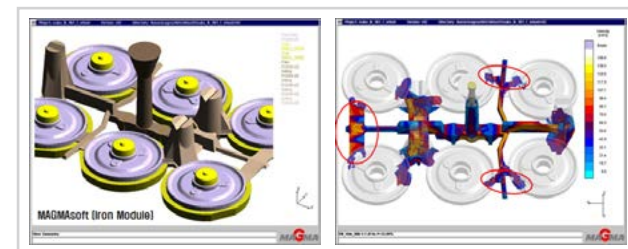
OHSAS 18001

## Material Technology

- Possession of a new material mix which is tough and high in strength
- Application of material technology to reduce error rates
- Weight lightening via shape design optimization for each material

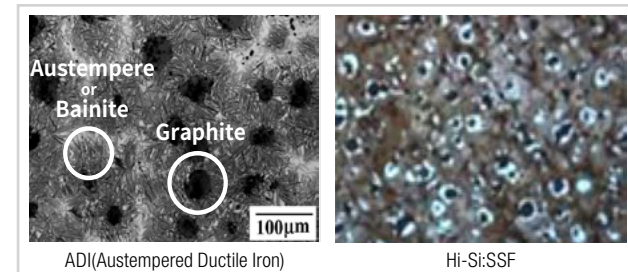
## Development of advanced casting method

Optimal shape design using design/analysis softwares such as CATIA and MAGMA  
Continuous research and development to improve casting quality and productivity



## New material development

Development of ADI(Austempered Ductile Iron : high toughness and high strength material that is lighter and more cost efficient)

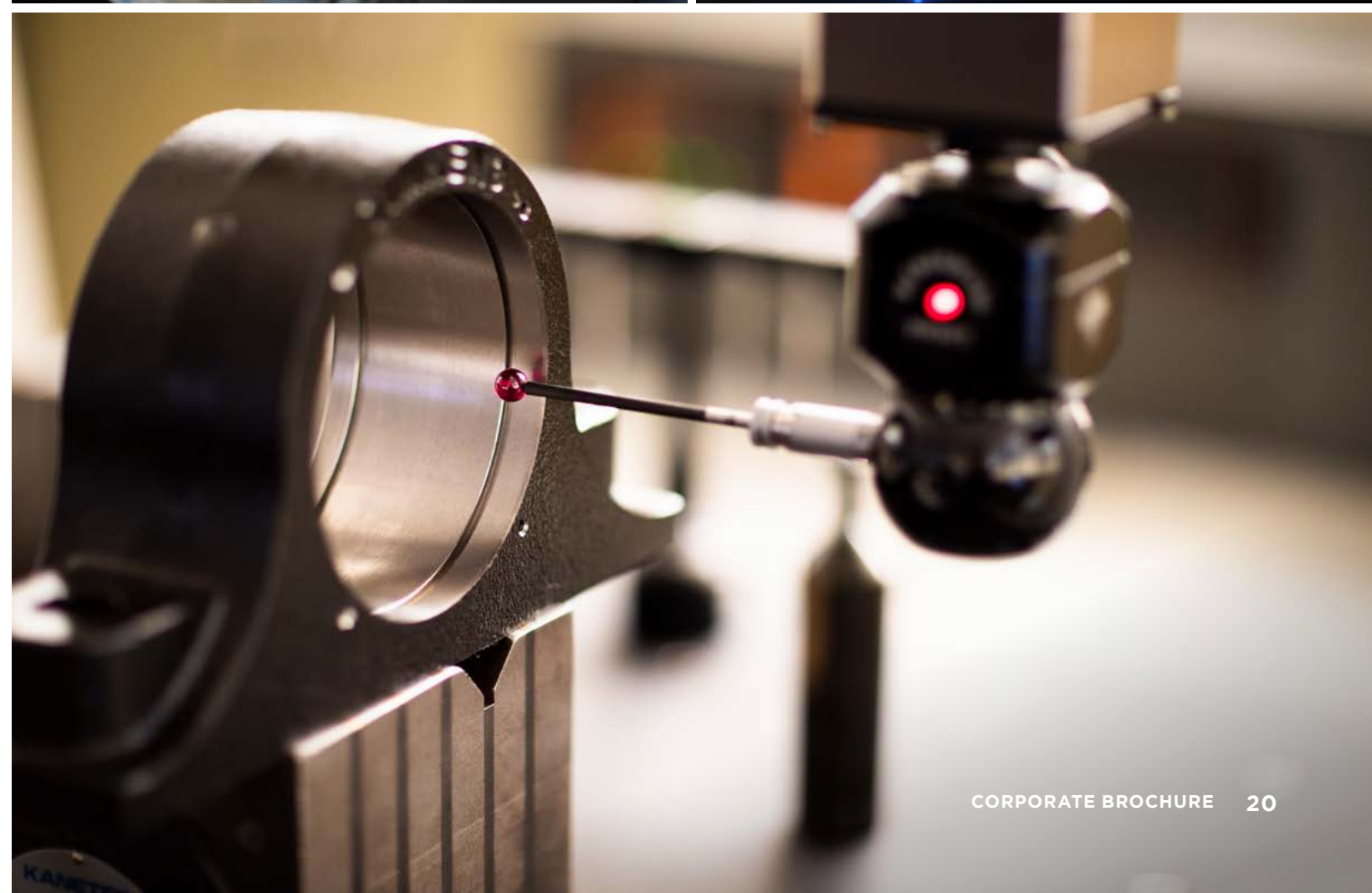


## Development of hybrid components

Procurement of product lightweight technology through complex casting process such as development of bonding technology for dissimilar materials using lightweight alloy and dual casting methods



FC-AI 2 Piece Floating Type Lightweight Disk (about 24% lighter in weight compared to cast iron integrated type)





# ALLOY WHEEL BUSINESS

Even in times of change, Hyundai Sungwoo Casting spares no effort in increasing efficiency of production lines, and pursue innovation while respecting international quality standards.

Based on a strong foundation with trust and safety, we will grow into a brand with global competitiveness.

## ALLOY WHEEL STRENGTH

Through advanced designing capabilities, casting technique, unique manufacturing process and technology, Hyundai Sungwoo Casting produces the best quality alloy wheels that guarantee a comfortable ride from reduced road noise and improved driving performance.



Wheel Comparison

Classification	Alloy wheel	Steel wheel
Impact resistance	A+	B
Fatigue resistance	A+	B
Level of lightness	A-	C
Precision	A+	C
Usability of design	A+	C
Tubeless tire adhesiveness	A+	C





# ALLOY WHEEL PRODUCTS

Hyundai Sungwoo Casting's advanced alloy wheels are made possible by our unique manufacturing process, as well as design and casting techniques that embrace different types of vehicles from sedans, SUVs to eco-friendly cars.



**Compact vehicles** A variety of processing methods and colors are applied to match compact sized cars which have smaller wheels than generally used vehicles.



**Midsize vehicles** Fuel efficiency and car designs are respectively improved through light weighting methods and detailed coating techniques.



**Large vehicles** FSW technology (technology of implementing a hollow and Helmholtz resonator structure within a wheel) is applied to reduce vehicle weight, improve ride quality, and ensure a more silent ride.



**SUV** Considering the characteristics of SUV vehicles, such as high ground clearance and off-road use, bigger sized wheels with high-strength and endurance capabilities are used.



**Eco-friendly cars** Used in premium eco-friendly vehicles, aerodynamic wheels focused on minimizing air resistance and weight reduction are applied to increase fuel efficiency.





# MANUFACTURING PROCESS

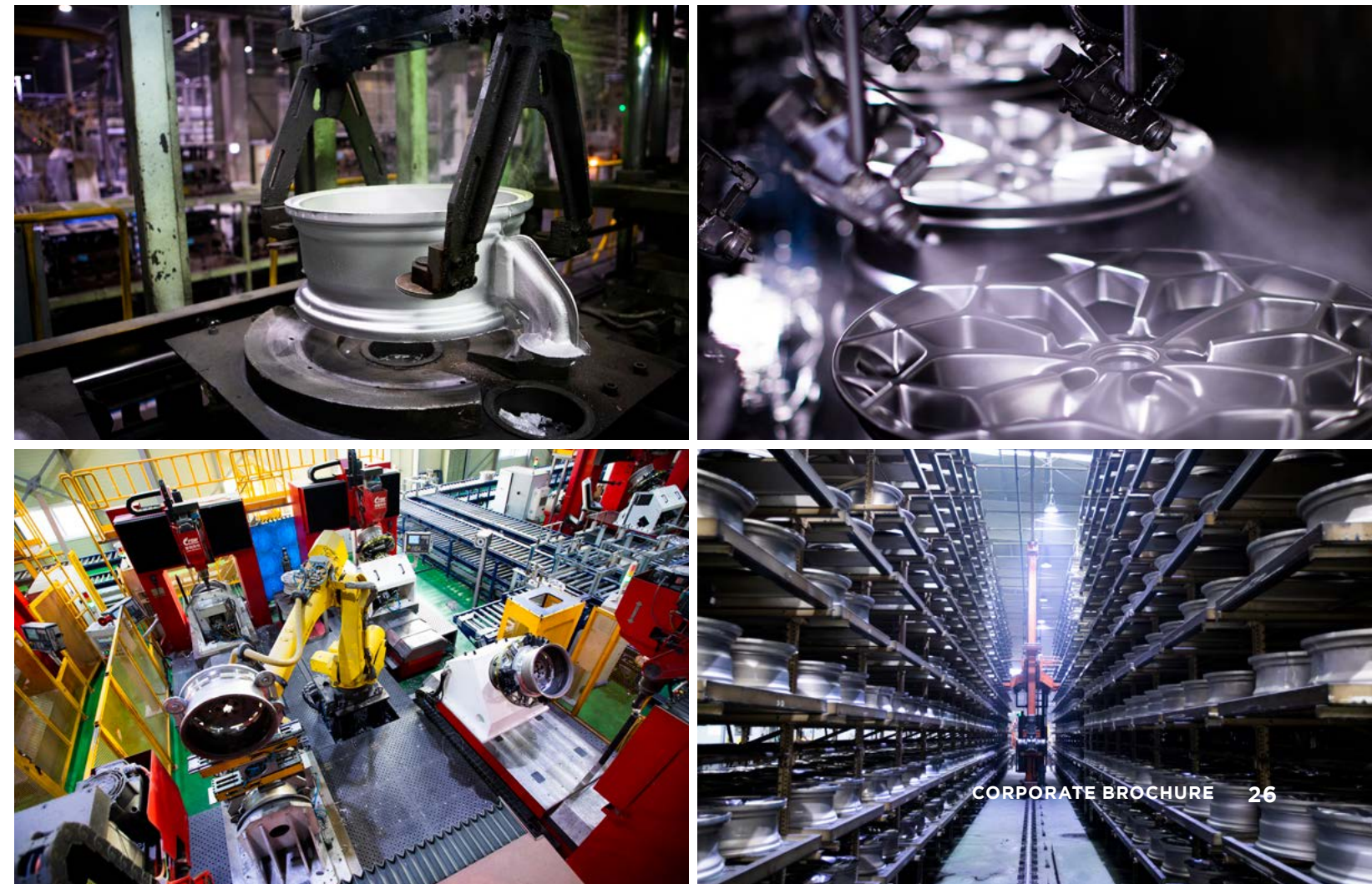
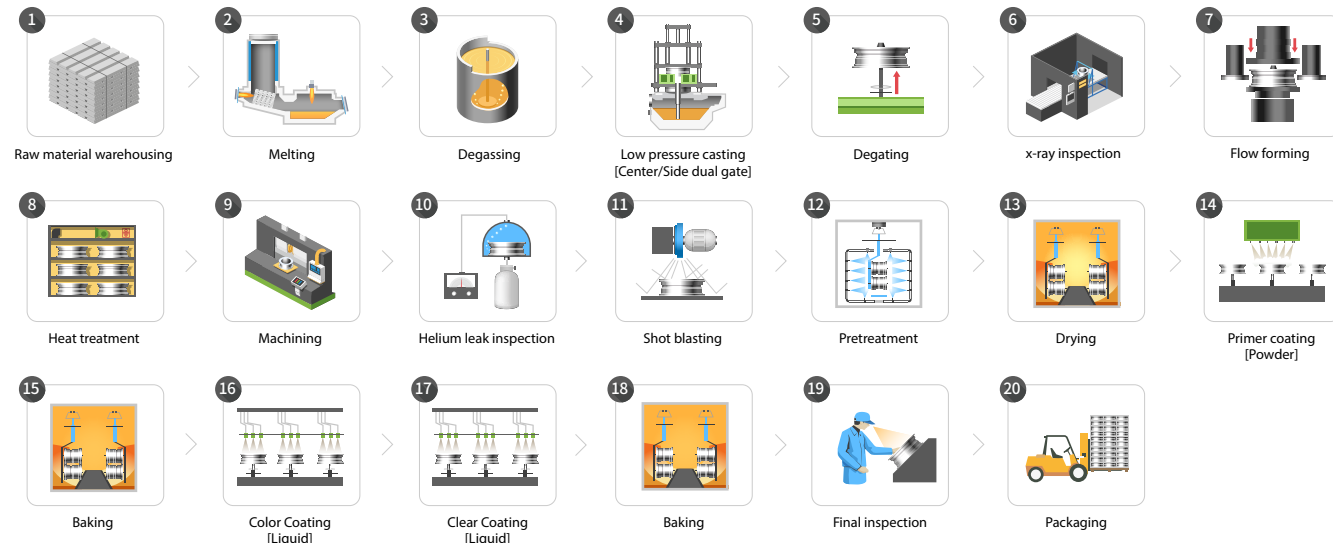
Optimal manufacturing facilities and production management is how Hyundai Sungwoo Casting satisfies customers from all over the world.

## Optimal manufacturing management by integrated automation system

Hyundai Sungwoo Casting's alloy wheel production team works to ensure optimal production. Hyundai Sungwoo Casting utilizes side dual gate and flow forming technique to ensure weight reduction and high-intensity. Also, a fully automated quality inspection system further enhances the stability and reliability of the products. Manufactured under an optimized production system, Hyundai Sungwoo Casting's alloy wheels are perfected till the last touch through rigorous quality assurance tests that meet world-class standards.



### Process drawing



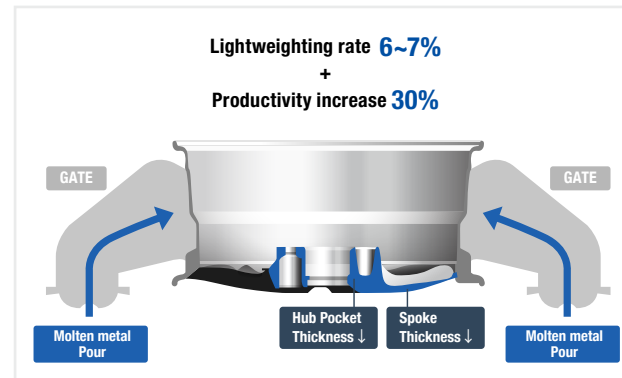


# RESEARCH & DEVELOPMENT

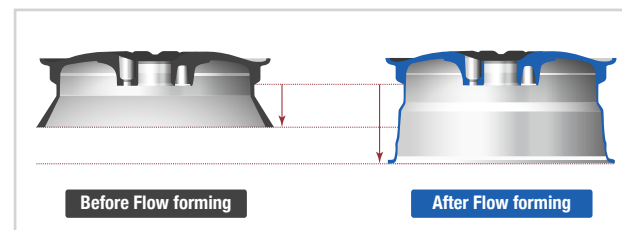
**We secure continuous growth engines through innovative technology and quality management.**

Hyundai Sungwoo Casting produces high-quality, high-performance alloy wheels with the world's best design capabilities, unique manufacturing methods, and strict quality assurance. Hyundai Sungwoo Casting will continue to develop innovative technologies that brings convenience and safety to the lives of customers, and ultimately lead to a prosperous future.

**Side dual gate** A method of pouring molten through gates on the side of a rim. Compared to center gate, side dual gate method allows weight reduction by improving mechanical properties and productivity.



**Flow forming** Technology of enabling weight reduction by 5% through fine micro structure of the rim. Also responsible for safe driving, it is applied to various vehicles including Hyundai Genesis Line, Kia Sorento and K5 models.



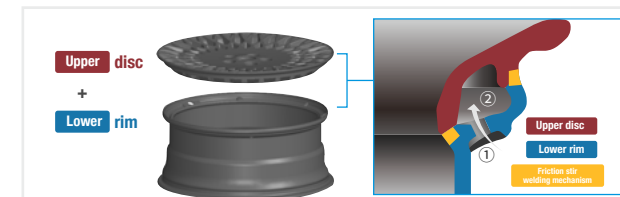
Weight reduction through [SIDE DUAL GATE + FLOW FORMING], in comparison to conventional center gate process

**11.8%**

	Center gate	Side dual gate + Flow forming
Weight	10.27kg	9.06kg

Additional weight reduction by side dual gate and flow forming

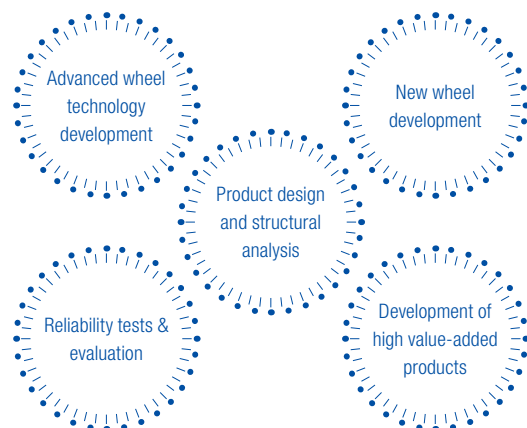
**FSW(Friction Stir Welding)** A technique used to build Helmholtz Resonator in a wheel by joining the disc and rim using heat generated by friction between a non-consumable rotating tool and workpiece (disc and rim). With a hollow chamber inside the wheel, not only is weight reduced but NVH (Noise, Vibration, Harshness) is improved for a smooth and silent ride.



Road noise in a specific frequency range generated during driving is ① absorbed through a hole, ② enters the resonator where the noise is converted into heat energy by friction with inner side wall of the resonator and extinguished, which results in reduced cabin noise (-4db).

## CORE R&D

From development stage, we conduct rigorous tests that exceed international quality standards to secure reliability and quality of products. Ranging from compact passenger cars to high-end large vehicles, we heavily invest for future technologies to improve weight lightness, strength, fuel efficiency, braking power, and safety.



## International Standard Certification



IATF 16949

ISO 14001

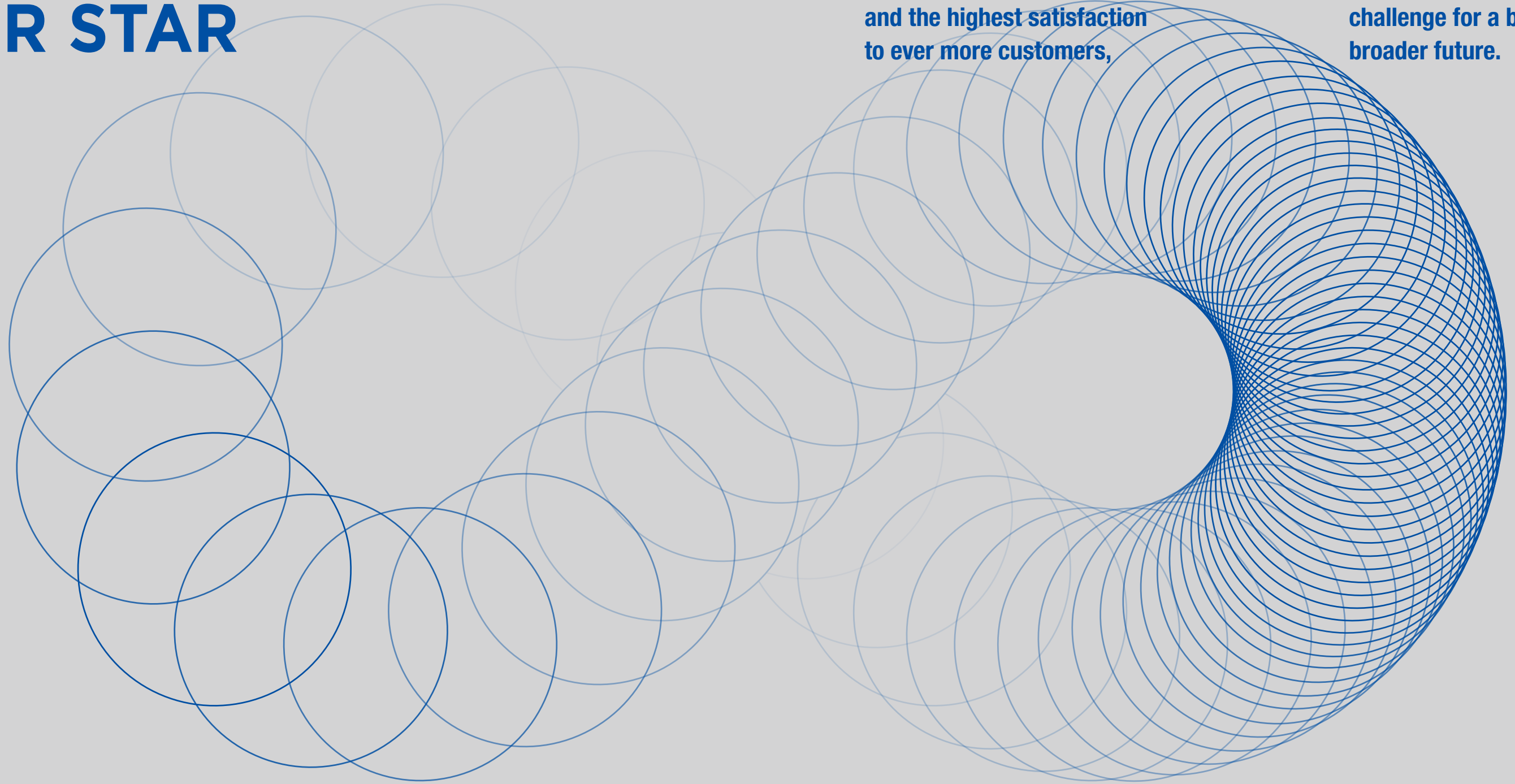
OHSAS 18001



# EXPANDING OUR STAR

To shine as a global brand  
that provides the best value  
and the highest satisfaction  
to ever more customers,

Hyundai Sungwoo Casting  
will continue to  
challenge for a bigger and  
broader future.







**HYUNDAI SUNGWO  
CASTING**

**Hyundai Sungwoo Casting Co., Ltd.**

Hyundai Sungwoo Holdings Building, 609 Bongeunsa-ro,  
Gangnam-gu, Seoul South Korea