

# Aluminum - High Pressure Die Casting

## Manufacturing Process

### OP 10 - Melting

- Material: Al alloy ingot

### OP 20 - Degassing

- G.B.F machine
- Chemical composition check
- Vacuum solidification test

### OP 30 - Casting

- Jet cooling system
- Vacuum system

### OP 40 - Trimming

- Degating & deburring
- Trimming Press
- Manual hammer

### OP 50 - Shot blasting

- Removing burrs
- Cleaning surface

### OP 60 - Machining

- Facing & boring
- Drilling & tapping

### OP 70 - Washing

- Washing & drying

### OP 80 - Leak Test

- Air leak Test
- Water bubble test

### OP 90 - Inspection

- C/F gage and air gage
- Appearance check
- SPC

### OP 100 - Packaging

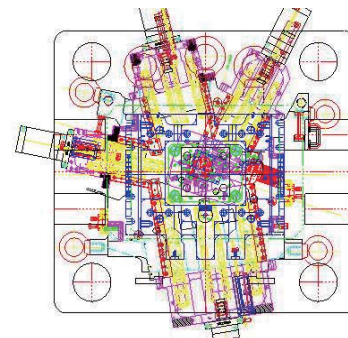
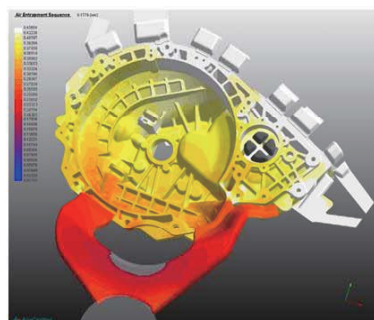
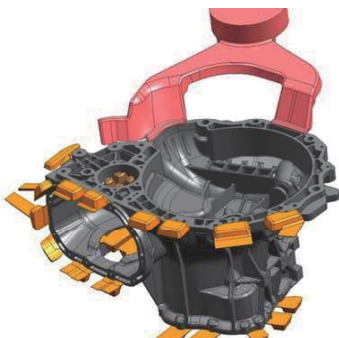
- Lot No. Marking
- Bar-code label
- Warehousing

Die Casting Machine Tonnage  
350 / 650 / 850 / 1250 / 2250 / 2500 / 3250 Ton



No	Name	Tonnage	Q'ty	Maker	
1	DIECASTING M/C	2,500 Ton	1	TOSHIBA	JAPAN
2	DIECASTING M/C	2,250 Ton	1	UBE	JAPAN
3	DIECASTING M/C	1,250 Ton	1	UBE	JAPAN
4	DIECASTING M/C	850 Ton	4	UBE TOSHIBA	JAPAN
5	DIECASTING M/C	650 Ton	4	TOSHIBA	JAPAN
6	DIECASTING M/C	350 Ton	2	TOSHIBA	JAPAN
7	Melting Furnace	8 Ton	1	SHINJIN	KOREA
8	SHOT BLAST M/C	300 500 Kg	4	KUMKANG	KOREA

R & D:  
Gate Design / Solidification Simulation / Mold Design



# Aluminum - High Pressure Die Casting



## Products

Clutch Housing, Cover-Rear Assy, Valve Body, Aux Cover  
Material: Aluminum alloy for die casting

Die casting Machine Tonnage:  
350 / 650 / 850 / 1250 / 2250 / 2500 / 3250 Ton  
Product Range:  
Up to 20Kg





## Manufacturing Process Horizontal Mold / DISA Sand Casting

### Melting

- Chemical Analysis
- CE, Temperature check

### Pouring Amount

- Load Cell Auto Weigh

### Sand preparation

- Compatibility, Moisture
- Strength, IG Loss
- Active Clay, Total Clay

### Molding

- Compressive strength
- Mold check & Heat up

### Nodularization

- Auto Feeding
- Error Proof system

### Inoculation

- Auto Feeding M/C

### Pouring

- Chemical component (n=1/ladle)
- FCD\_Nodularity ratio Tester (n=1/Ladle)
- FC\_Plate Chill Tester (n=1/Ladle)
- Temperature Check (n=1/mold)
- Area possession for identifying process defects mold

### Cooling

### Cutting(Riser / Gate)

### Inspection

- Visual Check
- Mechanical Test
- Matrix Check
- Dimension Check

### Deburring

- Bending Gage Check
- Surface Check
- Dimension Check

### Final Inspection

- Final Visual Inspection

### NDT

- MPI
- UT



## Manufacturing Process Lost Wax Casting

- Injection Wax
- Assembly Tree
- Cleaning
- First Coating
- Drying
- Back up Coating
- Drying
- De-Wax
- Burn out / Preheating
- Melting
- Pouring
- Releasing mold
- Cutting
- Cleaning Surface
- Inspection



## Products (Horizontal Mold / Disa Sand Casting)

Bearing Cover, Support Plate, Adjust Ring, Shift Block

Material: Ductile / Grey Iron

Finish: E-Coating / Zn Plating / Induction Hardening



## Products (Lost Wax Casting)

Cover, Impeller, Valve & etc

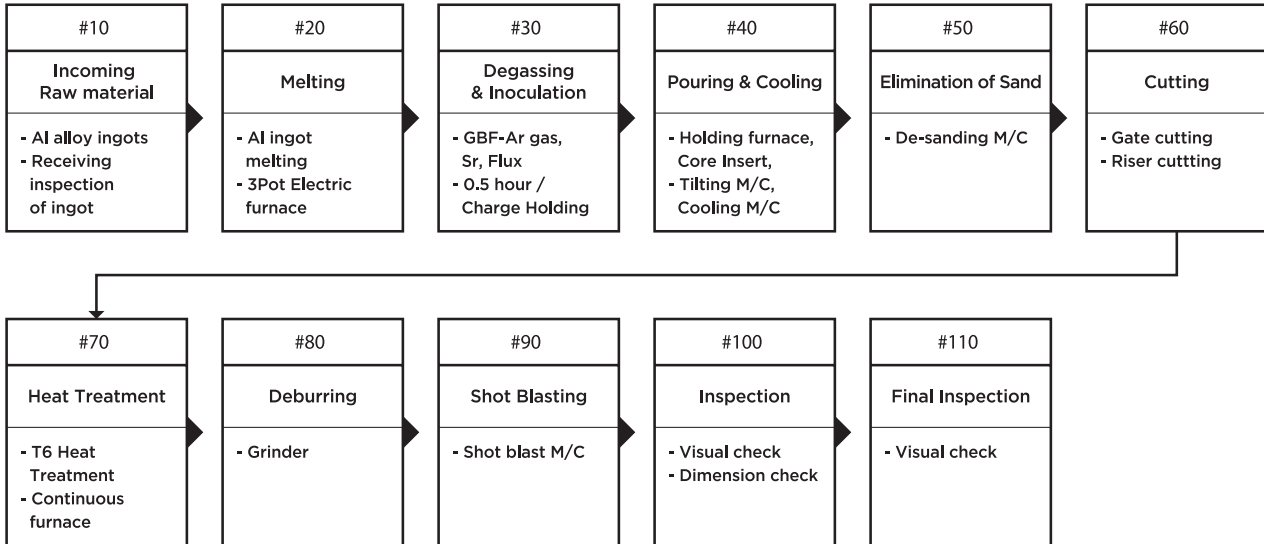
Material: Carbon Steel, Alloy Steel, Stainless Steel, Heat-Resistant Steel, Super Alloy & Ti





# Aluminum - Permanent Mold Die Casting

## Manufacturing Process



Automated Casting Process  
GBF Degassing / In house Core Making



Heat treatment  
Continuous furnace with automatic system



## Machining Capability



H-MCT: MAKINO, Washing M/C, Leak Test M/C, Tool Presetter



Automated Machining System / Automated SPC System

# Aluminum - Permanent Mold Die Casting



## Products

Supercharger Housing, Hybrid Motor Housing, Main Case

Material: Aluminum alloy for gravity casting

Product Range: Up to 20 Kg





# Carbon Steel & Alloy Forging / Turning (Screw Machining) / Stamping



## Manufacturing Process - Turning (Screw Machining)

CNC Automatic Lathe

Turning

Heat Treatment

Grinding

Hard Turning

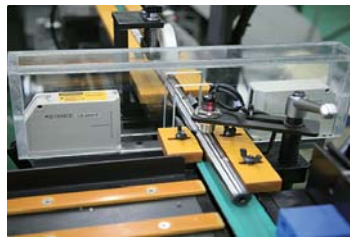
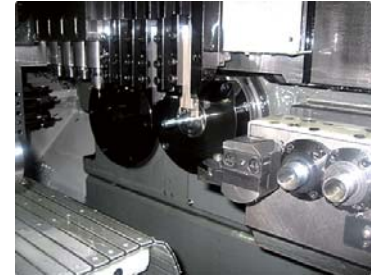
Buffing

Laser Marking

Washing

Automatic Measuring

Packaging



## Manufacturing Process - Forging

Incoming Raw Material

Cutting

Heating

Forging

Coining

Heat Treatment

Shot Blasting

NPT - MPI

Final Inspection

Packaging

Stamping Press Tonnage  
300 / 400 / 500 / 800 / 1200 Ton



Forging Press Tonnage - 1350 / 1600 / 2500 Ton



# Carbon Steel & Alloy Forging / Turning (Screw Machining) / Stamping



## Products - Forging

Yoke, Spacer

Material: Hardening Steel, Carbon Steel, Alloy Steel, Stainless Steel



## Products - Turning (Screw Machining)

Shaft, Spool, Hub Pin, Drain Plug

Material: Hardening Steel, Carbon Steel, Alloy Steel, Stainless Steel



## Products - Stamping & Others

Lube Tube, Reaction Plate, Washer, Lever

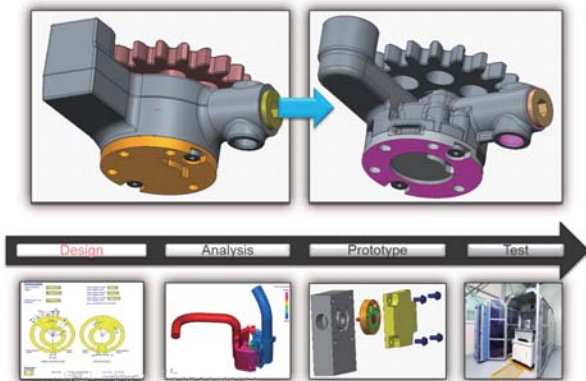
Material: Hardening Steel, Carbon Steel, Alloy Steel, Stainless Steel





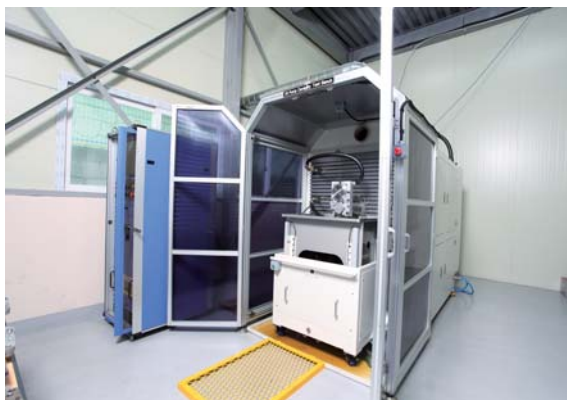
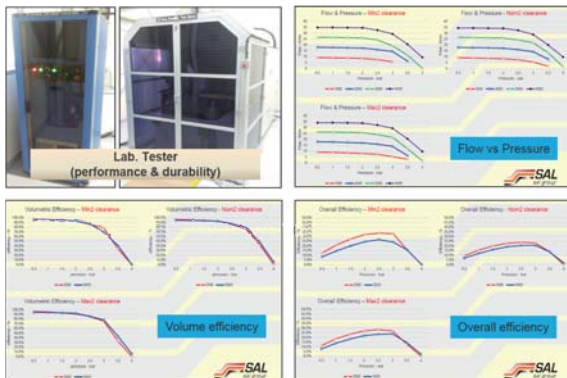
## Design Capability

GE-Rotor  
Relief Valve System  
Design Optimization



## Engineering Capability

CFD (Computational Fluid Dynamics)  
Validation Test & Analysis  
Casting Flow Analysis



## Manufacturing Capability

Error proofing for missing components (Poka-yoke)  
- Prevent by auto-feeding systems

Assembly force control  
- Fastening torque by nut-runners  
- Fitting force by load cells

100% performance testing in process  
- Check discharge pressure & flow rate  
- Check relief valve open pressure  
- Check drive torque & missing component



# Oil Pump Ass'y



## Products

T/M Lubrication Pump  
Heavy Duty - Iron Body  
Medium Duty - Al Body

