



COMPANY INTRODUCTION

奋进 / 务实 / 创新 / 和谐

德阳天应和机械制 造有限责任公司

DEYANG TIANHE MECHANICAL MANUFACTURING CO LTD

中国 四川 德阳
DEYANG, SICHUAN, CHINA



www.tianhecasting.com





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QUALITY CONTROL

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奋进/务实/创新/和谐

德阳天应和



01. 公司介绍

PART ONE →

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德阳天和机械制造有限责任公司
DEYANG TIANHE MECHANICAL
MANUFACTURING CO LTD

www.tianhecasting.com





The company has over 25 years of experience in aluminium alloy casting, and its main casting processes include aluminium alloy low pressure casting and aluminium alloy gravity casting. The company's product line covers a wide range of aluminium alloy castings from 0.3kg to 70kg, serving the traditional diesel commercial vehicle engine and transmission parts, as well as new energy passenger car chassis parts and electric drive housings and other new energy fields.

After years of development, it has purchased more than 200 CNC machining centres, and achieved full CNC machining in 2012.

The company has full - set examination capabilities, including chemical composition, metallographic micro structure, mechanical properties, 3D scanning, X-ray flaw detection, fluorescence penetration flaw detection, three-coordinate inspection, automatic SPC analysis, cleanliness laboratory and so on.



技术 Technical

- 25 years experience in non-ferrous casting and development
- Low pressure casting and gravity casting processes
- Complete machining and assembly processes
- Mould and fixture design and manufacture
- Tool design

服务和产品 Service and product

- Over the past 25 years, close to 1,000 aluminium alloy casting products of different sizes have been successfully researched and developed for more than 20 customers.

主要业务



新能源底盘件
Chassis
parts for
New
energy
Vehicle



新能源电驱壳体
Electric
Drive
For New
Energy
Vehicle



业务板块
Business Segment

商用车发动机
零部件
Engine
Parts for
Commercial
Vehicle



风电零部件



商用车变速箱零部件
Transmission Parts for
Commercial
Vehicle



年生产数量
Annual Production
Number

100K

pcs

专业的技术团队
Technical Team

50+

Person

成功案例
Successful
cases

300+

Cases



公司成立
ESTABLISHMENT



2001

铸造厂房建立
First Self-owned
Factory



2001



加工厂房建立First
Machining Factory



2005

ISO/TA16949



2008



新工厂投入使用
New Casting and
Machining Factory



2013

公司里程碑

MAJOR MILESTONES



超过100台加工中心
Over 100 CNC Machines



2014

销售达1亿人民币
Sales Over 13 million
USD



2016



Awarded with Chinese
High-Tech Company
国家高新技术企业



2020

First Robot Casting line
第一条机器人铸造线



2020



销售超3亿
Sales over 50 Million USD



2021

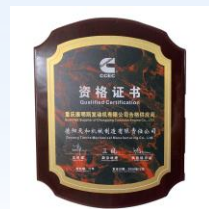
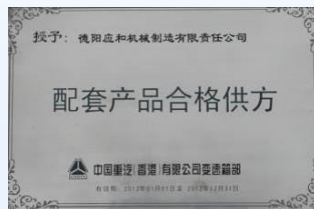
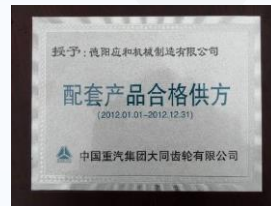
主要客户以及终端客户

MAIN CLIENTS AND END CLIENTS





Awarded with Excellent supplier from many clients 荣获 来自多个客户的优秀供应商称号





2010-2016

- 助残先进企业 Active Enterprise in Helping the Disabled
- 生态环境建设工作先进单位 Excellent company with sustainable environment construction work
- 安全生产先进企业 Excellent Enterprise in Safe Production
- 高新技术企业 High-tech Enterprise
- 德阳市工程技术研究中心 Deyang Engineering Technology Research Centre

2016-2024

- 四川省企业技术中心 Sichuan Enterprise Technology Centre
- 专精特新中小企业 Specialized and Sophisticated SMEs
- 职业卫生规范企业 Occupational Health Standard Enterprise
- 数字经济典型案例奖 Digital Economy Typical Case Award
- 超过50项专利技术 More than 50 patented technologies



02.

技术能力

Technology Capacity

PART TWO →

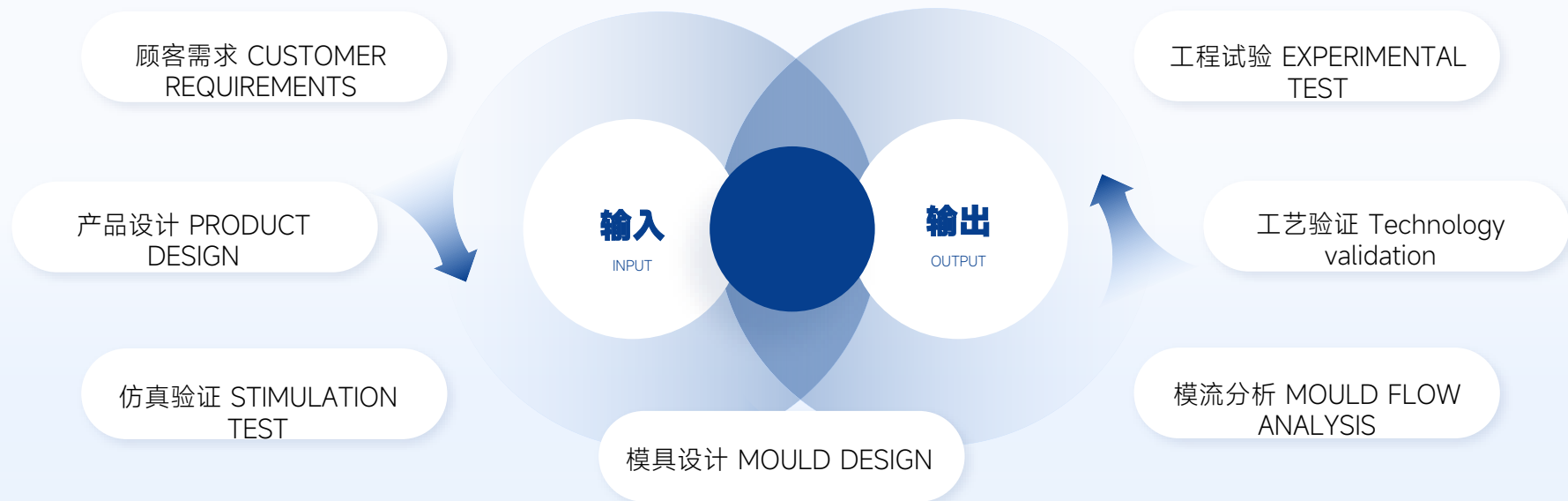


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德阳天应和机械制造有限责任公司
DEYANG TIAN(YING)HE MECHANICAL
MANUFACTURING CO LTD

铝合金铸造产品研发过程

Aluminium casting product R&D process



德阳天和严格遵守IATF 16949标准，确保其产品和服务的质量，增强顾客信任，提高市场竞争力，并促进持续改进和风险管理。
Deyang Tianhe strictly adheres to the IATF 16949 standard to ensure the quality of its products and services, enhance customer trust, increase market competitiveness, and promote continuous improvement and risk management.

顾客需求输入 CUSTOMER REQUIREMENT INPUT

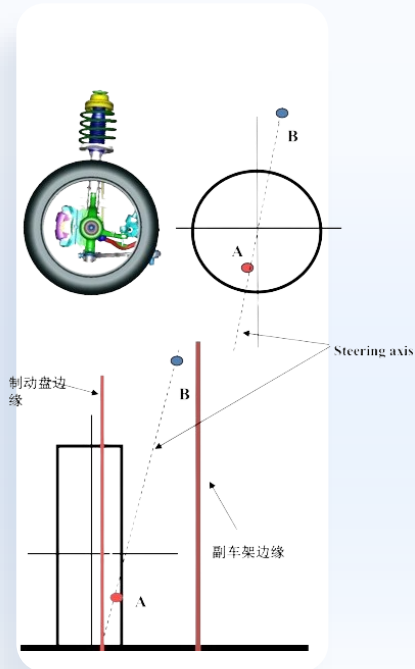
边界数据 Border data



连接点坐标 coordinates of the connection point

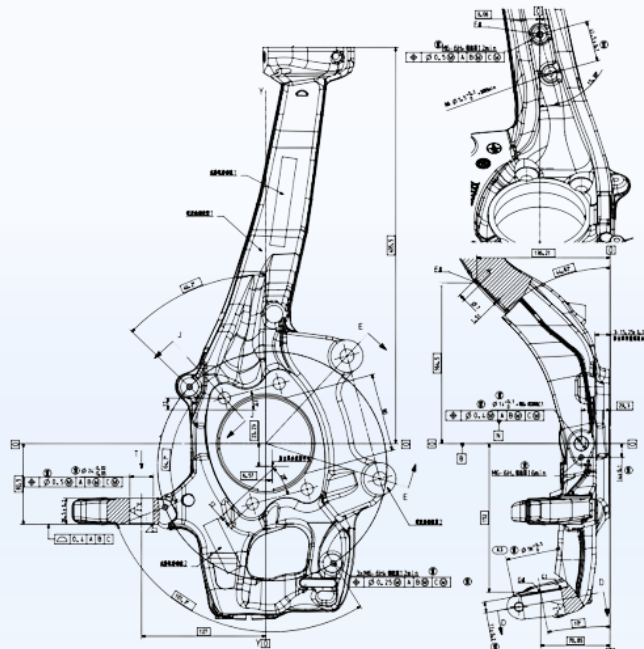
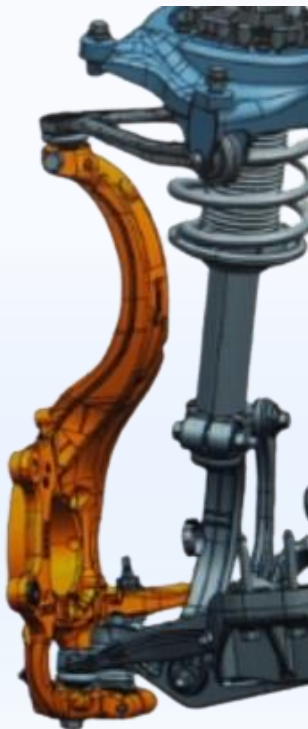
部件	描述	坐标
转向节	转向节与制动卡钳连接点	2812.8, -779.7, 32.85
	轮心	2740.0, -811.35, -2.77
	转向节与前控制臂连接点	2634.4, -661.11, -56.89
	转向节与后控制臂连接点	2851.88, -669.63, -80.1
	转向节与牵引臂连接点	2722.08, -676.23, -151.01
	转向节与减振器筒连接点	2782.84, -678.1, 115.38

悬架硬点 Stiffer suspension.

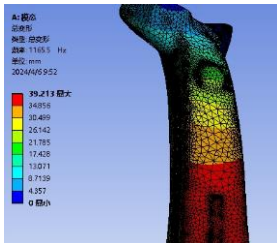
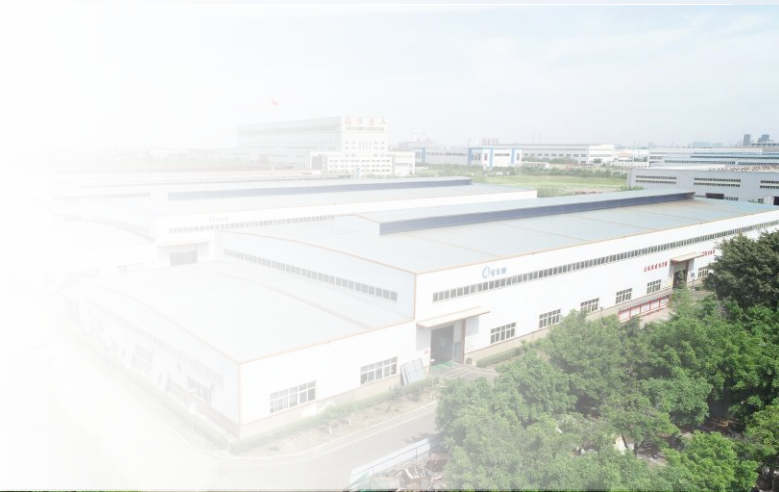


No.	Structure	M1Adef1-数据状态			M1Adef1-空档设计状态		
		X	Y	Z	X	Y	Z
1.1	top mount	39.22	-582.221	569.498	39.22	-582.221	569.498
1.2	spring seat sup	36.58	-585.8	511.96	36.58	-585.8	511.96
1.3	spring seat bot	24.104	-631.81	395.11	23.003	-634.234	341.981
1.4	ker strut mount	6.51	-617.768	104.702	6.511	-617.568	91.587
1.5	wheel center	0.98	-774.5	28	0.936	-774.105	14.493
1.6	kca front	0.3	-411.4	82.5	0.3	-411.4	82.5
1.7	kca rear	242	-408.5	-76.9	242	-408.5	-76.9
1.8	kca outer	-1.5	241	-91	-2.197	240.303	106.65
1.9	tiered outer	132.5	-700.325	314.73	132.597	-700.218	204.39
1.10	tiered inr	167	-560	30	167	-560	30
1.11	drive shaft int LH	-36.82	-304.14	48.69	-36.82	-304.14	48.69
1.12	drive shaft int LR	-35.98	-25.24	35.95	-35.98	-25.24	35.95
1.13	drive shaft int LH	25.641	-315.512	30.686	-25.641	-315.512	30.686
1.14	drive shaft int LR	-24.816	-40.719	37.854	-24.816	-40.719	37.834
1.15	drive shaft outer	0.98	-708.41	27.2	1.076	-708.014	13.846
1.16	subframe front	70	-459.501	113.4	70	-459.501	113.4
1.17	subframe rear	357	-420	-70.851	357	-420	-70.851
1.18	lca shf front z	-32.193	-411.769	83.214	-32.193	-411.769	83.214
1.19	lca shf rear x	264.765	-418.542	-76.9	264.765	-418.542	-76.9
1.20	lca shf rear z	241.623	-409.306	-30.963	241.623	-409.306	-30.963

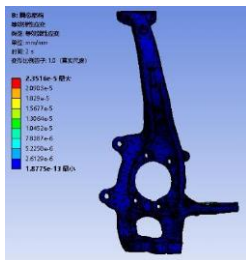
零件图 Part drawings



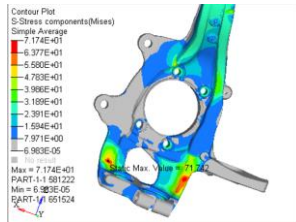
仿真验证 Simulation verification



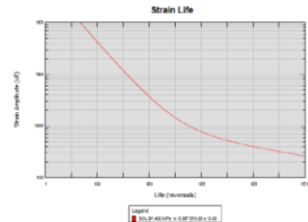
模态分析
Modal Analysis



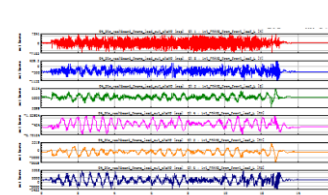
刚性分析
Rigidity Analysis



强度分析
Strength Analysis



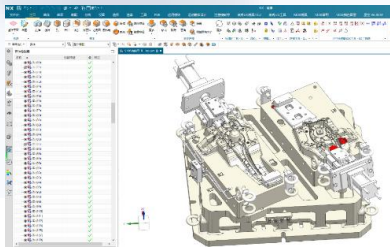
疲劳测试
Fatigue Testing



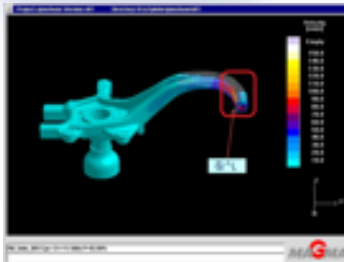
路谱
Road Load Data

铝合金铸造设计流程 Aluminium alloy casting design process

模具设计
MOULD
DESIGN



模流验证
MOULD
FLOWW TEST



模具加工
MOULD
MACHINING



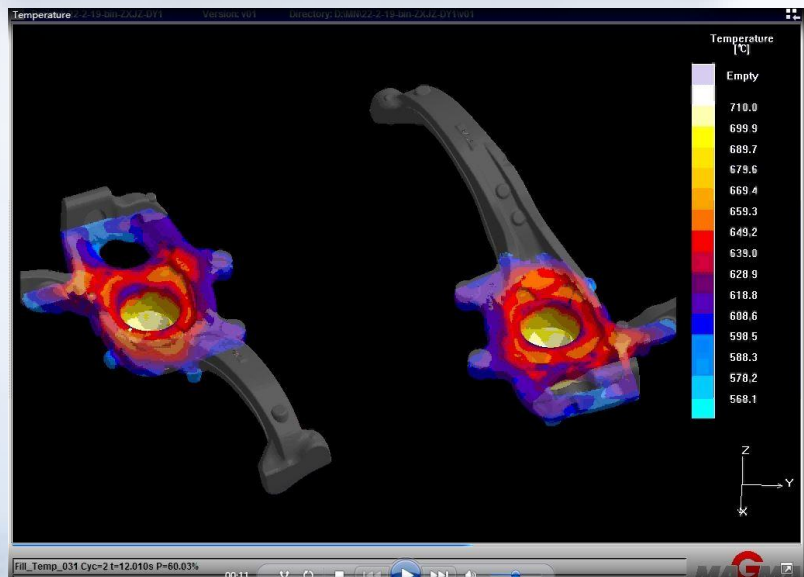
模具装配
MOULD
ASSEMBLY



模流分析 MOULD FLOW ANALYSIS

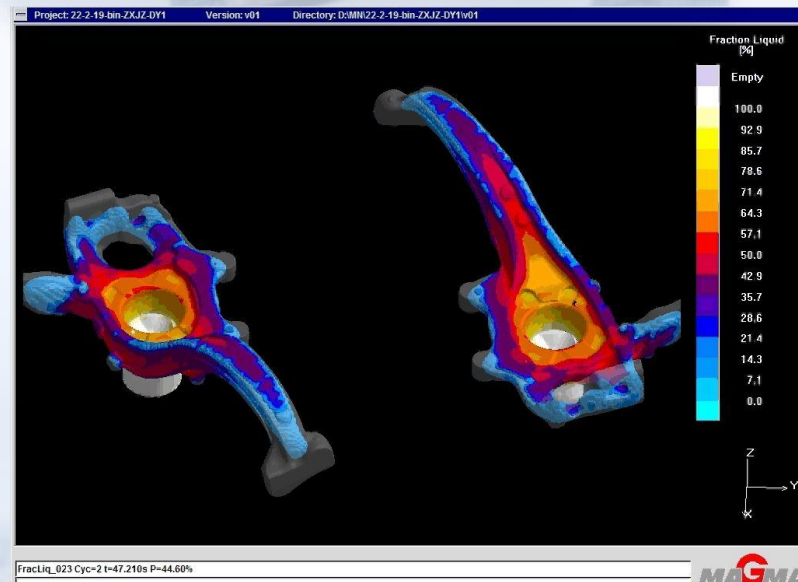
温度场分析

Temperature Field Analysis



凝固场分析

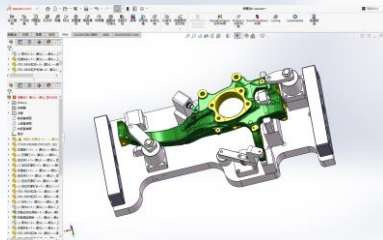
Coagulation Field Analysis



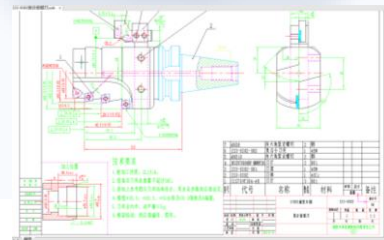
铝合金加工设计全流程 Aluminium alloy machining design process



夹具设计 Tooling Design



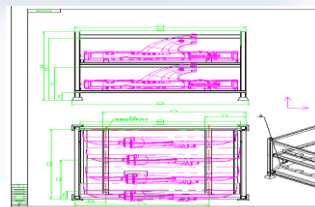
刀具设计 Cutter Design



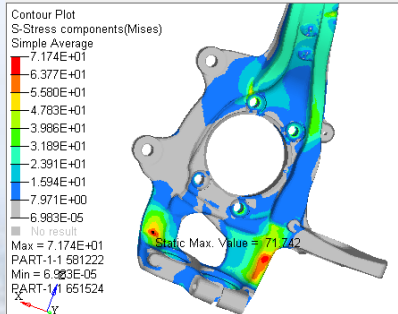
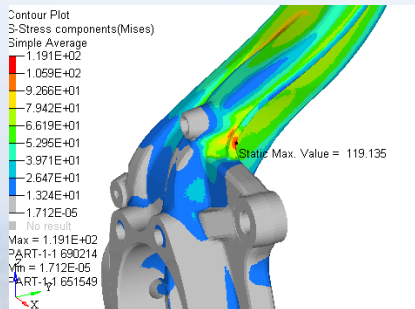
调试 Test



包装设计 Packing Design



工程试验 Engineering tests



传统柴油商用车辆 Commercial Vehicle Auto Parts



商用车变速箱壳类产品



商用车泵体



商用车管类件



传统柴油商用车辆 Commercial Vehicle Auto Parts



商用车变速箱壳类产品



商用车泵体



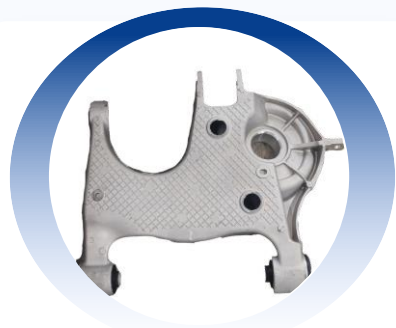
商用车管类件



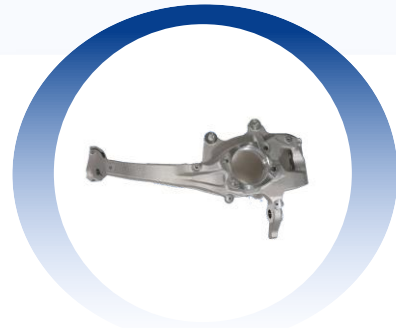
新能源商用车辆以及乘用车 New Energy Commercial Vehicle and Passenger Car



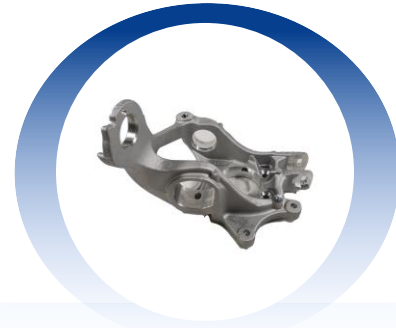
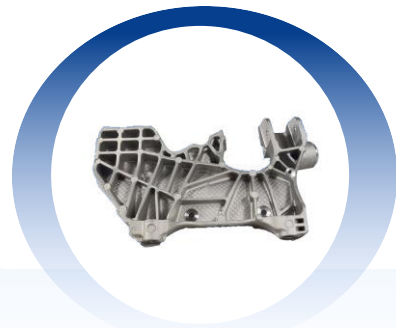
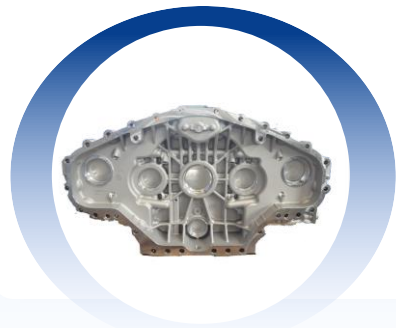
新能源商用车电驱壳体



新能源乘用车底盘件



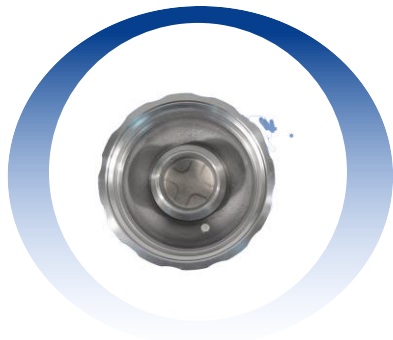
新能源乘用车底盘件





风电产品 Wind power products

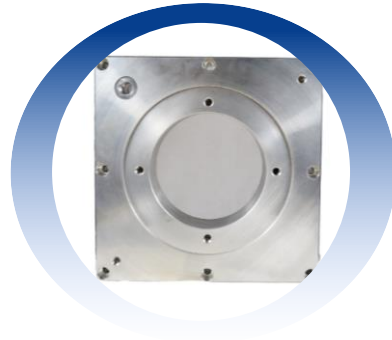
过滤器盖



过滤器座



阀块





03. 生产能力

PART THREE →



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德阳天应和机械制造有限责任公司
DEYANG TIAN(YING)HE MECHANICAL
MANUFACTURING CO LTD

铸造流程

CASTING PROCESS

○ 制芯 CORE
MAKING

○ 熔炼
MELTING

○ 铸造 Casting

○ 探伤 X-ray
Test

○ 热处理 Heat
Treatment

○ 抛丸 Shoot
Blasting



铸造流程

CASTING PROCESS

○ 制芯 CORE
MAKING

○ 熔炼
MELTING

○ 铸造 Casting

○ 探伤 X-ray
Test

○ 热处理 Heat
Treatment

○ 抛丸 Shoot
Blasting



铸造流程

CASTING PROCESS

- 制芯 CORE MAKING
- 熔炼 MELTING
- 铸造 Casting
- 探伤 X-ray Test
- 热处理 Heat Treatment
- 抛丸 Shoot Blasting



铸造流程

CASTING PROCESS

制芯 CORE
MAKING

熔炼
MELTING

铸造 Casting

探伤 X-ray
Test

热处理 Heat
Treatment

抛丸 Shoot
Blasting



铸造流程

CASTING PROCESS

- 制芯 CORE MAKING
- 熔炼 MELTING
- 铸造 Casting
- 探伤 X-ray Test
- 热处理 Heat Treatment
- 抛丸 Shoot Blasting



铸造流程

CASTING PROCESS

○ 制芯 CORE
MAKING

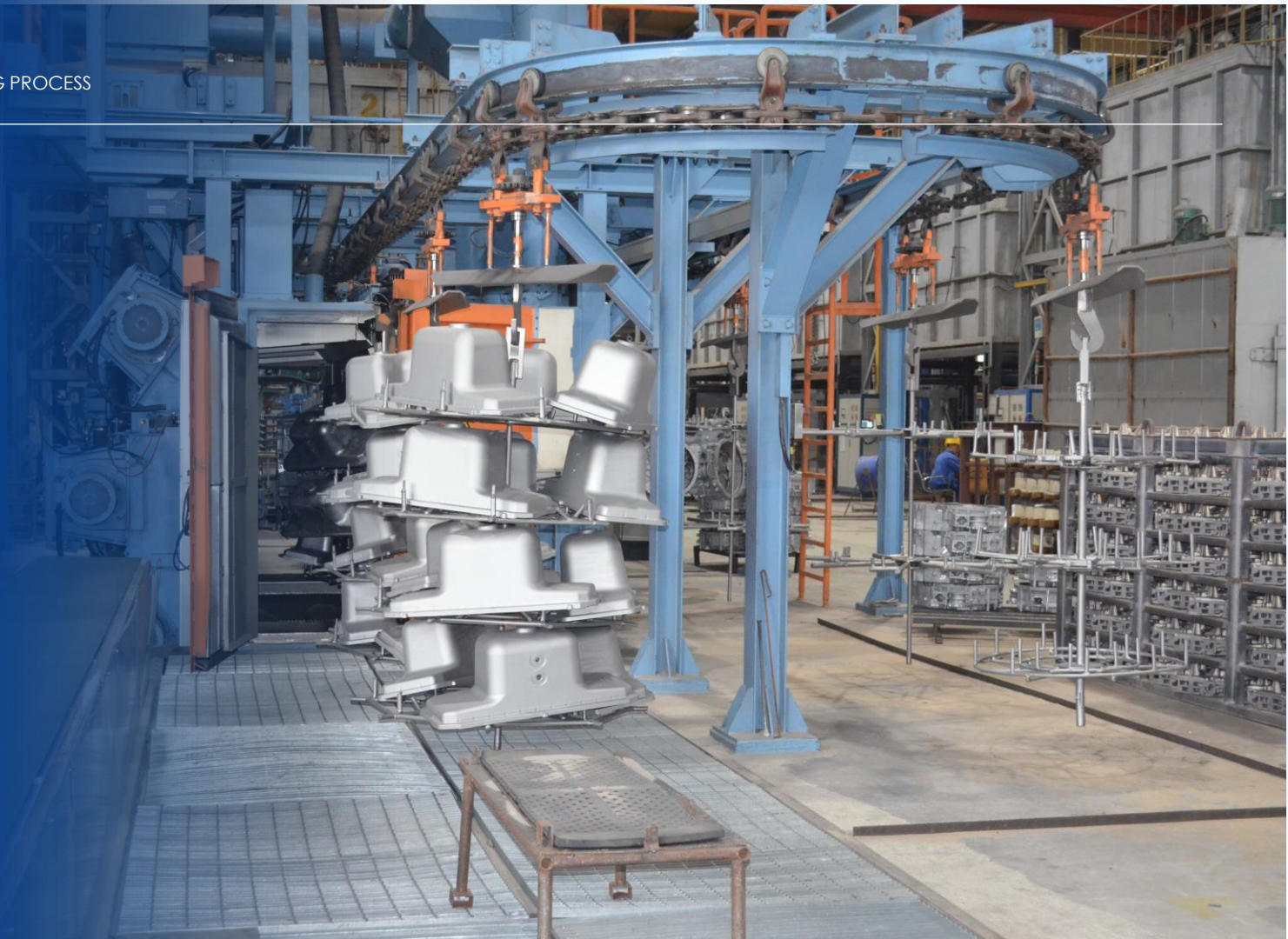
○ 熔炼
MELTING

○ 铸造 Casting

○ 探伤 X-ray
Test

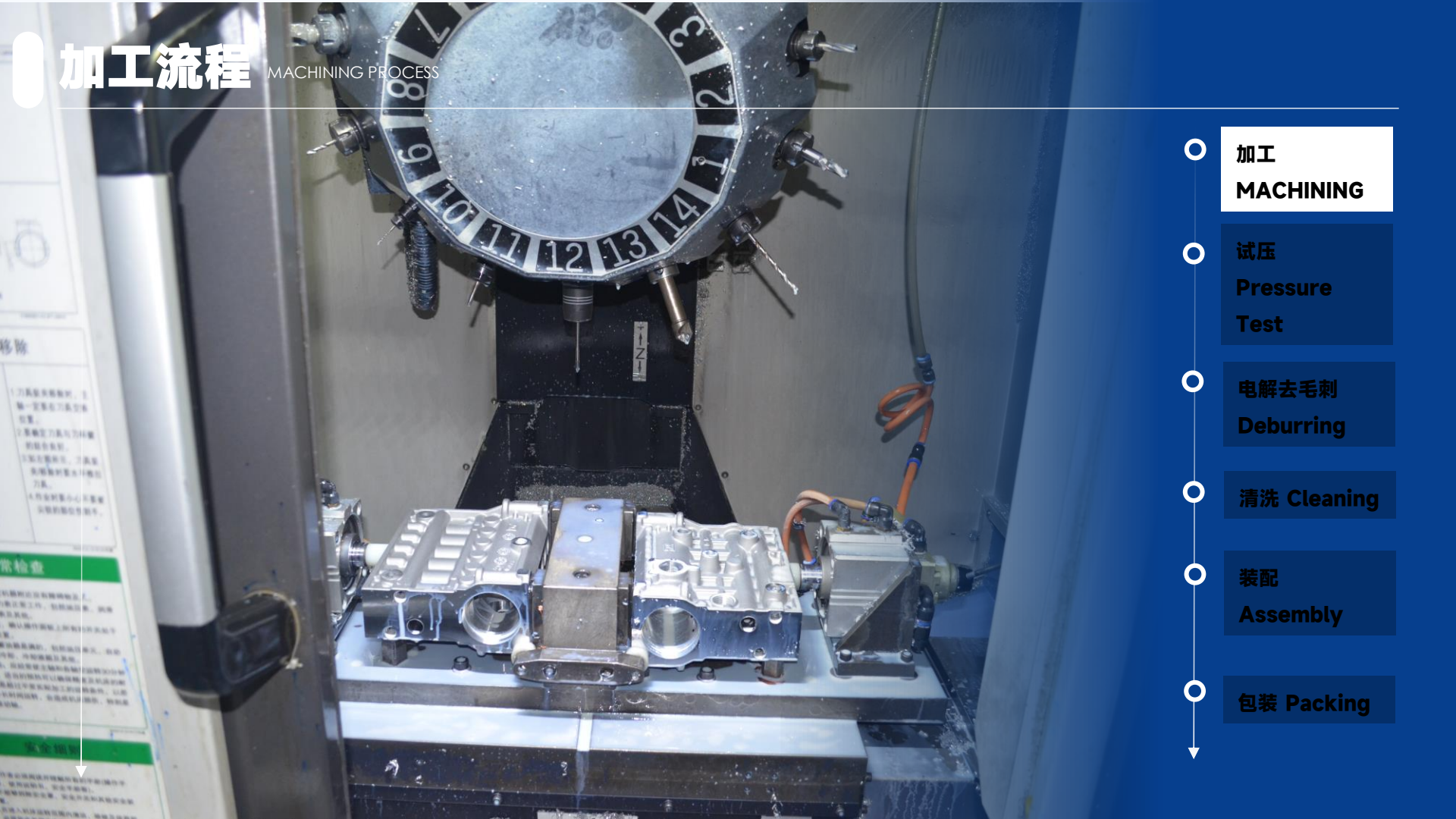
○ 热处理 Heat
Treatment

○ 抛丸 Shoot
Blasting



加工流程

MACHINING PROCESS



加工
MACHINING

试压
Pressure
Test

电解去毛刺
Deburring

清洗 Cleaning

装配
Assembly

包装 Packing

加工流程

MACHINING PROCESS



加工
MACHINING

试压
Pressure
Test

电解去毛刺
Deburring

清洗 Cleaning

装配
Assembly

包装 Packing

加工流程

MANUFACTURING PROCESS



加工
MACHINING



试压
Pressure
Test



电解去毛刺
Deburring



清洗 Cleaning



装配
Assembly



包装 Packing



加工流程

MACHINING PROCESS



加工
MACHINING

试压
Pressure
Test

电解去毛刺
Deburring

清洗 Cleaning

装配 Assembly

包装 Packing

加工流程

MACHINING PROCESS

Tegeder

加工
MACHINING

试压
Pressure
Test

电解去毛刺
Deburring

清洗 Cleaning

装配
Assembly

包装 Packing

加工流程

MACHINING PROCESS



加工
MACHINING

试压
Pressure
Test

电解去毛刺
Deburring

清洗
Cleaning

装配
Assembly

包装
Packing



04. 质量保证

PART FOUR →



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德阳天应和机械制造有限责任公司
DEYANG TIANHE MECHANICAL
MANUFACTURING CO LTD

2008



- TS 16949质量体系认证 Quality Assurance Certificate



2017



- IATF16949 质量体系认证 Quality Assurance Certificate





台式直读光谱仪
Benchtop direct
reading
spectrometer



火花直读光谱仪
Spark direct
reading
spectrometer



金相显微镜
metallographic
microscope

铸造毛坯质量控制 Quality control of roughcasts

铸造毛坯质量控制 Quality control of roughcasts

硬度仪
Hardness
Test



材料试验机
Material
Testing
Machine



关节臂



工业内窥镜
Industrial
endoscop
es

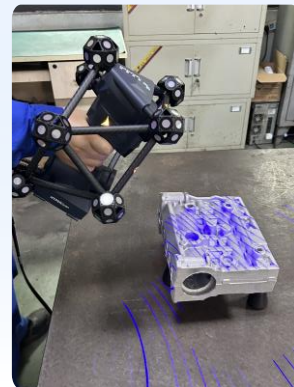


铸造毛坯质量控制 Quality control of roughcasts

3台工业X光射线探伤机 3 industrial X-ray inspection machines



1台智能光学追踪3D扫描仪
1 Intelligent Optical Tracking 3D Scanner

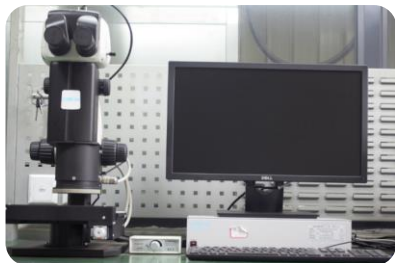


机加尺寸质量保证 Quality control of Machining

圆柱度仪
Cylindricity
meter



颗粒度检测仪
Granularity
Tester



蔡司高精度三坐标检
测仪
ZEISS - CMM



海克斯康高精度三坐
标检测仪
HEXAGON - CMM

SPC工作站 SPC Workstation

1. 自动计算每个检测项目的控制限

1. Automatic calculation of the control limit of each test item

2. 自动判断加工过程是否失控，为生产系统提供预防报警

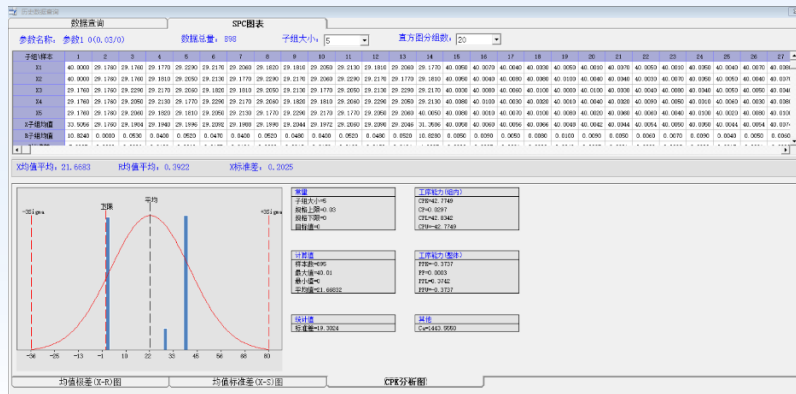
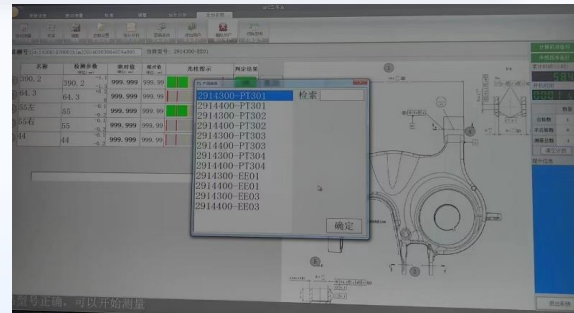
2. Automatically determine whether the processing process is out of control, to provide preventive alarms for the production system

3. 所有检测项目均可进行过程能力分析并用图表展示

3. All testing projects can be process through capability analysis and graphical presentation

4. 测量数据永久保存

4. Measurement data is permanently saved





MSA

测量系统分析计划

序号	零件名称	零件图号	被测特性值	量具、测量设备	测量方法	测量人	分析开始时间	分析结束时间
1			Φ14.52_同轴度 Φ10_圆跳动	三坐标 /2.50.3.3x1000.μm	自动测量	何富梅、马云凤、谢公燕	2023.3.09	2023.3.11
2			Φ44 (-0.1/-0.2)	带表游标卡尺 200.0.02	手工测量	吴平、黄小梅、肖燕	2023.3.09	2023.3.11
3			Φ24.45 (+0.05/0)	内径千分尺 160.0.01	手工测量	吴平、黄小梅、代莉	2023.3.09	2023.3.11
4	后摆臂总成(左/右)	2914300/2914400	30 (+0.2/0)	深度尺 0-200.0.02	手工测量	谢公燕、吴平、马云凤	2023.3.09	2023.3.11
5			81.5±0.2	船钩仪	手工测量	黄伟伟、李小明、李小利	2023.3.09	2023.3.11
6			45°	万能角度尺 0-320°/2°	手工测量	吴平、黄小梅、肖燕	2023.3.09	2023.3.11
7			Φ12.3 (+0.2/0)	圆柱量规 H1-1321	手工测量	吴平、马云凤、黄小梅	2023.3.09	2023.3.11

量具重复性和再现性报告

零件号和名称: 2914300

被测参数: 30±0.2/0

计量单位: mm

制造商: 成都量具厂

操作者: 谢公燕、吴平、马云凤

日期: 2023.3.11

最终结论:

% R&R = 7.26% 理想
 ndc = 19 可接受
 不接受

判别标准: %R&R ≤ 10% || ndc > 5, 理想; %R&R 11~30% || ndc > 5, 可接受; %R&R > 30% || ndc < 5, 不接受

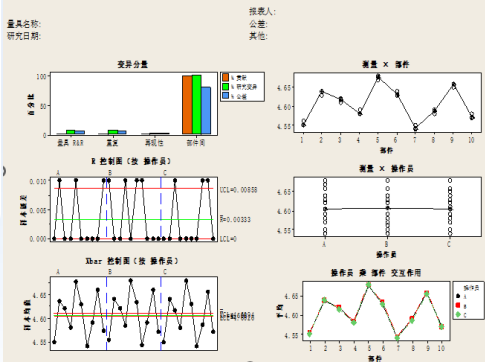
量具 R&R

来源	方差分量	贡献率
合计量具 R&R	0.0000114	0.53
重复性	0.0000103	0.48
再现性	0.0000011	0.05
操作员	0.0000011	0.05
部件间	0.0021479	99.47
合计变异	0.0021593	100.00
过程公差	= 0.2	

来源	标准差(SD)	(5.15 * SD)	研究变异	%研究变异	%公差
合计量具 R&R	0.0033744	0.017378	7.26	5.79	
重复性	0.0032070	0.016516	6.90	5.51	
再现性	0.0010496	0.005405	2.26	1.80	
操作员	0.0010496	0.005405	2.26	1.80	
部件间	0.0463453	0.238678	99.74	79.56	
合计变异	0.0464679	0.239310	100.00	79.77	

可区分的类别数 = 19

测量的量具 R&R (方差分析)



质量追溯 Quality Traceability

铸态打码
Roughcast
Engraving

热处理扫描
Scan at Heat
treatment
process

探伤扫描
X-RAY
SCAN

毛坯入库
扫描
Roughcast
in stock
Scan

机加工扫描
Machining
Process
Scan

压装扫描
Assembly
Scan

成品入库
扫描
Finished
goods
Scan

当前工序 铸态

操作员姓名 系统管理员

产品名称 EE03后座臂左

产品号 14300102004

操作员编号 02

DY14300102002

L11M3

20240311143539

A125

当前计数 0

信息输入 请输入

拍照

操作提示 保存成功!

当前工序 毛坯入库

操作员姓名 系统管理员

产品名称 EE03后座臂左

产品号 14300102004

操作员编号 02

DY14300102002

L11M3

20240311143539

A125

当前计数 0

最大包数数量 50

当前包数 2

入库码 请输入

拍照

操作提示 保存成功!

当前工序 机加工

操作员姓名 系统管理员

产品名称 EE03后座臂左

产品号 14300102004

操作员编号 02

DY14300102002

L11M3

20240311143539

A125

当前计数 0

信息输入 请输入

拍照

操作提示 保存成功!

当前工序 压装

操作员姓名 系统管理员

产品名称 EE03后座臂左

产品号 14300102004

操作员编号 02

DY14300102002

L11M3

20240311143539

A125

当前计数 0

衬套号 请输入

拍照

操作提示 保存成功!

当前工序 成品入库

操作员姓名 系统管理员

产品名称 EE03后座臂左

产品号 14300102004

操作员编号 02

DY14300102002

L11M3

20240311143539

A125

当前计数 0

最大包数数量

当前包数 2

包装箱编号 请输入

拍照

操作提示 保存成功!





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