



Electric Coil Assembly For Transercase & Differentialcase  
Magnetic Clutch Assembly For Air Compressor  
Forging & Machining Part  
Field Coil Assembly  
Various Solenoids

## COMPANY INTRODUCTION

*Dreaming of best autoparts maker in the world !!*

- 1. Company Profile***
- 2. Brief History***
- 3. Quality Certification History***
- 4. Organization Chart***
- 5. Major customers & Annual sales revenue***
- 6. Main Production line and Facilities***
- 7. R&D Capability***
- 8. Shilla Technologies***

# 1. Company Profile



- Corporate name : Shilla Industrial Co.,Ltd
- Founded year : 1980
- Annual sales revenue : USD 94 Million (2017)

- Employees : 335
- Capital : USD 3.3 Million
- Certified by medium business administration

[Jain HQ & Primary plant in Korea]



[Main process]

Winding, Plastic molding, Final assembly, Validation testing etc

[Dalian plant In China]



[Main process]

Roll forming, Plastic molding, Winding, Bearing Assembly etc

[Namsan plant in Korea]



[Main process]

Cold forging, Precision machining, Welding, Bearing Assembly etc

[Eupcheon plant in Korea]



[Main process]

Stator Winding, Plastic molding, winding, Rough machining etc



## 2. Brief History

- Jul. 1980 Established Shilla Industrial Co. Ltd
- Jun. 1986 Registered as a supplier for Korea Delphi Automotive(Erae automotive)
- Oct. 2000 Established R&D center
- Sep. 2001 Registered as a supplier for BorgWarner Torq Transfer Systems
- Oct. 2003 Registered as a tier-2 supplier of Toyota motors (Through KDAC)
- Oct. 2003 Established Namsan forging plant
- Feb. 2004 Registered as a tier-2 supplier of Honda motors (Through BW-TTS)
- Mar. 2004 Registered as a supplier for Eaton Corporation.
- May. 2004 Selected as Supplier of the Year from BorgWarner TTS
- Jul. 2005 Received zero accident record award for 9 consecutive years (Ministry of labor)
- Dec. 2005 Registered as a supplier for Hanon systems
- May. 2006 Registered as a supplier for GKN Driveline.
- Dec. 2009 Selected as the best cooperative firm by KDAC, LTD(ERAE automotive)
- Apr. 2010 Registered as a supplier for Litens Automotive
- Apr. 2010 Registered as a supplier for Robert Bosch GmbH
- Jan. 2011 Selected as best quality supplier from Hanon Systems
- Apr. 2011 Registered as a supplier for ZF Friedrichshafen AG

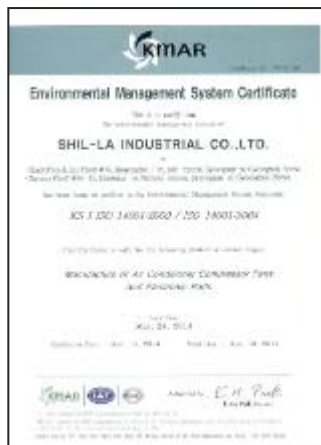
## 2. Brief History

- Dec. 2012 Received \$30 Mill Export Award
- Jul. 2013 Registered as a supplier for Dana Incorporated
- Dec. 2014 Selected as supplier excellence from GKN Driveline
- Jan. 2015 Selected as Best Supplier for QRDR Performance over the year 2014 from DivigiWarner
- Apr. 2015 Selected as Supplier of the Year from BorgWarner TS & TTS
- Mar. 2016 Received Silver Tower Order of Industrial Service Merit from Korean president
- Dec. 2016 Received \$50 Mill Export Award
- Dec. 2016 Selected as best medium business firm in province
- Jun. 2017 Selected as Supplier of the Year from BorgWarner PDS
- Oct. 2017 Received Supplier award from DANA Incorporated(Accelerate Hybridization & Electrification)
- Oct. 2017 Selected as best environment management company(Korean business management organization)
- May. 2018 Selected as WORLD CLASS 300 company(Ministry of trade, industry and energy)

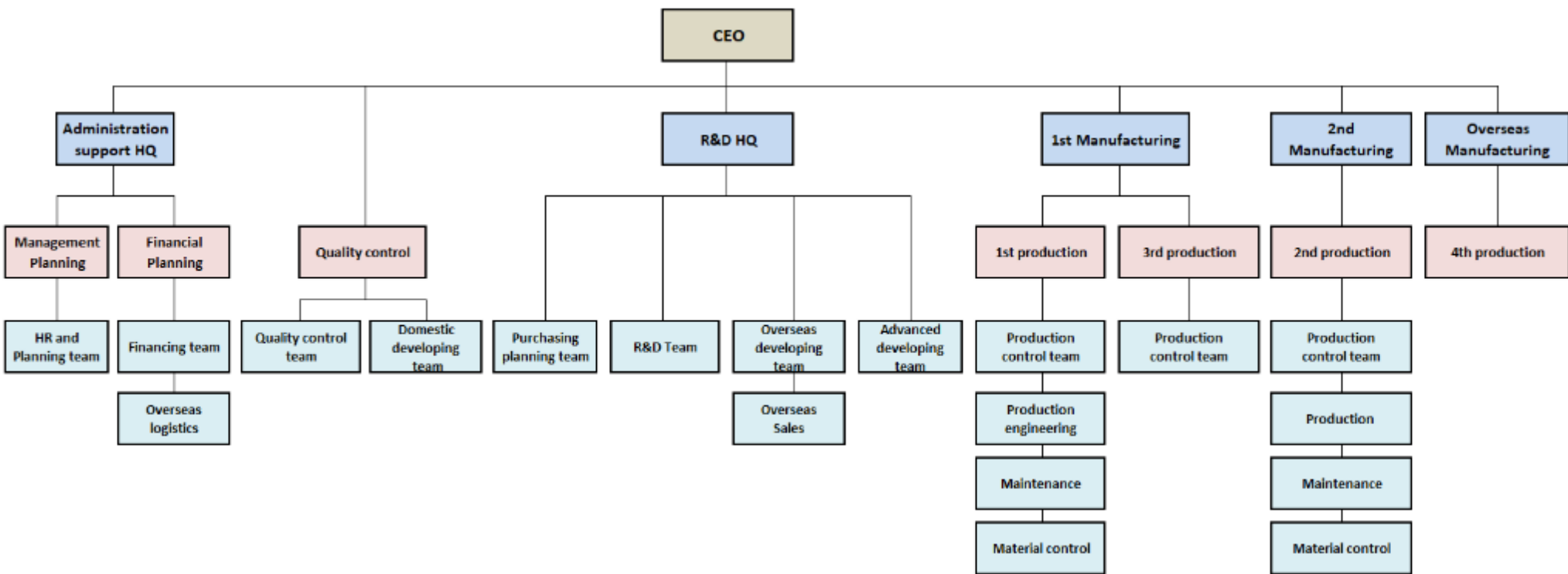
### 3. Quality Certification & Environment History

- Nov. 1997 Obtained ISO 9002 certificate from British Standard Institution (BSI)
- May. 1999 Obtained QS 9000 from Korea Management Association (KMA)
- Sep. 2000 Single PPM Certificate from Small and Medium Business Administration
- Nov. 2004 Obtain certificate TS 16949 & ISO 14001 from British Standards Institution (BSI)
- Dec. 2006 Obtained SQ certification from HMC through Hanon systems
- Sep. 2007 Obtain certificate TS 16949 & ISO 14001` from Korea Management Association (KMA)
- Aug. 2013 Renewed TS 16949 from Korea Management Association (KMA)
- Mar. 2014 Renewed ISO 14001 from Korea Management Association (KMA)
- Dec. 2016 Obtained processing SQ certification from Hanon systems
- Feb. 2018 SQ certification for electric & electronic industry in progress (BorgWarner PDS)
- Aug. 2018 IATF16949: 2016 certification

#### Certificates



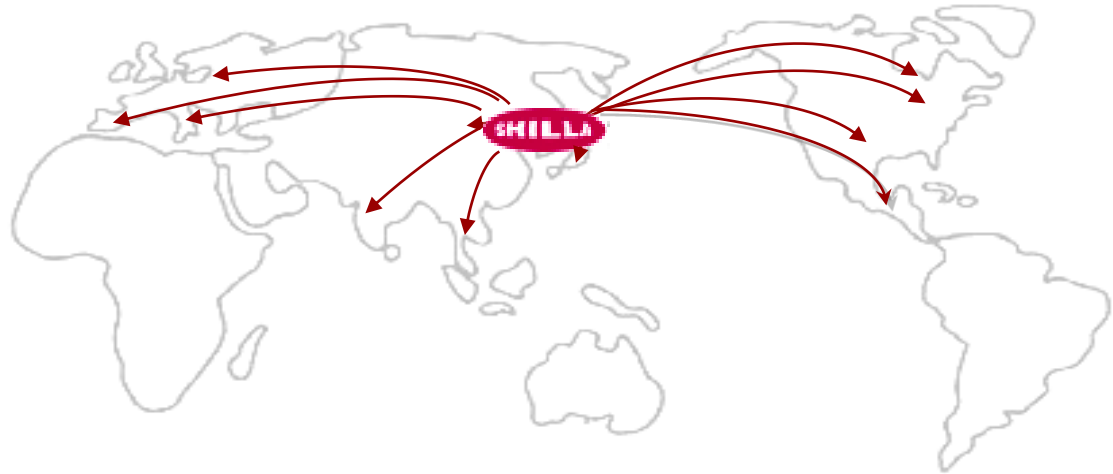
# 4. Organization chart



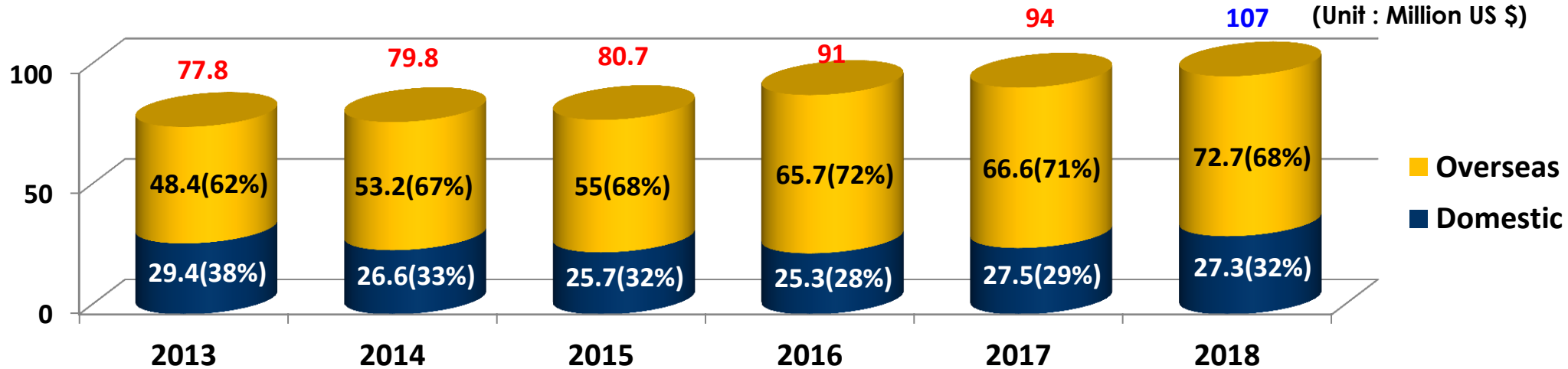
Office	Operator	Total
113	222	335

# 5. Major customers & Annual sales revenue

- BorgWarner
- GKN Driveline
- Dana Incorporated
- Hanon Systems
- ERAE Automotive
- Robert Bosch GmbH
- Eaton Corporation
- Divgi Torque Transfer Systems



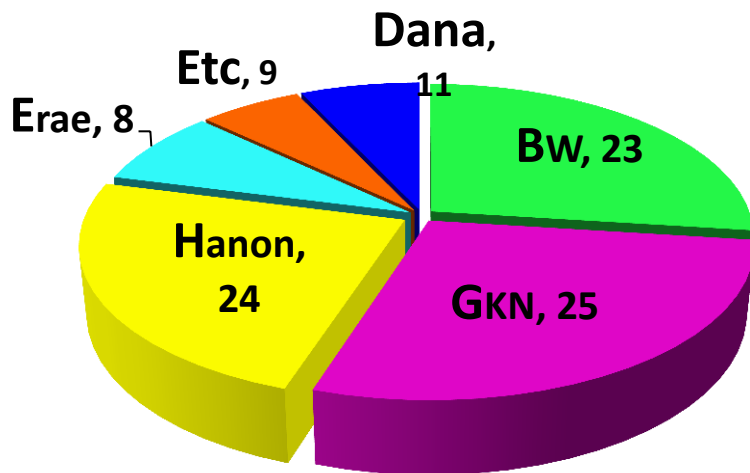
## ◆ Annual Sales Revenue



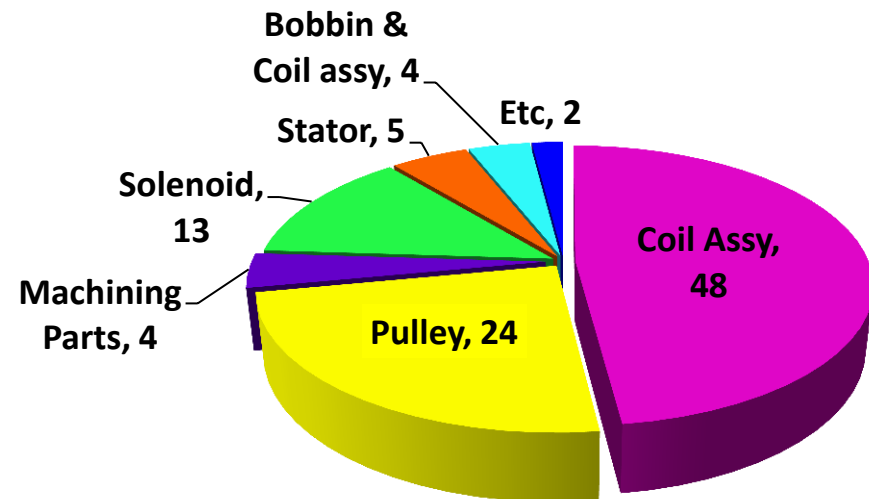


## 5. Major customers & Annual sales revenue

### ◆ Sales Portfolio (Year 2017)



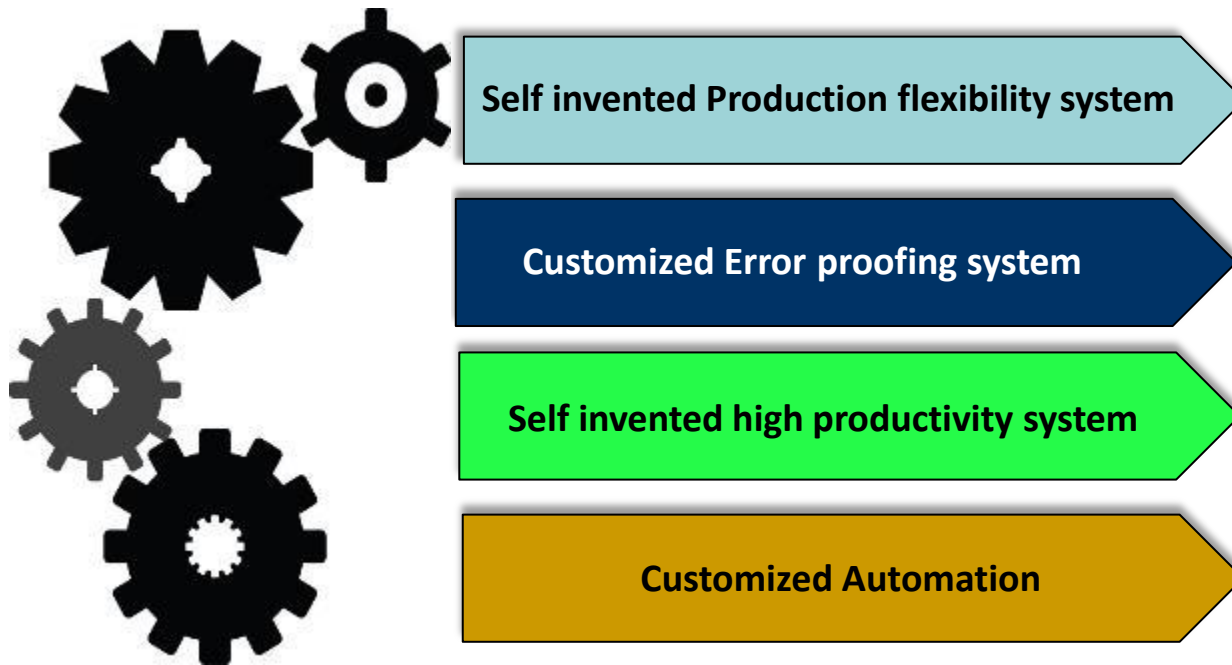
By Customers



By Products

## 6. Main production line and facilities (Assembly line)

### ◆ Strength in production technology



*Self maintenance  
and fast countermeasures*

## 6. Main production line and facilities (Assembly line)

Div	Facility	Q'ty	Applied items	Capacity
Assembly Injection	Stator for Alternator	3 Lines	Alternator	1 Mil pcs
	Coil assembly and solenoid actuator line	7 Lines	Field Coil Assy for A/C compressor, 4 Wheel drive Transfer case, EDL, ETC	8.7 Mil pcs
	Pulley assembly line	2 Lines	A/C compressor Pulley Assy	3.5 Mil pcs
	Solenoid assembly line	4 Lines	Various Solenoids for EDL, EGR Valve, ETC	2.7 Mil pcs
	Bobbin and coil assembly line	3 lines	Transmission Bobbin coil assembly	11 Mil pcs
	Canister Controlled Purge (CCP) line	1 Line	CCP Solenoid valve	0.7 Mil pcs
	Injection Molding line	12 Lines	Bobbin, coil molding, BMC molding	9 Mil pcs
Winding	Winding assembly line	17 Lines	Stator, Coil, Solenoid, Sub Line	4.2 Mil pcs

## 6. Main production line and facilities (Cold Forging Line & etc)

Div.	Name of facility	Q'ty	Manufacturer
Press	2000 / 1500 Ton Knuckle Press	1 / 1	Schuler
	1000 / 800 Ton Knuckle Press	1 / 1	Sumitomo / AIDA
	630 / 600 Ton Knuckle Press	2 / 1	AIDA / Sumitomo
	400 / 250 Ton Knuckle Press	2 / 2	AIDA
	350/320 Ton Press	1/1	Komatsu/Fukui
	200/150 Ton Press	1/1	K.M.C/Komatsu
	Heating Furnace	1	Haksung
	Lubrication	1	Daigen
	Shot blast M/C	2	Samkwang
Others	Roll forming M/C	8	Nihon spindle/WF
	2SP CNC	14	WIA/Doosan/Hwacheon
	CNC	83	WIA /Doosan
	MCT	20	WIA /Doosan/Brother
	Laser Welding Machine	1	Miyachi
	Auto TIG Welding Machine	2	OTC
	Radio heating adhesive press	1	Hara Seiko
	Hydraulic press	8	Hyundai
	Others	4	



**Forging Process**

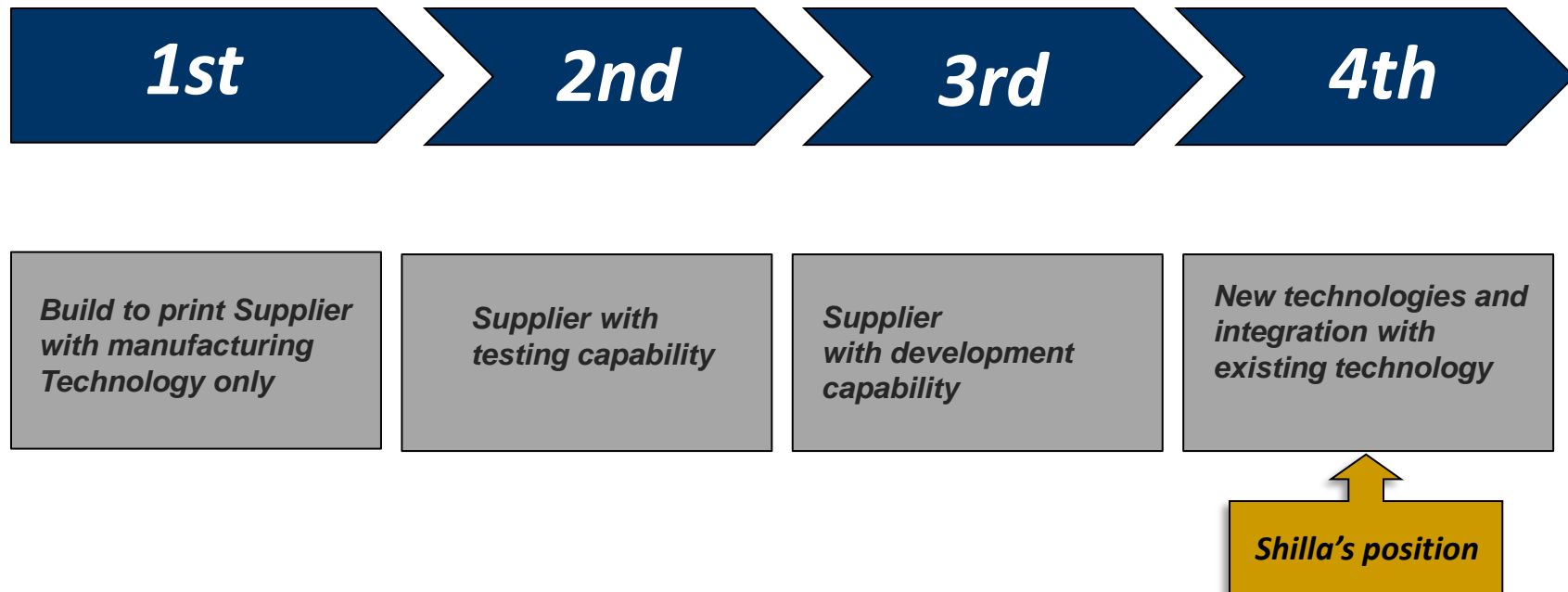


**Machining Process**



## 7. R&D capability

### ◆ R&D Evolution



## 7. Test facilities

No.	Equipment	Q'ty
1	Thermal shock tester	2
2	Temperature & Humidity tester	2
3	Cleanliness Tester	1
4	Salt spray tester	1
5	Coating thickness tester	2
6	Roundness tester	1
7	C.M.M	2
8	Non-Contact 3D Video Measuring Machine	1
9	Electron microscope	2
10	Projector	1
11	Contracer	2
12	Surface roughness Tester	2
13	Micro Height (Vertical 3)	3
14	Rockwell Hardness Tester	2
15	Dry oven	3

No.	Equipment	Q'ty
16	Oscilloscope	1
17	Multi Meter	6
18	Surge Tester	15
19	Power supply	16
20	Magnetic Particle Inspection	2
21	Resistance Tester	56
22	Insulation Resistance Tester	14
23	Hypot tester	26
24	Magnet Force Tester	1
25	Radiflo	1
26	Polishing	1
27	Mounting	1
28	Specimen Cutting	2
39	Pulley Resistance Tester	1
30	Dead Weight Tester	1





# *Shilla Technology Introduction*

# Clutch coil and solenoid actuator technology

Application for EDL, T-Case,



## <Key capabilities>

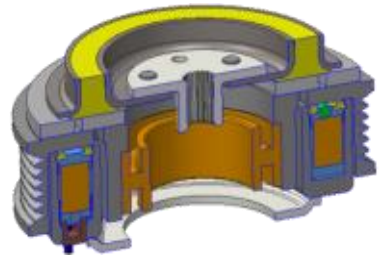
- More than 20 years experience
- Magnetic flux simulation
- Copper and aluminum wire application

- Cold and Hot forging
- Precision steel Machining
- Automation

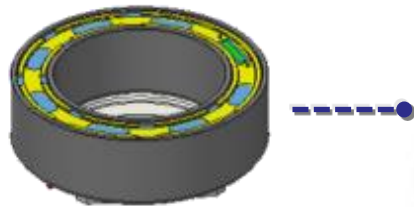
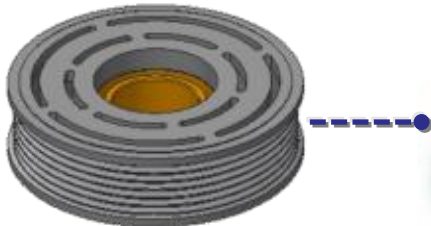
- Various winding technology
- Epoxy injection
- Mechatronics



# Magnet clutch assy for various application



<Aircon compressor>



<Supercharger and T case>



## <Key capabilities>

- Various magnetic clutch production and mechatronics experience
- Scale and weight down and cost savings
- Copper and aluminum wire application

- Metal flow and stress simulation
- Roll forming and machining for pulley and rotor
- Optimized process flow and logistic control
- Durability test system

# Injection molding and winding technology

## Application – Bobbin and coil assembly



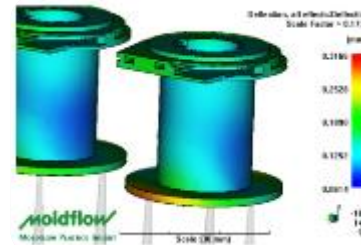
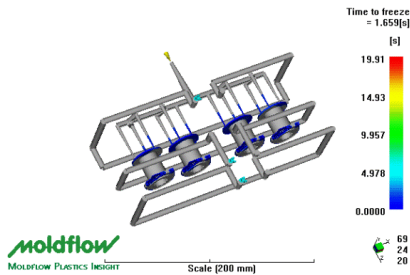
### <Key capabilities>

- Precision Injection molding
- CAE and mold flow analysis

- Various coil winding technology
- Self and non-self bonding
- Current flow winding
- Square coil winding

- Precision Overmolding
- Vision inspection

- No bobbin molding
- Golf ball molding (Air molding)
- Current flow winding



### <Main equipment>

- Injection molding machine

- Winding machine

- Overmolding machine

- Injection Molding Machine
- Vacuum impregnation Machine
- Leak Tester

Application – Balance bush, Flange, Swash plate, shaft



### <Key Characteristics>

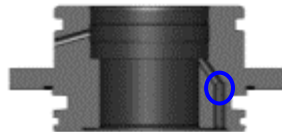
- Hot forging
- Eccentricity Machining
- Deburring

### <Main equipment>

- CNC
- MCT
- BMD gage



- Hot forging
- Machining
- Endoscope inspection



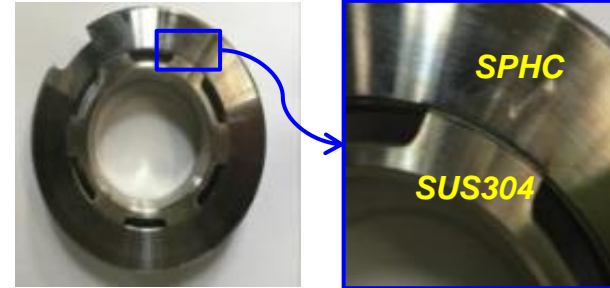
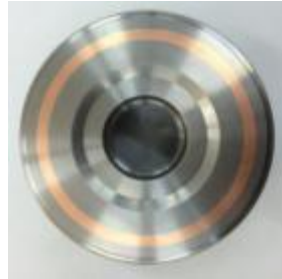
- CNC
- MCT
- Special measurement



- Hot forging
- Machining
- Deburring
- High tolerance satisfaction without grinding. (flatness, parallel, perpendicularity)

# Welding and brazing technology

Application – Brazing, CMT Welding, Laser welding

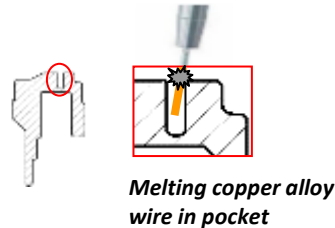
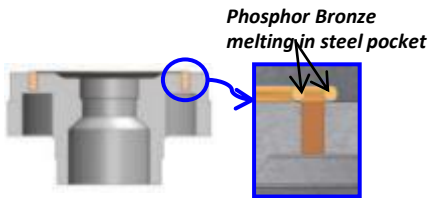


<Key capabilities>

- **Copper Brazing**
- Hot forging
- Machining
- Leak controlled

- **CMT Welding**
- Hot forging
- Machining
- Leak controlled

- **Two different steel materials laser welding**
- Cold forging
- Machining
- Strength after laser welding : min 1300kgf



<Main equipment>

- CNC
- Brazing machine

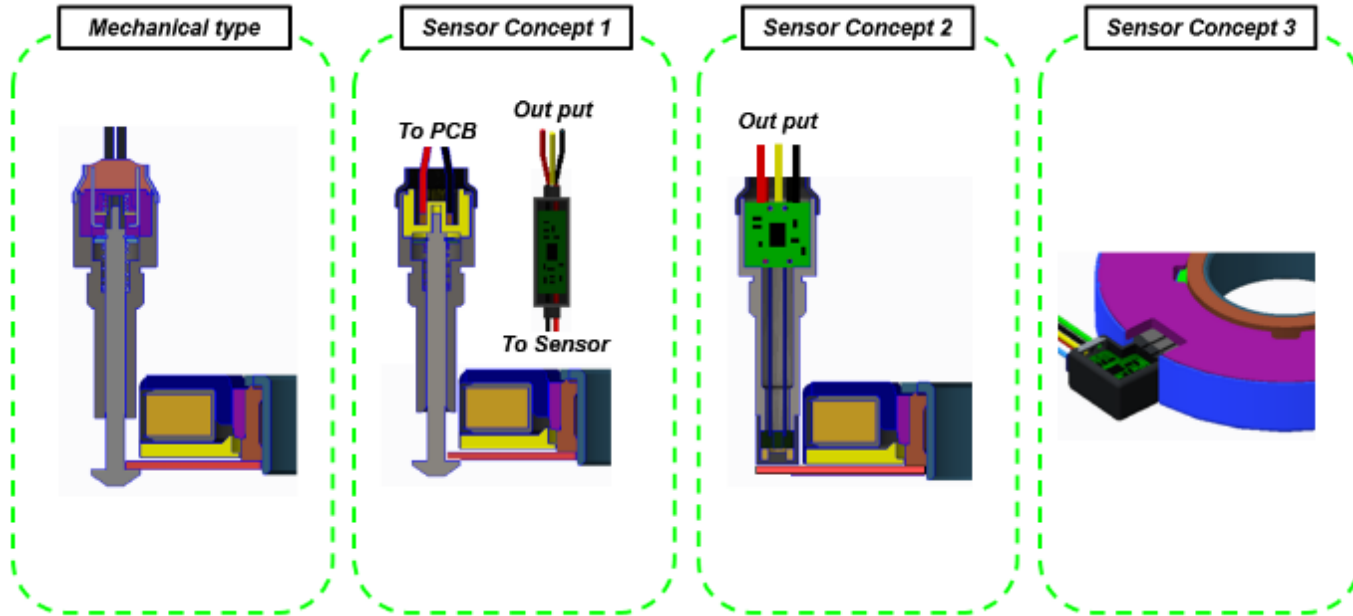
- CNC
- CMT welding machine

- Forging Knuckle press
- CNC
- Hydraulic press machine
- Laser welding machine



# Shilla position sensor technology

## Application – Position sensor and Piezo



Electronic  
Locking  
Differential



- Inductive sensor from high frequency electromagnetic field
- On-off and linear sensor
- Eco-friendly solution with high performance

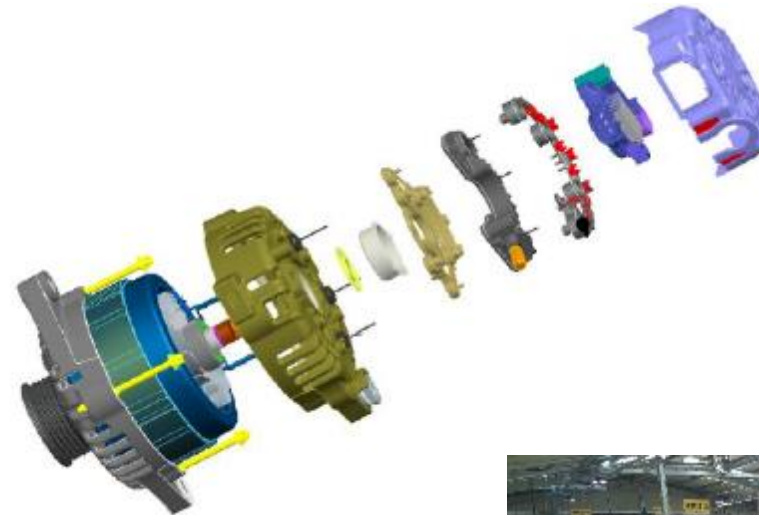
# Stator winding assembly for alternator

Application – Stator assembly (Induced electromotive force generation)



## <Key process>

- Slot liner inserting
- Winding & Wedge inserting
- Compact end-turn
- Stator varnish
- Induction strip & Brush lead wires
- Twist lead wires
- Final Test



## <Main equipment>

- Winding M/C
- Vanishing coating



## <Production Line>