Technology Built by Systems, A Precision Machining Specialist

CNC automatic lathe machining specialist, automotive component manufacturer, ESG-driven and carbon-neutral management

HYUN JIN

CEO's Message

Since its establishment, HYUNJIN PRECISION has continuously invested in innovation and technology, evolving beyond a conventional manufacturer into a leader in smart manufacturing. Through smart factory operations and an MES-based system, we have fully digitalized our production processes. AI-based vision inspection technology enables us to significantly reduce defect rates and deliver reliable, high-quality products our customers can trust.

As electric and hydrogen vehicle industries advance, demanding lighter and more precise components, HYUNJIN PRECISION strengthens its R&D capabilities and integrates smart technologies to deliver innovative solutions that exceed customer expectations.

Moving forward, HYUNJIN PRECISION will go beyond profit creation to practice ESG and ethical management, actively pursuing carbon neutrality.

Thank you.

CEO, HYUNJIN PRECISION Co., Ltd. Jin-Chul Kim

CERTIFICATIONS, AWARDS & PATENTS

- IATF 16949 Certification
- OHSAS 18001 Certification
- ISO 14001 Certification
- Quality Management System Certification
- Minister of SMEs and Startups Award
- Government Excellence Award
- KOSHA Recognition
- Excellent Workplace for Risk Assessment
- Venture Business Certification
- Root Industry Enterprise Certification
- Materials & Components Specialist Certification
- T-SQ Certification
- ISO 45001 Certification
- Certified In-house R&D Center
- Inspection Equipment Patent
- Assembly Process Patent
- Functional Inspection Equipment Patent
- Main-Biz Certification

A Global Technology Partner Built on Precision Machining

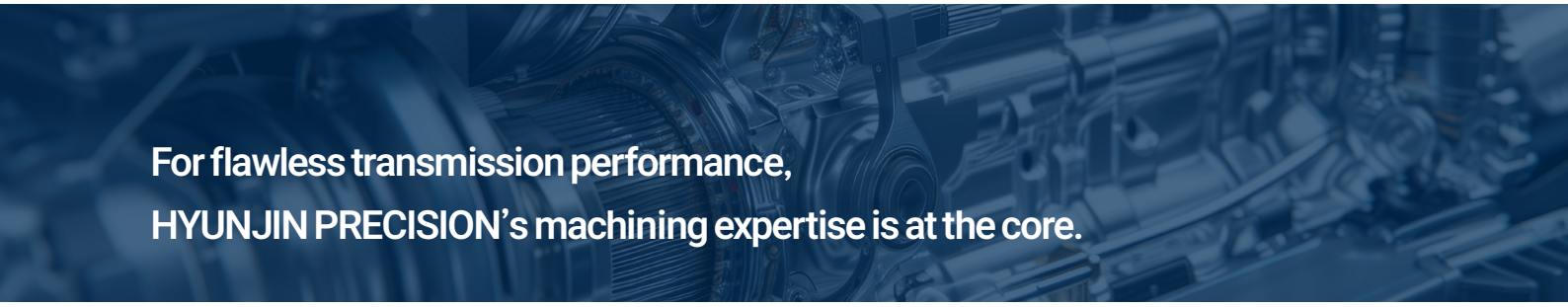
HYUNJIN PRECISION Co., Ltd. specializes in precision component machining, supplying high-quality parts reliably to the automotive, EV, and industrial machinery sectors. Through a multi-axis CNC automatic lathe production system and quality-driven management, we continue to build trust with global customers.

Year Established	September 1998
Factory	Chilgok, Gyeongbuk, Korea (1,200m²)
Equipment	62 CNC automatic lathes (Hanwha, Nomura, Nexturn)
Workforce	~40 specialists (Production, Quality, R&D, Logistics)

Technology is built on time.

HYUNJIN PRECISION's history is a record of trust.

- **98.09** Established as a private company
- **13.06** Incorporated as HYUNJIN PRECISION
- **16.12** Expanded and relocated factory (1,200m²)
- **17.11** Selected as T-SQ Excellent Partner
- **18.03** Participated in global EV component development
- **19.05** Established Corporate R&D Center
- **19.07** Acquired IATF 16949, ISO 14001 & ISO 45001
- **20.10** Certified as Venture Business / Root Industry Enterprise
- **21.05** Established AI-based Vision Inspection System
- **21.09** Awarded Excellent Partner by Schaeffler Korea
- **23.09** Achieved annual sales of KRW 8 billion / Expanded global customers
- **24.06** New EV shaft product line launched & supplied
  Smart factory upgrade (AI Vision, smart tool counter)
  IESG management launched & carbon neutrality initiatives
  Ministerial & technology innovation awards / Excellent workplace certification
- **25.03** Established MES System



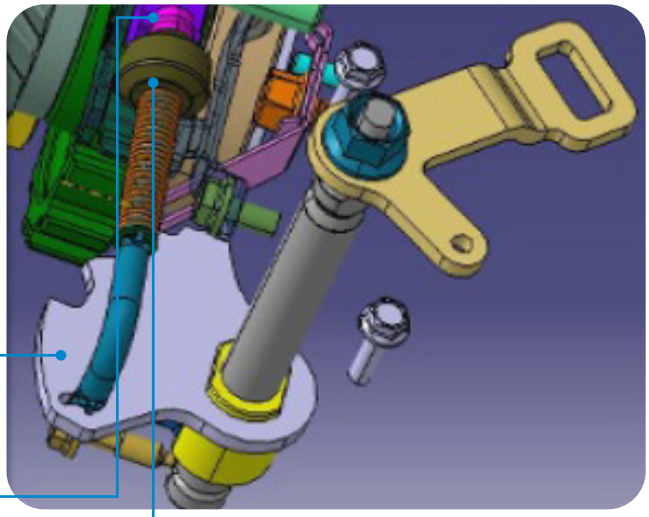
For flawless transmission performance,
HYUNJIN PRECISION's machining expertise is at the core.

TRANSMISSION & REDUCTION GEAR PARTS

Precision Components for Accurate Motion

HYUNJIN PRECISION manufactures transmission components, including automatic transmission levers and parking components. Precision processes such as turning, ultrasonic cleaning, vacuum packaging, and QT heat treatment maximize quality and durability.

AUTO Transmission LEVER parts



Automatic Transmission & Reduction Gear Parking Parts

OTHERS [PIN, Sleeves]

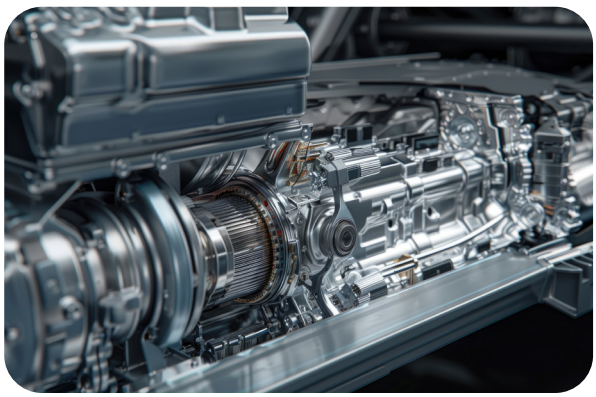
Material	SUJ2, S10C, S20C, S45C, S48C, SCM415H, SCM420, SUM24L, 100CrMN5, SCR420HB, 16Mncr5, 100CRMNSI6-4
Outer Diameter	Ø1 – Ø45
Post Processing	Turning, ultrasonic cleaning, vacuum packaging, QT heat treatment, carburizing, induction hardening, shot blasting, barrel polishing, riveting, press fitting

TRANSMISSION & REDUCTION GEAR SHAFT PARTS

Perfect Rotation Achieved Through Ultra-Precision Machining

HYUNJIN PRECISION manufactures transmission shafts primarily using S48C and S48C QT-BAR materials. Shaft diameters from Ø10 mm to Ø45 mm are supported. Through processes such as PFZnNi coating, high-frequency heat treatment, and centerless grinding, we ensure excellent surface quality and durability.

SHAFT



Material S48C, S48C QT-BAR

Outer Diameter Ø10 – Ø 45

Post Processing PFZnNi B/C/D coating, high-frequency heat treatment, centerless grinding

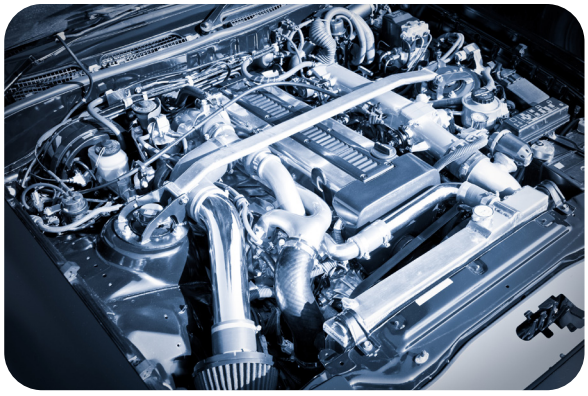
The engine's powerful performance is realized through fine precision.

ENGINE PARTS

Ultra-Precision Technology Powering Engine Performance

HYUNJIN PRECISION machines a wide range of engine components. Diameters from 1 mm to 45 mm are supported, applying multiple heat treatment and surface finishing processes to enhance durability and performance.

Engine Parts Product Line

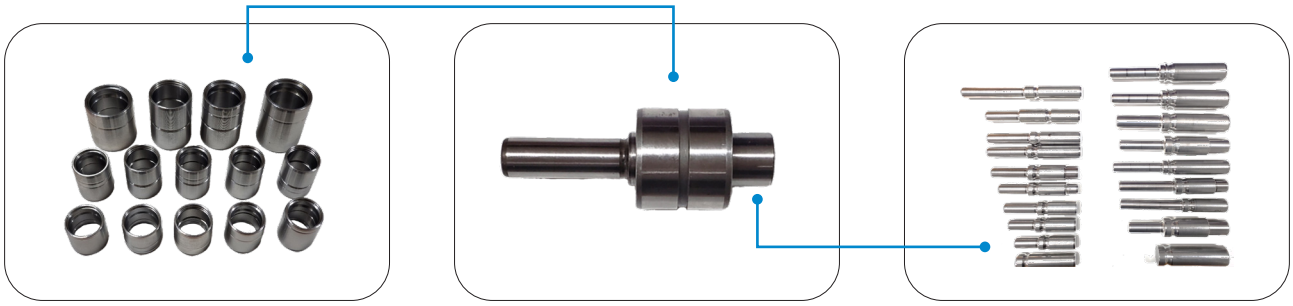


Material	SUJ2, S10C, S20C, S45C, S48C, SCM415H, SCM420, SUM24L, 100CrMN5, SCR420HB, 16Mncr5, 100CRMNSI6-4
Outer Diameter	Ø1 – Ø45
Post Processing	PFZnNi B/C/D coating, high-frequency heat treatment, QT heat treatment, carburizing, gas nitriding, shot blasting, barrel polishing, anodizing, press fitting, ultrasonic cleaning, rust prevention

WPB BEARING PARTS

Bearing Technology Proven by Durability and Precision

HYUNJIN PRECISION manufactures water pump bearing (WPB) components using SUJ2 materials. Diameters from Ø16 mm to 45 mm are supported, ensuring stability under high-speed rotation.



WPB(water pump bearing) PIPE parts | Water Pump Bearing | WPB(water pump bearing) SPINDLE parts

Material SUJ2 | **Outer Diameter** Ø16 – Ø45 | **Post Processing** Ultrasonic cleaning, QT heat treatment, carburizing & grinding

> **High-speed rotational stability proven through water pump bearing components.**

OTHERS (Development Parts)

Challenging technological boundaries — development parts for the future

Beyond internal combustion engine components, we have developed advanced products for electric vehicles, eco-friendly smart vehicles, as well as implant and defense applications.

▶ Through specialized tooling, proprietary processing technologies, and CNC automatic lathe machining of forged materials, we achieved product lightweighting and manufacturing cost reduction.

E-COMPRESSOR SHAFT

BALL SCREW

GUIDE SHAFT

Defense Parts

Implant Parts

Inner wheel

CNC AUTOMATION INFRASTRUCTURE

Optimized Equipment System for Multi-Product Precision Machining

HYUNJIN PRECISION operates 62 high-performance CNC automatic lathes, optimized for multi-axis machining and complex shape processing. This enables integrated operations such as turning, milling, threading, and drilling within a single process, ensuring both quality stability and productivity.

CNC Automatic Lathe Equipment Status (Models: 12, 20, 26, 35, 38, 42, 45, 51)

A total of 62 CNC automatic lathes in operation | Equipment origin: Korea and Japan

Hanwha

Nexturn

Nomura

CNC 자동선반 전경

Machining Capability

Applicable Processes	Turning, milling, threading, drilling, facing, tapping
Machining Size	Bar material Ø42 mm or below Pipe material Ø45 mm or below Max length: 300 mm
Measurement	Power gauge & spring load testing
Mass Production	24-hour continuous operation per model

Centerless Grinding Capability

Through centerless grinding, key items achieve micron-level tc
OEM quality standards.

QUALITY PERFORMANCE CASE

Trust in Precision Proven by Data

HYUNJIN PRECISION consistently meets global customer quality standards requiring ±0.01 mm tolerances.

EV PSEV Shaft

Quality Test Results (Sample Shaft Criteria)

Design Outer Diameter	Ø14.000mm
Tolerance	±0.009mm
Measured Average	Ø13.995 ~ Ø14.004mm
Straightness	0.028mm
Roundness	0.025mm

Customer Requirement Consistently achieved **within 0.03 mm**

Centerless Grinding Performance (Representative Item Tolerance Examples)

SHAFT Outer Diameter	0.018 μm
GUIDE VALVE Outer Diameter	0.009 μm
PIN Outer Diameter	0.005 μm
RING Outer Diameter	0.009 μm

μm-level tolerances can be achieved for key items through centerless grinding.

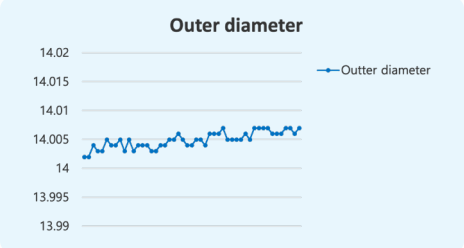
SHAFT Outer Diameter	GUIDE VALVE Outer Diameter	PIN Outer Diameter	RING Outer Diameter
0.018 μm	0.009 μm	0.005 μm	0.009 μm

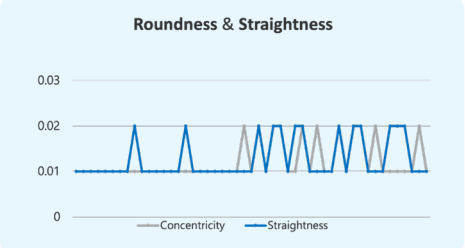
Measurement Methods

VICI Vision MLT250 (Italy)
KEYENCE Image Measuring System (IM-7020)
3D Coordinate Measuring Machine/ Roundness Tester / Surface Roughness Tester (Supplementary)

Quantitative Technology Reliability

Based on 10 repeated measurements, Standard deviation within ±0.002 mm
Defect rate below 0.3% (12-month average)
Dimensional deviation graphs Inspection history managed based on normal distribution criteria





INSPECTION & MEASURING EQUIPMENT

Measurement accuracy determines the reliability of quality

At HYUNJIN PRECISION, quality standards for high-precision machining are defined by measurement consistency and quantitative verification, not production results alone. All products undergo 100% inspection and traceability management prior to shipment using multi-dimensional measuring equipment and visual recognition systems.

Major Measuring Equipment & Features

3D Coordinate Measuring Machine (CHAMP564)

High-precision measurement of three-dimensional geometry and position, including contact-based geometric tolerance measurement.

Form Measuring Instrument (TOKYO SEIMITSU)

Precision measurement of product surface profiles and contours.

Image Dimension Measuring System (KEYENCE)

Non-contact precision measurement of dimensions and shapes using optical technology.

Roundness Tester (KOSAKA)

Precision measurement of roundness, cylindricity, and concentricity for cylindrical components.

Surface Roughness Tester (KOSAKA)

Quantitative measurement of surface roughness parameters, including Ra, Rt, Ry, Rsm, and RZ.

Cleanliness Testing Equipment (AND)

Quantitative extraction and analysis of residual contaminants and deposits on internal and surface areas of products.

Full-Process Inspection System

Quality consistency is ensured by applying the same measurement standards and equipment from prototype stages through mass production.

Final pre-shipment verification is performed in sequence: **non-contact image measurement, burr inspection, surface roughness inspection, and full data collection.**

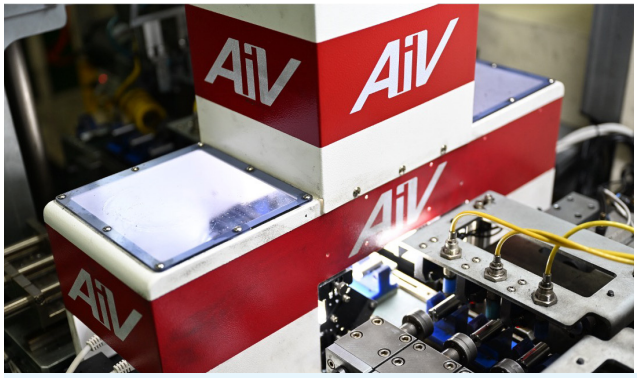
Inspection histories are stored on a **cloud server**, enabling full traceability during customer quality audits.

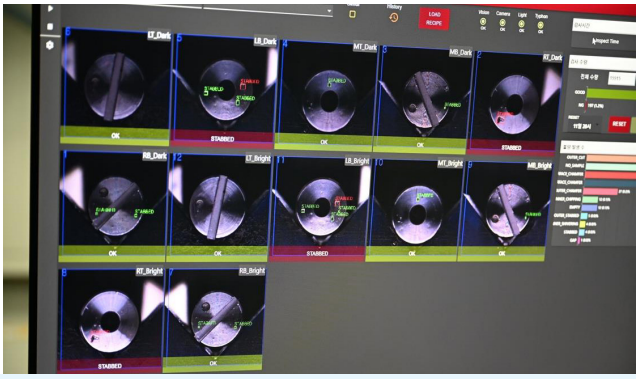
AI QUALITY CONTROL SYSTEM

The core technology is not defect detection, but defect prediction and prevention.

HYUNJIN PRECISION has established an advanced AI-based visual recognition quality control system, evolving beyond conventional manual inspection. This system enables smart manufacturing by preventing defects before they occur, rather than simply detecting them.

Key Functions & System Architecture





AI Deep Learning Vision Inspection System

01 Deep Learning-Based Vision Inspection System

- High-speed cameras and lighting capture real-time images of component cross-sections, inner diameters, and outer surfaces.
- Deep learning algorithms automatically learn defect patterns, including **shape deviations, burrs, contamination, and dimensional variations.**
- Inspection standards are established through training with over 200 image samples for new models.

02 Real-Time In-Process Data Analysis

- Dimensional data, surface abnormalities, and machining time are automatically collected and analyzed in real time.
- **Automatic alerts and defect extraction signals are generated** when deviations exceed defined thresholds.

03 Defect Reduction and Improved Delivery Reliability

- Customer quality complaints have been maintained at **zero for three consecutive years.**

> **AI-based quality control is** not inspection automation,
> **but real-time control of quality cause-and-effect relationships.**

DIGITAL PRODUCTION SYSTEM

Precision machining alone is not enough to earn customer trust.

HYUNJIN PRECISION has established a real-time digital manufacturing system that connects production, quality, and logistics, beyond precision machining alone. Data-driven and transparent operations play a key role in securing customer trust in delivery reliability, quality, and traceability.

Digital Production System

Kiosk-Based Work Information Sharing

- Kiosks installed on the production floor ▸ Real-time sharing of work instructions, equipment data, and production schedules
- Instant access to equipment change history and process status

LOT Traceability System

- Each part is assigned a unique LOT number
- All histories recorded from receipt to shipment
- Rapid product and root-cause traceability in case of quality issues

In-House Server-Based Production Data Integration

- Process, equipment, inspection, and shipment data centrally stored on an in-house server
- Automated reports support traceability and quality audits

Real-Time Equipment Status Monitoring

- Real-time display of CNC equipment status, stoppages, and alarms
- Reduced downtime, improved delivery stability

FULL PROCESS FLOW

A process customers can trust requires a clear and defined flow.

HYUNJIN PRECISION operates a standardized and digitalized integrated manufacturing process that eliminates unnecessary manual work and information gaps. This provides customers with more predictable quality and delivery performance.

01

Material Receipt & Inspection

LOT assignment and barcode egistration upon material receip

02

CNC Automatic Lathe Machining

Turning, milling, ID/OD machining, threading, facing, and angular machining

03

Ultrasonic Cleaning

Removal of foreign materials, chips, and machining oil

04

Heat Treatment & Surface Finishing

Processes to enhance strength, precision, and surface quality

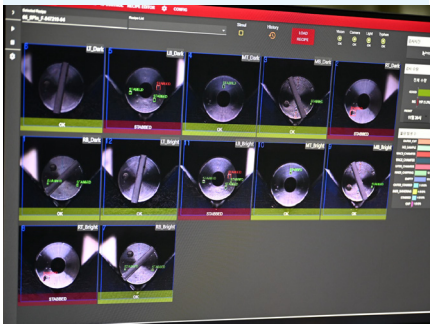
05

Precision Measurement

Non-contact measurement using image measuring systems and CMM

06

100% Visual Inspection



Final quality verification and image storage of detected defect areas

07

Packaging & Shipment

Final inspection completed with product-specific packaging standards

▸ All processes recorded in real time on a LOT-based cloud system

GLOBAL CUSTOMER SUPPORT CAPABILITY

Domestic technology, proven to global standards.

HYUNJIN PRECISION has collaborated with component manufacturers across major global production regions, including Korea, the United States, Europe, India, Brazil, Russia, and Southeast Asia. Based on systems that meet diverse export certifications and quality standards, we are a trusted supply partner in the global components industry.

Key Global Response Regions

Korea
Headquarters and key domestic customers

USA / Mexico
Supply of EV powertrain and precision rotating components

Europe / Russia
Supply of industrial machinery bushings and sleeves

India / ASEAN
Export of hydraulic components and modular connectors

Brazil
Machining support for agricultural machinery components

Logistics Accessibility

from **Busan Port** — **130km** →

from **Incheon Airport** — **300km** →

Land transportation within **3–5 hours** ▸ Optimized for both sea and air exports

Combined **sea container and air express shipping** available

Based on a Global Quality System

Production quality management system operated under **IATF 16949 certification**

Dedicated inspection criteria tailored to customer-specific quality requirements and specifications

PPAP, FAI, RoHS, and IMDS documentation available upon request

> To global customers, HYUNJIN PRECISION is not just a supplier, but **a transparent and reliable manufacturing partner.**

DELIVERY & DEVELOPMENT PROCESS

From one-on-one custom design to mass production — flexible and fast.

HYUNJIN PRECISION operates an integrated system supporting the entire development process, from prototype design and machining to testing and mass production approval. Direct collaboration between development and production teams ensures fast communication and effective problem resolution.

Step-by-Step Response Process

01 Customer Requirement Intake

- Receipt of drawings or specifications (OD, tolerance, surface roughness, etc.)
- Technical data sharing after NDA execution

02 Prototype Design & Machining

- Process-based manufacturability review
- Design & tolerance refinement
- Prototype production (1 – 10 units)

03 Quality Testing & Feedback

- Customer assembly & tolerance verification
- Inspection feasibility review & feedback integration
- Equipment & dimension adjustment as needed

04 Mass production approval & delivery

- Mass production after approval
- 100% inspection, standardized packaging & delivery
- Measurement protocols for consistent quality

Dedicated Response System

Integrated collaboration among engineering, quality, and logistics teams

Dedicated project managers and development engineers assigned per customer

Unified response system integrating R&D, quality, and production

"Through **dedicated project managers** and an **integrated response system,** HYUNJIN PRECISION **shortens development lead times** and **ensures reliable delivery** during mass production transition. **This is the HYUNJIN PRECISION way.**"

A technology partner responsible for customer precision,

HYUNJIN PRECISION

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