

# SDZ AUTO PARTS CO.,LTD.



## Company Overview



- **Established in:** Sept. 2004, Employee:190+
- **Located in:** Xinbang Industrial Zone, Songjiang District, Shanghai,China
- **Company Type:** Manufacturer, OE supplier, IATF16949 Certificated by TÜV
- **The Company's Key Products:**

Cooling System Products: Thermostat Housing Assembly, Oil Cooler, Coolant Pipes, Heater Hoses

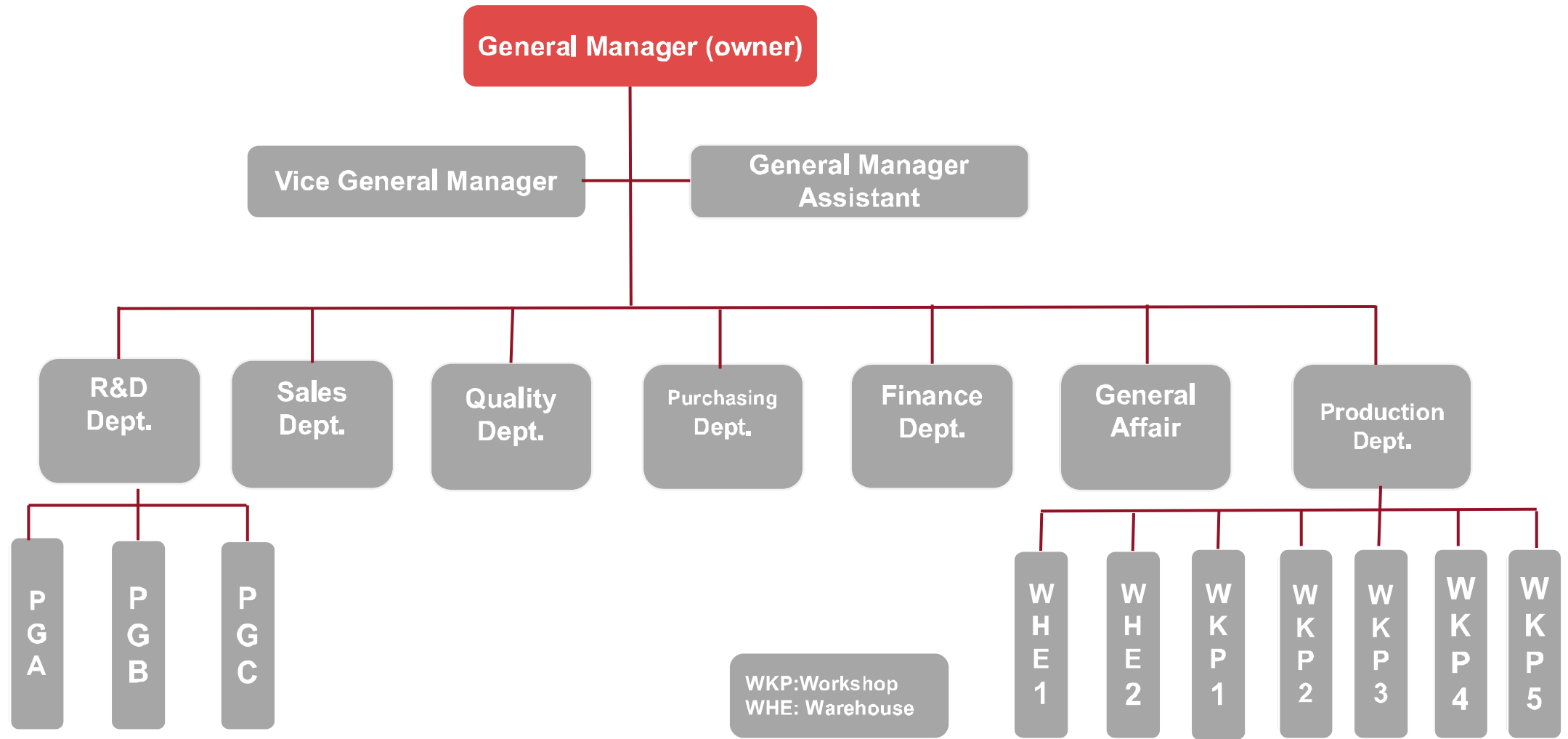
Others Pipes: Turbocharger Pipe, Brake Line, Fuel line, High Pressure Line

Engine Parts: Valve Cover, Intake Manifold

- **Total Area :** 355,209 Square feet=33,000 Square meter

**Total Building Area:** 178325 FT<sup>2</sup>+136658 FT<sup>2</sup>=314983 m<sup>2</sup>





## **SDZ VALUE:**

### **ENTERPRISE TENET**

With innovation as the driving force,  
Quality as the guarantee, Customer satisfaction as the  
orientation, Employees as the fundamental,  
Social responsibility is the mission,  
to create a glorious future.

### **QUALITY PRINCIPLE**

Quality up, Cost down,  
Satisfying Customer,  
Continuous improvement.

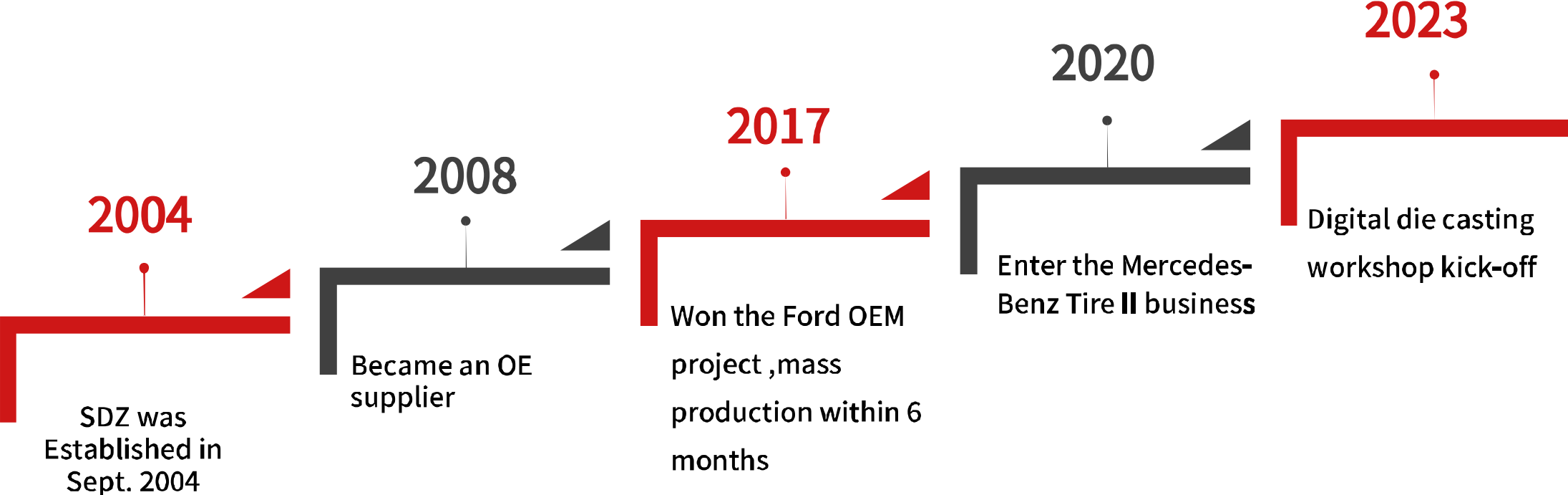
### **TALENT CONCEPT**

Regard talents as the treasure of SDZ, Concern  
employees's growth, Advocate morality first,  
ability important, Encourage innovation and  
teamwork, Provide employees with a enough  
space for development and career .

### **CORE VALUE**

Love, Integrity, Enterprising, Innovation,  
Dedication.

# Company milestone



## Brief Factory Tour

**SDZ** 世德子



Main Gate and Office Building



SDZ Workshops

# Brief Factory Tour



SDZ Office Lobby



Office

# Brief Factory Tour



SDZ Show Room



SDZ Lab



# Brief Factory Tour



One of the Workshops—Pipes/Tubes



One of the Workshops—Assembly & testing units & Packing Station

Other workshops are oil cooler workshop, plastic injections workshop ,AL die casting workshop, CNC workshop.

# Certifications



IATF16949 Certified  
By TÜV



ISO45001

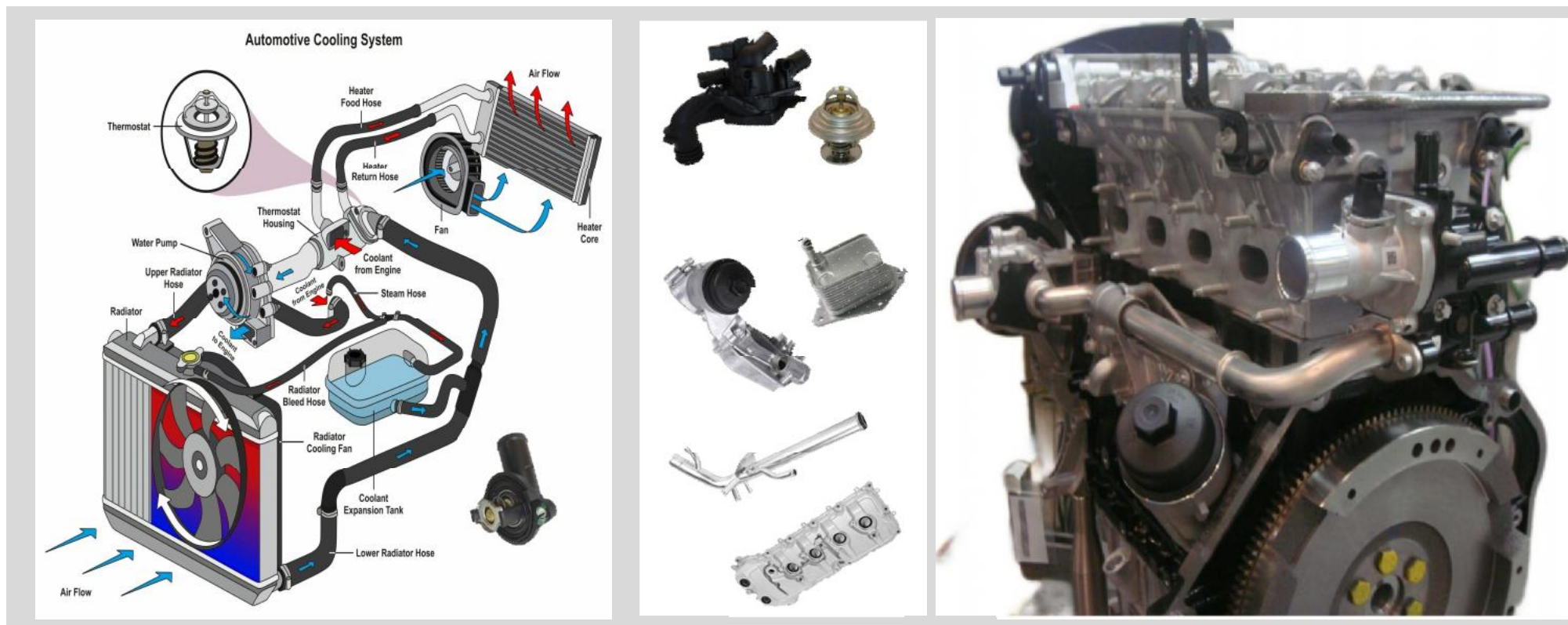


ISO14001

What do we produce?

SDZ<sup>®</sup> 世德子

## Cooling System Products and Engine Spare Parts



## Main Products - Thermostat Housing Category

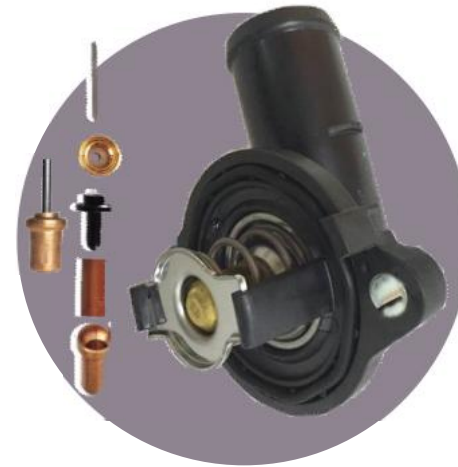
SDZ<sup>®</sup> 世德子



Housing



TH:Thermostat With Housing



TI:Integrated Thermostat



Electronic Thermostat

Plastic material covers: PA66+GF; PPA+GF;PPS+GF; Strictly per OE design or per customer requirements

## Main Products - Thermostat Housing Assembly

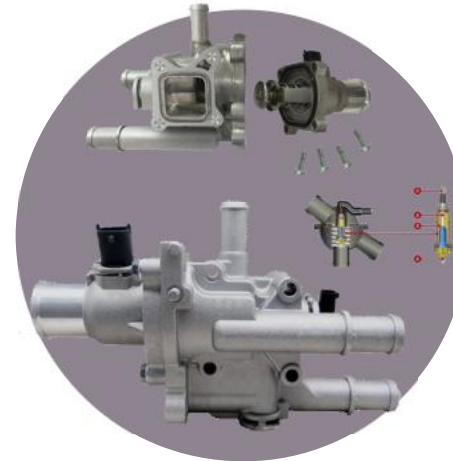
SDZ<sup>®</sup> 世德子



Sleeve valve thermostat  
for hydrogen energy



Thermostat housing  
(without thermostat)



Electronic thermostat



Wax thermostat  
housing assembly

## Main Products - Automobile Pipes



Cooling Pipe

Material: 08F with E-coating



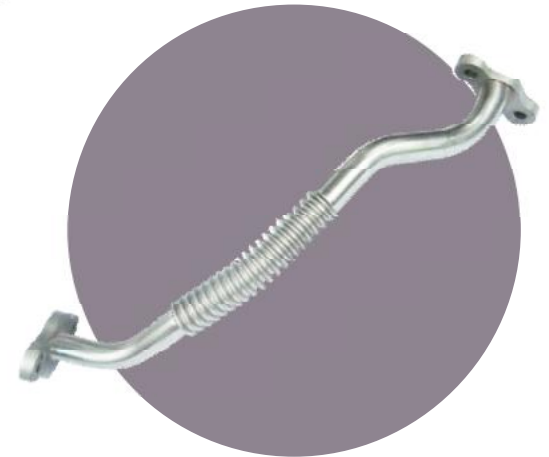
Heater Hose

Material: AL+EPDM rubber



EGR Tubes

Material: stainless steel +  
heat insulation sleeve



Turbocharger Pipe

Material: stainless steel

## Main Products - Automobile Pipes



**High pressure hose**  
Material: stainless steel,  
pressure measurable  
300MPA



**Fuel line**  
Material: stainless steel



**Brake line**  
Material: stainless steel +  
stainless braided



**Tube parts apply to other  
products**  
Including Thermostat  
assemblies, oil coolers, etc.

## Main Products - Oil Cooler

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Material: Choose OE manufacturer's supplier Chain



Bottom flange  
& connector pipe:  
3003 Aluminium



Soldering ring:  
4343-H14 Aluminium



Radiating fin:  
3003 Aluminium



clapboard: 10% 4343 / 3003 / 10% 4343 Aluminium

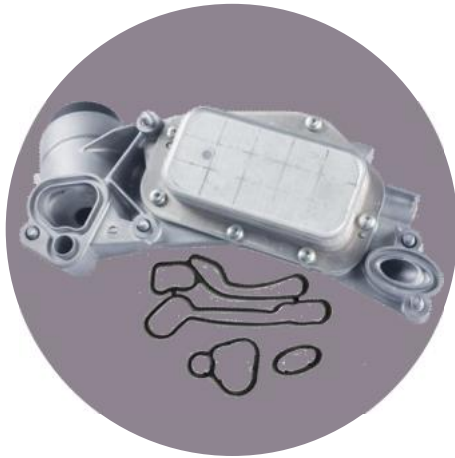


lower & upper Cover:  
10% 4343 / 3003 AL



## Main Products - Oil Cooler Assembly

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Choose high quality  
level gasket  
FKM...by famous brand  
supplier



The Al housing is  
made inhouse by SDZ  
including the CNC process



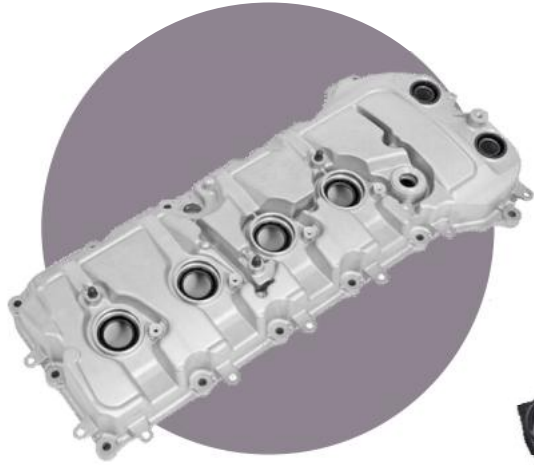
The Pipe components  
is made inhouse



Plastic housing is  
made inhouse

## Other Engine Parts- Valve Cover

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AL Die Casting  
Valve Cover



Plastic Injection  
Valve Cover



AL Die Casting  
Intake Manifold



Plastic Injection  
Intake Manifold

# SDZ Capacity - Technical R&D

## R&D Team

- 3 Process Engineers
- 11 R&D Engineers
- 3 Mold Engineers



## Product Category

- 4 main product lines:
  - Thermostats
  - Automotive Tubes
  - Oil Coolers
  - Valve Covers



## Development Efficiency

Developing more than  
150 new products per  
year on average



## Patent Certificate

- 54 Patents Obtained
- 8 Invention Patents
- 46 Utility Model Patents



## Technical Advantages

- Forward Product Development
- Advanced Technical Analysis
- Mold Expertise



# R& D Team and Achievements

	2021	2022	2023
Pipes/Tubes	40	42	48
thermostat housing	33	41	55
Oil Cooler	42	45	46
Valve cover	21	37	28
<b>Total</b>	<b>136</b>	<b>165</b>	<b>177</b>

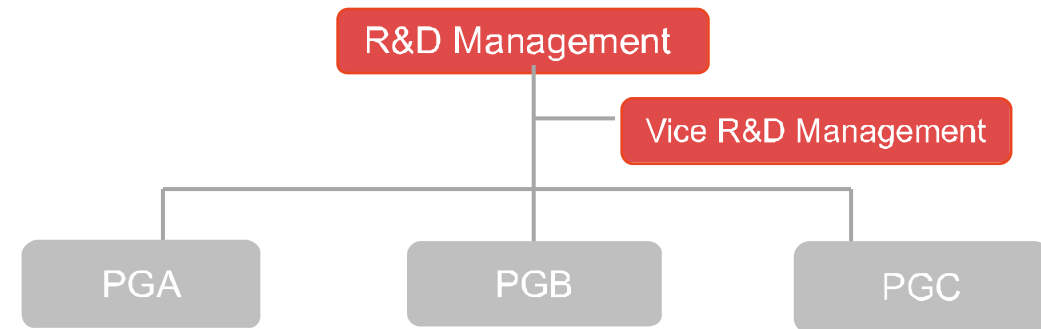


## SDZ Can complete 2D draft and 3D molding design.

The product development is strictly controlled according to IATF16949 process or Customers requirements.

SDZ has the cooperation with Shanghai University of Engineering Science.

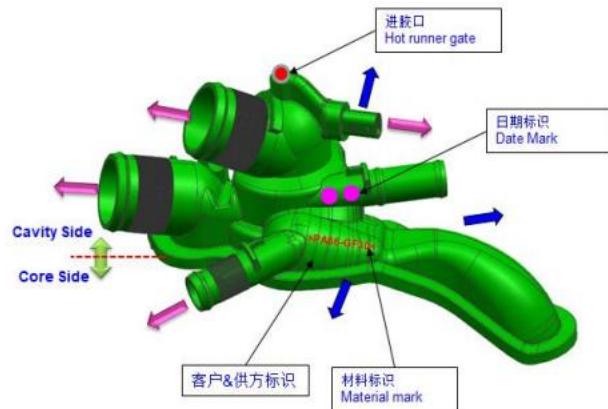
SDZ invite the Professor in the field to train our engineer.



# Technical Advantages -- Products Design

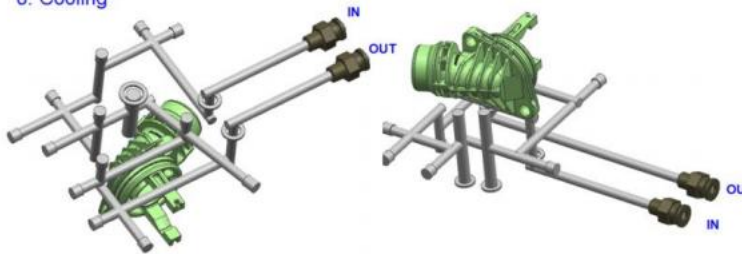
## DFM Design DFM 设计

Parts details (详细的模具结构方案, 参考DFM报告)				
主要脱模方向 Main Demoulding axes	顶块 Lifters	滑块 Sliders	滑块/顶块 (油缸方式) Slider or Lifter by hydraulic cylinder	进胶点 injection point
↓	↑	↑	↑	●



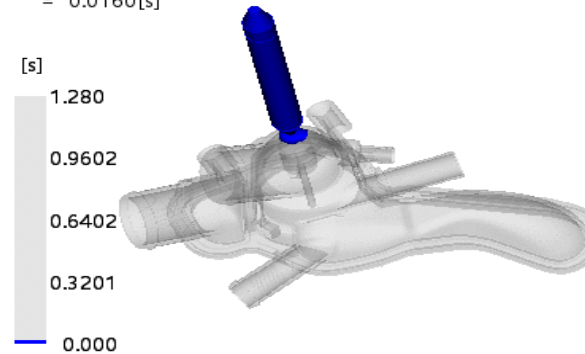
**SDZ** 上海世德子汽车零部件有限公司  
SDZ AUTO PARTS CO., L.TD.

### 8. Cooling



## Mould Flow Analysis 模流分析

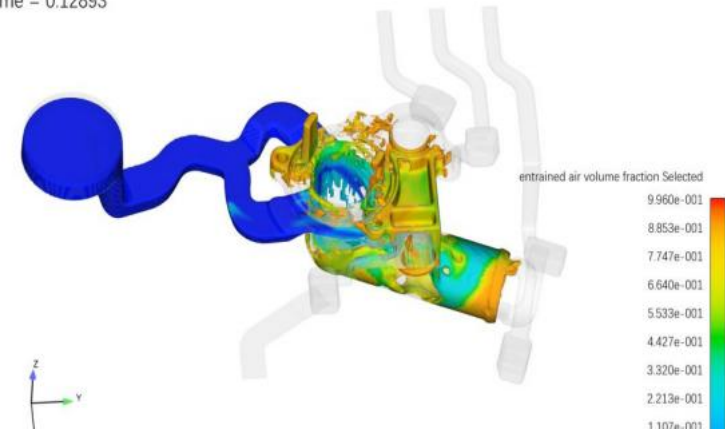
充填时间  
= 0.0160[s]



AUTODESK  
MOLDFLOW INSIGHT

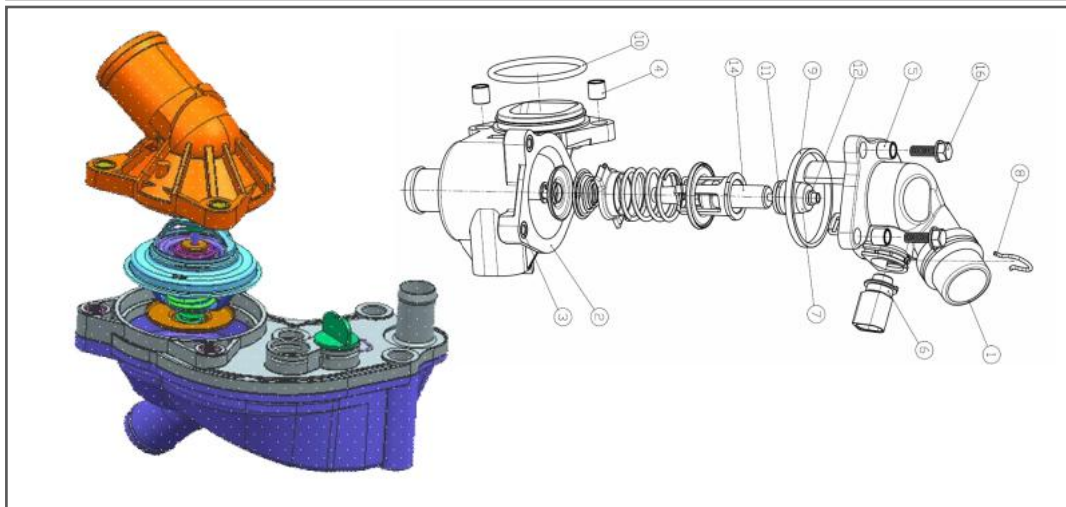
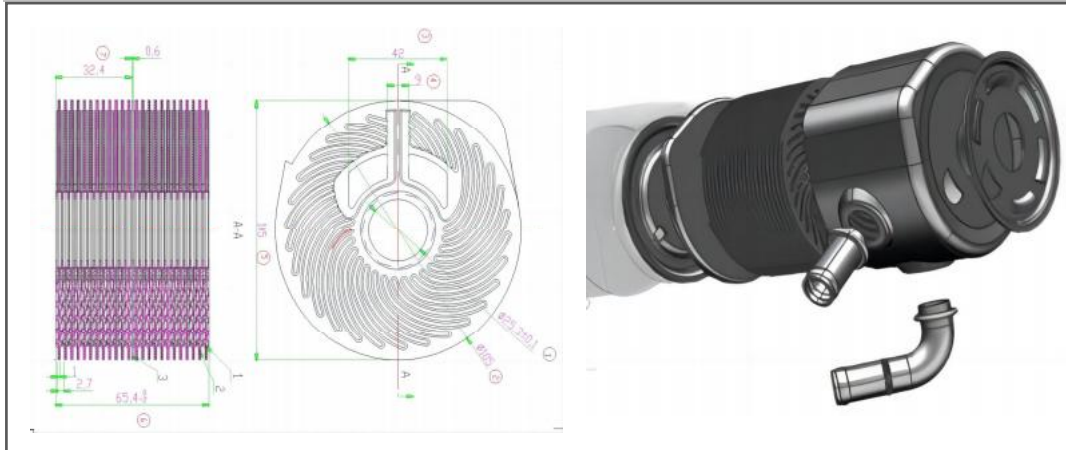
175  
58  
-77

Time = 0.12893

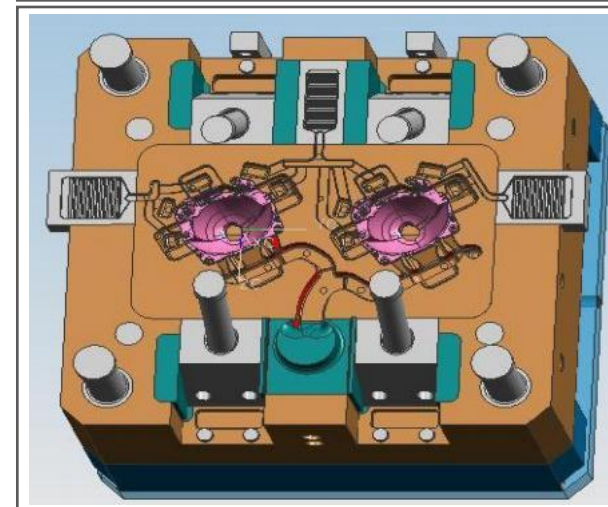
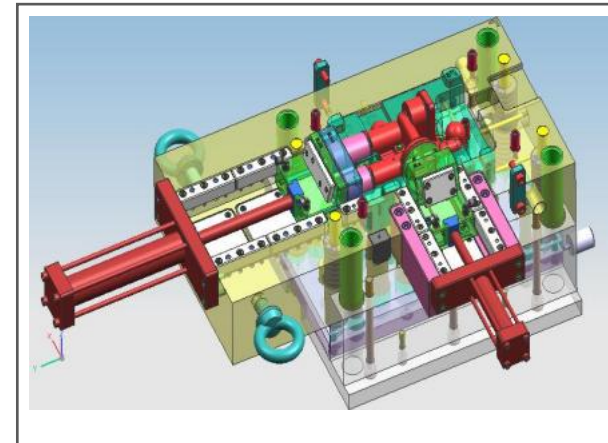


# Technical Advantages – Design

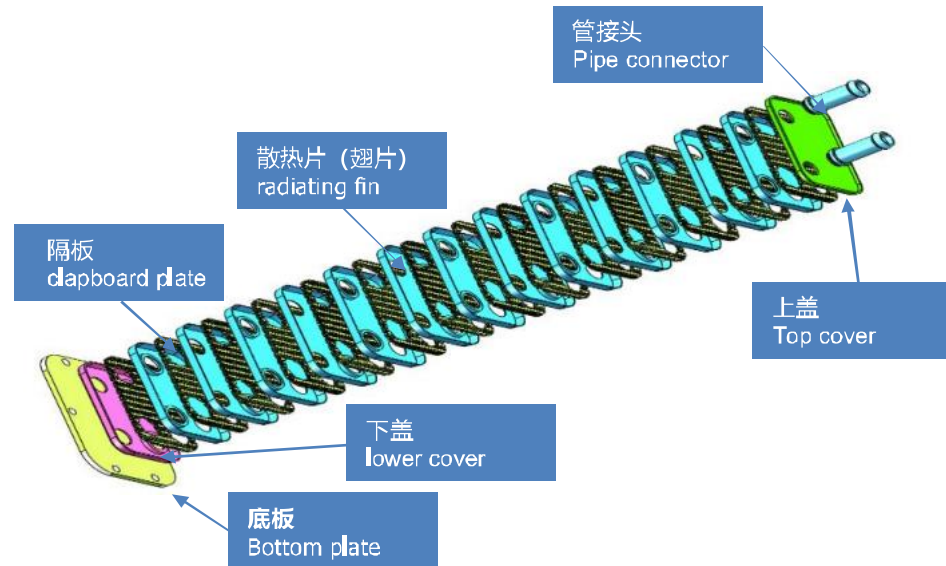
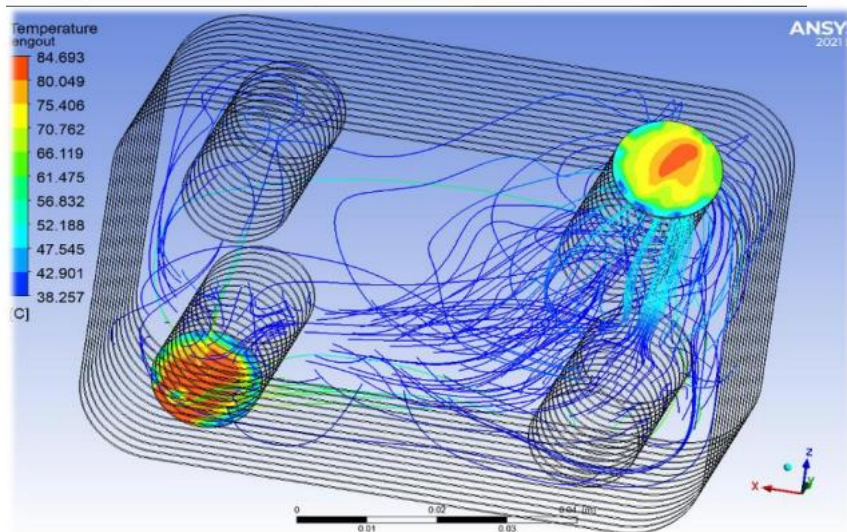
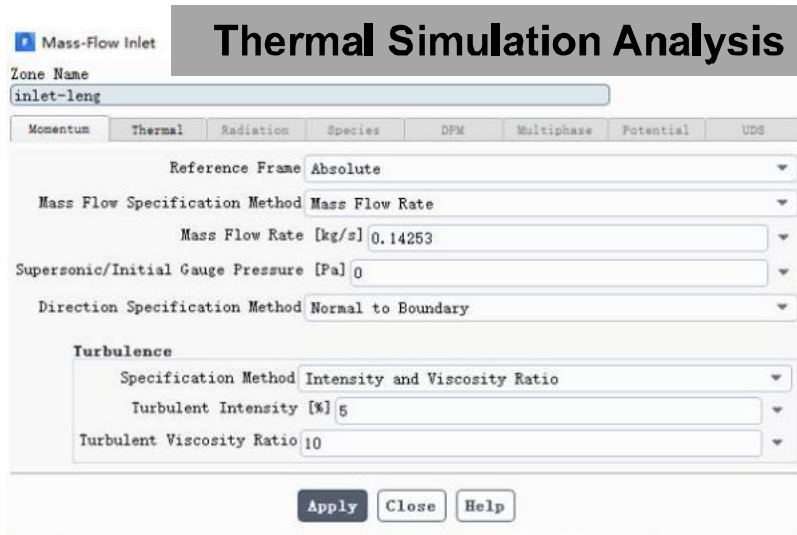
## Products Design



## Mould Design



# Technical Advantages -- Oil Cooler Design



Delving into advanced techniques

Employing CAE analysis

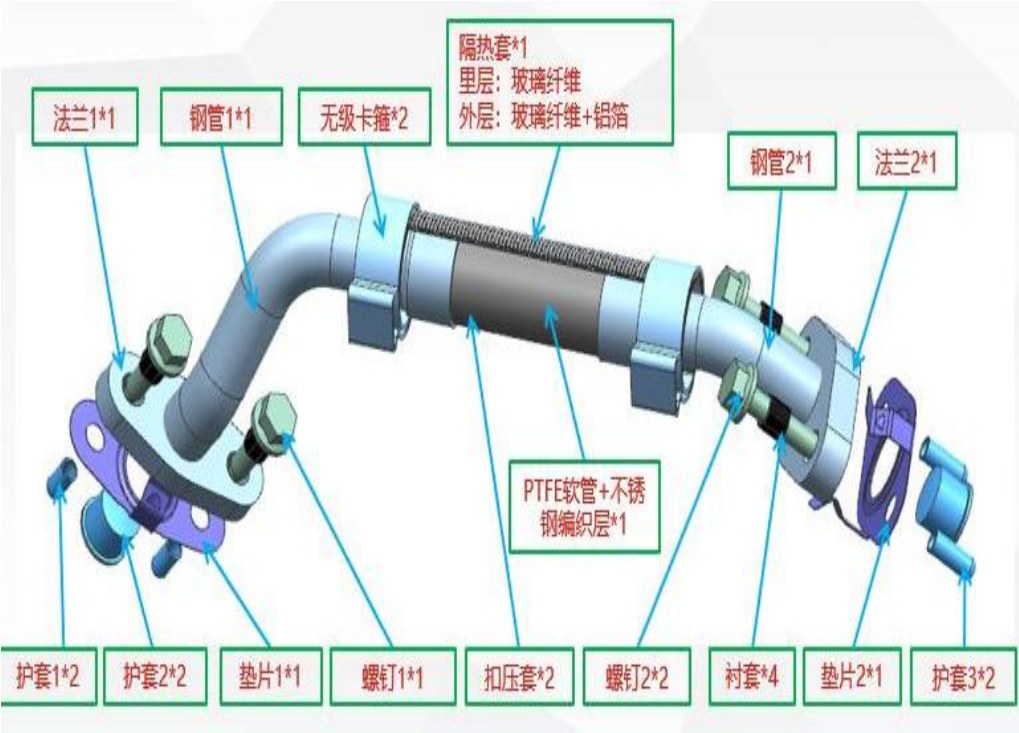
Utilizing mold flow studies

Motion simulation expertise

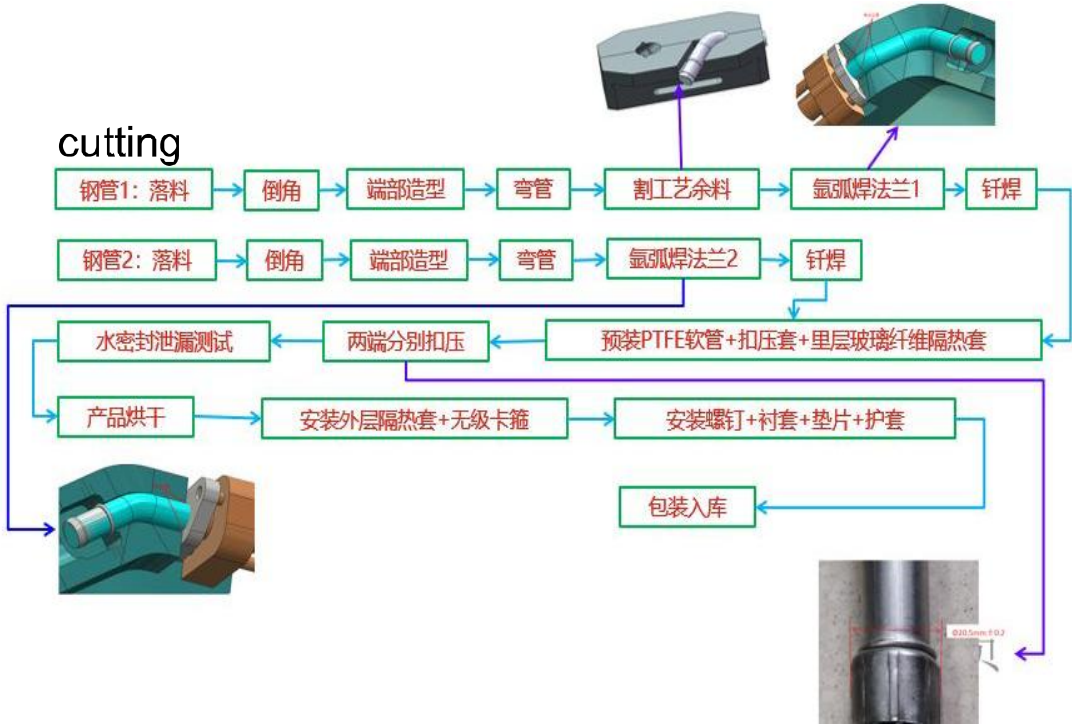
Guaranteeing product reliability

# SDZ Capacity -- R&D

BOM Pictures of Pipes products



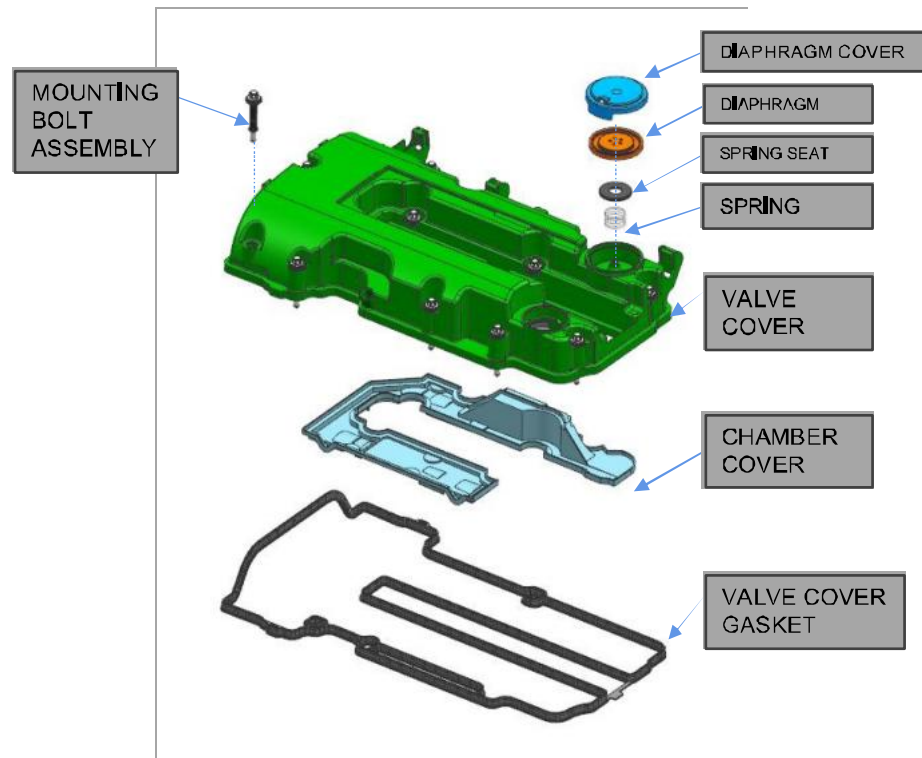
Key Process of Pipe Making



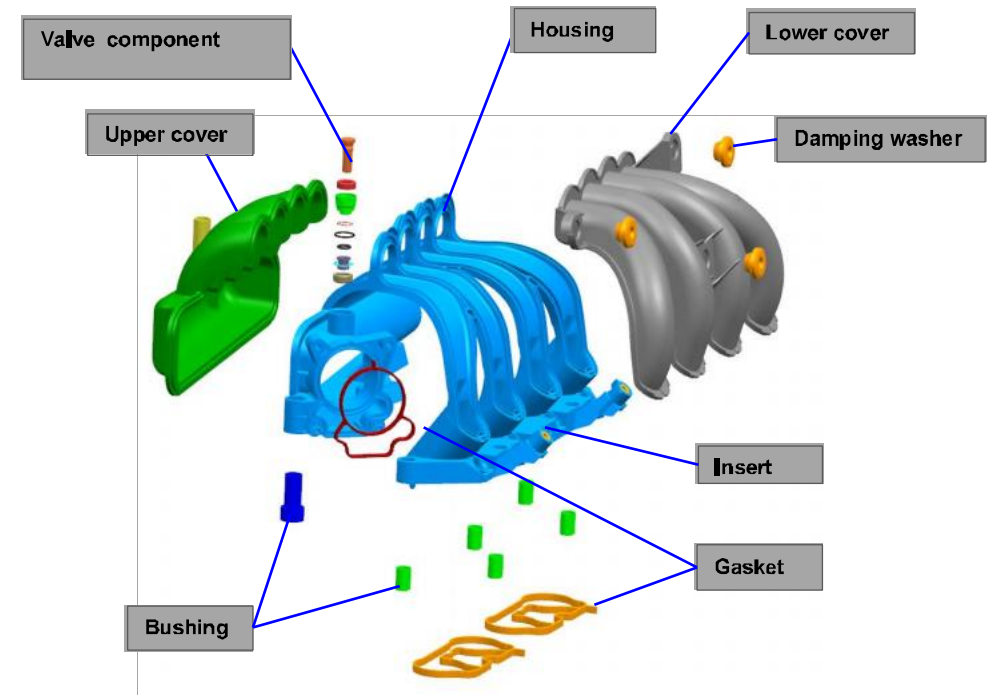


# Technical Advantages -- Other Engine Parts Design

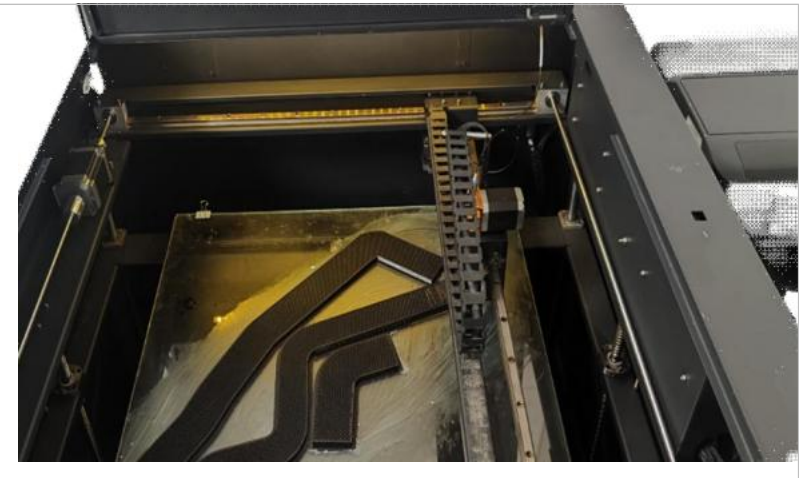
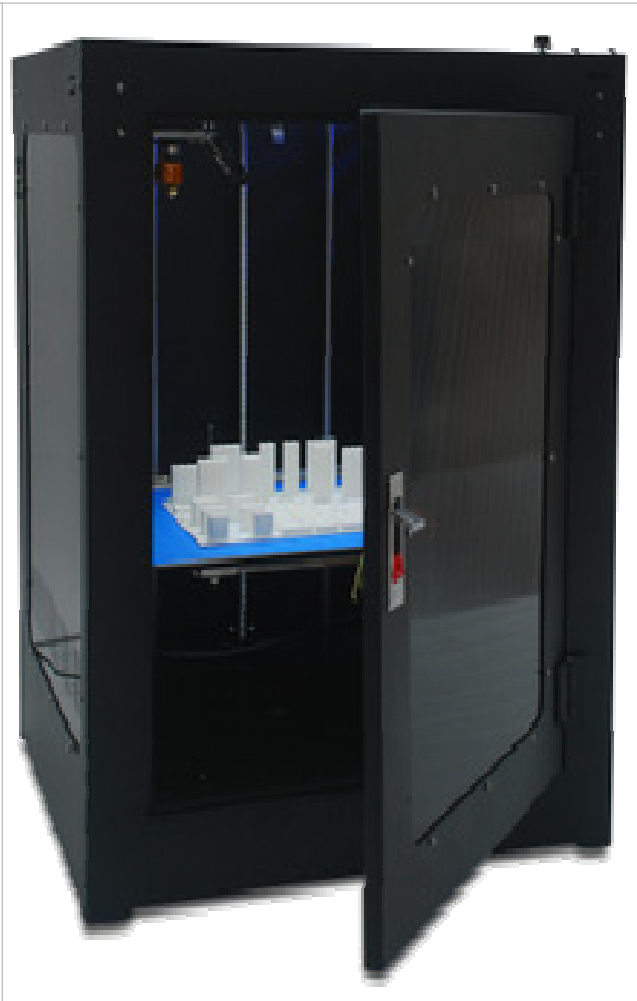
## valve cover design



## Intake manifold design



# Technical Advantages -- 3D Scanner & 3D Printer



# OE/OES Projects Show

**SDZ** 世德子



美国福特  
USA FORD

节温器壳体  
Thermostat housing



英国莲花路特斯  
British Lotus

跑车机油冷却器  
Oil cooler for  
sports cars



东风柳汽  
Dongfeng Liuzhou (DFL)

蜡式节温器  
Wax thermostat



Hydrogen Energy

不锈钢节温器  
Stainless Steel  
Thermostat



东风集团  
Dongfeng Group

天然气管  
Gas Pipe



RENAULT

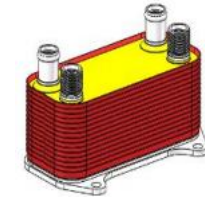
雷诺集团  
Renault Group



氢能源节温器总成  
Hydrogen Energy  
Thermostat Assembly



五菱柳机  
Wuling Liuji



MPV, 皮卡机油冷却器  
MPV, Pickup Oil Cooler

# Quality Ensurance

SDZ<sup>®</sup> 世德子



Reliable Optimized material selection 可靠的最优选材



Advanced Equipments 先进的设备



IATF  
16949

IATF16949 Certified System  
IATF16949质量体系保障



Professional Engineering Staff  
专业的工程制造团队



Well-trained QC staff  
训练有素的质量团队



Customer-oriented Policies  
以客户为导向

# Key Test and Inspection Equipments

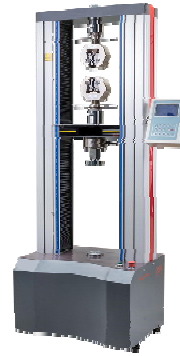
SDZ<sup>®</sup> 世德子



三坐标测量仪CMM  
coordinate measuring



投影仪OMM  
(Optical Measuring Machine)



拉拔力试验机器  
Pull off test machine



爆破测试台  
Bursting test machine



盐雾试验箱  
Salt Spray



密封件臭氧测试机  
Ozone test machine



高低温试验箱  
High-low temperature tester



振动模拟试验台  
Vibration simulation

# Key Test and Inspection Equipments

Oil Cooler impulse(life span) testing

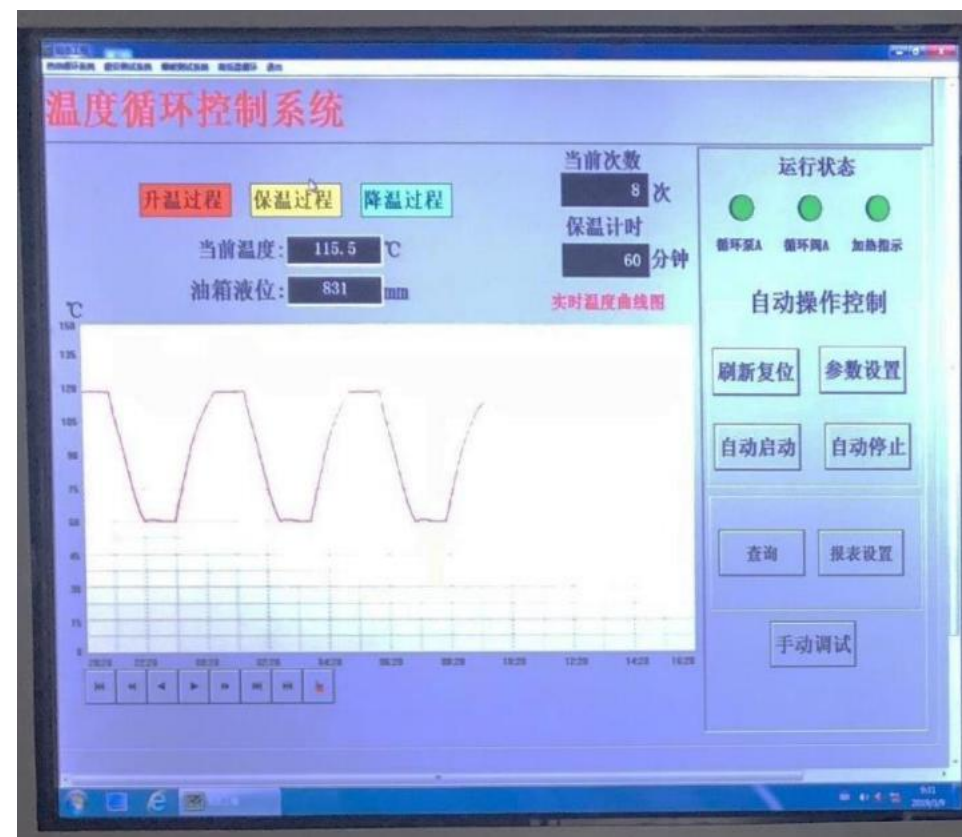


Oil cooler heat exchange test



# Key Test and Inspection Equipments

Product temperature cycle test  
in accordance with OE customer requirements



# Key Test and Inspection Equipments

Thermostat Function tester



Thermostat Life Span Tester





# Key Test and Inspection Equipments

High Pressure test machine  
 Inside tester: Max to 280Mpa(40600Psi/2800 bar)

High Pressure test :cooperation with the professional test center  
 outside test center: up to 1000Mpa(145,037Psi/10000 bar)



历史记录

压力公差[bar]	爆破压力公差[bar]	最小爆破压力[bar]	爆破测试	操作员	最大压力[bar]	平均压力[bar]	最大位移[%]	循环时间[s]	压力过高	压力过低	未测试
300.0	1000.0	1000.0	false	MaximatorIP	4703.9	4608.6	11.7	17.6	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4713.3	4609.3	12.1	17.7	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4691.0	4610.0	11.9	17.6	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4703.9	4609.9	12.5	18.0	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4694.1	4609.5	11.9	17.7	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4701.0	4610.8	13.5	17.9	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4696.2	4609.9	11.8	17.6	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4694.9	4610.1	11.7	17.6	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4693.1	4610.8	12.4	18.0	false	false	false
300.0	1000.0	1000.0	false	MaximatorIP	4694.2	4610.6	12.3	17.9	false	false	false
150.0	1000.0	1000.0	false	MaximatorIP	2399.9	0.0	9.9	7.9	false	false	false
150.0	1000.0	1000.0	false	MaximatorIP	2753.4	0.0	11.5	8.4	false	false	false
150.0	1000.0	1000.0	false	MaximatorIP	6524.1	0.0	13.7	12.6	false	false	false
150.0	1000.0	1000.0	false	MaximatorIP	6534.1	0.0	15.8	12.4	false	false	false

测试日期: 2023/ 7/14 ~ 2023/ 7/14

生成报告 全部生成 导出CSV

测试结果

测试类型: n/a  
 测试时间: 2023/07/12 12:21:43  
 二维码加: 30230712-03  
 设定压力: 7000.0 [bar]  
 测试压力: 5000.0 [bar]  
 最小爆破压力: 1000.0 [bar]  
 测试工程师: MaximatorIP  
 平均压力: 0.0 [bar]

是否爆破: true  
 过程中止: true  
 保压错误: false  
 测试结果: false

— 高压传感器 — 空心缸 — 顶针缸

压力[bar]

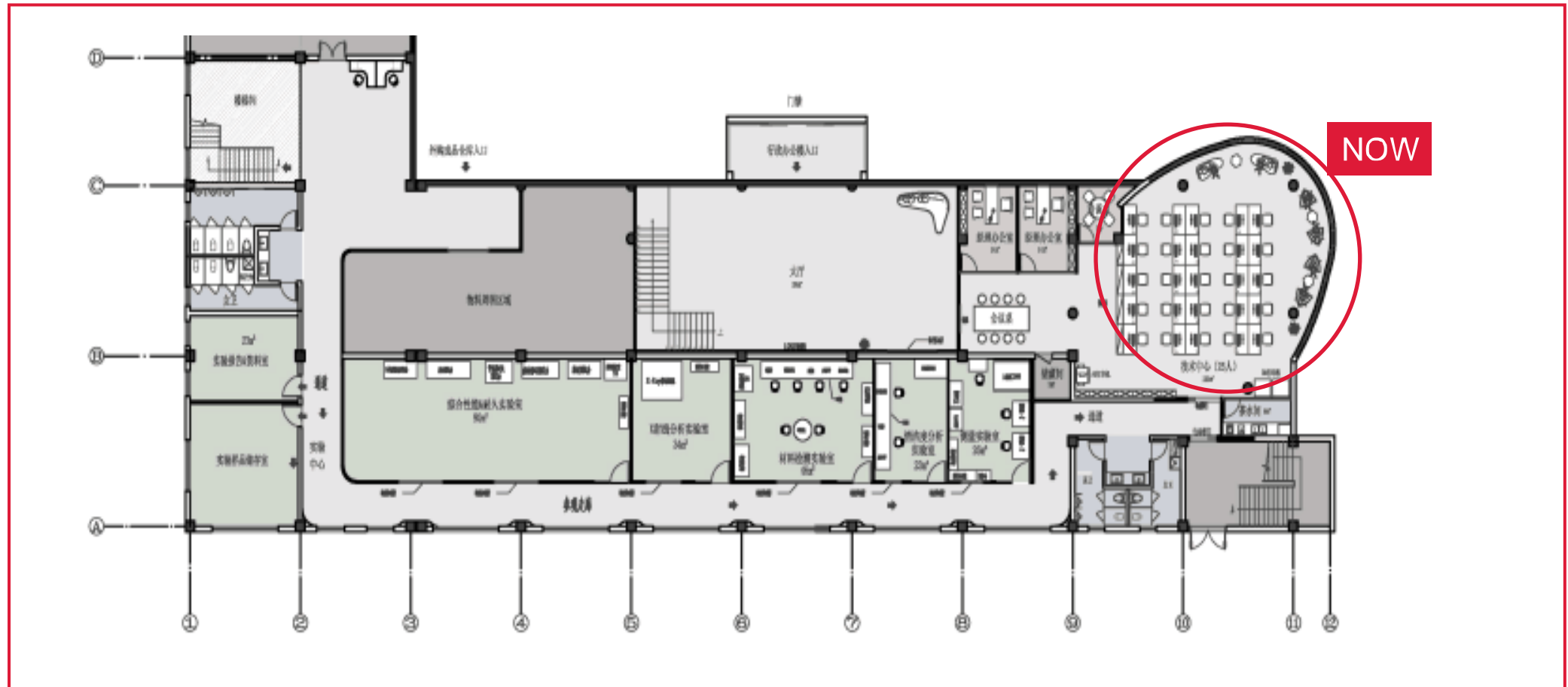
力[kN]

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000

0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 10.5 11.0

时间[s]

# Enlarge Plan for SDZ lab – layout



## Key Manufacturing Processing

Plastic injection

Welding:  
vibration friction welding,  
rotary friction ,  
ultrasonic welding,  
Spot welding-for metal  
laser welding-for metal  
argon ARC welding

multi-process processing of pipe :  
bending,shrinking,  
Chamfering ,  
heading.....

Brazing of aluminum oil cooler

CNC machining

Aluminum die casting

shot blasting;  
sand blasting  
Tumbling  
Cleaning

Pressing & Punching

...

# Manufacturing -- Material Chose & Control

Choose superior Raw material for PA66, PPA, PPS and other injection particles per OE design.



Raw material melting point detection - melting point tester.



# Manufacturing -- Plastic Injection

SDZ<sup>®</sup> 世德子



Fully automatic plastic injection line with central feeding system maximizes efficiency

## Hai Tian MA series injection machine:

- clamping force from 600 to 33,000kN
- New high drive servo system
- Good design structure
- High precision
- Environmental Care
- Quick maintenance
- 25T-780T, meet different sizes of products.

Total 12 sets:

Capacity: 0.5million PCS/month

# Moulds And Tooling Storage

SDZ<sup>®</sup> 世德子

Moulds and tooling warehouse area



Leaking test fixture tooling



# Manufacturing -- Various Advanced Plastic Welding

## Vibration friction welding



## Rotary friction welding



## Ultrasonic welding



# Manufacturing -- Pipe



well-equipped for forming technology

Cutting, bending, Heading, Chamfering, Shrinking, welding and so on.  
Various raw material :AL, Carbon steel, stainless,



Well controlled for the installation geometrical structure

Each part has the profile tooling to check the geometrical size



# Manufacturing -- Pressing/Punching

Automatic continuous transfer punching  
-progressive blanking die



Variety size of punching machines



# Full-automatic Ultrasonic Cleaning Equipments

SDZ<sup>®</sup> 世德子



High efficiency: 5-tanks (clean 5 times)  
continuous cleaning and drying process ; cleaning and dry section can be individual controlled.

Productive: Increased production capacity, suitable for mass production

Environmental: More environmentally friendly.



Small size cleaning machine

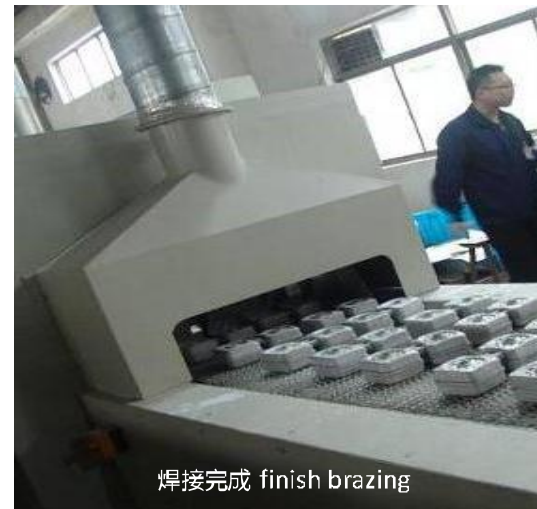
meet multi-varieties and  
small batch

# Oil Cooler Brazing Furnaces

SDZ<sup>®</sup> 世德子



电脑控制与监测焊接过程 Computer control and monitoring brazing



# Oil Cooler Brazing Furnaces

SDZ<sup>®</sup> 世德子

New one controlled atmosphere aluminum brazing—capacityX4  
Advanced equipment performance will assure high efficiency, high quality solutions.



SDZ机油冷却器产品线配置了国际先进的CAB铝钎焊系统（与MAHLE, DENSO同款），可应用于汽车行业的热交换器，如油冷器、冷凝器、中冷器的生产。SDZ oil cooler production line is equipped with an internationally advanced CAB aluminum brazing system (the same model as MAHLE and DENSO), which can be applied to the automotive industry in the production of heat exchangers such as oil coolers, condensers, and intercoolers.

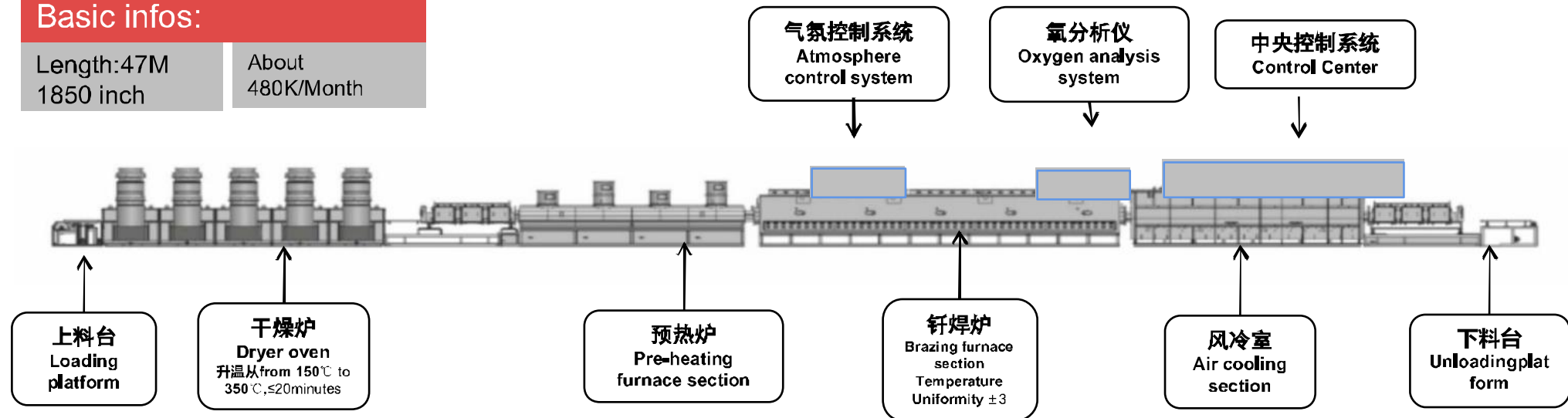
- 节能设计:先进的加热控制系统，包括电力和天然气加热。Energy efficient design, advanced heating control system, including electric and natural gas burner heating.
- 炉温稳定精准:先进的温控仪表和软件参数调整，炉温精度  $\leq \pm 0.2^{\circ}\text{C}$  : Advanced temperature control instrument and software parameter adjustment, furnace temperature accuracy  $\leq \pm 0.2^{\circ}\text{C}$  :
- 低噪，洁净:钎焊炉强冷室风冷能力强，吹风机与吸风机协作配合，震动小，噪音低(1.2米距离小于等于85dB)，保护工作环境洁净。
- It is with strong cold chamber has strong air cooling ability, hair dryer and suction fan cooperate, small vibration, low noise  $\leq 85\text{dB}$  1.2 meter distance, and assure the working environment clean.

# The controlled atmosphere brazing (CAB) construction

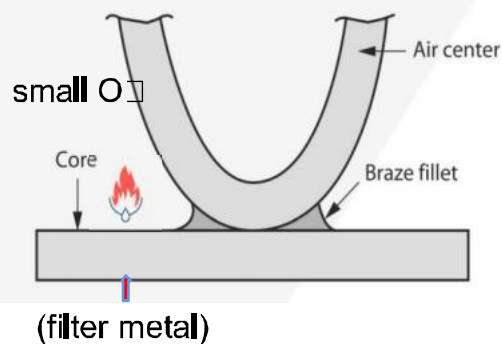
## Basic infos:

Length: 47M  
1850 inch

About  
480K/Month



加热系统能力充足，各加热区独立控制，使得炉内循环风速满足工件烘干要求，确保工件进入下道工序时无任何危害钎焊质量的水分存在。



### 可控气氛钎焊工艺的优势

可控气氛钎焊 (CAB) 工艺在低氧的氮气保护环境下，将芯体加热到钎焊温度，并在加热过程中保证芯体上的温度均匀性。

在炉内钎焊过程中，铝/硅合金钎料（图1）被加热到液态后流入焊口并形成焊点。焊口的图解请参考图2。

The controlled atmosphere brazing (CAB) process **heats the core** to brazing temperature in a **low oxygen** nitrogen protected environment and ensures **temperature uniformity** across the core during heating. In the furnace brazing process, the **aluminum/silicon alloy filler metal** is **heated to a liquid** state before **flowing into the weld** and forming a **solder joint**. Refer to Figure 2 for a diagram of the solder joints.

# AL Die Casting -- Centralized Smelting Furnace of Natural Gas

SDZ® 世德子



crucible

Smelting Rate:300-350Kg/h;  
AL Liquid capacity:1000KG



Middle size smelting  
rate/speed:1000Kg/h

Large sized smelting  
rate/speed:1500Kg/h

Save energy ;  
Reduce AL  
liquid loss ;  
High effience

Fully automatic  
transmission  
of purification  
liquid aluminum  
reduce energy  
consumption .

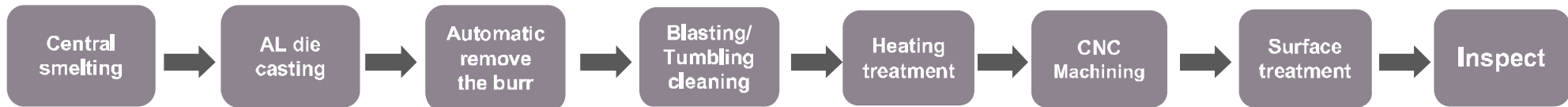
\*Melting energy  
consumption  
55~60Nm<sup>3</sup>/t .

\*Aluminum liquid  
loss≤0.8~1.3%

集中炉熔炼能力  
大幅增加,  
显著降低能耗,  
溶解能耗55~60Nm<sup>3</sup>/t,  
铝液烧损≤0.8~1.3%

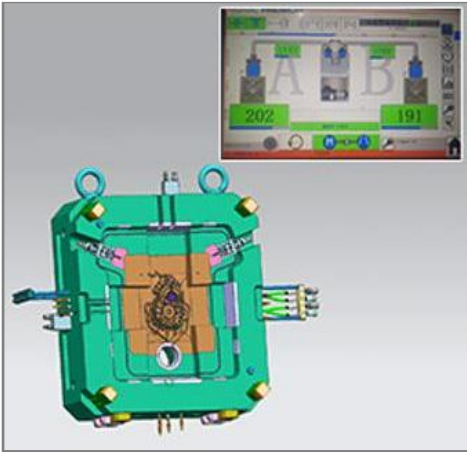
# Smart AL Die Casting

Each process are fully automatic— TOYO brand



# Smart AL Die Casting Advantages

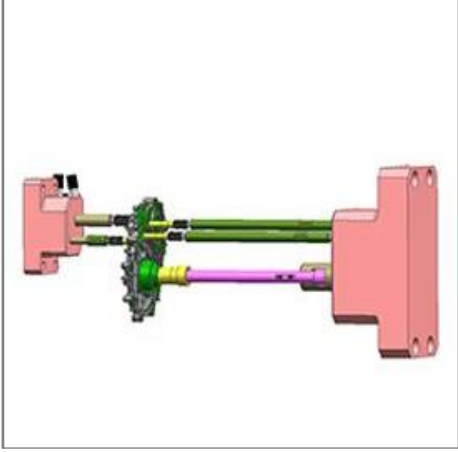
Assure High quality Product:  
advanced die-casting technology reduce the porosity of die-casting parts.



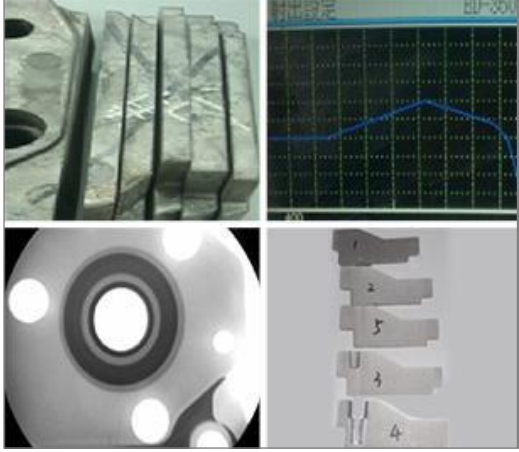
Vacuum die casting  
真空压铸技术



High pressure  
point cooling 高压点冷技术



Local extrusion technology  
局部挤压技术



Ultra-low speed die casting  
超低速压铸技术



# AL Die Casting: Large Capacity

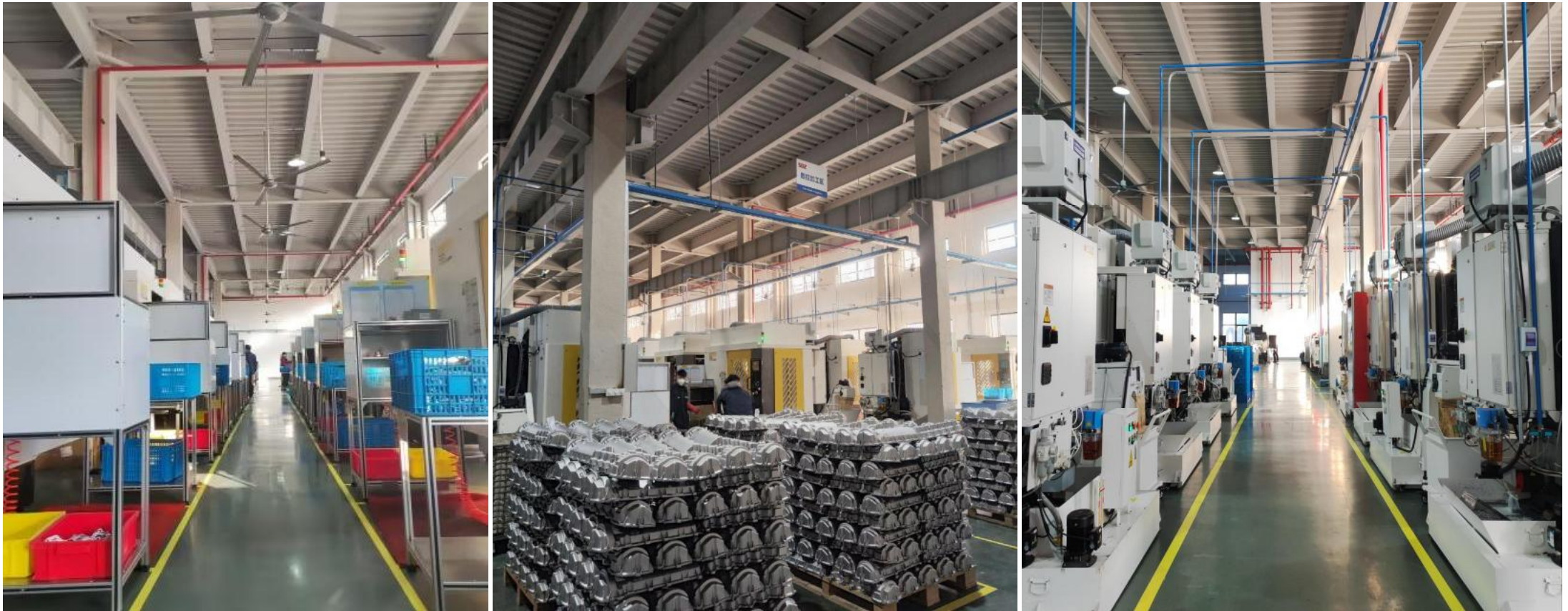
Specification parameters规格参数				Machine QTY /sets 设备数量	
HPDC Machine Type 压铸机型号	Die-locking force 锁模力 (Ton)	Shot Weight (Al) 射料量(kg)	Approximate Product Weight (Al) 产品重量约(kg) = (0.5-0.7) *Shot Weight	QTY	Capacity 产能
LK DCC280	280	1.5~2.9	0.75-2.03	4	0.3million /Month
TOYO 350-V7EX (Japan)	350	2.7~4.7	1.35~3.29	5	only 2 put into use;
LK DCC580 (Hong Kong)	580	4.2~6.9	2.1~	2	
LK DCC700 (Hong Kong)	700	6.5~10	3.2~7	1	
LK DCC800 (Hong Kong)	800	7.1~11.2	3.55~7.84	1	put into use
LK DCC1250 (Hong Kong)	1250	13~25.4	9.1-17.78	1	
	Parts Size can reach about 1 Meter			14	

# CNC Machining

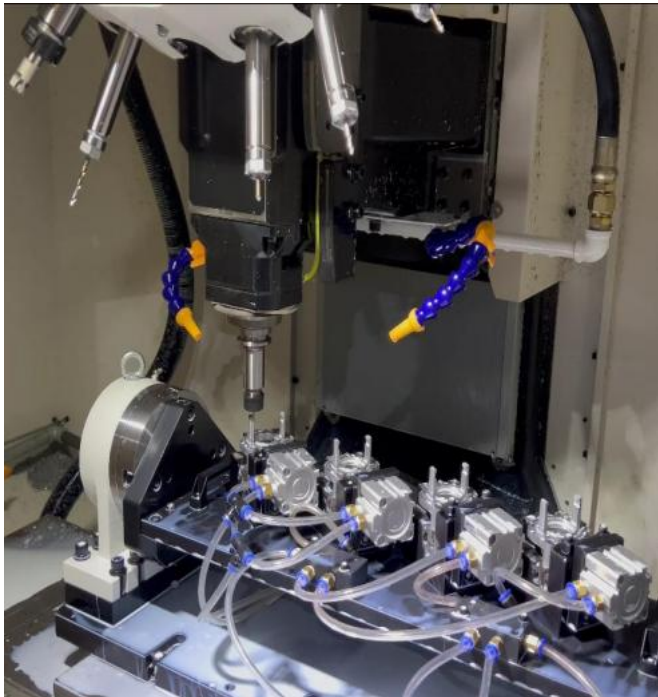
SDZ<sup>®</sup> 世德子

High-Speed, High-Precision and High-Efficiency Machining Center-**FANUC** brand

total 20 sets



## Advanced CNC Machining



FANUC CNC 汽车零部件的高速高精度加工  
High speed and high precision machining of auto parts  
by FANUC CNC



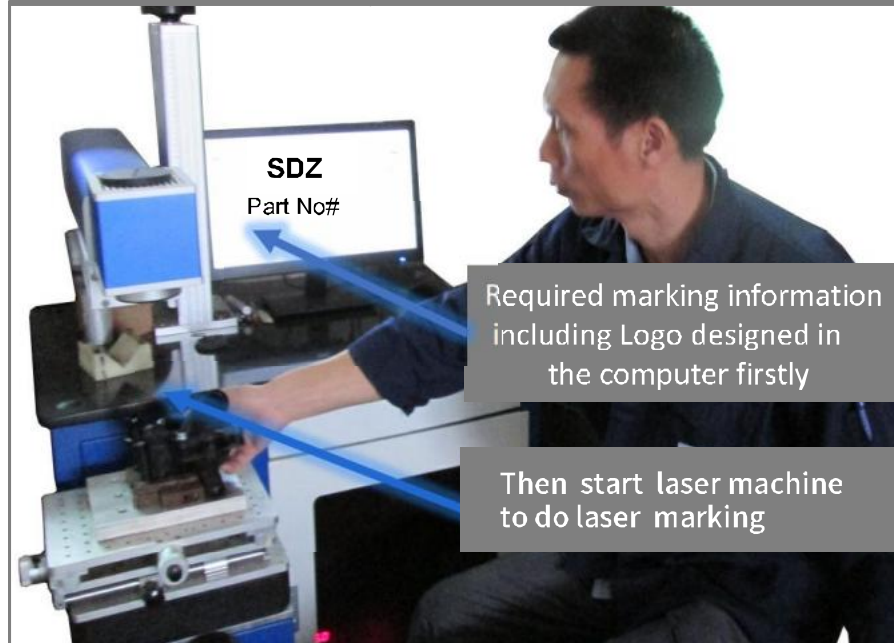
双主轴走心机, 融合机床上下料系统, 轴类, 螺丝, 球头等零件全自动生产  
Double spindle precise digital-controlled machine, integrated  
loading and unloading raw material system,  
automatic production of shaft parts, ball joint, banjo



大工件数控加工  
Large size components machining

# Marking & Packing

Packing and laser marking per packing instruction



Laser marking samples



**Bulk Packing:**  
with PE bag without inner box



**Inner Box Packing**



**# Divider Packing**



**Customized Packing :**  
Per Customer requirements with brand authorization



SDZ supply:

- SDZ brand packing
- Neutral Packing
- Customized Packing

# Storage & Shipment



packed in cartons



packed in pallets

## Convenient traffic:

Shanghai Port : 2 hours arrived  
Ningbo port: two days arrived





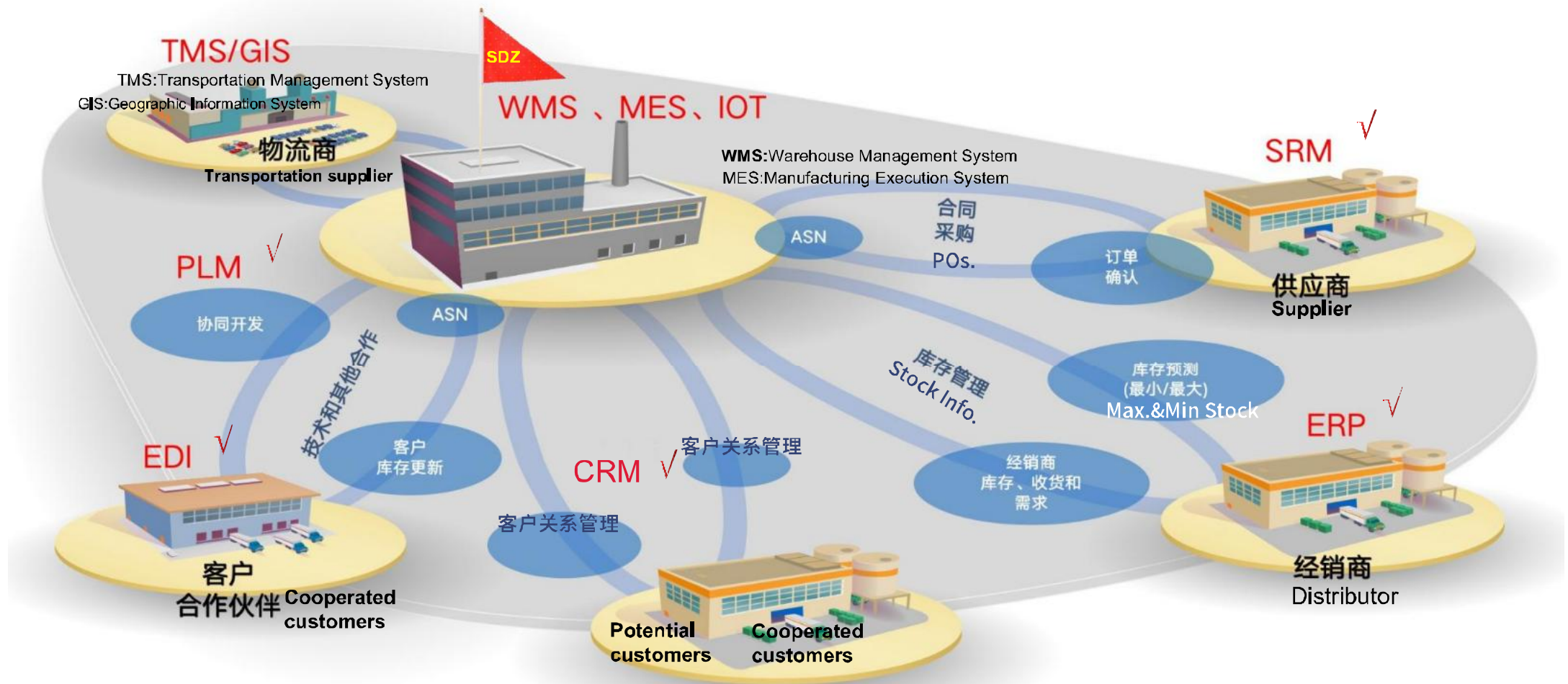
### Environmental protection & energy conservation

**\*In** Order to save energy and resources and do a better job in environmental protection, SDZ has taken the initiative to install solar panels to contribute to the green development of the country.

**\*We** bought new machines with multi energy, not only the electric but also the gas .And the machine is with gas waste treatment systems.

# Digitalized Factory -- SDZ introduced ERP、CRM、PLM、MES System

SDZ<sup>®</sup> 世德子





# 感谢聆听

# THANKS

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