



**RADICAL**

转动世界 承载未来

Turning the world Bearing the future



杭州雷迪克节能科技股份有限公司  
Hangzhou Radical Energy-Saving Technology Co., Ltd

# CONTENTS | 目录

## / 01

关于我们  
About Us

企业简介

Radical Profiles

01-02

员工分布

Employee Structure

06

发展历程

Radical History

03-04

厂区及产能

Plants & Capacity

07-08

组织架构

Organizational Structure

05

企业荣誉

Honor & Rewards

09-10

## / 04

质量及技术 Quality & Technology

质量控制

Quality Control

23-24

技术研发

R&D

25-30

## / 02

市场 Market

营业收入

Annual Turnover

11

典型客户

Typical Customer

11

业务分布

Business distribution

12

## / 05

企业札记 Reading Notes Of The Enterprise

重要事件

Important Events

31

展会记录

Exhibition

32

## / 03

产品及制造 Products and Manufacturing

雷迪克产品

Products of Radical

13-14

产品应用

Product Application

15-16

生产装备

Production Equipment

17-22

# INTRODUCTION



新厂房效果图

## 企业简介 Radical Profiles

雷迪克创建于2002年，是一家集研发、设计、制造为一体的综合性汽车轴承制造企业，在汽车配件领域有多年的OE配套及售后市场经验。所研发的产品涉及轮毂轴承、轮毂轴承单元、圆锥轴承、涨紧轮、离合器分离轴承等5大类三千余个品种，公司母公司占地面积4万余平方米，拥有先进的生产设备和一系列完整的高精度检测仪器、测试设备，设有技术中心，研发中心。

Radical was founded in 2002, is a research and development, design, manufacturing as one of the comprehensive automotive bearing manufacturing enterprises, who has many years of OE supporting and after-sales market experience in the field of auto parts. The developed products involve wheel bearings, wheel hub units, tapered roller bearings, belt tensioner and pulley, clutch release bearings etc. 5 categories of more than 3,000 skus, the parent company covers an area of more than 40,000 square meters, with advanced production equipment and a series of complete high-precision testing instruments, testing equipment, with a technology center, R & D center.

通过潜心研发、生产，企业不断壮大，公司于2017年5月16日正式在深圳证券交易所创业板上市，通过首次公开募股及发行可转换公司债券，公司共计募资超过6亿元。2019年5月，建筑面积超过5万平方米的第二工厂正式全面投产，2023年度创收超亿元，占地350亩的第三工厂一期也将于2024年底前建设完毕并投入使用，募集资金均用于公司三个工厂的生产建设。同时募集资金的投入也加快了公司拓宽市场规模和领域的步伐，大大提升了公司的生产产能并扩大产品范围，使公司进一步向集团化企业迈进。

Through dedicated research and development, the company continued to grow, the company was officially listed in the Shenzhen Stock Exchange GEM on May 16, 2017, through the initial public offering and the issuance of convertible corporate bonds, the company raised a total of more than 600 million yuan. In May 2019, the second factory with a construction area of more than 50,000 square meters was officially put into full operation, and the income of 2023 exceeded 100 million yuan. The first phase of the third factory, covering an area of 350 acres, will also be completed and put into use by the end of 2024, and the funds raised will be used for the production and construction of the company's three factories. At the same time, the investment of raised funds has also accelerated the pace of the company to expand the market size and field, greatly improved the company's production capacity and expanded the product range, so that the company further to the group enterprise.

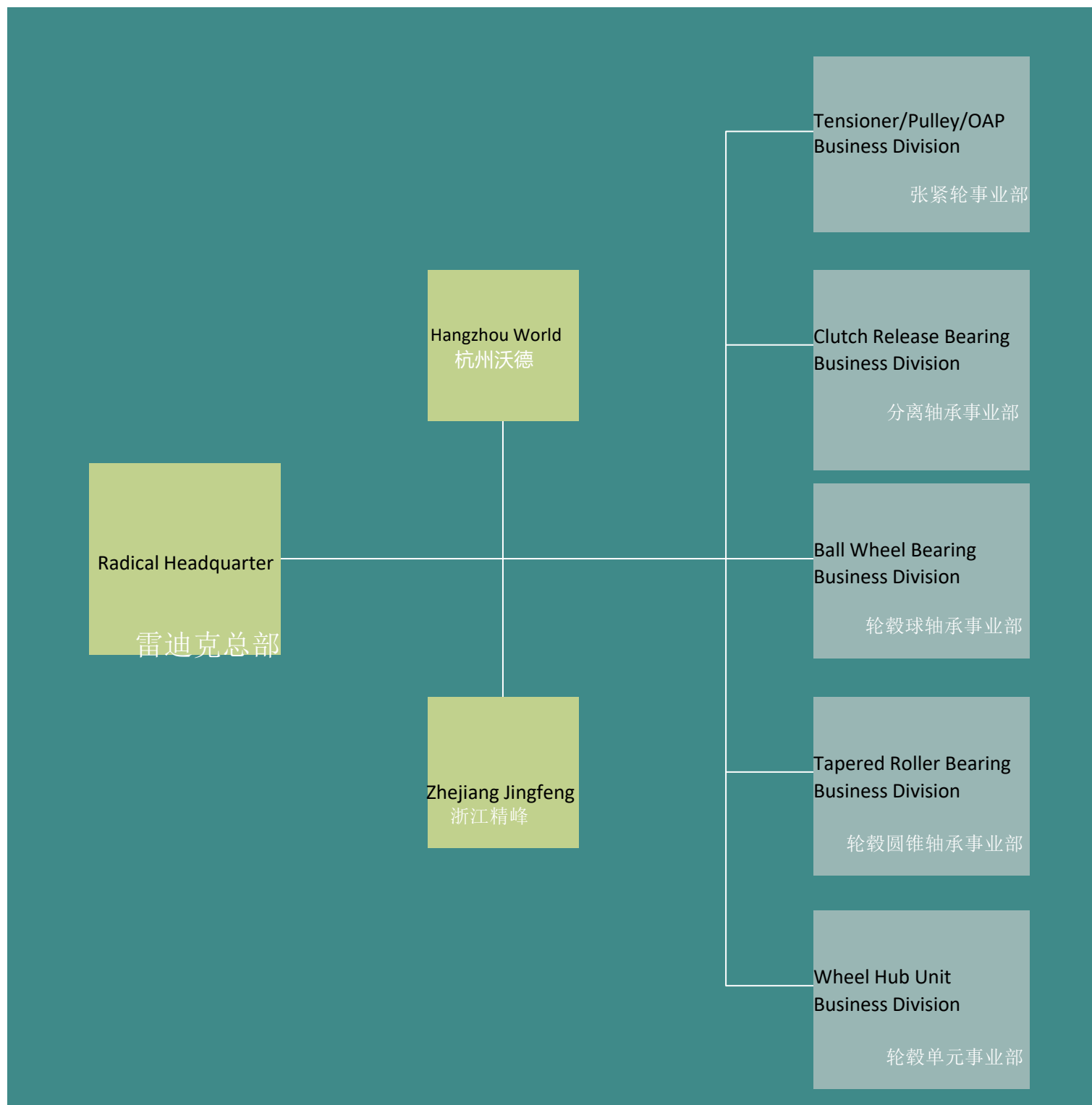


# 2002 - 2024

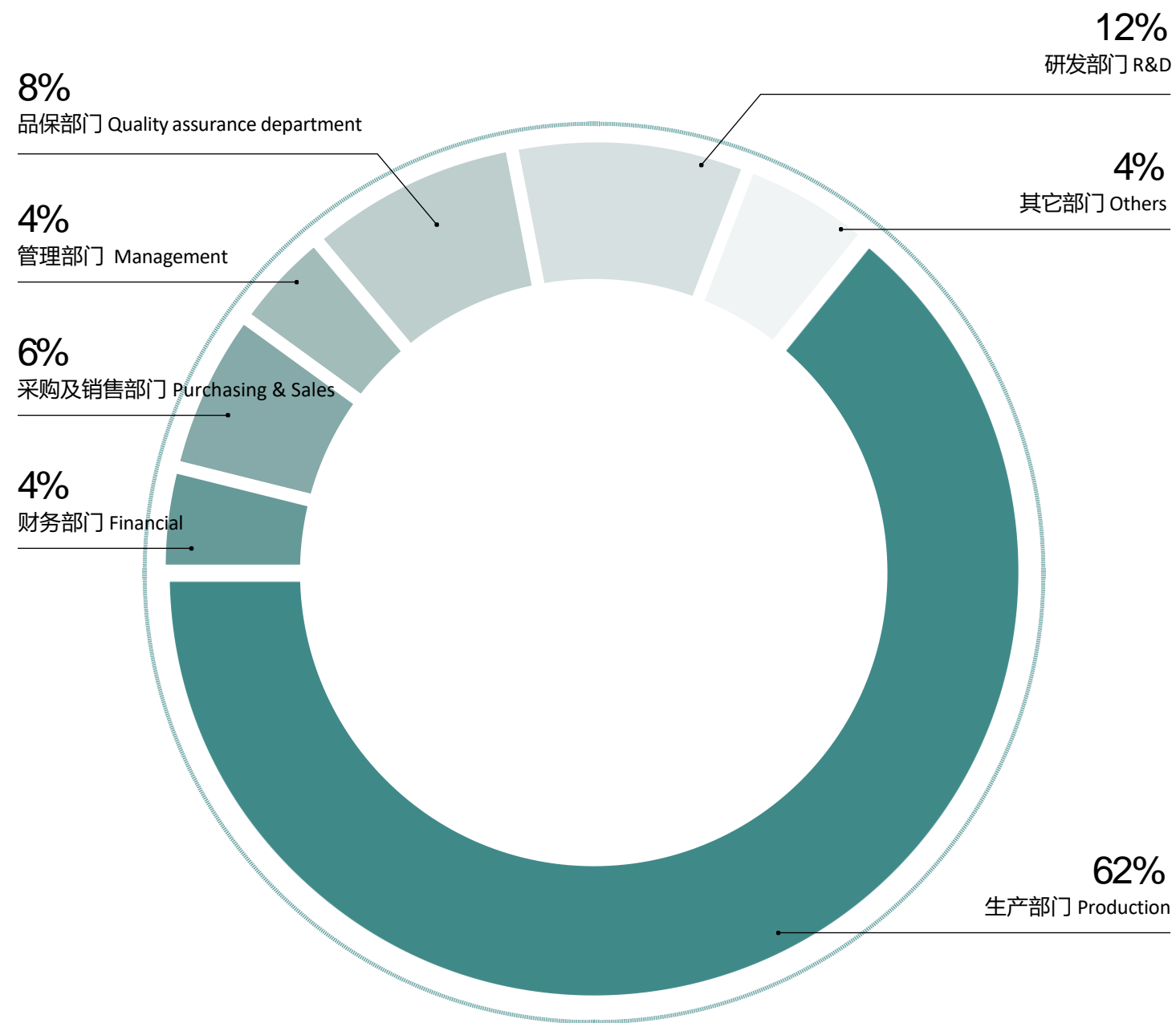
## 发展历程 Radical History



## 组织架构 Organizational Structure

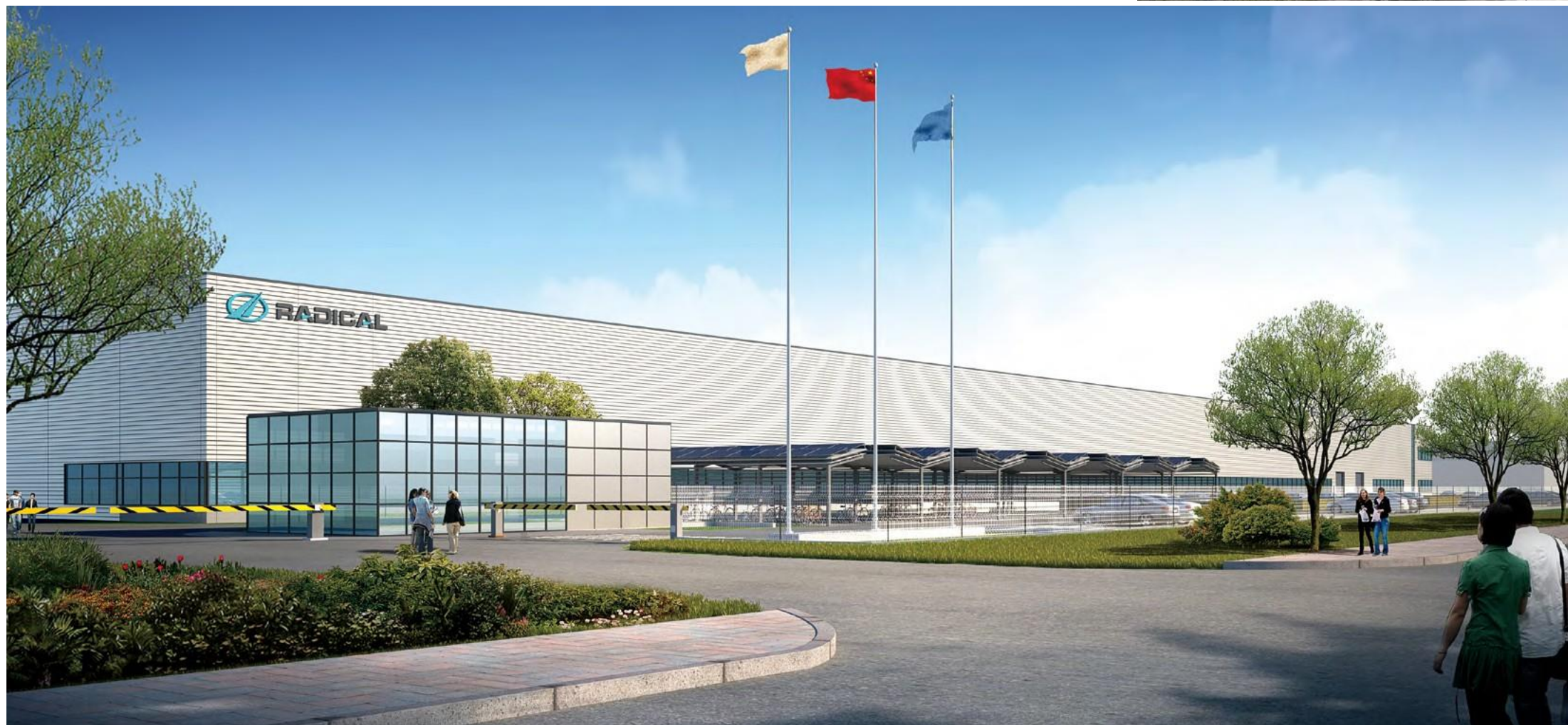


## 员工分布 Employee Structure





# 厂区及产能 Plants and Capacity



- 1、第一厂区 The 1<sup>st</sup> Plant  
- 萧山厂区 Xiaoshan District  
占地面积:40000 平方米 Occupied area 40000m<sup>2</sup>
- 2、第二厂区 The 2<sup>nd</sup> Plant  
- 钱塘新区厂区 Qiantang District  
占地面积:46200 平方米 Occupied area 462000m<sup>2</sup>
- 3、第三厂区 The 3<sup>rd</sup> Plant  
- 桐乡厂区 Tongxiang District  
占地面积:233788 平方米 Occupied area 233788m<sup>2</sup>



# RADICAL

## 企业荣誉 Honor& Rewards



专利证书 The Patent Certificates

公司现有专利共计 80 项 Radical owns over 80 different patents



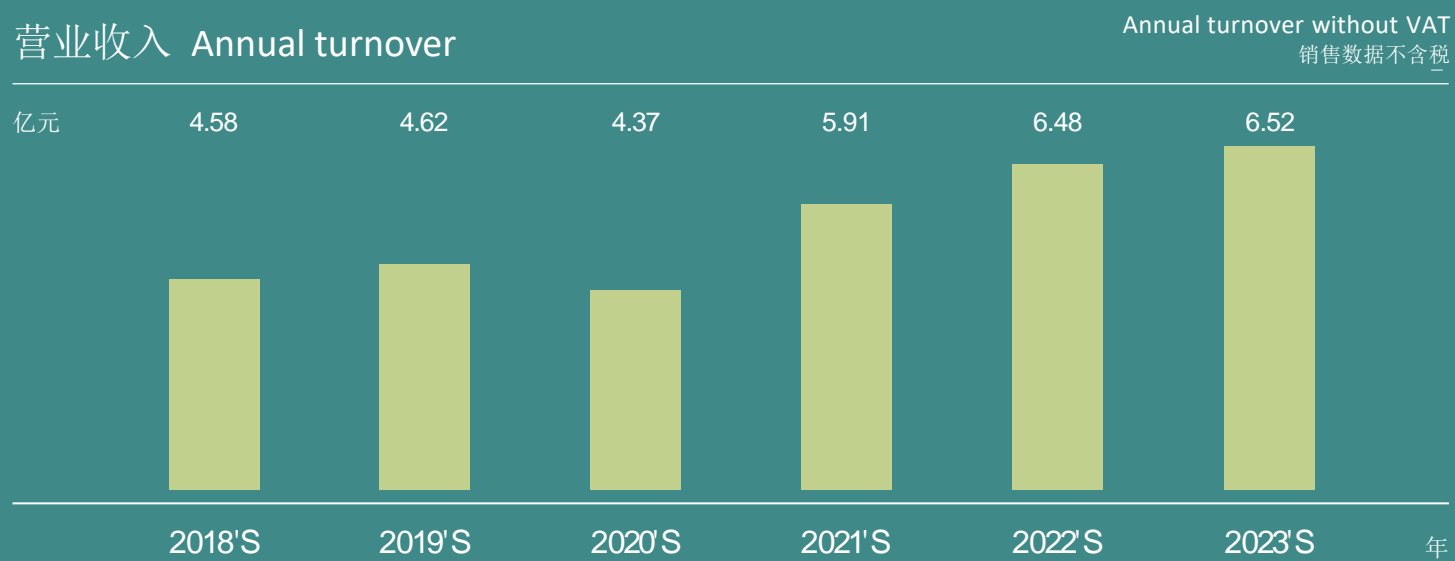
荣誉证书 Honorary Certificates



# / 02

## 市场 Marketing

### 营业收入 Annual turnover

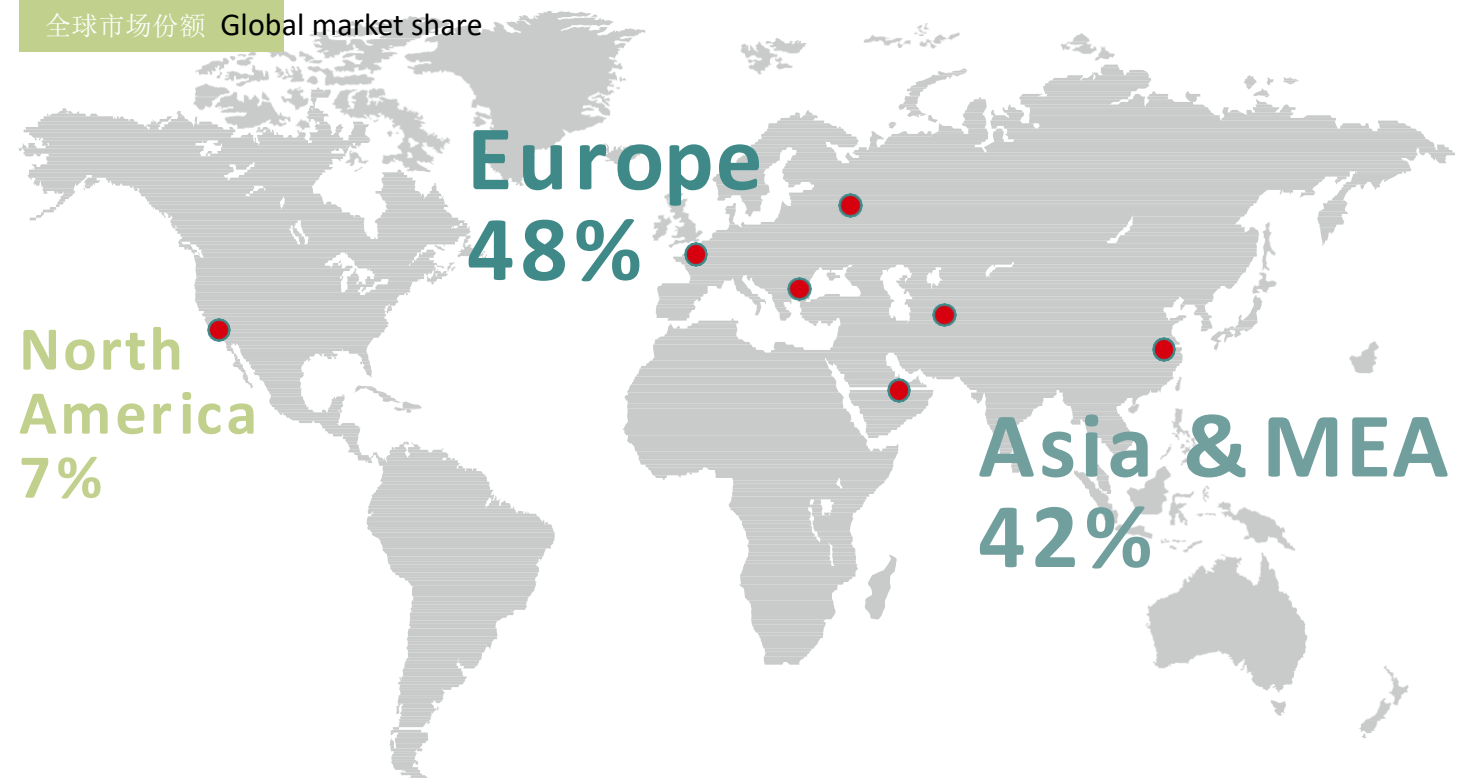


### 典型客户 Typical Customer



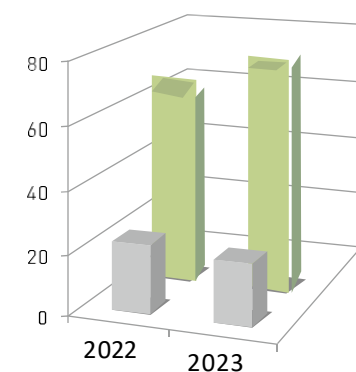
### 业务分布 Business Distribution

#### 全球市场份额 Global market share



#### 国内及出口销售

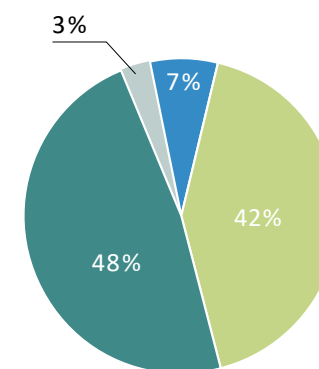
Domestic and export sales



国内总销 Domestic sales | 出口总销 Export sales

#### 各出口市场比例

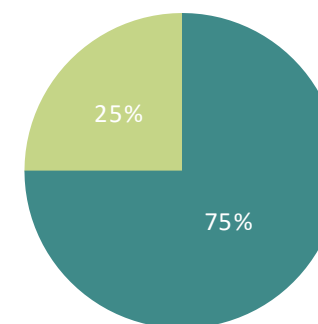
Proportion of each export market



欧洲市场 Europe Market | 亚太市场 Asia & MEA markets  
美洲市场 North America Market | 其它市场 Others

#### 配套与售后占比

Proportion of OE and AM



售后 Aftermarket | 配套 OE

# / 03

## 产品及制造 Products and Manufacturing

### 雷迪克产品 Products of Radical

汽车轮毂轴承单元 Wheel hub



卡车轮毂轴承 Truck Wheel hub bearing



麦弗逊悬挂轴承 Macpherson suspension bearing



机械分离轴承 Clutch release bearing



液压分离轴承 Concentric slave cylinder



变速箱轴承 Gearbox bearing



发动机轴承 Engine bearing



轮毂锁 Wheel lock



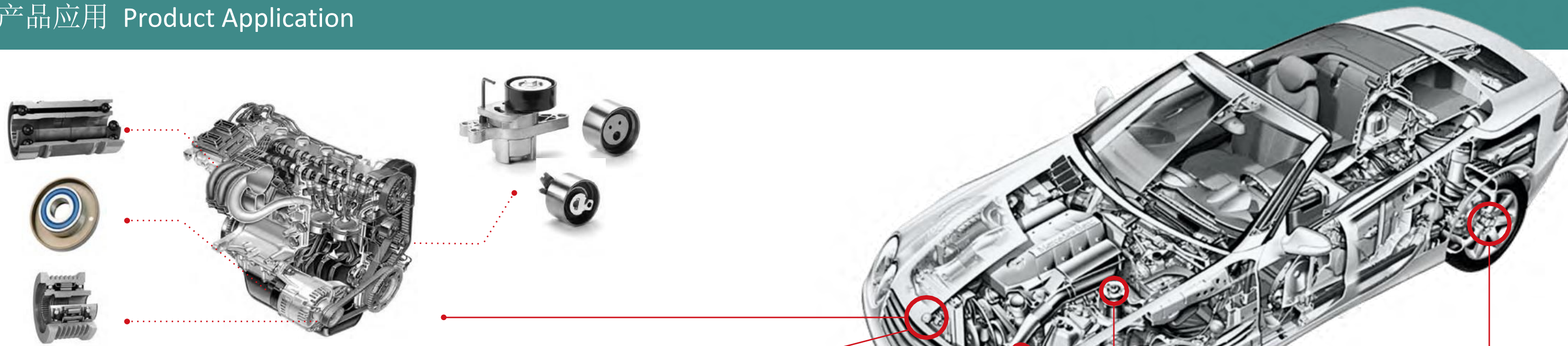
轮毂轴承和修理包(球) Ball wheel bearing and repair kits



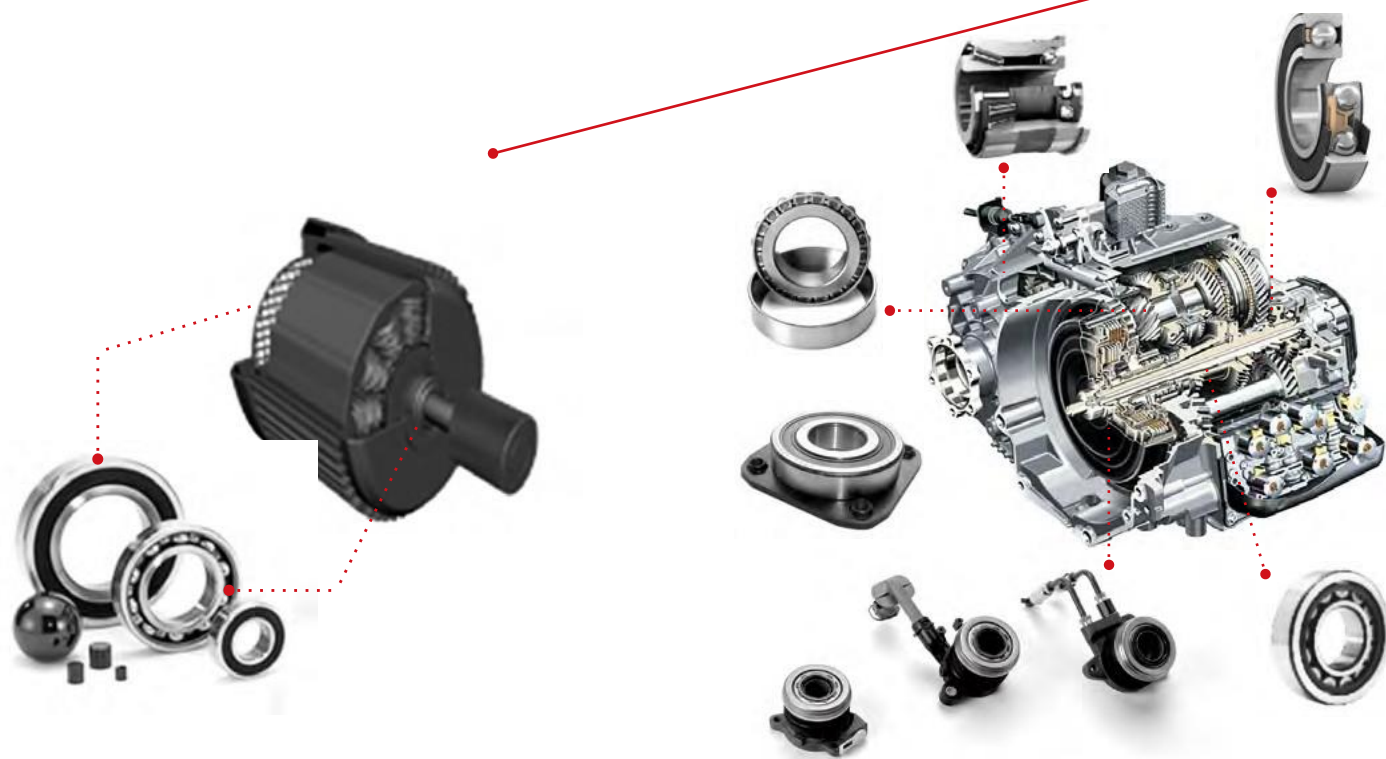
新能源电机轴承 New energy electromechanical bearing



# 产品应用 Product Application



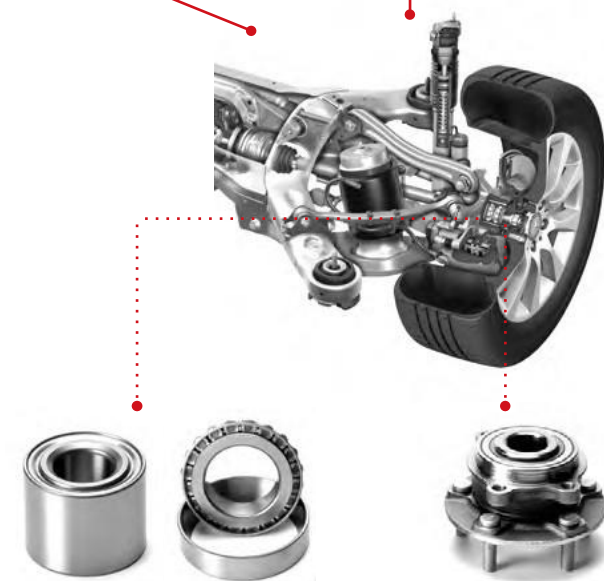
1. 发动机 Engine



3. 离合器 / 变速箱 Clutch and gear box



4. 悬挂系统 Suspension system



5. 轮毂 Wheel hub

2. 新能源汽车电机  
New energy vehicle motor



# 生产装备 Production and Equipment



1

2

1、磨加工车间 Grinding workshop

2、自动装配机器人 Automatic assembly



# 生产装备 Production Equipment



- 1、感应淬火自动线  
Induction Quenching Automatic Line
- 2、盐浴淬火工艺  
Salt Bath Quenching Process
- 3、感应淬火工艺  
Induction Quenching Process

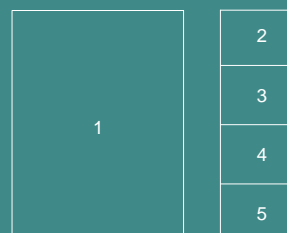
- 4、法兰磨加工自动线  
Flange Grinding Automatic Line
- 5、外圈磨加工自动线  
Outer Ring Grinding Automatic Line
- 6、车加工自动线  
Automatic Line For Turning





## 生产装备 Production Equipment

- 1、2、自动装配机器人  
- Automatic Assembly Robot
- 3、通过式超声波清洗机  
Pass-type Ultrasonic Cleaning Machine
- 4、5、齿圈及传感器压装  
Tone Ring & ABS sensor press fitting





# 质量及技术 Quality and Technology

## 质量控制 QC

### 体系证书 Certificate

IATF16949: 2016  
GB/T24001-2016/ISO14001:2015  
CNAS ISO 17025



## 质量控制及产品检测保障能力 QC and Supportability Of Production Inspection

### 进货检验 Incoming Inspection:

#### 1、原材料检验 (钢材) Raw Material Inspection (Steel):

元素含量 Element Content、硬度 Hardness、金相 Microstructure、夹杂物 Inclusions

#### 2、来料尺寸外观检验 Size and Appearance Inspection for Incoming Material:

锻件 Forging Parts、车件 Turning Parts、各类附件 Accessories 密封Seal、保持架Cage、油脂Grease、ect.

### 过程检验 Process Inspection:

#### 1、尺寸Size、曲率Curvity、表面粗糙度Ra、位置度Ture Position:

#### 2、热处理后: 硬度、金相:

After Heat Treatment: Hardness、Microstructure

#### 3、振动Vibration、噪音Noice、轴承清洁度Cleanliness:

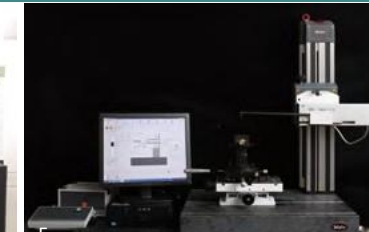
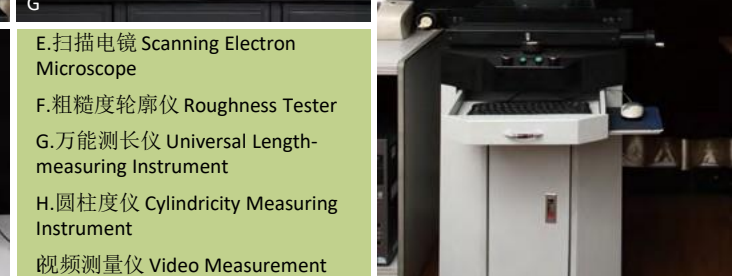
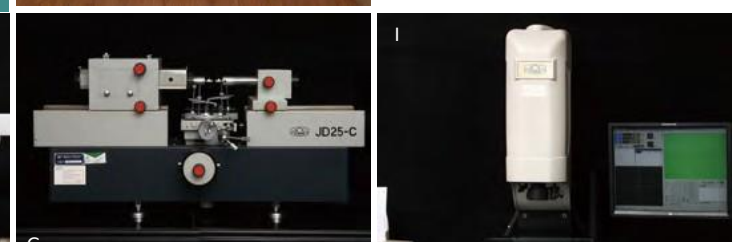
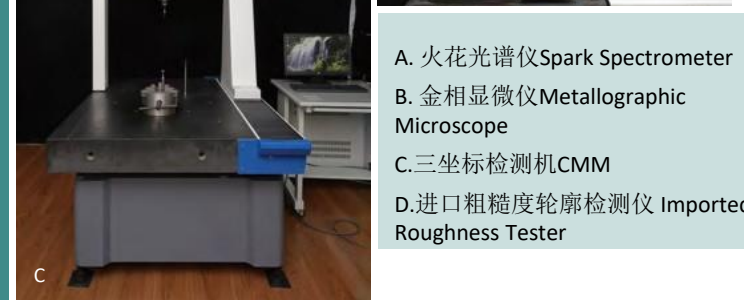
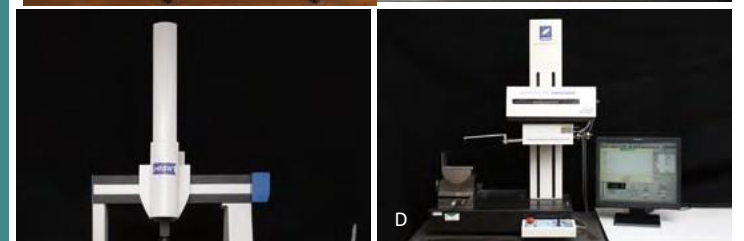
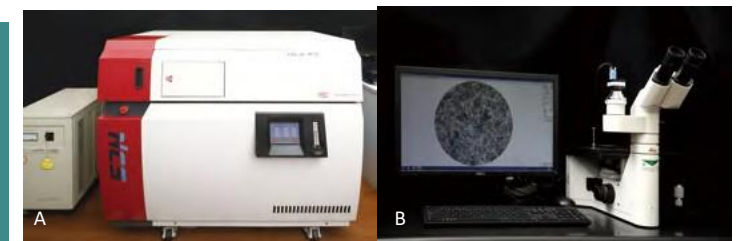
#### 4、探伤Flaw Detection:

#### 5、烧伤检测Burn Inspection.

### 成品检验 Finished Production Inspection:

外观Appearance、成品尺寸Size、包装PKG、手感Feel、启动扭矩Startup Torque、ect.

## 检测仪器 Instrumentation

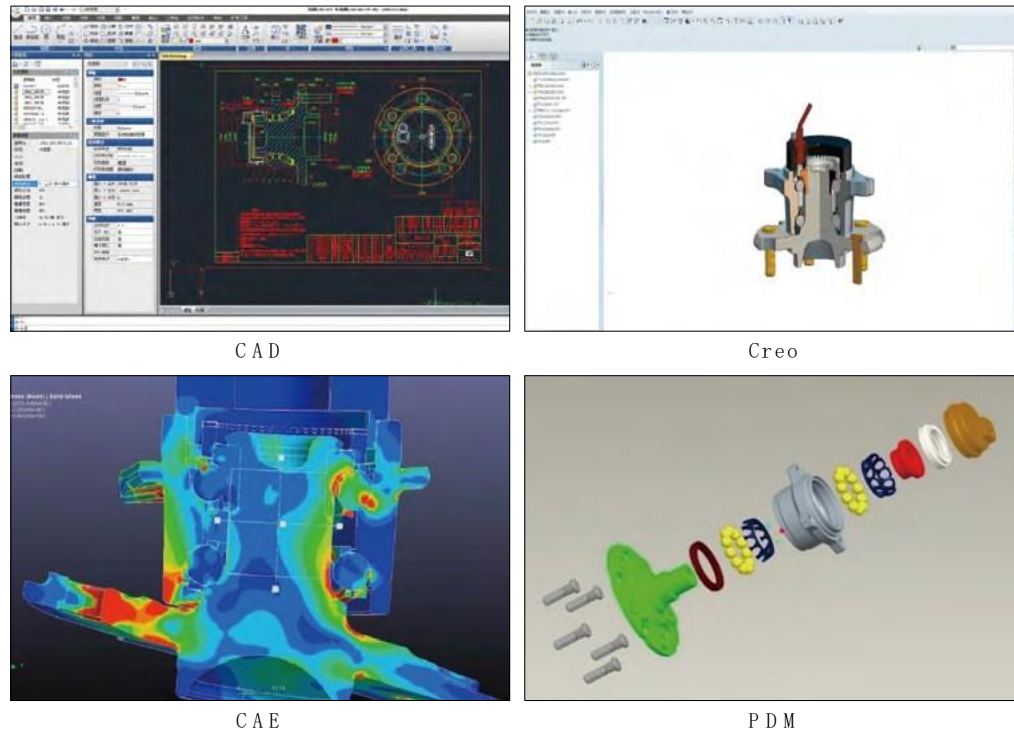


# 技术研发 Technology R&D

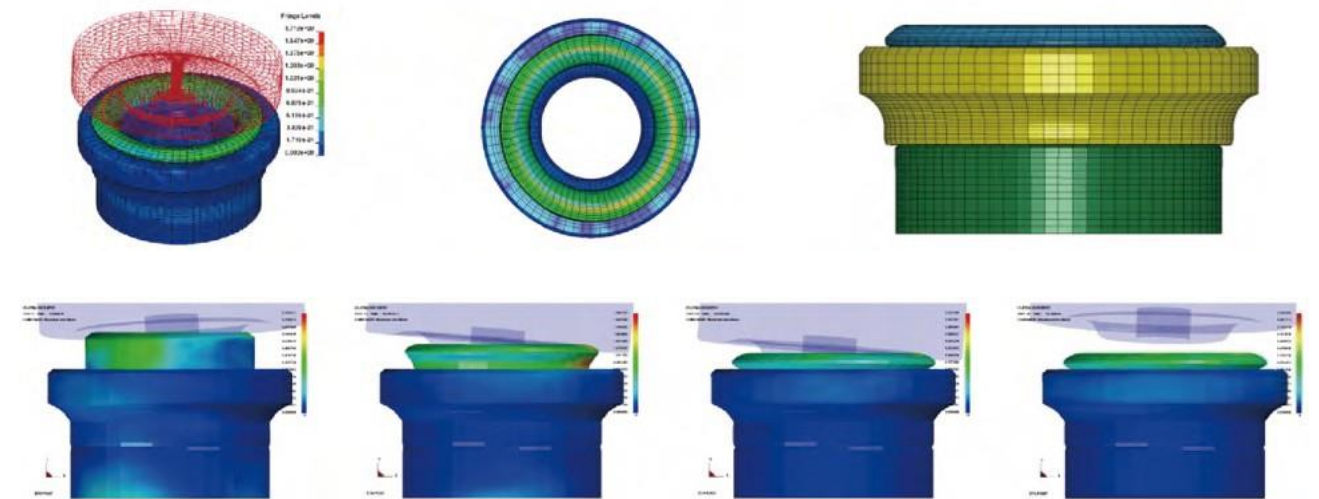
## 产品设计保障 Product Design Assurance

### 一、软件 Software

- CAD
- Creo (Pro/E)
- CAE (Creo、Romax)
- PDM

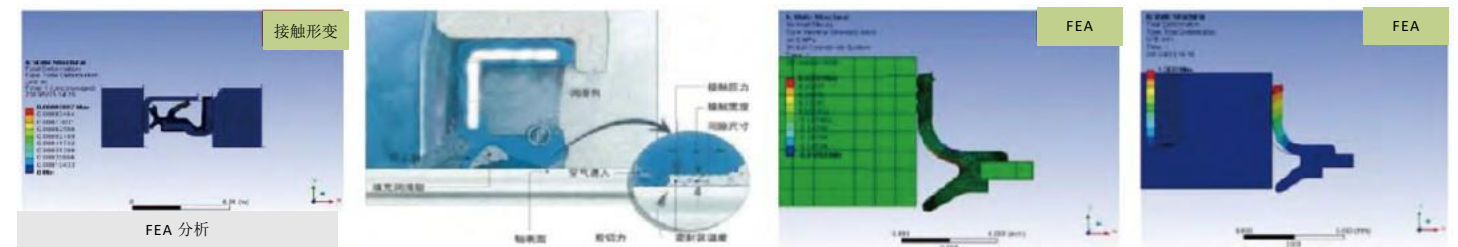
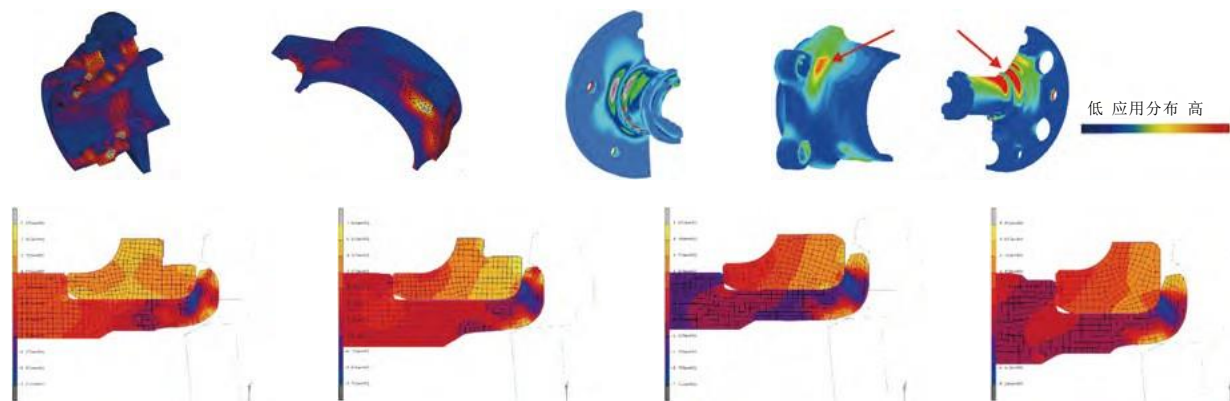


### 三、有限元卷边应力及强度分析 Finite element rolling stress&strength analysis



### 二、有限元强度及应力分析 FEA and Stress Analysis

### 四、低摩擦密封结构分析 Analysis of Low Frictional Sealing Structure



密封唇边接触面分析  
特性: (1) 低摩擦性, 降低摩擦力矩; (2) 提高密封寿命。  
Sealing lip contact surface analysis  
Characteristics: (1) Low friction, reduce friction torque; (2) Improve the sealing life.

### 五、丰富的产品材料应用经验 Rich Experience In Application of Raw Material



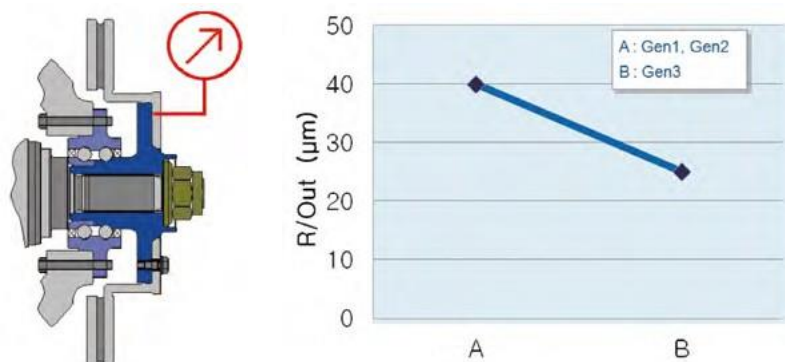
# 技术研发 Technology R&D

## 产品重要参数指标保障

### Guarantee of important Characteristics

#### 一、产品法兰盘的端跳保障

##### Product flange end jump assurance

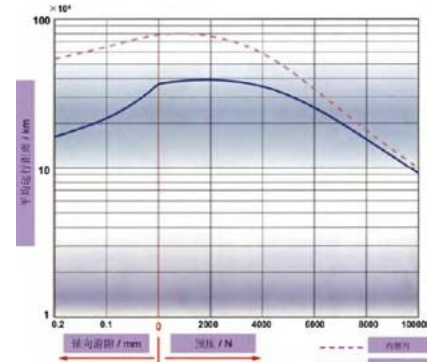


产品法兰盘的端跳保障能力 $\leq 0.015\text{mm}$ ，  
通过产品法兰盘结构改善或成品车工艺来实现。

The end jump guarantee ability of the product flange is less than 0.015mm,  
By improving the structure of the product flange or the process of the turning to achieve.

#### 二、产品负游隙保障

##### Product negative clearance assurance



产品负游隙与寿命关系应用图。

Product minus clearance and life relationship application diagram.

## 产品试验能力保障

### Product test capability assurance

#### 一、试验项目

##### Test Project

公司目前可开展以下试验，并可根据客户要求，调整或增加其它试验项目，内部不能解决的，可委托第三方进行试验。  
At present, the company can carry out the following tests, and can adjust or add other test items according to customer requirements. If it cannot be solved internally, it can entrust a third party to conduct the test.

序号	试验项目 Test Project	序号	试验项目 Test Project	序号	试验项目 Test Project
1	泥浆/水喷射试验 Mud test	9	微动磨损试验 Fretting wear test	17	螺栓抗滑扭矩试验 Bolt anti-sliding torque test
2	一般耐久性试验 Endurance test	10	刚性试验 Implosion test	18	钢球压碎试验 Ball crushing test
3	强化耐久性试验 (0.6、0.8、1.2g) Enhanced endurance test	11	轴承单元静强度试验 Static strength test of bearing unit	19	法兰盘卷边部位压力试验 Pressure test for hemming part of flange
4	高速耐久试验 High speed durability test	12	漏脂试验 Grease leakage test	20	内圈脱出力试验 Inner ring output test
5	轮毂轴承单元冲击试验 Hub bearing unit impact test	3	轴承温升性能试验 Bearing temperature rise performance test	21	齿圈/端盖脱出力试验 Gear ring/end cap removal force test
6	高/低温试验 High/low temperature test	14	启动力矩/转动扭矩试验 Starting moment/turning moment test	22	密封气密性试验 Seal air tightness test
7	弯曲疲劳试验 Repeated bend test	15	螺栓拉伸试验 Bolt tensile test	23	中性盐雾试验 Neutral salt spray test
8	法兰盘旋转疲劳试验 Bending rotation test	16	螺栓抗脱出力试验 Bolt stripping resistance test	24	A B S 传感器耐久性试验 Endurance test of ABS sensor

#### 三、产品卷边裂纹保障 The capability of preventing crack when rolling



螺母结构 Structure of nut



卷边结构 Flanged structure



卷边结构形成过程  
The forming process of the flanged structure

- 特性:
- (1) 降低成本
  - (2) 减少尺寸
  - (3) 节约空间、减重
  - (4) 实现装配前可控的预压

- Characteristic:
- (1) Reduce cost
  - (2) Reduce size
  - (3) Save space and weight
  - (4) Achieve controlled preloading before assembly

#### 二、试验中心 Test center



试验中心一角  
Corner of test center

#### 四、产品转动能力力及滚道质量保障 The capability of assuring turning torques as well as raceway



# 技术研发 Technology R&D

## 试验中心 Test Center



1	2	3	4
	5	6	7
	8	10	11
	9		

- 7 轮毂轴承及单元 (高低温)泥浆耐久试验机(IAMT) Wheel bearing high & low temperature mud fatigue test machine
- 
- 8、双工位轴承性能测量试验台(LINK) Duplex bearing performance measurement test bench
- 
- 9、微动磨损试验台 (MTS) Fretting wear test bench
- 
- 10、汽车轮毂轴承单元冲击试验机 Wheel bearing hub impact curbing test machine
- 
- 11、轮毂轴承单元刚性试验机 Wheel bearing hub stiffness test machine

- 1、试验中心一角 Layout
- 
- 2、轮毂单元HUB 弯曲疲劳微动磨损试验机 Hub bending fatigue fretting wear test machine
- 
- 3、中重型轴承强化寿命试验机 HD bearing enhance life test machine
- 
- 4、汽车轮毂轴承重法兰盘旋转试验机 Flange rotating test machine
- 
- 5、摩擦扭矩试验机 (KNR) Friction torque test machine
- 
- 6、重卡轮毂轴承单元模拟试验机 HD wheel hub simulating test machine





/ 05

# 企业札记

Corporate Notes

## 重要事件 Important Events

公司2017年在创业板上市 Listed on the GEM in 2017  
 股票代码 Stock Code 300652



## 展会 Exhibition



▼ 2024年成都参展 CAPAS 2024

▲ 2019年迪拜参展 Automechanika Dubai 2019

▼ 2023年法国参展 Automechanika Lyon 2023



◀ 2023年上海参展 Automechanika Shanghai 2023

# RADICAL

股票代码 Stock Code : 300652



 杭州雷迪克节能科技股份有限公司 Hangzhou Radical Energy-Saving Technology Co., Ltd.

[www.radical.cn](http://www.radical.cn)

-  
地址: Add  
浙江省杭州市萧山经济技术开发区桥南春潮路 89 号  
No. 89 Chunchao Road, Qiaonan Area, Xiaoshan Economic & Technological Development Zone, Hangzhou City, Zhejiang Province

-  
电话: Tel  
0086-571-22806188 / 22806100

-  
传真: Fax  
0086-571-22911950

-  
邮编: Post Code  
311231

-  
邮箱: Email  
[info@radical.cn](mailto:info@radical.cn)



股票代码 Stock Code : 300652



杭州雷迪克节能科技股份有限公司

[www.radical.cn](http://www.radical.cn)