



MAKING YOUR CAR LIGHTER FOR THE GREEN FUTURE

Semyungtech, the world's leading supplier of automotive aluminum chassis and powertrain components



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SEMYUNG TECH



ABOUT SEMYUNG TECH

Since founded in 1994, we continue to make an effort to achieve 'the #1 light weight automotive parts company in the world till year 2020' and consistently focus on maximizing customer's benefit and satisfaction. In order to provide best quality and lowest cost parts, we have been developing variety of aluminum casting and forging technologies that improve fuel economy and vehicle performance.

We operate in three divisions : The Chassis division produces aluminum light weight suspension parts. The die casting division produces engine and transmission aluminum components. The commercial vehicle division produces brake hub and disc/drum assembly.

Semyungtech focus on developing innovative aluminum parts manufacturing technologies in order to meet higher level of quality and lower cost requirements in the future. We always pursue a goal "Beyond customer's expectation."

People are the most important asset of our company and also source of our future. By providing higher level of education for all staffs, we continue to improve people's ability in order to achieve personal goal as well as to raise company's international competitiveness.

HISTORY

- 1994 SEMYUNGTECH was established
- 1995 Iksan plant began production of commercial vehicle's brake hub and drum assembly
- 2000 Iksan aluminum die casting plant began production of passenger car engine components
- 2004 ISO/TS 16949 certified
- 2005 Was appointed as an 'Excellent strategic company' by provincial government
- 2005 Asan plant began production of aluminum Chassis components (COBA Press)
- 2006 ISO 14001 certified
- 2008 Engineering center was established
'Component/Material Specialist' certified by Government
INNO-BIZ certified
- 2009 Was appointed as a 'Leading company' by provincial government
- 2011 Iksan aluminum die casting plant#2 began production
- 2012 Was appointed as a 'Hidden Champion' by Korea Export & Import bank

MAIN CLIENT



CERTIFICATIONS





Timing Chain Cover
Customer HYUNDAI, KIA
Application GAMMA Engine



Timing Chain Cover
Customer HYUNDAI, KIA
Application NU engine



Timing Chain Cover
Customer HYUNDAI, KIA
Application KAPPA Engine



Balance Shaft Module
Customer HYUNDAI, KIA
Application THETA Engine



Oil Pump Housing
Customer HYUNDAI, KIA
Application A2 Engine



Oil Pump
Customer HYUNDAI
Application TAU Engine



Oil Pump Cover
Customer HYUNDAI, KIA
Application Medium/small Automatic Transmission



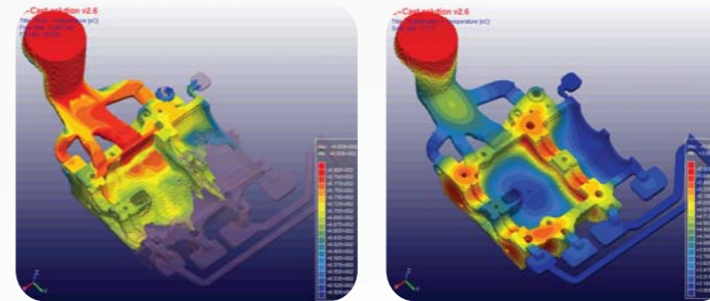
Drum Support
Customer HYUNDAI, KIA
Application Automatic Transmission



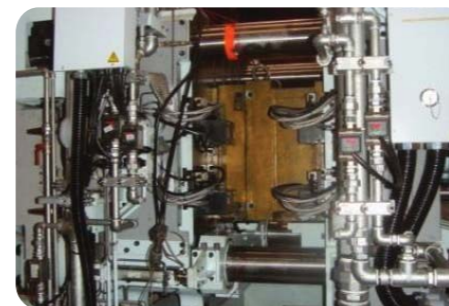
Tension Level
Customer HYUNDAI, KIA
Application LAMBDA Engine

Aluminum HPDC

Apply various casting complex technology to overcome the limitation of general die casting



Casting Simulation
forecasts inner defect results in optimum design and best casting method



Quality Ensuring Method

Our competitiveness is to apply the result of endless research and development to products

- ▮ Vacuum die casting
- ▮ Local squeeze die casting
- ▮ Mold temperature control
- ▮ Sealed casting
- ▮ Super cooling & time cooling



■ BRAKE-HUB & DRUM / DISC ASSEMBLY



Hub&Drum Assembly

Customer HYUNDAI, HYUNDAI MOBIS
Application Truck & Bus
Material FC25
Type Drum Type



Hub&Disc Assembly

Customer HYUNDAI, HYUNDAI MOBIS
Application Truck & Bus
Material FC21+α
Type Disc Type



Brake System Of BRAKE-HUB & DRUM / DISC ASSEMBLY



Drum Type



Disc Type

Product Characteristic

- >> Minimize Noise & Judder
- >> Wear Endurance
- >> Excellent High temperature Endurance

Product Images

>> Drum + Hub = Drum Type



>> Disc + Hub = Disc Type



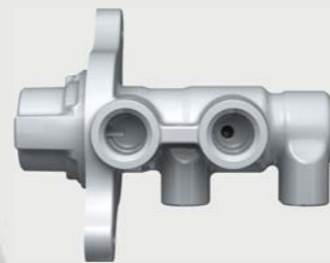
SEMI-SOLID



Caliper Cylinder

Application Brake Parts

Method Semi-solid High Pressure Casting Method



Master Cylinder

Application Brake Parts

Method Semi-solid High Pressure Casting Method



RR Carrier

Application Chassis Parts

Method Semi-solid High Pressure Casting Method+Forging

Semi-solid High Pressure Casting

Different from conventional high pressure die casting that uses liquid, Semi-solid Casting uses semi-solid slurry (near solid aluminum bar status) as a casting material. Following table summarizes characteristics and conditions of different casting methods

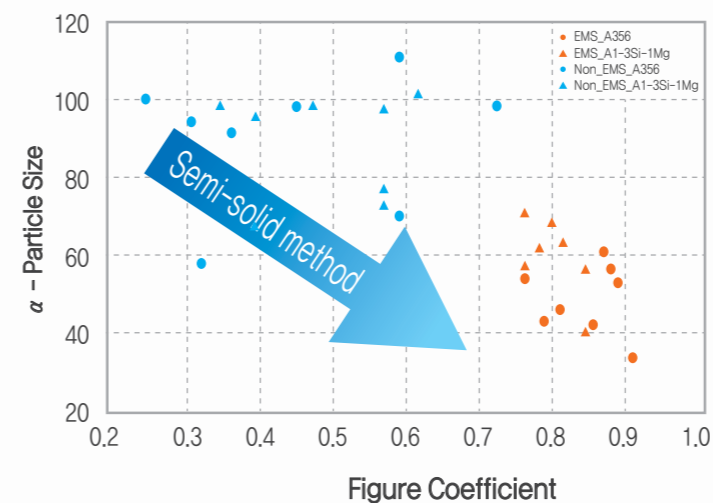
Parameter	Die Casting	Squeeze casting	Thixocasting	SMT Semi-solid
Feed Material	Liquid	Liquid	Semi-solid	Semi-solid
Gate Size	Thin	Thick	Thick	Thin or Thick
Injection Speed	Fast	Very slow	Slow	Slow to fast
Injection Speed Intensification	Normal	High	High	Medium to high
Pressure Porosity level	High	Low to nonexistent	Essentially nonexistent	Low to nonexistent

Advantages of SMT Semi-solid high pressure casting

Semi-solid slurry generates potential heat at a specific temperature during solidification process. During the fill-in process, material can be filled into the die without dramatic temperature decline. In result, low defect and high quality product can be made along with less solidification cycle time.

Strong Points of Semi-solid High Pressure Casting Method

- >> Lower defect
- >> Higher Mechanical Properties
- >> Reduce manufacturing cost



Conventional D/C



Semi-solid

Fluidity Test and 3D simulation

- >> Test of vacuum inhale liquidity(liquidity pattern comparison)
- >> Forecast a defect through a simulation and correlate with actual test result.



High pressure casting



Semi-solid casting

COBA (CASTING+FORGING)



RR Carrier

Customer HYUNDAI, KIA

Vehicle SONATA, GRANDEUR, K5, K7

RR Carrier

Customer HYUNDAI, KIA

Vehicle EQUUS, GENESIS, K9

FR Knuckle

Customer HYUNDAI, KIA

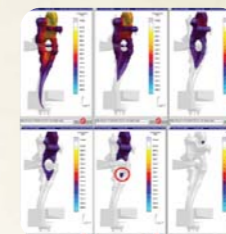
Vehicle EQUUS, GENESIS, K9

COBAPRESS

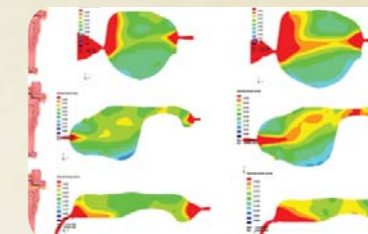
Conventional castings including gravity, low pressure and high pressure casting potentially possess internal defects such as blow hole, shrinkage and porosity. Cobapress removes these internal defects by adding forging process.

Simulation of Casting and Forging

- >> Shorten development time
- >> Optimize product design
- >> Reduce die cost (minimize development loss cost)



Casting simulation



Forging simulation

Advantages vs. Conventional castings

- >> Higher Mechanical Properties → weight reduction
- >> Improve Surface Finish → better fatigue life
- >> Greater Process Reliability → improve quality
- >> Better Internal Integrity → reduction of internal defects
- >> Dimensional Accuracy → reduction of machining

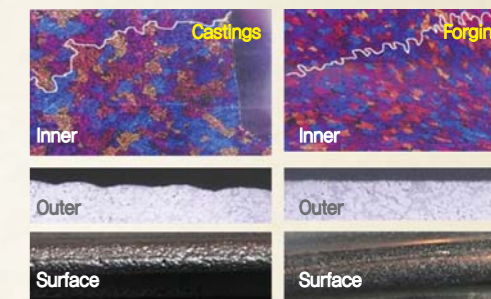
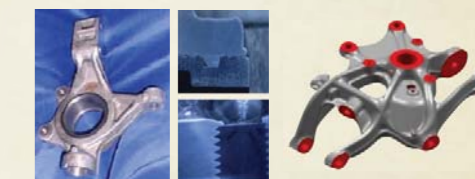


Figure of COBA PRESS

Advantages vs. Conventional forging

- >> Lower cost
- >> More design flexibility → Complex design parts applicable
- >> Ability to Core holes or Inserts → Cost saving, Less machining



Complex design

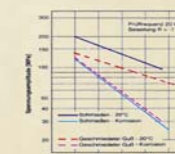
Mechanical Properties

IDEN	UTS (Mpa)	YS (Mpa)	Elong' (%)	Hardness
SPEC	290 ↑	220 ↑	Min 7%	HB 80 ~ 140
ACT	306 ~ 323	235 ~ 254	7.3 ~ 12.4%	HB 87 ~ 103



Side core design

Less Weight
Less Machining Stock



Forging Life

THE QUALITY MANAGEMENT

QUALITY ASSURANCE EQUIPMENT



3D
measurement



X-Ray
examination



Metal
microscope



Tension /
breakage test



Chemical composition
analysis



Figure
measurement



Roughness
measurement



Hardness
measurement



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