A high-speed train, likely a CRRC model, is shown traveling across a large concrete bridge over a body of water. The train is white with a red and blue stripe. The background shows a hazy landscape with some buildings and trees.

株洲中车奇宏散热技术有限公司

ZHUZHOU CRRC-AVC Thermal Technology CO.,LTD.

www.crrcgc.cc



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主要产品及应用

Part III 第三部分

Comprehensive Ability
综合能力



Part I

Company Introduction
公司概况



Company Introduction

公司概况

ZHUZHOU CRRC-AVC Thermal Technology CO.,LTD.

株洲中车奇宏散热技术有限公司



**Our Headquarters-
CRRC Zhuzhou
Institute was
founded in 1959**

母公司株洲所
创立于1959年



**Established in 1970
Being wholly -owned
of CRRC in 1993
Joint venture with AVC
in 2011**

1970年公司成立
1993年成为株洲所
全资子公司
2011年与台湾奇宏合资



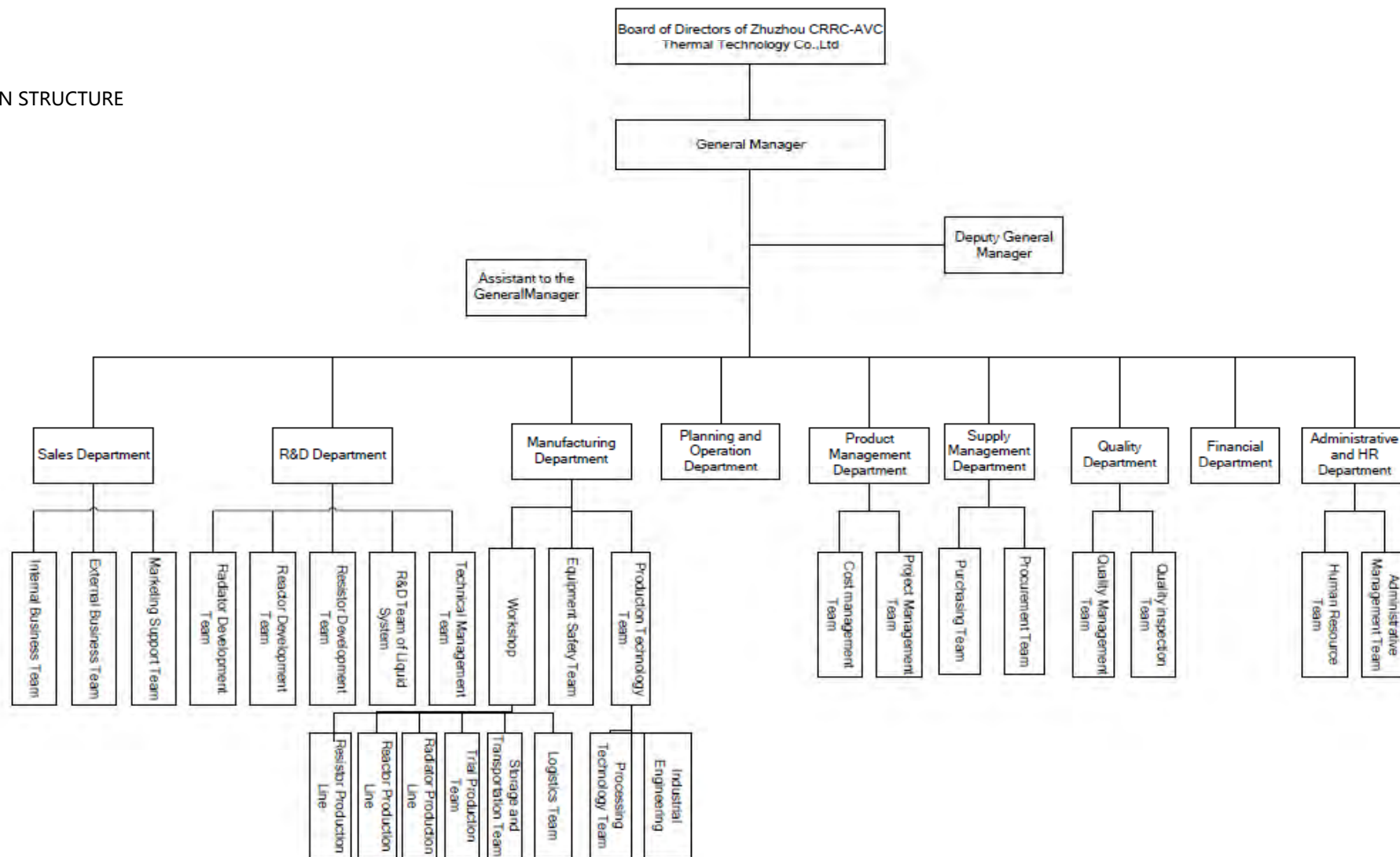
**Provincial Hi-Tech national technology-
based SME
Small giant enterprise in Hunan Province
Innovative center of zhuzhou city**

国家高新技术企业
国家科技型中小企业
湖南省小巨人企业
株洲市企业技术创新中心



Company Introduction

ORGANIZATION STRUCTURE





Company Introduction

公司概况

TALENT CAPITAL

Personnel Distribution(Total 203 employees)

Sales Dept	R&D Dept	Manufacturing Dept	Planning & Operation Dept	Product Management Dept	Supply Management Dept	Quality Dept	Financial Dept	Administrative & HR Dept
10	40	108	7	5	9	12	6	6



Company Introduction 公司概况

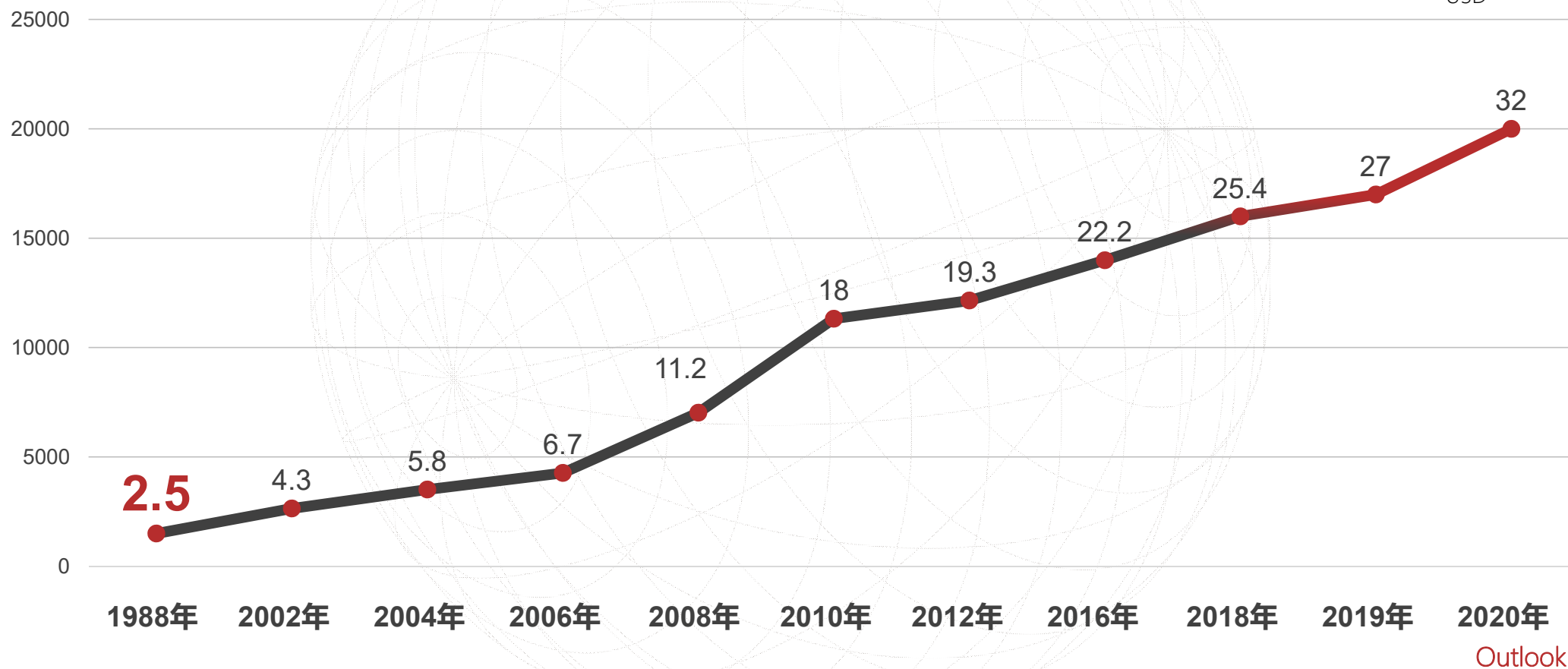
REVENUE GROWTH

Maintaining sustained, healthy & stable development

保持持续、健康、稳定发展态势

Unit/单位: Million USD

经营业绩





Customer Forecast



Heatsink

35%

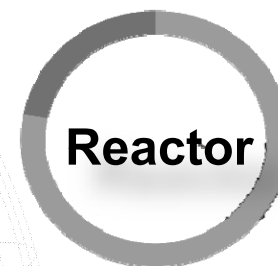
Annual
Revenue Ratio



Resistor

34%

Annual
Revenue Ratio



Reactor

31%





Part II

Main Products and Achivement 主要产品及应用



8 Core technologies 八大核心技术

■ Thermal radiating tech of power device 功率器件散热技术



■ Systematic managing tech for heat 系统热管理技术



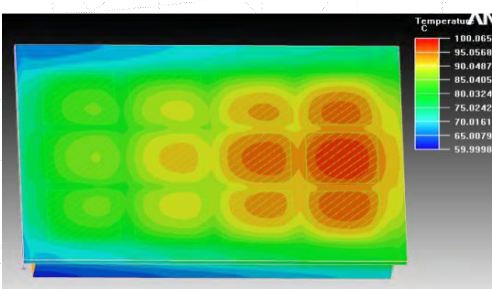
■ Heat exchanging tech 换热技术



■ High efficiency consumption tech 高效耗能技术



■ Simulation tech 仿真技术



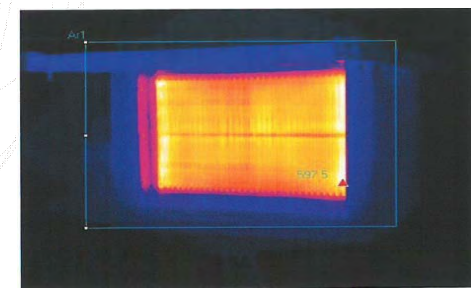
■ Magnetic designing tech 电磁设计技术



■ Passive inspection tech 无源检测技术



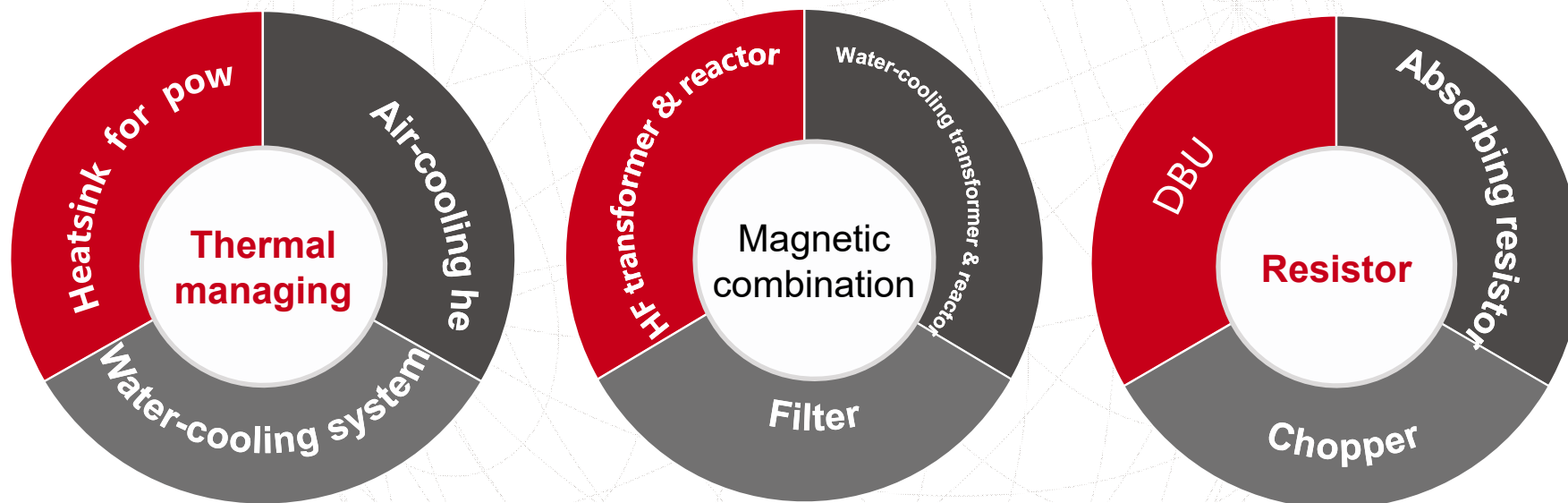
■ Inspection & testing tech 检验检测技术





Production structure 产品结构

Company's product fields have divided into 3 main categories, which all originated from these 8 core technologies



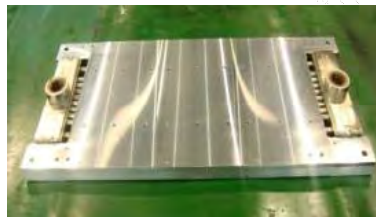


Thermal management products

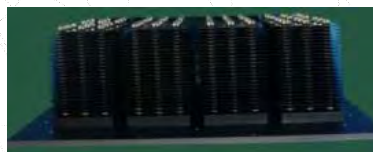
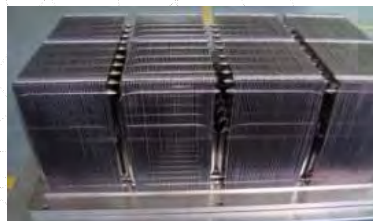
热管理产品

1、Thermal radiating product for power device 功率器件散热产品

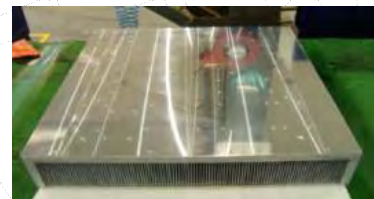
**Water cooling
heatsink** 水冷散热器



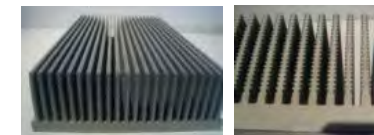
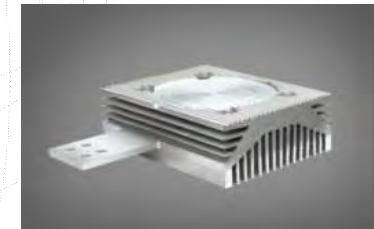
Heat pipe radiator
热管散热器



Fin-inserted heatsink
翅片散热器 (嵌片)



Profile heatsink 型材散热器





Thermal management products

热管理产品

Fin-inserted heatsink 嵌片散热产品

- Applied to the field of rail transit,such as EMU, CRH,etc
应用于轨道交通
- Domestic market share occupies 60%,and exported to Argentina, Australia, Singapore, South Africa ,etc
国内市场占有率约60%；出口至阿根廷、澳大利亚、新加坡、南非等国家和地区。
- Total 2.3pcs products have put in service, and operated stable and reliable
已上线产品达到8万件，运行状况稳定、可靠



Thermal management products

热管理产品

Fin-inserted heatsink 嵌片散热产品



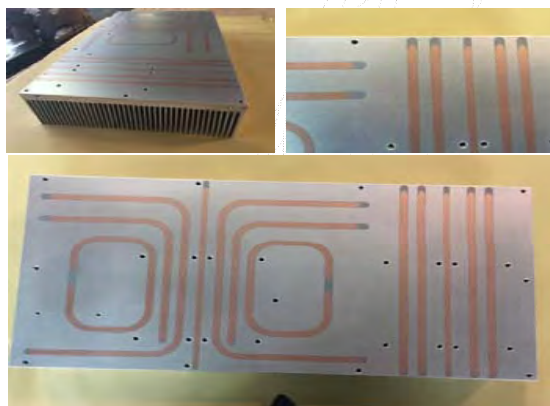
Applied to: **Rail Transit**



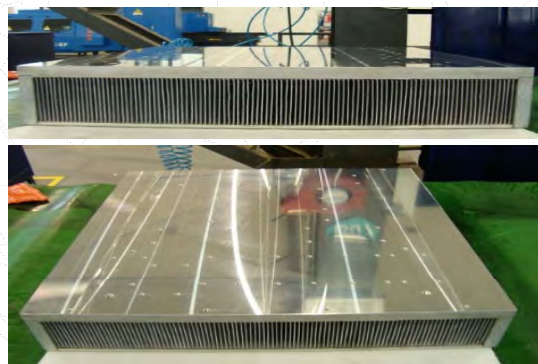
Thermal management products

热管理产品

Combined by IGBT in the field of SVG、Photovoltaic and HVC



Applied to: **SVG、Photovoltaic**



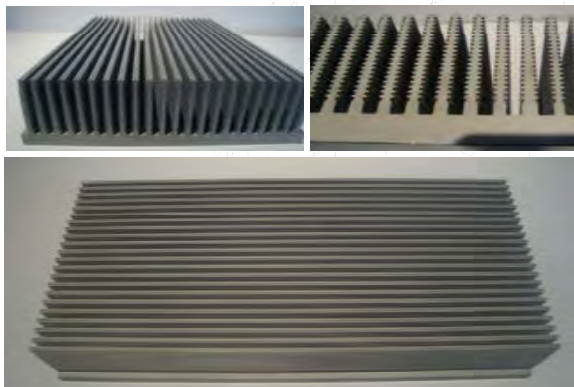
Applied to: **HVC**



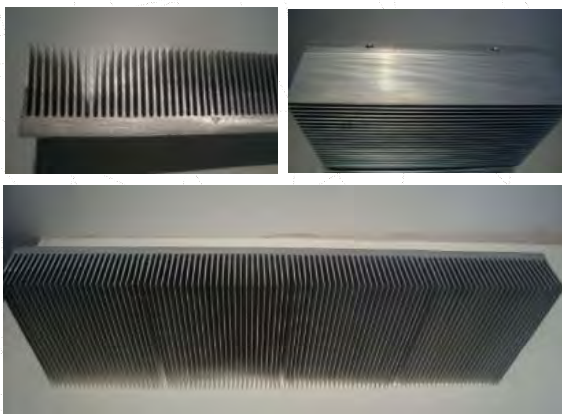
Thermal management products

热管理产品

Profiles Radiator 型材散热产品



Applied to: **Wind power/Photovoltaic**



Applied to: **Communication**



Thermal management products

热管理产品

Water-Cooling Heat sink 水冷散热产品

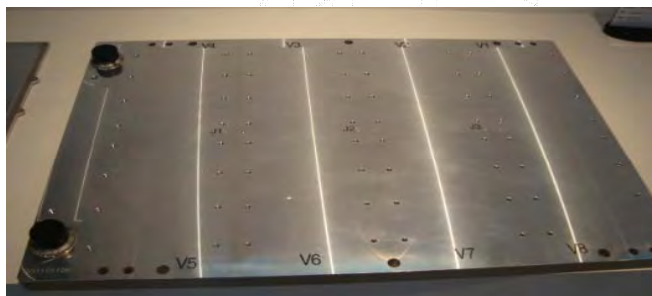
- Applied to converters of CEMU , EMU, and locomotives
- 应用于中国标准动车组（复兴号）、动力集中型动车组、机车等牵引变流辅变及充电机装置功率器件的散热。
- With No.1 domestic market share, and exported to Argentina, Australia, Singapore, South Africa etc.
- 国内市场占有率第一；出口至阿根廷、澳大利亚、新加坡、南非等国家和地区。
- With up to 100,000 products delivered and featuring stable and reliable operation
- 已上线产品达到10万件，运行状况稳定、可靠。



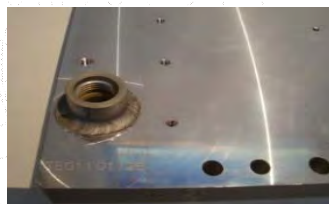
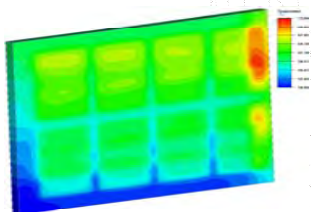
Thermal management products

热管理产品

Water-Cooling Heat sink 水冷散热产品



Applied to: **Electric locomotives with 7200KW**

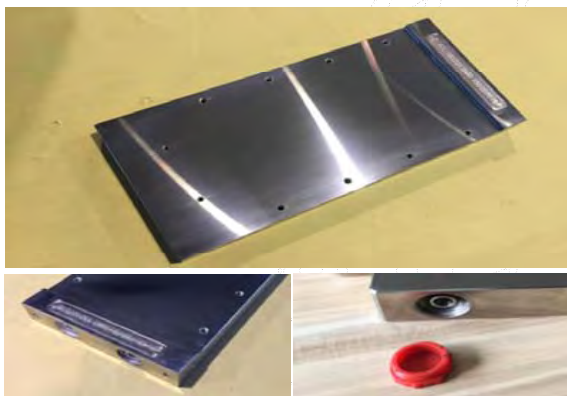




Thermal management products

热管理产品

Water-Cooling Heat sink 水冷散热产品



Applied to: **Flexible DC transmission**



Applied to: **Power transmission**



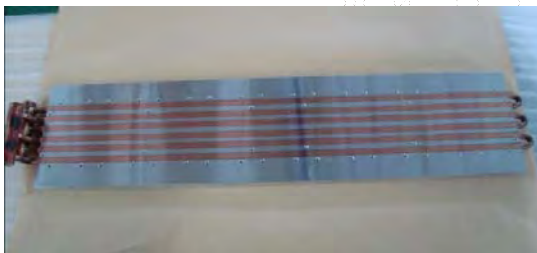
Thermal management products

热管理产品

Water-Cooling Heat sink 水冷散热产品



Applied to: **Wind power**



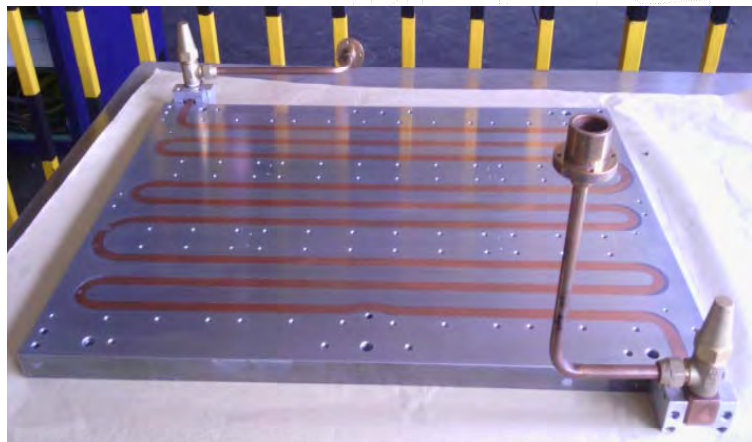
Applied to: **Wind power**



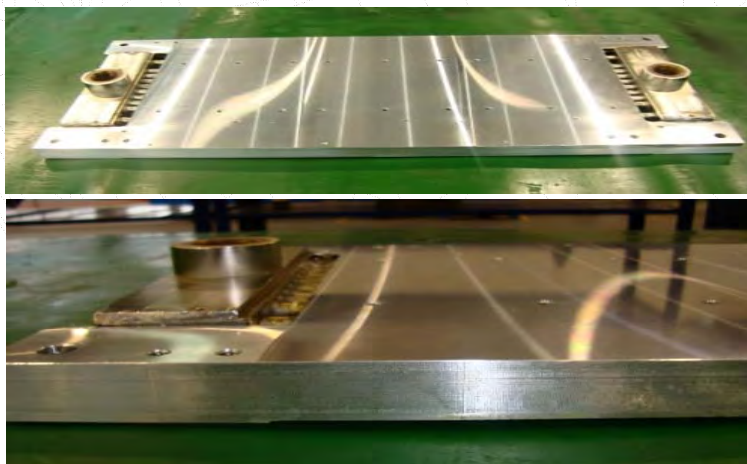
Thermal management products

热管理产品

Water-Cooling Heat sink 水冷散热产品



Applied to: **Central A/C**



Applied to: **OHV (30M)**



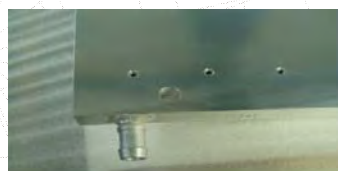
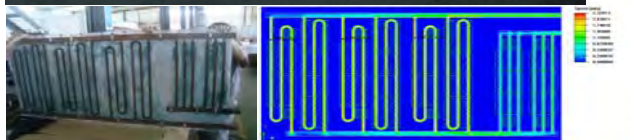
Thermal management products

热管理产品

Water-Cooling Heat sink 水冷散热产品



Applied to: **Nuclear engineering**



Applied to: **UHV frequency Converter**



Thermal management products

热管理产品

Heat pipe heatsink

热管散热产品

- Applied to all modes of urban rail transit, mine explosion protection and ship
- 应用于城市轨道交通所有制式(地铁、有轨电车、空轨、磁浮、智轨等); 矿山防爆、船舶
- Occupies No.1 domestic market share
- 2012~2017年连续6年国内市场占有率稳居第一
- With up to **30,000** products having been put into service and featuring stable and reliable operation
- 已上线产品达到3万件, 运行状况稳定、可靠。



Thermal management products

热管理产品

Heat pipe heatsink

热管散热产品



Applied to: **Urban Rail Transit**





Thermal management products

热管理产品

Heat pipe heatsink

热管散热产品



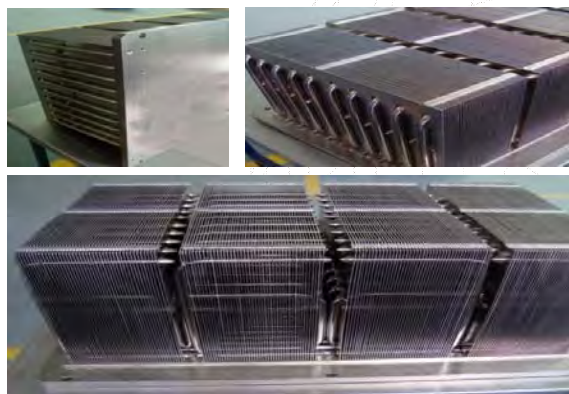
Applied to: **CRH2**



Thermal management products

热管理产品

Heat pipe heatsink 热管散热产品



Applied to: **Inverter of OHV**



Applied to: **Inverter of Ship**

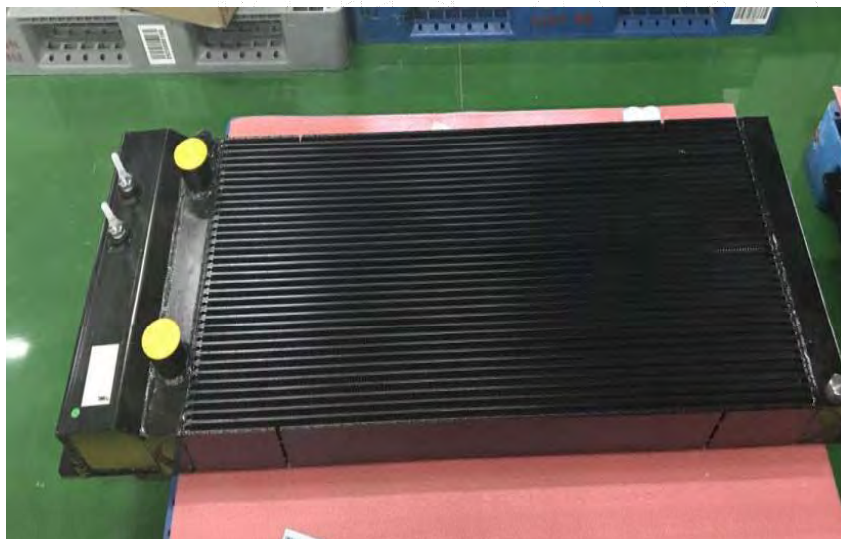


Thermal management products

热管理产品

2 Thermal exchanging product 换热器产品

- Applied to converters and chargers of CEMU , EMU, and locomotives with 7200KW & 9600Kw
应用于中国标准动车组（复兴号）、动力集中型动车组、7200KW机车、9600KW机车等轨道交通牵引变流装置；
- Applied to braking system and water cooling system
应用于制动系统、各类水冷系统装置。



Applied to: **CRH**



Thermal management products

热管理产品

3、Water cooling system 水冷系统

Applied to cooling down the system of low floor vehicle, train, wind power and off-highway vehicle

应用于低地板车、有轨电车、风电、矿卡等装置的系统冷却



Applied to: **Motor of low floor vehicle**



Magnetic device and combinations 磁性元件及組合

HF transformer & reactor



High power transformer



Water cooling reactor 水冷电抗器



Filter 滤波器





Magnetic device and combinations 磁性元件及组合

1、High frequency reactor & transformer 高频电抗器/变压器



Applied to converters of CEMU , EMU, urban rail train, and engineering truck, which put in service with quantity of 12K pieces, and those products are operating reliable and stable

应用于中国标准动车组（复兴号）、动力集中型动车组、城际动车、磁悬浮车、城轨、机车、工程车变流装置
已上线运行产品达到1.2万件，性能可靠、稳定。



Magnetic device and combinations 磁性元件及组合

2、Water cooling reactor 水冷电抗器

- Applied to Wind Power in 2.0MW or above, with products outshipping to USA,Australia,Tailand,Argentina, And it has more than 14K pieces profucts putting in service which are reliable and stable.
- 应用于风电2.0MW以上各型平台的变流装置；产品出口至美国、澳大利亚、泰国、阿根廷国家；已上线运行产品达到1.4余万件，性能可靠、稳定；



Applied to: **Wind Power**



Magnetic device and combinations 磁性元件及组合

2、Water cooling reactor 水冷电抗器



Applied to: **Ship converter**

Advantages:

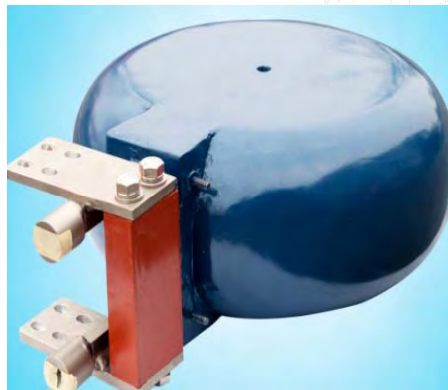
- Small, light, low thermal rising
- Has mass production records, reliable , stable
- Recieved high appraisal from customers



Magnetic device and combinations 磁性元件及组合

3、Large power reactor and transformer 传统大功率电抗器/变压器

- Applied to the field of new energy vehicle, wind power photovoltaic and industry
应用于新能源汽车、风电、光伏、电源、工业变流领域



Applied to: **Rolling mill**

Advantages:

- Small, light, low thermal rising
- Unique in profession
- Has Massive profuction records.



Applied to: **Rolling mill**



Magnetic device and combinations 磁性元件及组合

4、Filter 滤波器

- Applied to converter of wind power and rail transit
- 应用于风电、轨道交通等变流装置



Applied to: **Wind power and Rail transit**



Resistor 电阻

1、Brake resistor 制动电阻

- Applied to all modes of **urban rail transit, mine truck**

应用于城市轨道交通所有制式(地铁、有轨电车、空轨、磁浮、智轨等);

- With No.1 domestic market share, and exported to **U.S.A, Malaysia, Georgia, São Paulo in Brazil, Australia, Singapore etc**

2012~2017年连续6年国内市场占有率稳居第一; 出口至马来西亚、格鲁吉亚、巴西圣保罗、澳大利亚、新加坡等国家;

- With up to **35,000** products having been put into service and featuring stable and reliable operation
已上线产品达到3.5万台, 运行状况稳定、可靠



Resistor 电阻

1、 Brake resistor 制动电阻



Applied to: **Diesel locomotive**



Resistor 电阻

2、Over-voltage Absorption Resistors 过压吸收电阻

- Applied to all modes of **urban rail transit** (metro, tramcar, skytrain, maglev, ART, etc.)
- 应用于**城市轨道交通**所有制式(地铁、有轨电车、空轨、磁浮、智轨等);
- From 2012 to 2018, the domestic market **share having been ranked first** for six consecutive years
- 2012~2018年连续6年国内市场**占有率稳居第一**;
- Total more than 10,000 products delivered and have stable and reliable operation status已上线产品达到**1万余台件**, 运行状况稳定、可靠。



Resistor 电阻

2、Over-voltage Absorption Resistors 过压吸收电阻



Applied to: **Metro**



Resistor 电阻

3、Chopper resistor 斩波电阻

- Applied to locomotives ,and exported to Argentina

应用于7200KW、9600KW等机车；出口至阿根廷等国家；

- With more than 35,000 products having been put into service and featuring stable and reliable operation

已上线产品达到3.5万余台，运行状况稳定、可靠。



Resistor 电阻

3、Chopper resistor 斩波电阻



Applied to: **Locomotive with 9600kw**



Resistor 电阻

4、LVRT (Low voltage ride-through) Resistors 低电压穿越电阻

- Applied to **wind power industry** 应用于风电各型平台的变流装置;
- Exported to **the United States, Australia, Argentina etc** 产品出口至美国、澳大利亚、阿根廷等国家;
- With **more than 8,000** products having been put into service and featuring stable and reliable operation.
- 已上线运行产品达到8000余台, 性能可靠、稳定。



Resistor 电阻

4、LVRT (Low voltage ride-through) Resistors 低电压穿越电阻



Applied to: **Wind Power**



Resistor 电阻

5、 Other Resistors 其他电阻

- Applied to **motor startup, lifting industry, power industry, test load, filter, charging, etc.**
- 应用于电机起动制动电阻器、起吊行业大型机械制动电阻器，电力行业中性接地电阻器，试验负载电阻器，滤波电阻器和充电电阻器等。





Part III

Comprehensive Ability 综合能力



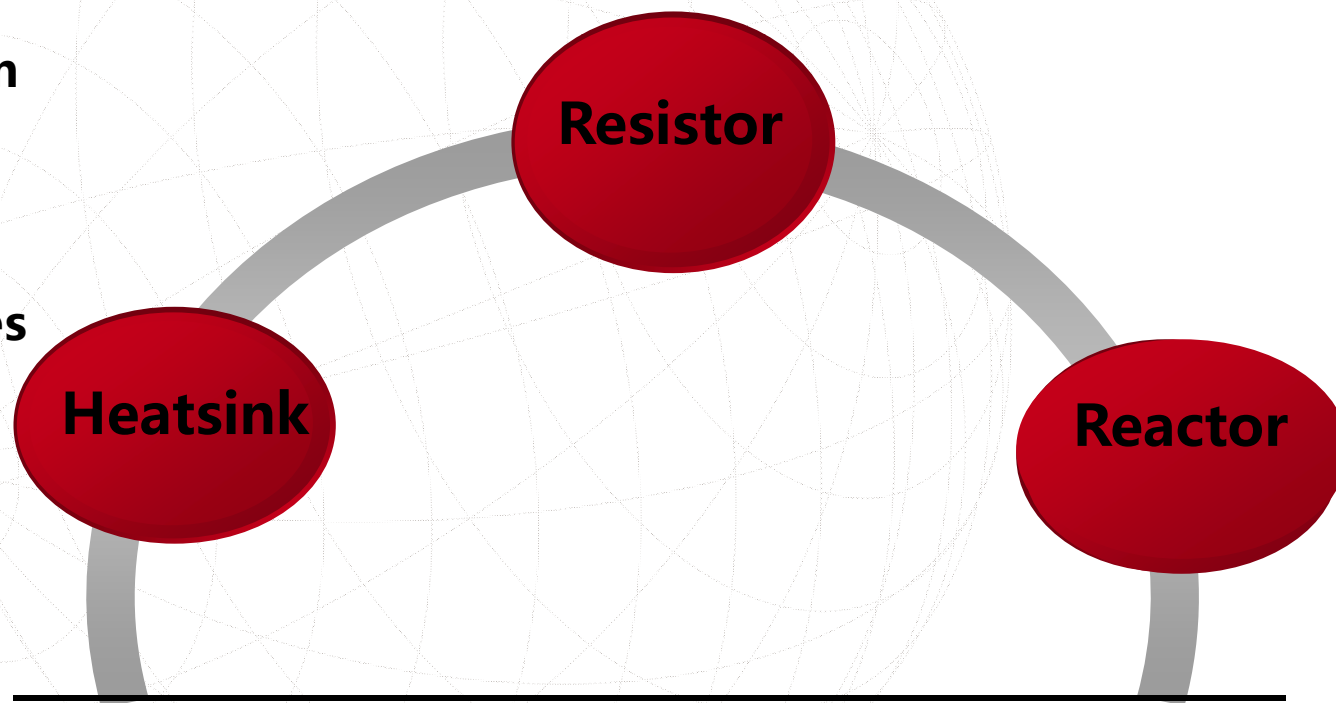
Comprehensive Ability 综合能力

R&D Ability— Professional Design

Have professional R&D team
which consists of **40**
employees obtained doctor,
masters, and undergraduates

公司拥有一支**40**名由博士、硕士及本科生组成的专业设计队伍;

可以根据客户提供的技术要求为客户**定制**各种散热器、电抗器和电阻





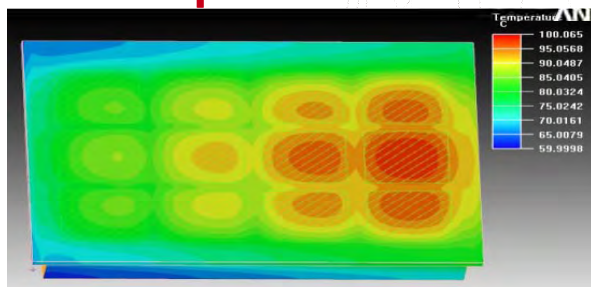
Comprehensive Ability 综合能力

R&D Capability-simulation

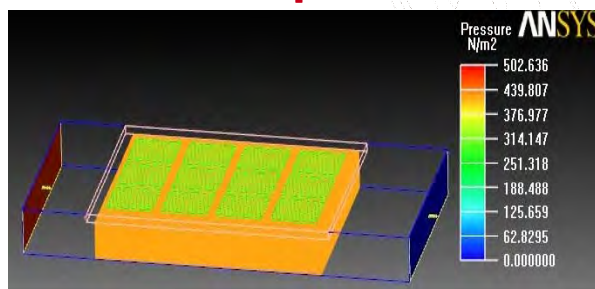
Heat sink

Thermal/Flow resistance

Temp distribution



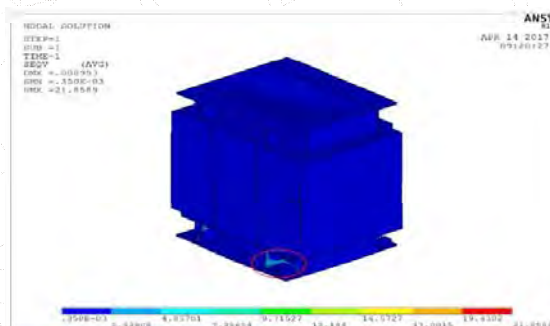
Pressure drop distribution



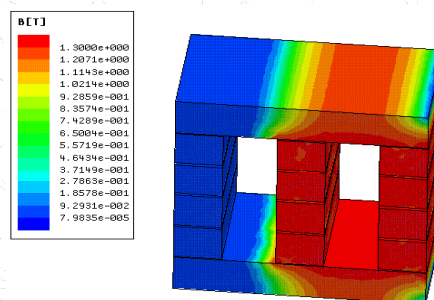
Reactor

Electromagnetic/Thermal/Structural

Structure



Electromagnetic simulation



Resistor

Thermal/Structural

Stress Distribution

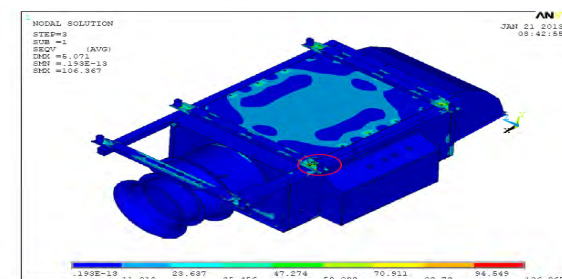


图20 垂直随机振动时 1σ应力分布 (最大应力 106.4MPa)

Structure

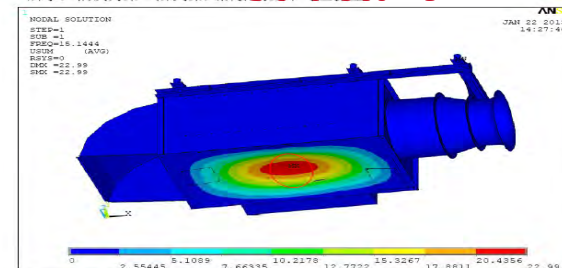


图9 第一阶振动频率 (15.1Hz) 对应振型



Patent Qty is **44**(发明专利), which include **10** innovating projects(发明专利) and **34** utility advanced projects(实用新型专利)

 中 华 人 民 共 和 国 知 识 产 权 局		案号: <div style="border: 1px solid black; padding: 5px; font-weight: bold; font-size: 18px; margin-top: 20px;"> 2018年01月26日 </div>
201203 上海市松江知识产权分局 2016 字第 413 号 上海绿力知识产权 代理事务所 (普通合伙) 王洪英 (311 60797236)		
		
申请号/专利号: 2014 20089488.7 英字序号: 201402201257409		
申请人/专利权人: 湖州中车安泰散热器技术有限公司		
发明创造名称: 一种式式风冷中压散热器制造电路图		
予 核 合 格 通 知 书		
上述专利申请(专利) 申请人/专利权人于 2018 年 01 月 26 日提出审查意见处理请求, 经审查, 符合专利法及其实施细则的相关规定, 准予变更, 现将变更的内容通知如下:		
变更项目: 专利权人 变更前: <div style="margin-left: 40px;"> 第 1 专利权人 专利权人/委托代理人: 是 专利权人姓名/名称: 湖州中车安泰散热器技术有限公司 专利权人国籍: 中国 专利权人邮政编码: 412007 专利权人地址: 浙江省湖州市南太湖新区绿城国际 专利权人证件号码: 3306021196320133 </div>		
变更后: <div style="margin-left: 40px;"> 第 1 专利权人 专利权人/委托代理人: 是 专利权人姓名/名称: 湖州中车安泰散热器技术有限公司 专利权人国籍: 中国 专利权人邮政编码: 412007 专利权人地址: 浙江省湖州市南太湖新区绿城国际 专利权人证件号码: 3306021196320133 </div>		
该申请已符合专利法, 决定受理。此 告 2018 年 01 月 26 日 专利局公告。		



Comprehensive Ability 综合能力

MANUFACTURING CAPABILITIES

Heat sink

Punching



Ultrasonic Cleaning



Resistor

Point Welding M/C



Reactor

Vacuum Dipping



Vacuum Brazing M/C



Auto production line of Resistor



Mooring M/C





Comprehensive Ability 综合能力

Testing Capability

Heat sink

热管理产品热阻、流阻测试

Water cooling testing



Reactor

磁性材料（包括硅钢片、铁氧体、磁粉芯）检测、模拟
温升试验、耐压试验、变压比检测、空载电流检测；

Ultrasonic lab



Wind tunnel Test



Resistor

温升、振动、噪音等测试

Comprehensive Test



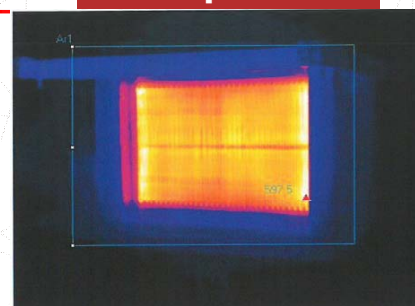
Hi-frequency source



Electromagnetic compatibility



Temp Rise



Vibration Test





Comprehensive Ability

综合能力

质量保证

QUALITY ASSURANCE

ISO14000 环境管理体系
OHSMS18000 职业健康管理体系

ISO9001 质量管理体系

RAMS工程
可靠性、可用性、可维护性、安全性



Think you for watching!