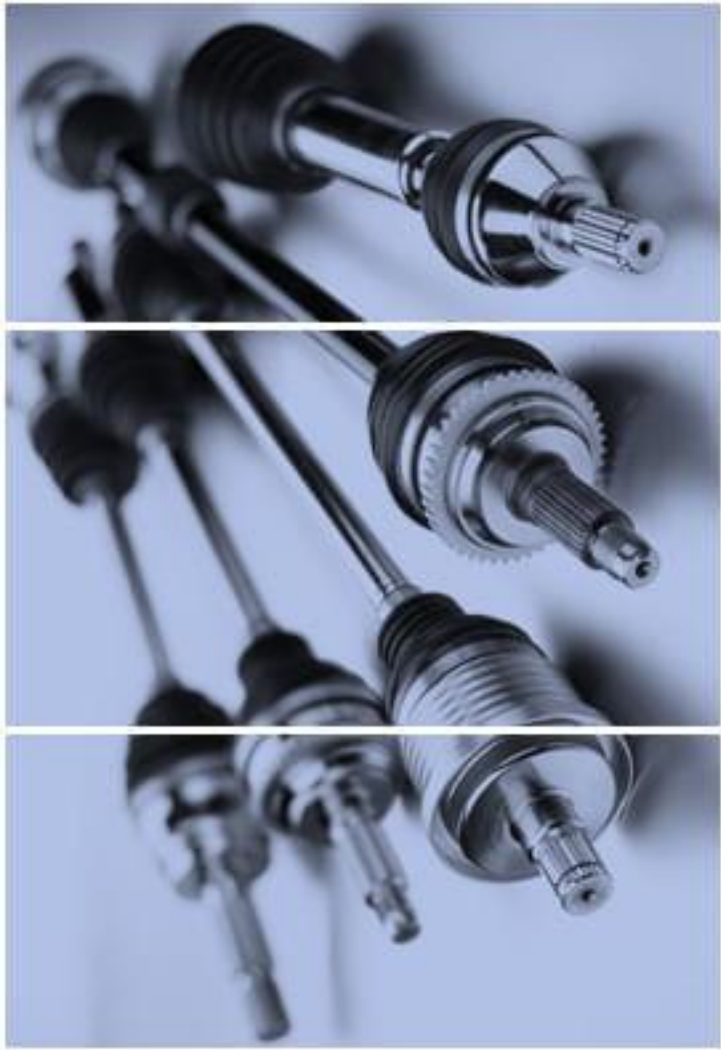


2024



Xianglong Manufacturing Corporate Profile





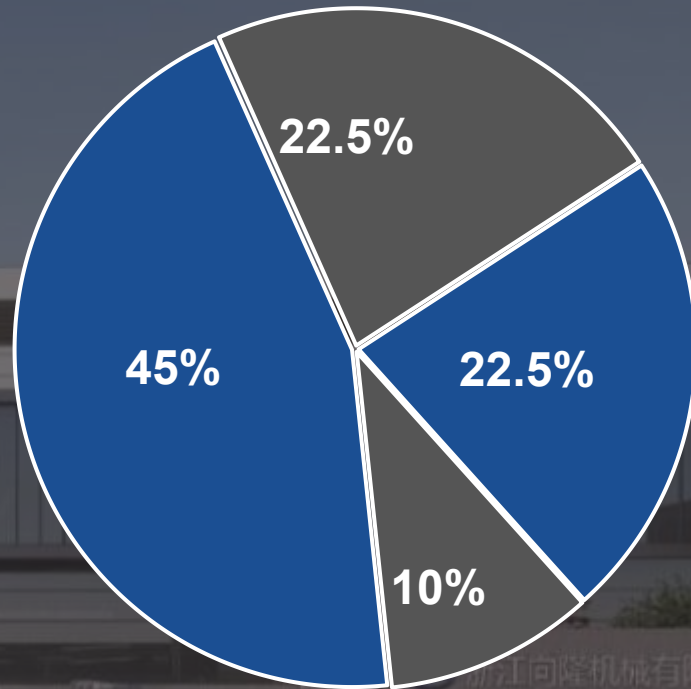
Corporate Profile

R&D Capability

Research Capability

Manufacturing Capability

Ownership Structure



USA: VEM 45%

China: JiaLong 22.5%

Investment Company: XieBang 22.5%

XL Employee: 10%

Enterprise mission: Make travel safer and more comfortable with high-quality products and services

Enterprise vision: To become strategic partners of mainstream auto brands

Enterprise core values: Customer-oriented
Employee-rooted Realistic and innovative Continuous improvement

SPS Spirit: Unswerving Responsible Aggressive Sharing

Enterprise culture : Diligence Innovation Win-Win cooperation



Established Time	December, 2006
Headquarters Address	Ningbo. China
Core Business	R&D, Manufacturing, Sales of automotive drive line system parts
R&D centers & Plants	Two R&D centers(German R&D center is in progress)
	Three mass production plants (Cixi and Jiangbei Ningbo city China, Rayong Industrial Zone, Thailand)
	Other two plants in the future (Mexico and Poland plants are under site selection)
Employee qty.	More than 1000 people



SPS is committed to create value for customers continuously, original intention remains the same, forge ahead!

SPS Speed Power Strength



Start- up Period 2002-2007

- 2002** Established by Ningbo JiaLong
- 2006** Joint ventured with USA VEM, meanwhile be the supplier of Polaris
- 2007** Haval Greatwall in production



Growth Period 2008-2016

- 2012** BRP in production
- 2013** FAW and GAC in production
- 2014** Relocation plant in Cixi Get projects from Mazda
- 2015** Honda SC and Hyundai in production



Growth Period 2017-2019

- 2017** BYD and Geely new energy car in production
- 2018** Isuzu in production
- 2019** Volkswagen and Ford in production, that means SPS become the partner of mainstream auto markets



Development Period 2020-.....

- 2020** SAIC Volkswagen, Chrysler in MP Thailand plant into operation.
- 2021 become a partner of HongQi Automobile
- 2022 Nio in MP
- 2023 Development continue



Auto Field

Drive shaft

High Speed CVJ

.....

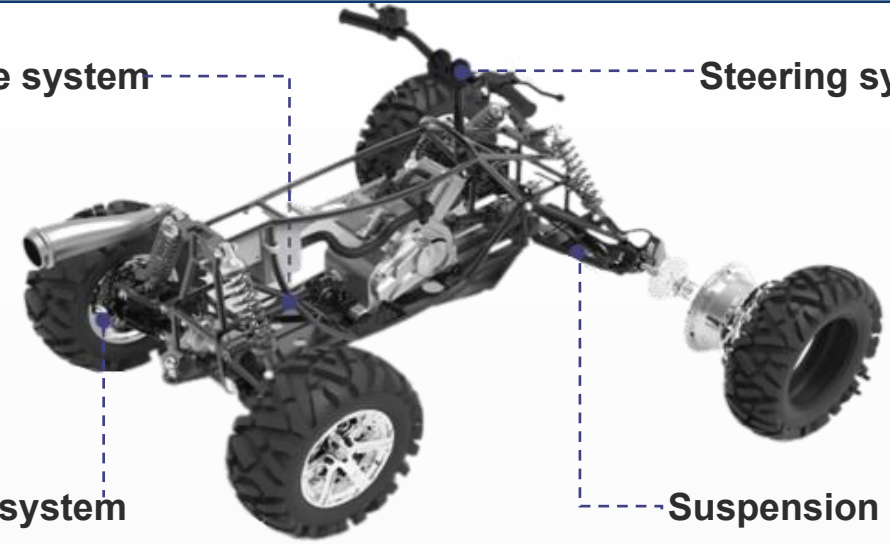


Drive line system

Steering system

Braking system

Suspension system



ORV Field



Drive Line: Drive shaft, Prop shaft



Steering: Rack and Pinion, Steering column, Ball joint



Suspension: Stabilizer bar



Braking: Brake disc

.....



Drive shaft

- Lighter weight
- Higher strength
- Higher efficiency
- Better NVH

Prop shaft

- Better balance
- Better NVH
- Lighter weight

High speed CVJ

- Low temperature rise
- Higher load
- Higher speed
- Better NVH
- Lighter weight

Modular product

- Rack and Pinion
- Hub Unit
- Brake Disc
- Steering column
- Stabilizer Bar

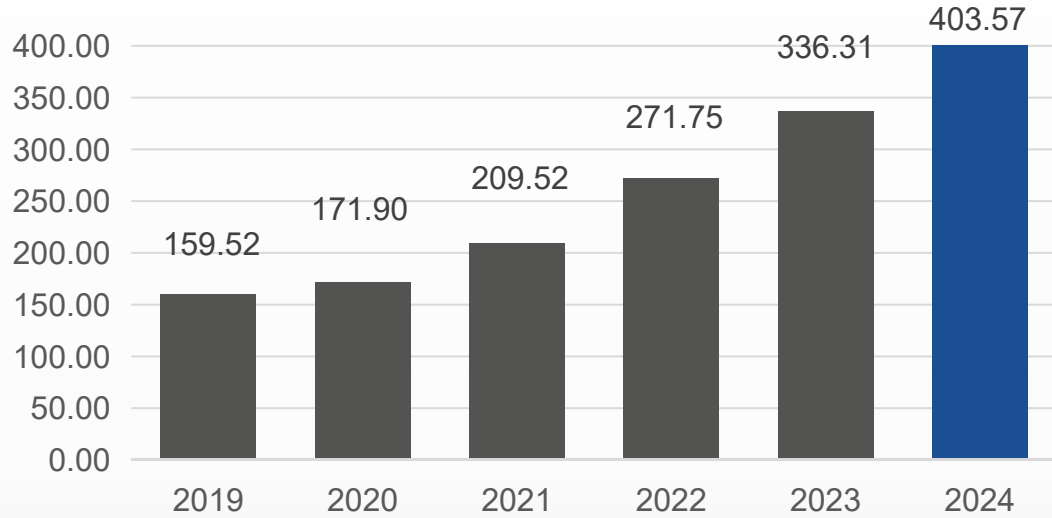


Sale revenue and market share



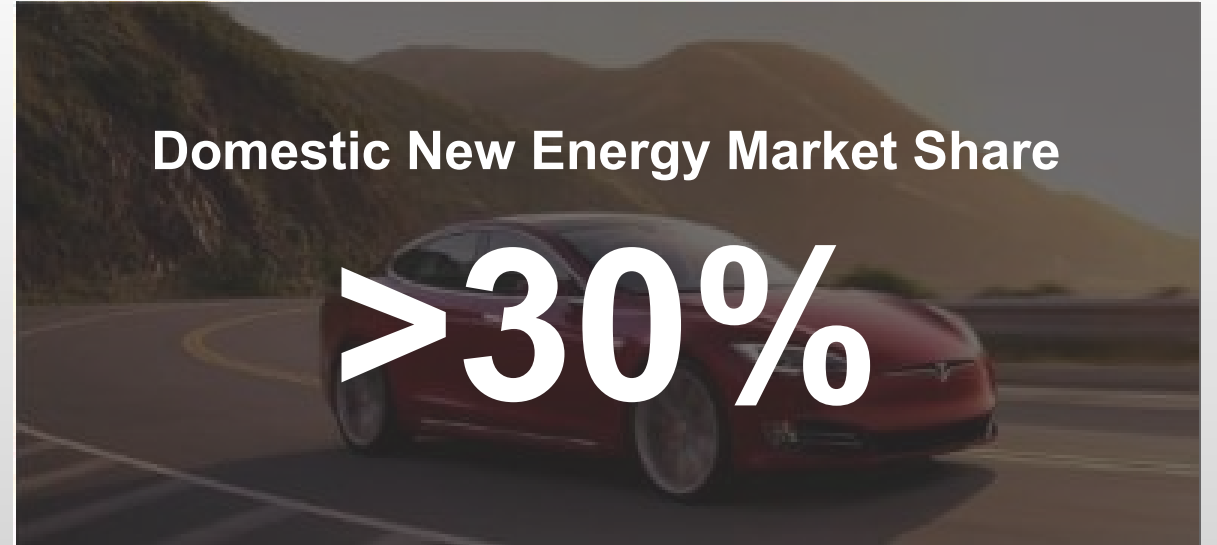
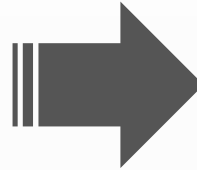
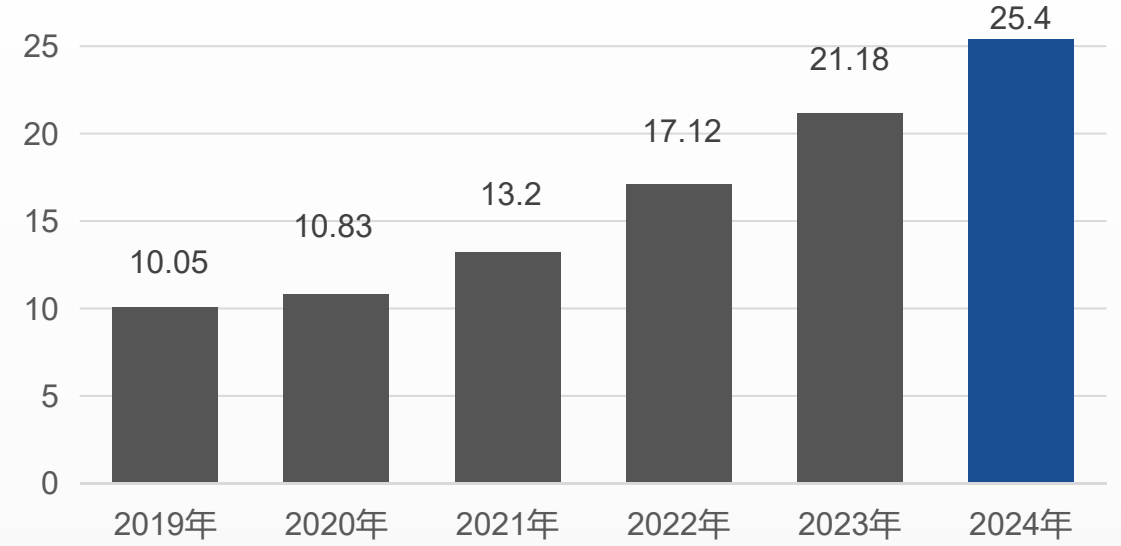
\$ Sales revenue

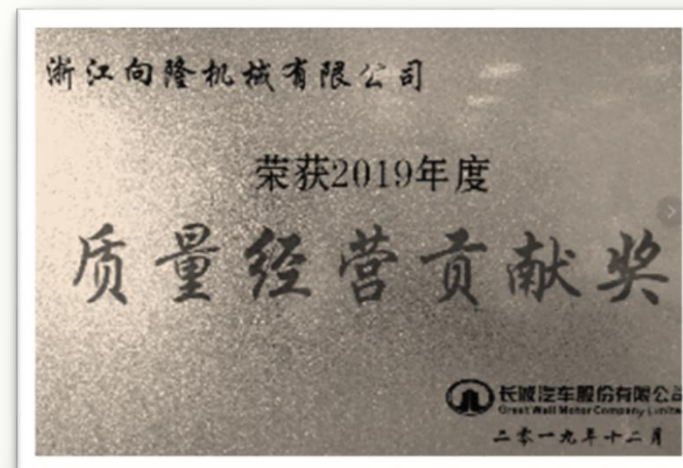
Unit: Million USD



¥ Sales revenue

Unit: 100 million CHY







International customers

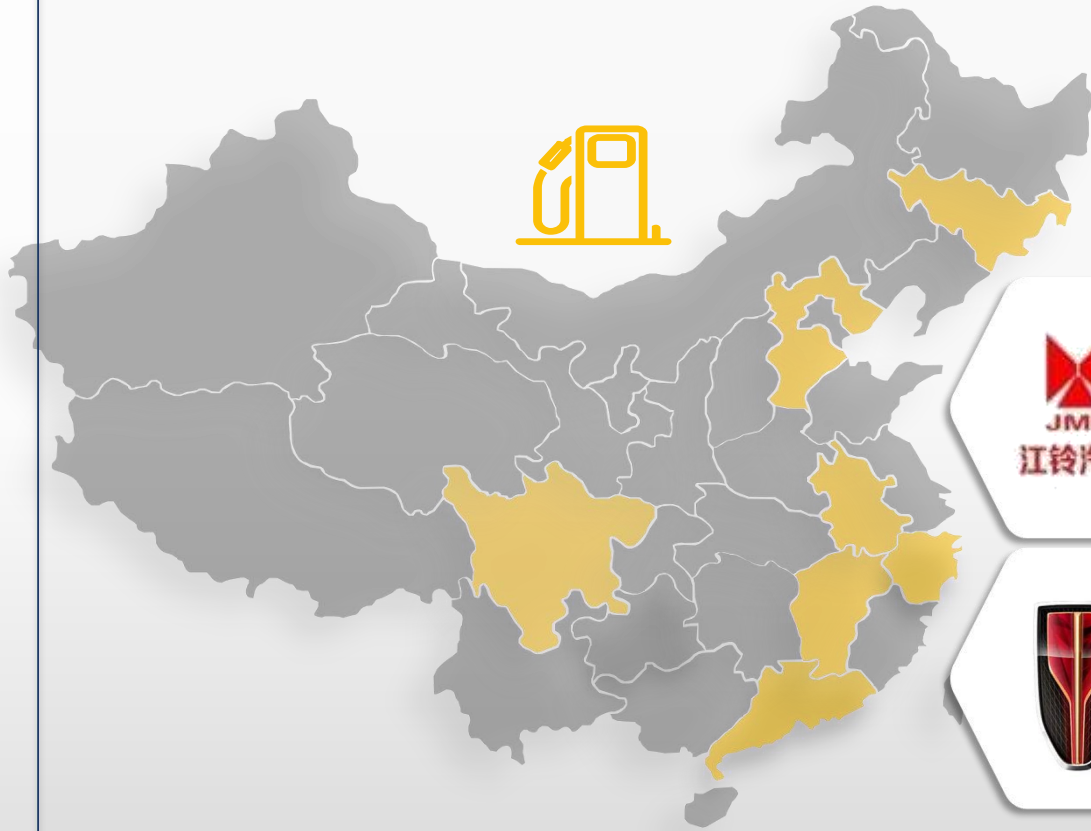




Main Customers



Domestic customers-Fuel vehicle





New energy vehicle



A collection of logos for major Chinese automotive brands, arranged in a honeycomb pattern. The logos include:

- BYD (red oval logo)
- 吉利汽车 GEELY AUTO (Geely logo)
- 哪吒汽车 (Neta logo)
- ORA (ORA logo)
- 岚图 (Lantu logo)
- XPENG (XPENG logo)
- 理想 (Li Xiaolang logo)
- HYCAN (Hycan logo)
- LOTUS (Lotus logo)
- LEAPMOTOR 零跑汽车 (Leapmotor logo)
- AITO (AITO logo)
- More



Main Customers



European and American customers



- JETTA VS5
- JETTA VS7
- Octavia A8
- Lamando
- Audi Q3、Q4
- Tayron、Tiguan
- T-ROC、T-ROC HEV
- Sagitar HEV



- Ford Raptor
- Ford Ranger



- Jeep Wrangler
- Jeep Grand Cherokee



- Polaris Rogue
- Polaris Zeus
- Polaris Hercules



- BRP X3
- BRP G2
- BRP NEXT



Japanese and Korean customers

ISUZU
江西五十铃



- DMAX
- ISUZU TF140


HONDA



- HONDA HR3
- HONDA HR6
- HONDA HR7


NISSAN



- NISSAN P3R





- EV Elantra
- MISTRA



Main Customers



Domestic customers



- HAVAL M4/6
- HAVAL H2/4/6
- HAVAL big/cool
- HAVAL rabbit/Love
- HAVAL ORA
- HAVEL Snapdragon Max



- Trumpchi GS4
- Trumpchi GS5
- Trumpchi GM6 M8 PHEV
- Aion S/LX/V/Y
- Hyper GT



- TANG
- QIN
- YUAN
- SONG
- E5



- GEELY EV
- GEELY GSE
- GEDMETRY A
- MAPLE



- Arrizo
- EXEED TX、LX



Main Customers



New power



- Pegasus (ET5)
- Sirius(ES6)
- Libra (EC6)
- Orion (EC5)



- M5 (AITO)
- SF5
- M5 (Overseas)



- S
- U
- V



- W02
- W03



- Eletre



Corporate Profile

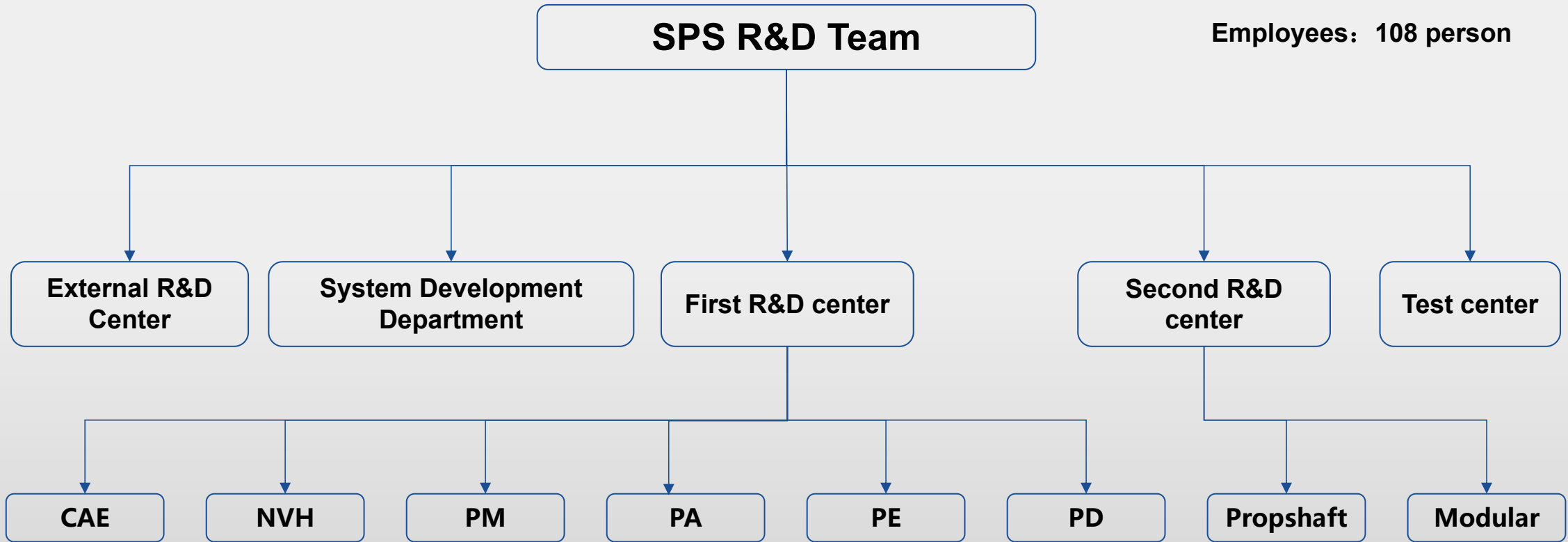
R&D Capability

Research Capability

Manufacturing Capability



Pre-research Generation Development generation Improvement generation





Joint Types



Joint	SPS Xiang Long	GKN	Picture
Fix Birfield Joint (Six balls)	FBJ	AC	
Fix Under cut free Joint	FUJ	UF	
Fix Efficiency Joint(Eight balls)	FEJ	/	
Plunging Standard tripod Joint	PSJ	GI	
Plunging Double Joint	PDJ	DO	
Plunging Cross Joint	PCJ	VL	
Plunging Low Friction Joint	PLJ	AAR/AARi	

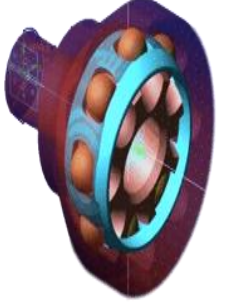
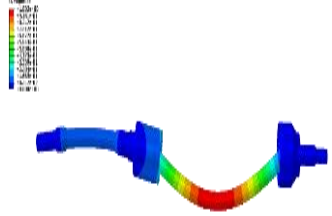
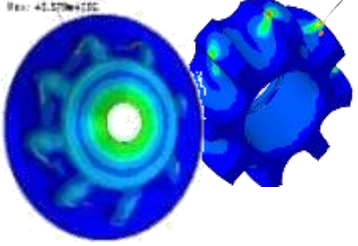



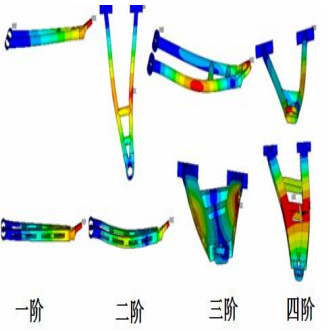
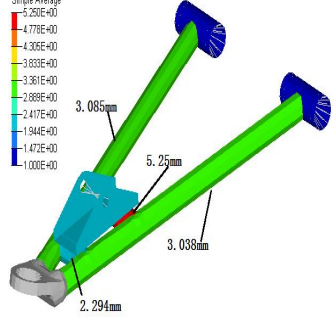

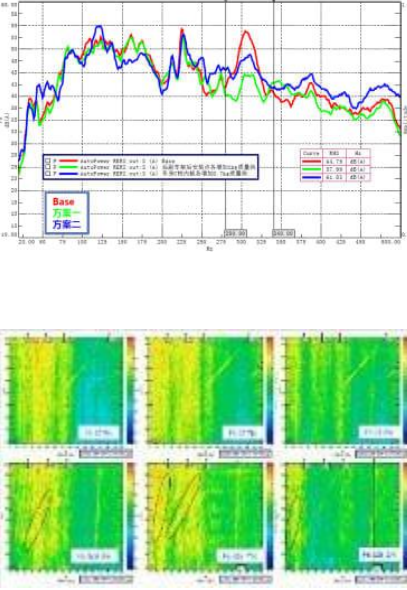


Joint types



Nominal torque(N.m)	FBJ	FUJ	FEJ	PSJ	PDJ	PCJ	PLJ	Break Torque(N.m)
900	FBJ6809			PSJ6809	PDJ6809			1260
1100	FBJ7111				PDJ7111			1540
1300	FBJ7513			PSJ7513	PDJ7513			1820
1500	FBJ7915			PSJ7915				2100
1700	FBJ8217			PSJ8217	PDJ8217			2380
2000	FBJ8720			PSJ87II	PDJ8720			2800
2300	FBJ9223				PDJ9223	PCJ92	PLJ9223	3220
2600	FBJ9526	FUJ9526	FEJ-U9526	PSJ9526	PDJ9526	PCJ95	PLJ9526	3640
2900	FBJ9829					PCJ100	PLJ9829	4060
3300	FBJ10033	FUJ10033	FEJ-U10037	PSJ10033	PDJ10033		PLJ10033	4620
3700	FBJ10437	FUJ10437	FEJ-U10437	PSJ10437	PDJ10437	PCJ104	PLJ10437	5180
4100	FBJ10941	FUJ10941	FEJ-U10941		PDJ10941	PCJ109	PLJ10941	5740
4600	FBJ11346	FUJ11346	FEJ-U11346		PDJ11346	PCJ113	PLJ11346	6440
5100			FEJ-U11751		PDJ11751	PCJ117		7140
5300						PCJ119		7420
5600			FEJ-U12156			PCJ121		7840
6300			FEJ-U12563			PCJ125		8820

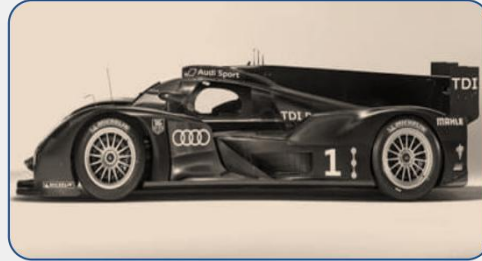


System	CAE Analysis			Road spectrum collection & Lifetime analysis	NVH Test
	Load decomposition	Modal analysis	Strength analysis		
Driveline System	 <p>CV joint load decomposition</p>	 <p>Drive shaft modal</p>	 <p>Joint strength analysis</p>		
Suspension System	 <p>Multi-body dynamics analysis</p>	 <p>Arm modal</p>	 <p>Arm strength analysis</p>		



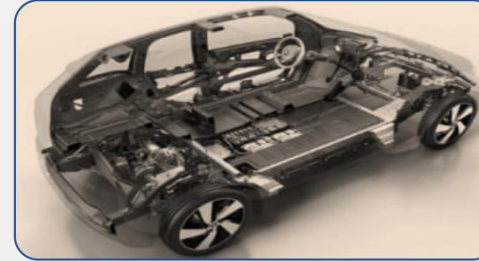
Lighter weight

Welding tube technology
Rotary forging technology
FEJ Angle (45°)
FEJ-U Angle (50°)
Compact Joint Type
Compact shaft diameter



Higher Efficiency

FEJ Angle (45°)
FEJ-U Angle (50°)
SX-8 Ball Joint
PCJ 8 Ball Joint
Higher efficiency grease



Lower vibration Lower Noise

Collect the Vehicle NVH data
Establish NVH database
Max. angle noise solution
Starting noise solution
Bigger PLJ Joint
Bigger PCJ Joint



Higher Strength

Bigger Joint Size
4600-6300 N.m
Higher strength material
New raw material development

Cost-effective material development

Cooperate with NanJing steel and establish a R&D center

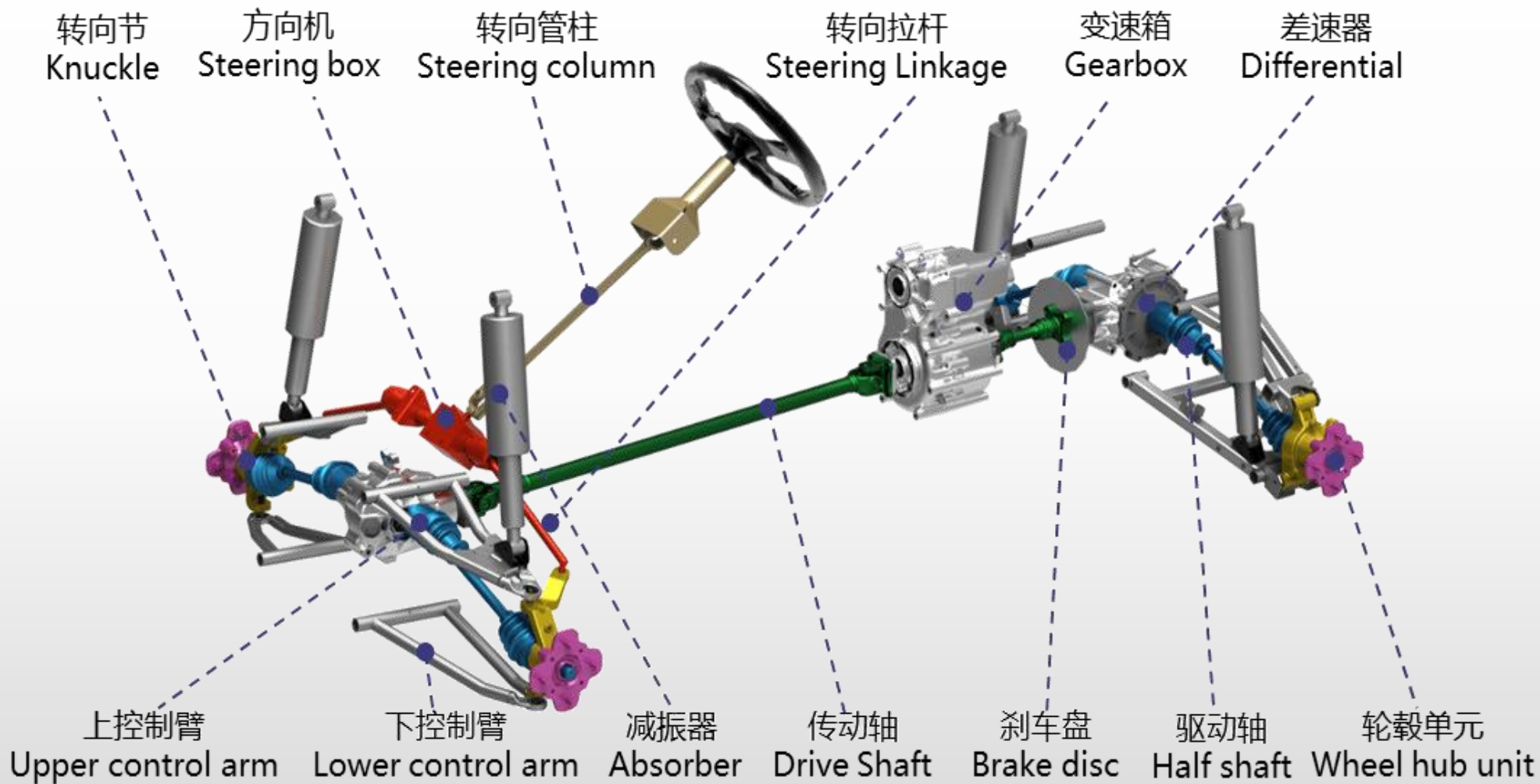


Higher performance grease development

Cooperate with VW

Test Item 测试项目			Unit 单位	Test Method 测试方法
Appearance 外观			---	---
thickener Type 稠化剂类型			---	---
Penetration 锥入度	60W	25°C	1/10mm	ASTM D 217
	10 ⁵ W	25°C	1/10mm	ASTM D 217
Dropping Point 滴点			°C	ASTM D 566
Oil separation 油分离			Wt%	ASTM D 6184
Evaporation loss 蒸发损失			Wt%	ASTM D 972
Oxidation stability 氧化稳定性			kgf/cm ²	ASTM D 942
Copper strip corrosion 铜腐蚀			---	ASTM D 4048
Four-ball wear Test 四球磨痕测试			mm	ASTM D 2266
Four-ball E.P 四球极压	Welding Point 烧结负荷		Wt%	ASTM D 1264
	LNSL		Kg	ASTM D 2596
Low temperature Torque 低温扭矩	Starting	-30°C	gf · cm	ASTM D 1478
	Running	-30°C	gf · cm	
Low temperature Torque 低温扭矩	Starting	-40°C	gf · cm	ASTM D 1478
	Running	-40°C	gf · cm	
SRV test (200N, 40Hz, 1h, 80°C, 1.5mm)			---	---
Friction coefficient Max.				
摩擦系数				
Wear diameter of rotate ball ,mm Max			---	ASTM D 5707
顶球磨痕直径			mm	

Modular products design





Drive shaft torque real-time monitoring Drive shaft temperature real-time monitoring





Corporate Profile

R&D Capability

Research Capability

Manufacturing Capability



Test center profile

Employees:

13 person total

Building area:

2570 square meters

Equipment investment:

Over 150 Million RMB

Imported equipment rate 99%

Certification:

CNAS-CL01 certification

Pass VW audit





SPS has advanced test rigs in this industry



Life test rig(Germany)



NVH test rig(Germany)



Quasi-Static torsion test rig (Germany)



Torsional fatigue test rig (Japan)



Natural frequency measurement rig (Germany)

Basic parameter:
 Displacement+200/-300mm
 Torque±2000N.m
 RPM 0~±3000 rpm
 Temperature 0~200°C
 Working range: 400~1000mm

Basic parameter:
 RPM ±2000 rpm
 Torque ±2000 N.m
 Displacement: -50~+50mm
 Working angle:-60°~60°
 Working range: -55~+255 mm
 MB 1.±1000 N/ MB 2.±4000 N
 Circumferential clearance ± 4°

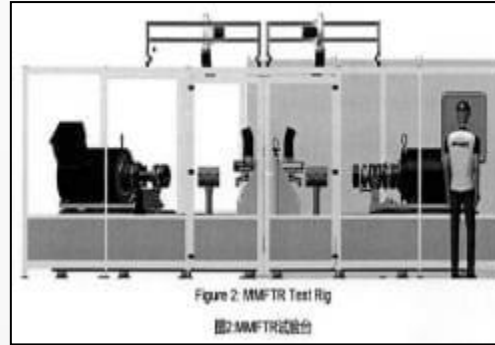
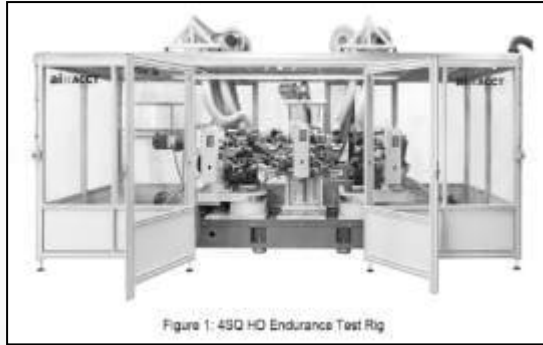
Basic parameter:
 Max. torque 10000N.m
 RPM 2.5~60rpm
 Working angle ±50°
 Working range:1300mm

Basic parameter:
 Working angle ±50°
 Torque ±2000N.m
 Frequency 0~10Hz
 Working range:
 250~2000mm

Basic parameter:
 Resonant frequency 31KHz
 Frequency: 5Hz~3500 Hz
 Accelerated speed120g



SPS has advanced test rigs in this industry



**Hot/Cold Starter
Platform(Germany)**

**4SQ High-dynamic Life test
rig (Germany)**

**Modular multifunctional
test rig(Germany)**

**Road spectrum
Collection(Germany)**

NVH analysis

Basic parameter:
Temperature +180°C~-50°C
Working Angle 0~60°
Cooling speed 1.5°C/min
Heating speed 1.5°C/min

Basic parameter
RPM:±2500 rpm
Torque:±4000 N.m
Displacement: 400~1150m m
Working angle:-90°~90°

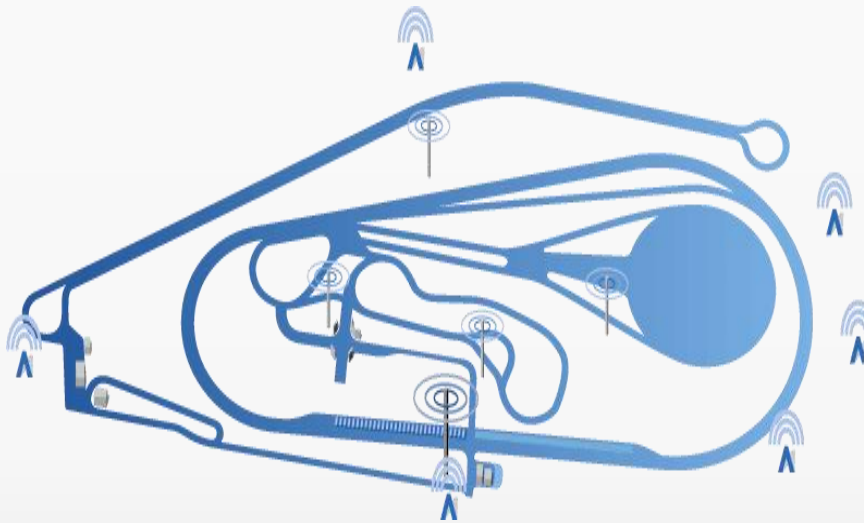
Basic parameter
Max. Torque 8000N.m
RPM 600rpm
Working angle±60°
Working range:2100mm

Basic parameter:
32 channel
Frequency 100kHz
EBRG
EHLS
EITB

Basic parameter:
14~24 extensible
channel



Advanced life and efficiency test rig based on road spectrum collection



Proving Ground



Road Simulation

Estimated save more than **3 months** durability test cycle

- Cooperate with VW Germany for new test rig research and development
- Vendor: Germany aix ACCT
- China's first 3K durability test rig based on road spectrum, invested 4 M USD



Corporate Profile

R&D Capability

Research Capability

Manufacturing Capability

13 production lines SPS has 12 millions half shafts capacity





- **NACHI滚齿机 (日本)**
Cold rolling spline
Japan
13 machines available



- **KUKA摩擦焊 (德国)**
Friction welding
Germany KUKA
4 machines available

- **中频热处理 (日本+意大利+热炼)**
heat treatment
Japan DKK/ Italy SAET/China
39 machines available

- **DMG硬车硬铣 (德国)**
Hard turning and hard
Milling
Germany DMG
26 machines available



- **井上磨床 (日本)**
Grinding machine
Japan
26 machines available



- **自动化装配线 (中国)**
Automatic assembly line
China
17 machines available



Quality Excellence System 8QES



X-LONG
Diligence Innovation win-win

Quality target

Quality Planning

Quality Assurance

Quality Control

Tier-2 Supplier Quality



01



02



03



04



05

0KM PPM
12MIS
24MIS
IPTV6
Cost of poor quality

QAP
FTA
GP12
Past issues verification
MQS
Manufacturing feasibility
IATF16949

SQIE
Reliability improvement
8QB
8D
5Why
Lesson Learned
SPC
VDA6.3

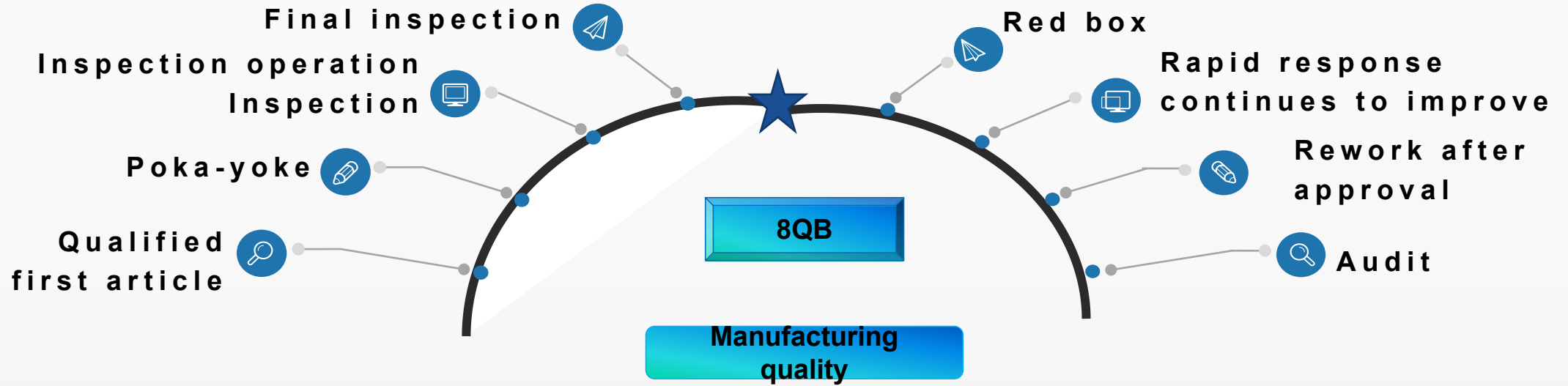
VAD6.5
PAC-V
CQI-8
CQI-9
GD&T
PDCA
TOP3/TOP5
Face to face board

QAP
VDA6.3
8D
5Why
A3 Report
IATF16949

8QES (Quality Excellence System)



8QB for manufacturing process

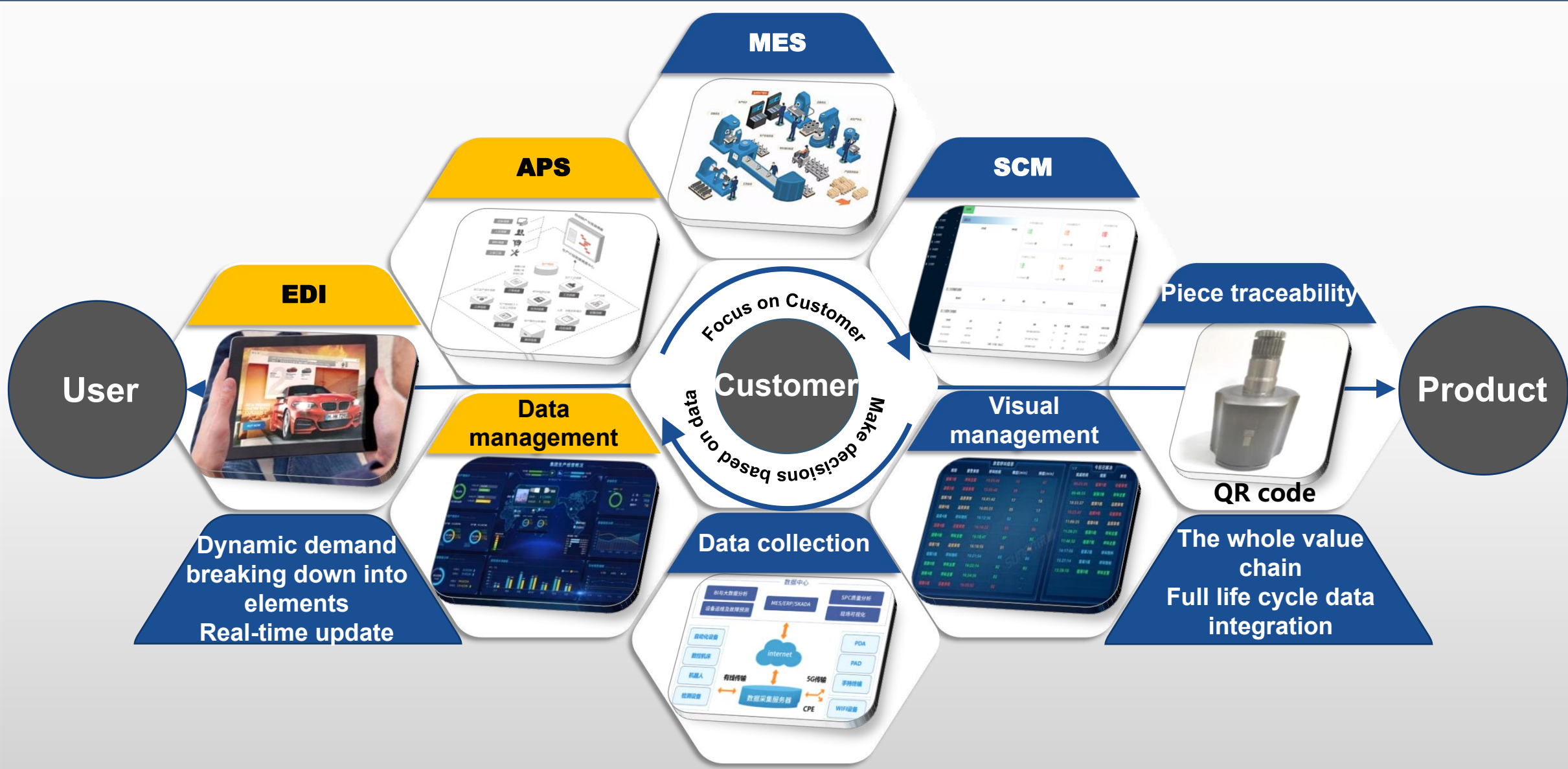


8QB for manufacturing process

Qualified first article	Poka-yoke	Inspection operation Inspection	Final inspection	Red box	Rework after approval	Rapid response continues to improve	Audit
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5G Intelligent factory planning



2024



Progressive and Promising