IRON CASTING AND MACHINING FOUNDRY
FOR SMALL TO LARGE IRON CASTING

DAEHAN SPECIAL METAL
www.edaehan.co.kr
Our Cast Iron foundry Daehan Special Metal Co., Ltd (DSM) is based in South Korea with a 44 year history as the one-stop iron casting solution provider for the marine, heavy machinery, waterworks and automotive industry. Since the establishment of the cast iron foundry in 1973, DSM has grown over the years to a current global supplier of precision iron castings for wide range of casting sizes using furan resin casting to cast large sized iron castings up to 9 ton and green sand casting for smaller automotive components.

Our medium to large sized casting capability includes iron castings of large sized engines, turbine housings, bearing housings, industrial grade compressors, valve components, pump components, heavy machinery components and tools, marine mills and wind mill components in wide range of iron casting alloys including ductile cast iron, grey cast iron, austempered ductile iron, ni-resistant iron castings, and more.

IRON CASTING & MACHINING FOUNDRY
FOR SMALL TO LARGE IRON CASTING
MARINE ENGINES, INDUSTRIAL MACHINERY COMPONENTS AND TOOLS, VALVE AND PUMP COMPONENTS AND AUTOMOTIVE PARTS
IRON CASTING FOUNDRY CAPACITY

Furan Resin Casting Capacity – 900 ton /month  DISA capacity – 600 ton /month
AMF capacity – 1000 ton /month

FURAN CASTING LINE CAPACITY

<table>
<thead>
<tr>
<th>Currently manufactured product size (mm)</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>9,000</td>
<td>2,500</td>
<td>3,000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Currently manufactured product Weight (kg/p)</th>
<th>Maximum weight</th>
<th>Medium Weight</th>
<th>Minimum Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000</td>
<td>3,000–5,000</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

AUTOMATIC TYPE LINE CAN CAST PRODUCTS FROM 0.5 KG TO 20 KG.

For foreign clients, our engineering department reviews the casting requirement and specification and provide a quotation and casting report for the client’s review. Often new clients visit our factory for quality inspection before we start a new project with our new clients.

SPECIAL IRON CASTING MATERIALS

Our Cast Iron foundry has extensive experience with austenitic ductile iron, meehanite cast iron for uniform mechanical and physical properties as well as special alloy iron materials like Hi-Sil Moly ductile iron castings that are excellent for applications that require protection from corrosion, erosion and friction wear up to temperature 1440F.

Its thermal analysis program uses ATAS dynamic inoculation to identify optimum melting condition for ductile cast iron and gray cast while using FEMAP and residual stress simulation software to check on any deformation or stress from heat. Each project manager can monitor the process and track and meet production lead time because all the manufacturing process data are automatically tracked, recorded and sent to the central control system.

IRON CASTING MATERIALS

Gray Cast Iron
- High Cast Iron (GG200-GG400)
- Heat Resistant Cast Iron
- Austenitic Cast Iron
- Hi-chrome Cast Iron
- Hi-silicon Cast Iron
- Acid-Resistant Cast Iron

Ductile Cast Iron
- General Ductile Cast Iron (GGG450-GGG1000)
- Low Temp Ductile Cast Iron
- CGI (CV) Cast Iron
- ADI Cast Iron
- HS HiSiMo Ductile Cast Iron – maximum resistance to scale build up
- Austenitic Ductile Cast Iron for application requiring strong resistance to corrosion, erosion and friction wear
- Austempered Ductile Cast Iron
- Spheroidal graphite cast iron for greater resistance to fatigue and prevents crack in the system under extreme conditions

Special Alloy Cast Iron
- Meehanite Cast Iron – for application requiring resistance to heat, wear and corrosion
- Ni-resistant Cast Iron
IRON CASTING EXECUTION STEPS

Our Cast Iron Foundry Daehan Special Metal uses various simulation programs, manufacturing programs, process check and quality check programs to strictly monitor and control the iron casting process from start to finish. The Cast Iron Foundry uses a Nova flow and solid program and AnyCasting system to simulate and verify casting methods by analyzing the pouring process, solidification process and stress. To manage the manufacturing process of all iron castings, our foundry implemented manufacturing execution systems and quality management system to monitor, collect and analyze the measuring data, inspection results and the defect data in each process. Each casting step is carefully monitored and each equipment being used is monitored including furnace temperature, defect history and composition specification.

1. Designing patterns and PC stimulation for verifying casting method before iron casting

2. Producing casting mold

3. Automated sand molding process
4. Closing molds by cope and drag method

5. Liquefying Pig iron and pressed scrap via induction furnace

6. 1st element analysis

7. Tapping and pouring liquid metal into the pot

8. 2nd element analysis

9. Nodular iron casting's nodularity rating meter (Automatic molding line)

10. Separating iron casting from sand mold
11 Degating Inlets and feeders

12 Shot blasting and grinding for deburring

13 Final inspection of iron casting
CAST IRON PRODUCT PORTFOLIO

IRON CASTED VALVE AND PUMP COMPONENTS

Valve Components - Rear Flange
Valve Components - Rear Flange 2
Pump Components - Oil Pump Cover
Pump Components - Oil Pump Cover 2
Pump Components - Oil Pump Impeller Casing

IRON CASTED MARINE AND SHIPBUILDING PARTS

Iron Casted Marine Parts- Oil Pan
Iron Casted Marine Part- Oil Pan 2
Iron Casted Front End Box
Iron Casted Gearhouse
Iron Casted Inner Ring
IRON CASTED MACHINE TOOLS AND COMPONENTS

Iron Casted CNC Bed
Iron Casted Cooler for Turbo Compressor
Iron Casted Gear Case for Wind Mill
Iron Casted Injection Molding Machine Frame Casting
Iron Casted Injection Molding Machine Frange Component
Iron Casted Offshore Crane Flange
Iron Casted Protective Plate Covering for Steel Mill
Iron Casted Rod-Conn for Mud Compressor
Pump Body

IRON CASTED CONSTRUCTION AND CIVIL WORKS PART

Iron Casted Coupler Material ADI
Iron Casted Lock Bolt
IRON CASTED AUTOMOTIVE COMPONENTS – TURBOCHARGER AND EXHAUST GAS RECIRCULATION COMPONENTS
CAST IRON FOUNDRY FACILITY

DSM has 7 cast iron foundries in total that are ISO 14001, ISO/TS 16949, and OHSAS 18001 certified with machining centers, and production sectors equipped with cutting edge machinery and testing equipment for quality check of all iron castings manufactured. With 140 engineers and staffs dedicated to manufacturing iron castings, the production lead time from the drawing to finished quality tested products are as short as 4 weeks.

PRODUCTION EQUIPMENT

- Molding machines – Automatic and Disamatic with 500 mould/hr capability
  - AMF Molding Machines
  - DISA molding machine
- Induction high-Frequency Furnaces – 6 sets
- Green sand mixer at 100 ton/hr
- Furan sand mixer 34 ton2/h
- Rotary drum cooler
- Shot blasting machines
  - Hanger type shot blasting
  - Apron type shot blasting
  - Drum type shot blasting
  - Mesh belt shot blasting
<table>
<thead>
<tr>
<th>Machine Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Trimming machine</td>
<td></td>
</tr>
<tr>
<td>CNC plano miller machine</td>
<td></td>
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<tr>
<td>CNC horizontal boring machine</td>
<td></td>
</tr>
<tr>
<td>CNC turning machine</td>
<td></td>
</tr>
<tr>
<td>Plano miller machine</td>
<td></td>
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<tr>
<td>Sand cooler</td>
<td></td>
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<tr>
<td>Sand reclaimer</td>
<td></td>
</tr>
<tr>
<td>Furan sand preparation</td>
<td></td>
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<tr>
<td>equipment</td>
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<tr>
<td>30 metric ton Silo</td>
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<tr>
<td>Pep Set Mixer at 30 kg/batch</td>
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<tr>
<td>x 3 sets</td>
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<tr>
<td>High frequency grinder</td>
<td></td>
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<tr>
<td>Air compressors of 100 HP</td>
<td></td>
</tr>
<tr>
<td>each – 4 sets</td>
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<tr>
<td>Radial dill machine</td>
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TESTING EQUIPMENT

DSM has a strict quality monitoring and inspection process throughout the production process. These in-house quality inspection is done using equipment ranging from handheld tools to multi-dimensional measurement equipment.

- Coordinated measuring machine and Layout machine for three dimensional product measurement, and pattern maintenance
- Layout machine
- CAE – cad/cam structural analysis software
- 26 channel spectrometer for analyzing molten metal sample composition
- Emersion thermocouple
- Universal material testing machine for tensile strength compressed load mechanical property analysis
- Carbon analyser and equivalent tester for measurement of molten TE, CE, TL, and TCL values.

- Brinell hardness tester- stationary and portable
- Ultrasonic flaw detecting system (DT2200)
- Magnetic particle flaw detector
- Rotating sand washer
- Universal foundry sand strength tester
- Green sand moisture tester
- Graphite measuring equipment to analyze graphite rate in the casting
- Metal microscope
- Nova flow and solid induction and solidification software
- ATAS quantitative analysis for optimum melting condition analysis for gray casting
- PQ ductile iron technology for optimum melting condition analysis for ductile casting
- Residual stress simulation software for stress and deformation analysis by solidification
- Flow and solidification software
QUALITY CERTIFICATION

AEO CERTIFICATION (AUTHORIZED ECONOMIC OPERATOR)

ISO/TS 16949:2009

ISO 9001:2008V


BS OHSAS 18001:2007

KOSHA 18001

INTERNATIONAL MEEHANITE LICENSEE

SUPPLIER QUALITY CERTIFICATION FROM HYUNDAI-KIA MOTORS

ABS CERTIFICATION
SHIPPING CERTIFICATION

DET NORSKE VERTIAS CERTIFICATION

GL-GERMANISCHER LLOYD

KR-KOREAN REGISTER OF SHIPPING

LOYDÍS REGISTER OF SHIPPING

NK- JAPANESE SHIPPING ASSOCIATION

RINA-ITALIAN SHIPPING ASSOCIATION
CAST IRON FOUNDRY TECHNOLOGY

Our Cast iron foundry in Korea holds multiple patents on various casting technologies which includes melting and sand bonding technology for iron castings, coupler structure, design and production for spiral-shaped steel coils, FG Coupler for Steel Connectors; the Design of FG Couplers for Steel Connectors; and for the Method and Apparatus of Connecting Spiral-Shaped Steel Coils.

CAST IRON FOUNDRY CLIENTELE

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RONSCO INC.  
Gardner Denver  
GE Power & Water

Wilo  
metaldyne  
CAT

MTU  
TOYOTIRES®  
OTA CHUZOSHIO Co. Ltd.

Honeywell  
SANDEN

HYUNDAI  
WIA  
LSis  
vossloh
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