



山东朗进科技股份有限公司
SHANDONG LONGERTEK TECHNOLOGY CO., LTD.

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综合节能环保控专家

Comprehensive energy-saving environmental control expert

以科技和创新提升人类生活品质
Improving the quality of human life with technology and innovation



COMPANY 企业简介

>> INTRODUCTION

山东朗进科技股份有限公司是一家率先掌握变频节能核心技术、空调暖通系统控制技术的高科技股份制企业，注册资本 8998.17 万元，研发基地分别设在济南、青岛，生产基地设在济南市莱芜高新区，拥有北京、广州、佛山、深圳、苏州、沈阳、成都、南宁、西安、郑州等多家子公司。主要设计生产轨道车辆智能化变频热泵（冷暖）空调、新能源大巴车辆变频空调、新能源大巴整车综合热管理系统和车辆变频控制器等系列产品。朗进车辆空调变频节能技术入选国家发展改革委《国家重点节能低碳技术推广目录》。

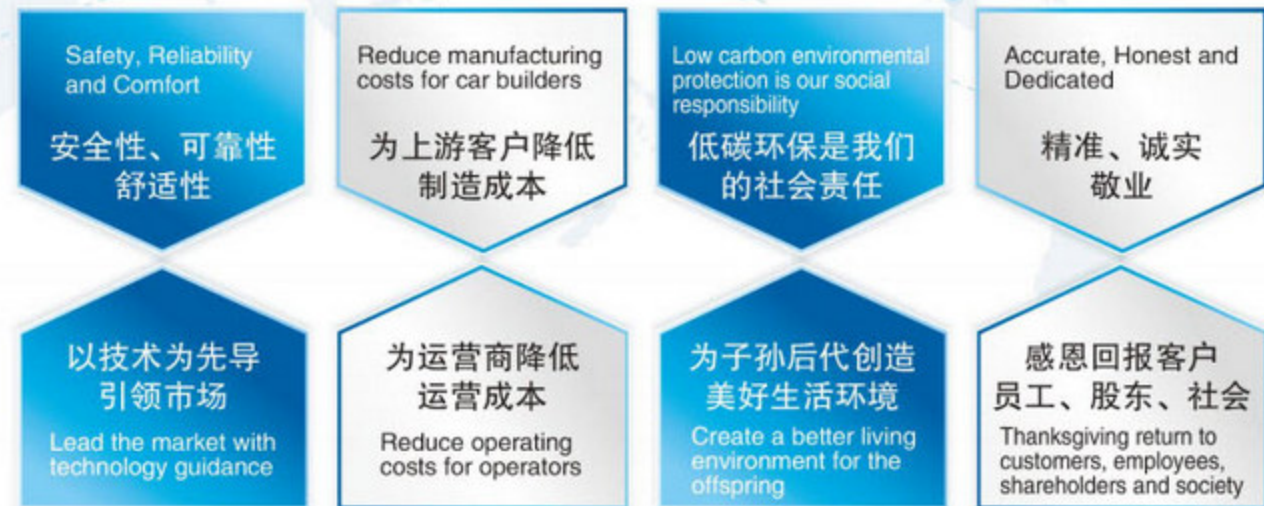
Shandong Longertek Technology Co., Ltd. is a high-tech joint-stock enterprise having core energy-saving technology and inverter cooling system control technology, with registered capital of RMB 8998.17 million. The company's R&D center is located in Jinan and Qingdao, and the product-manufacturing base is located in Laiwu high-tech zone of Jinan, with its branch companies in Beijing, Guangzhou, Foshan, Shenzhen, Suzhou, Shenyang, Chengdu, Nanning, Xi'an, Zhengzhou, etc. Main products are: rail vehicle intelligent inverter heat pump (cooling & heating) air conditioning system, new energy bus vehicle inverter air conditioning system, new energy bus integrated thermal management system, vehicle inverter controller and other series products. The inverter energy saving technology of Longertek railway vehicle air conditioning system was included in NDRC "National Key Energy-saving Low-carbon Technology Promotion Directory".



CORE 核心价值观

>> VALUES

- 秉承 “德 益 中 慧” 企业文化
Persist in the corporate culture "Integrity, Benefit, Tradition and Intelligence"
- 坚持 “朗进造=用心造” 质量理念
Adhere to the quality concept "Create by Longertek = Create by heart"
- 专注 空调系统节能及技术延伸
Focus Energy saving for air conditioning system with its extension technologies
- 创领 车辆空调智能解决方案
Leading Intelligence solution for vehicle air conditioning system





DARES TO 大事记

>>> CHALLENGE

- 2019年 朗进超低温热泵空调首次与中车ART智轨项目合作，成功装车并批量交付。
Longertek ultra-low temperature heat pump air conditioner cooperated with CRRC ART project for the first time, successfully loaded and delivered in batches
- 2019年 朗进科技在深交所创业板上市，证券代码：300594。
Longertek was listed on the Growth Enterprise Market of the Shenzhen Stock Exchange, with the stock code: 300594
- 2018年 朗进纯电动大巴空调4个城市节能对比验证，节电率20%以上，经过客户鉴定认可。
Longertek electric bus conditioning system finished comparison test in 4 cities with the result of 20% energy saving that gained acceptance from customer
- 2018年 国内第一台智能变频热泵城际市域列车空调装车成功。
First inter-city train intelligent inverter heat pump air conditioning system finished installation
- 2017年 朗进科技新三板挂牌上市，证券代码：871452。
Longertek was listed in the new third board, Stock Code: 871452
- 2017年 纯电动客车综合热管理系统研发成功，并获得多项发明专利。
Integrated thermal management system for electric bus was developed successfully with many patents
- 2017年 公司开发首款纯电动大巴空调装车测试，变频空调全系列化批量生产并投入市场，得到市场一致认可。
Longertek performed on-vehicle test to her first pure electric bus air conditioner, the full range of inverter air conditioner realized mass production and was put into the market, all got favorable comments from the market
- 2016年 国内首台“5D”技术，超薄、超静音、全直流技术变频车辆空调研制成功。
First 5D technology inverter air conditioning system in China with ultra-thin, ultra quiet, all direct DC input
- 2016年 国内首台超轻量碳纤维材质变频车辆空调和首台DC750V直供地铁车辆变频空调研制成功，并成功装车。
First inverter air conditioning system with carbon fiber material and First DC750V direct input technology inverter air conditioning system for metro in China
- 2016年 公司通过IATF 16949认证。客车变频空调设计完成系列化产品，并获得生产许可证。
IATF 16949 Certification, Serialized Products were finished design with production license
- 2015年 公司产品入选国家发改委《国家重点节能低碳技术推广目录》。
Longertek railway vehicle air conditioning system was included in NDRC "National Key Energy-saving Low-carbon technology promotion Directory" (the energy-saving part.)
- 2015年 国内首台DC1500V直供地铁车辆变频空调研制成功。
First DC1500V direct input inverter air conditioning system in China
- 2015年 国内首台自主设计生产的时速250/350公里动车组节能变频空调机组研制完成。
First 250/350 high speed train inverter air conditioning system with independent research and development production
- 2013年 朗进公司通过国际铁路行业认证IRIS认证。
IRIS Certification
- 2013年 国内首台DC750V直供技术有轨电车变频空调研制成功，并成功装车。
First DC750V direct input technology inverter air conditioning system for tram vehicle in China
- 2012年 国内首台普速客车变频空调在济南铁路局安装完成。
First inverter air conditioning system for railway coaches in China was installed in Jinan Railways Bureau
- 2012年 朗进公司通过EN15085焊接标准认证。
EN15085 Certification
- 2011年 朗进公司成功研发电动汽车变频空调控制器，批量投放市场。
Inverter controller for EV was developed and launched successfully by Longertek
- 2009年 国内轨道交通行业首次完成车载空调技术节能技术对比测试，测试表明：相比传统定速空调，变频空调平均制冷节电率>30%，平均制热节电率>40%，整车能耗降低12%
First comparison test between inverter system and fixed speed system was finished in China, compared with fixed speed system; inverter system has more than 30% energy saving in cooling mode, 40% in heating mode and 12% energy saving for whole vehicle
- 2008年 国内轨道交通行业首次以能源合同管理项目形式完成上海地铁5号线。
First Energy Management Contract in China was performed on Shanghai Line 5
- 2008年 朗进文化诞生！朗进文化的核心哲学思想：“德益中慧”。
Longertek culture was born. "Integrity, Benefit, Tradition and Intelligence"
- 2008年 山东朗进科技股份有限公司成立，公司股份制改造完成。
Shandong Longertek Technology Co., Ltd. was established, shareholding reform finished
- 2005年 国内第一台变频轨道车辆空调研制成功，并成功装车。
First railway vehicle inverter air conditioning system was developed and installed in China
- 2000年 国内第一台变频热泵机车空调研制成功，并成功装车。
First inverter heat pump air conditioning system in China was developed and installed
- 2000年 朗进公司前身莱芜三和科技公司成立。
Predecessor of Longertek, Laiwu Sanhe was established
- 1999年 国内第一台变频机车空调研制成功。
First locomotive inverter air conditioning system
- 1989年 国内第一套空调变频器由朗进董事长李敬茂先生开发完成。
First inverter controller in China was developed by Longertek Chairman, Mr. Lijingmao



CORE 核心技术

>>> TECHNOLOGY



- 1/ 自主研发直流变频控制器
Self-developed DC Inverter Controller
180° 矢量变频控制技术，能效高、噪音低
180° vector inverter control technology
High energy efficiency and low noise
电子膨胀阀优化控制技术，速度快、范围宽
Optimized electronic expansion valve control technology
High speed and wide range
20年车辆运营验证，安全、可靠
Vehicle operation verification up to 20 years
Safe and reliable
- 2/ 超低温热泵制热技术
Ultra-low Temperature Heat-pump Thermal Technology
直流变频技术，-15℃以上安全制热
DC inverter technology
Safe heating above -15℃
补气增焓技术，-25℃以上安全制热
Enhanced vapor injection (EVI) technology
Safe heating above -25℃
- 3/ 整车综合热管理技术
Overall Vehicle Thermal Management Technology
一拖多分流技术，2000年引入交通行业
Multi-split shunting technology
Introduced into the transportation industry in 2000
集成电池一体化，减重、节能、降低成本
Integrated battery fitment
Weight reducing, energy saving, and cost reducing
整车能源管控，能量回收利用
Overall vehicle energy management and control
Energy recovery
- 4/ 电磁兼容控制技术
Electromagnetic Compatibility Control Technology
抗电磁干扰能力强，安全性高
High anti-electromagnetic interference capacity
High safety
电磁辐射小，车规级品质
Small electromagnetic radiation
Automotive grade quality
- 5/ 智能故障预诊断技术
Intelligent Fault Pre-diagnosis Technology
智能故障预诊断技术
Full-time dynamic monitoring
High RAMS
远程大数据诊断，LCC低
Remote big data diagnosis
Low LCC





ACTUAL 实际运营节能 >>> OPERATING ENERGY SAVING

各运营公司节能鉴定报告
Survey report of energy saving from operators

朗进完成4个城市（先后三年）
大巴空调节能对比测试
制冷节电平均20%以上
制热节电平均45%以上
大大增加续航里程



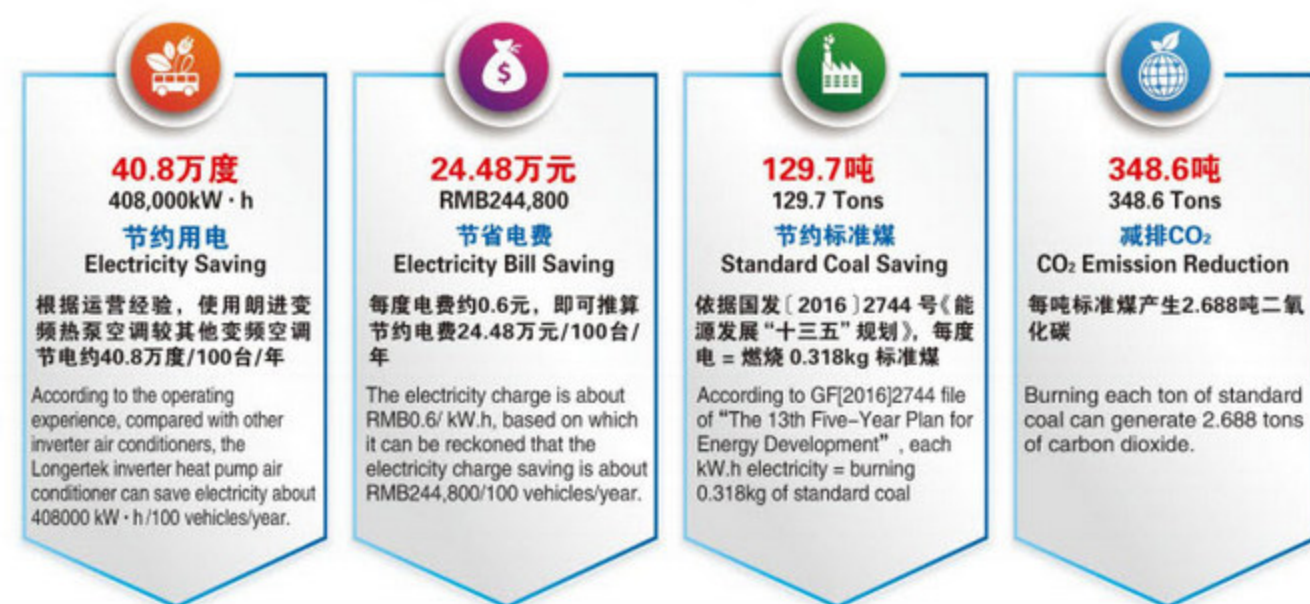
Longertek completed the survey in 4 cities (in 3 years)
Comparison test on bus air conditioning energy saving
The average electricity saving rate of cooling is above 20%
The average electricity saving rate of heating is above 45%
Greatly increase the endurance mileage



ECONOMIC 经济效益分析 >>> BENEFIT ANALYSIS

10米纯电动客车整车电量200kW·h
平均每日运营里程200km，整车制冷平均每日节电量10kW·h、制热平均每日节电量58kW·h
按照100台车辆 全部采用变频热泵空调技术，每年经济效益如下（制冷季60天，制热季60天）

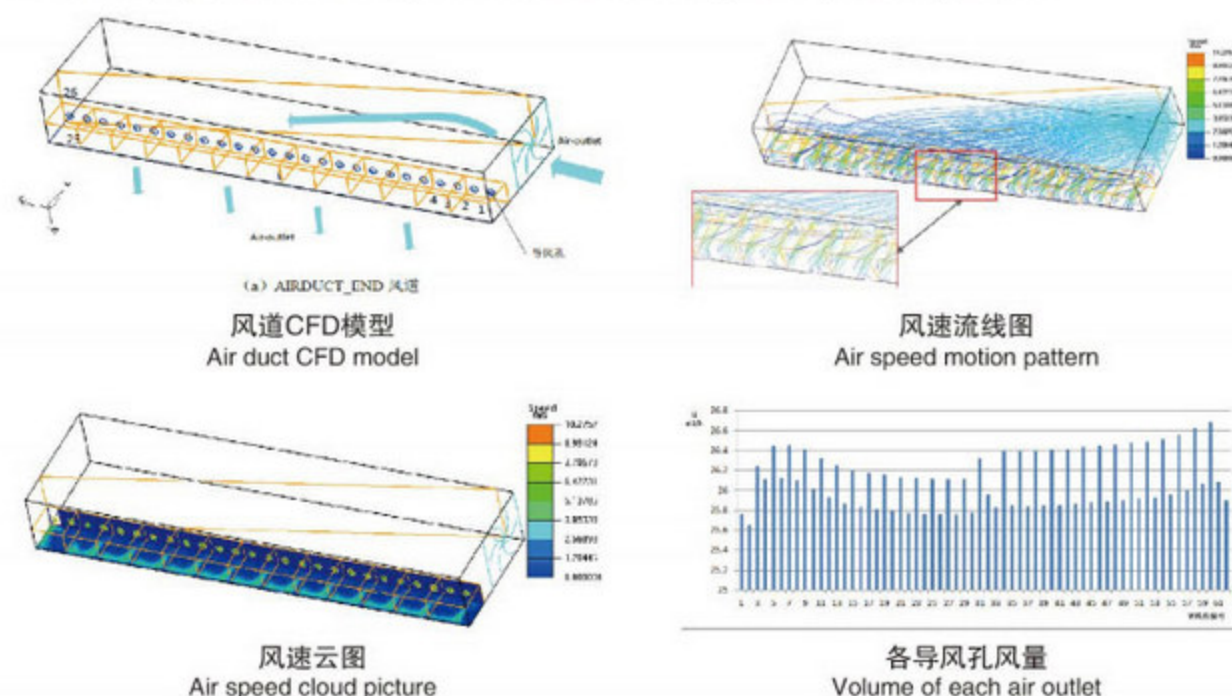
The total power of the 10 meter pure electric passenger car is 200kW·h
The average daily running mileage is 200km, the average daily cooling capacity of the vehicle is 10kW·h, and the average daily heating capacity is 58kW·h
Calculated by 100 vehicles If all the vehicles adopt inverter heat pump air conditioning technology, the annual economic benefits are as follows (60 days cooling season, and 60 days heating season)



AIR DUCT 风道CFD分析 >>> CFD SIMULATION

对空调机组与风道匹配建立模型，对出风均匀性、风速等进行分析。为风道设计、机组与风道匹配试验、产品应用提出合理化建议方案。

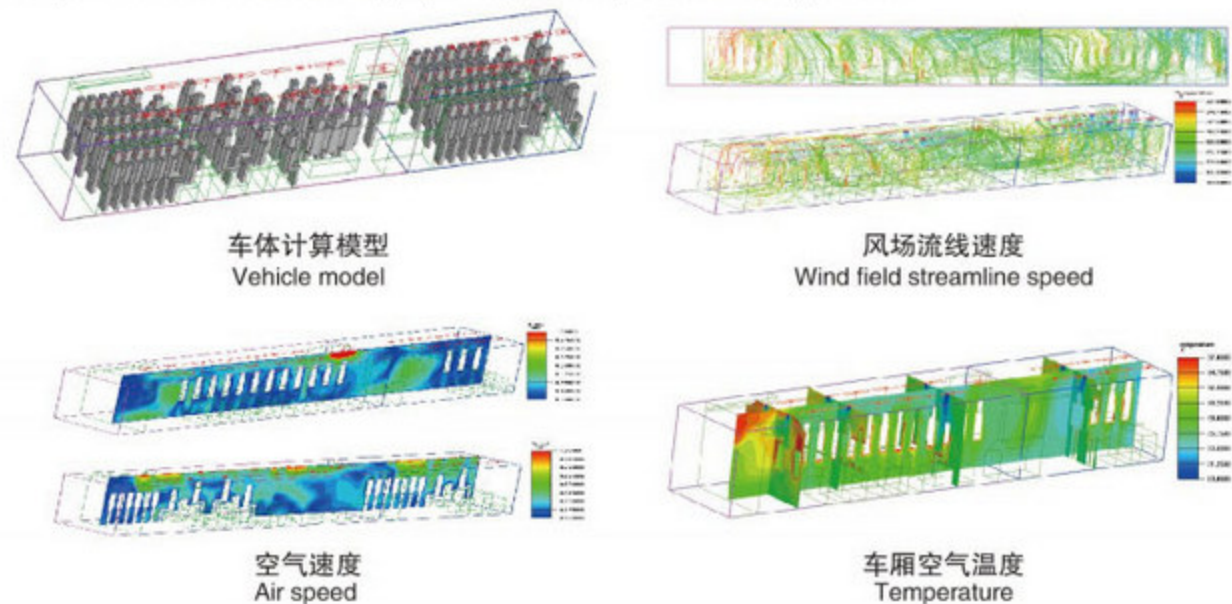
Build model on air conditioning and air duct, and analyze the air outlet uniformity and speed. Provide rationalized proposal to air duct design, unit and air duct matching test and product application.



SALOON 客室舒适度仿真分析 >>> COMFORT SIMULATION

对车辆车体建立模型，对客室内风场流线速度、风口流线速度、空气温度等进行分析，为产品优化、产品应用提出合理化建议。

Build vehicle body model and analyze the wind field streamline speed, air outlet streamline speed and air temperature. Provide rationalized proposal to product optimization and application.





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THE PRODUCT 产品谱系

>> SPECTRUM

◎纯电动大巴空调H系列（轻量化系列空调）

适用车辆：6m~18m 纯电动公路客车、新能源公交车
供电方式：DC200V~DC900V（可根据客户需求定制）
额定制冷量：10~40kW
额定制热量：8~40kW

H 系列：高端铝合金壳体，轻量化、噪音低、能效比高

产品特点：直流变频压缩机、噪音低
车辆专用变频器可靠性高
模糊无级变频，舒适度高
制冷能效比高，比传统电动空调节能，增加续航里程
高端铝合金壳体，轻量化、噪音低、能效比高



◎Electric bus air conditioning system Type UT (Heat pump HVAC in ultra-low temperature)

Applicable to: 6m~18m electric coach & bus
Power supply: DC200V~DC900V (Customized design)
Rated cooling capacity: 10~40kW
Rated heating capacity: 8~40kW

Type H: High-end aluminum alloy shell, with lightweight, low noise and high EER

Features: DC inverter compressor with low noise, vehicle dedicated inverter with high reliability, fuzzy stepless inverter with high comfort, high EER of cooling, more energy-saving than traditional electric air conditioner, longer endurance mileage, high-end aluminum alloy shell, with lightweight, low noise and high EER.

◎纯电动大巴空调 D系列（低温热泵空调）

适用车辆：6m~18m 纯电动公路客车、新能源公交车
供电方式：DC200V~DC900V（可根据客户需求定制）
额定制冷量：10~40kW
额定制热量：8~40kW

D 系列：-15℃以上热泵正常制热
适用于华北及以南地区，解决低温制热

产品特点：直流变频压缩机、噪音低
车辆专用变频器可靠性高
模糊无级变频，舒适度高
制冷能效比高，比传统电动空调节能，增加续航里程
-15℃以上热泵正常制热



◎Electric bus air conditioning system Type D (Heat pump HVAC in low temperature)

Applicable to: 6m~18m electric coach & bus
Power supply: DC200V~DC900V (Customized design)
Rated cooling capacity: 10~40kW
Rated heating capacity: 8~40kW

Type D: Heat pump heating normally above -15℃, applicable to north of China and south thereof to realize heating at low temperature.

Features: DC inverter compressor with low noise, vehicle dedicated inverter with high reliability, fuzzy stepless inverter with high comfort, high EER of cooling, more energy-saving than traditional electric air conditioner, longer endurance mileage, heat pump heating normally above -15℃.



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◎纯电动大巴空调 UT系列 (超低温热泵空调)

适用车辆: 6m~18m 纯电动公路客车、新能源公交车
供电方式: DC200V~DC900V (可根据客户需求定制)
额定制冷量: 10~40kW
额定制热量: 8~40kW

UT系列: -25℃以上热泵正常制热
适用于北方高寒地区, 解决超低温制热

产品特点: 直流变频压缩机、噪音低
车辆专用变频器可靠性高
模糊无级变频, 舒适度高
制冷能效比高, 比传统电动空调节能, 增加续航里程
-25℃以上超低温热泵正常制热



◎Electric bus air conditioning system Type UT (Heat pump HVAC in ultra-low temperature)

Applicable to: 6m~18m electric coach & bus
Power supply: DC200V~DC900V (Customized design)
Rated cooling capacity: 10~40kW
Rated heating capacity: 8~40kW

Type UT: Heat pump heating normally above -25℃, applicable to severe cold region in north of China to realize heating at low temperature.

Features: DC inverter compressor with low noise, vehicle dedicated inverter with high reliability, fuzzy stepless inverter with high comfort, high EER of cooling, more energy-saving than traditional electric air conditioner, longer endurance mileage, heat pump heating normally at ultralow temperature above -25℃.

◎纯电动大巴空调 B系列 (DB、UTB) (带电池热管理系统)

适用车辆: 6m~18m 纯电动公路客车、新能源公交车
供电方式: DC200V~DC900V (可根据客户需求定制)
额定制冷量: 10~40kW
额定制热量: 8~40kW

B系列: 集成电池冷却空调, 减重节能
可与DB系列、UTB系列集成配置

产品特点: 直流变频压缩机、噪音低
车辆专用变频器可靠性高
模糊无级变频, 舒适度高
制冷能效比高, 比传统电动空调节能, 增加续航里程
集成电池冷却空调, 减少整车重量, 实现综合热管理



◎Electric bus air conditioning system Type B (DB、UTB) (with BTMS)

Applicable to: 6m~18m electric coach & bus
Power supply: DC200V~DC900V (customized design)
Rated cooling capacity: 10~40kW
Rated heating capacity: 8~40kW

Type B: Integrating battery cooling air conditioning system, with lower weight and energy consumption, can be integrated with type DB and type UTB.

Features: DC inverter compressor with low noise, vehicle dedicated inverter with high reliability, fuzzy stepless inverter with high comfort, high EER of cooling, more energy-saving than traditional HVAC, longer endurance mileage, integrated battery cooling air conditioning system, with lower weight and energy consumption, to realize integrated thermal management.



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◎纯电动大巴空调 S系列 (综合热管理系统)

适用车辆: 6m~18m 纯电动公路客车、新能源公交车
供电方式: DC200V~DC900V (可根据客户需求定制)
额定制冷量: 10~40kW
额定制热量: 8~40kW

S 系列: 集成整车综合热管理系统, 实现能量回收利用, 降低整车能耗 (对电池、电机、电控和客室取暖进行综合管理)

产品特点: 直流变频压缩机、噪音低
车辆专用变频器可靠性高
模糊无级变频, 舒适度高
制冷能效比高, 比传统电动空调节能, 增加续航里程
集成整车综合热管理系统, 降低整车能耗



◎ Electric bus air conditioning system Type S (with integrated thermal management system)

Applicable to: 6m~18m electric coach & bus
Power supply: DC200V~DC900V (customized design)
Rated cooling capacity: 10~40kW
Rated heating capacity: 8~40kW

Type S: Integrating vehicle integrated thermal management system to realize energy recovery and lower vehicle energy consumption (integrated management of battery, motor, electric control system and saloon heating)

Features: DC inverter compressor with low noise, vehicle dedicated inverter with high reliability, fuzzy stepless inverter with high comfort, high EER of cooling, more energy-saving than traditional electric air conditioner, longer endurance mileage, integrating vehicle integrated thermal management to lower vehicle energy consumption.

◎传统 (混动) 客车空调

适用车辆: 6m~18m传统燃油、混合动力巴士和公交车
控制器: 自主知识产权
压缩机: 名牌活塞压缩机
制冷量: 10~40kW

产品特点: 轻量化、噪音低
防火等级高、安全可靠
RAMS安全性保障



◎ Traditional (including hybrid vehicle) bus air conditioning system

Applicable to: 6m~18m traditional and hybrid coach & bus
Controller: proprietary intellectual property rights
Compressor: Famous-brand piston compressor
Cooling capacity: 10~40kW

Features: Light weight, low noise, high fireproofing grade, high reliability, RAMS safety guarantee





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◎ 电池热管理系统

适用车型: 新能源车电池、电机电控热管理系统
结构方式: 制热分体式、一体式、热泵制热式
安装方式: 内置式、外置式
控制方式: 全自动智能变频控制
通讯协议: 标准CAN通讯协议控制

产品应用: 工业机床、电池冷却、新能源汽车等液冷设备

产品特点: 重量轻、体积小、温控精度高
安全可靠、实用新型专利, 专利号: ZL201920020571.X
标准CAN通讯控制方案



◎ BTMS

Application: new energy vehicle battery, motor electric control thermal management system
Structure: split, integrated, heat pump
Installation: internal, external
Control: automatic intelligent inverter control
Communication: standard CAN communication protocol

Application: Liquid-cooled equipment such as industrial machine tool, battery cooling and new energy vehicles.

Features: Light weight, small size, high-precision temperature control, safety, reliability, patented technology, and standard CAN communication protocol.

◎ 纯电动车辆空调控制器

适用车辆: 电动乘用车、物流车
供电方式: DC12V-DC750V(根据客户使用情况调节)
控制技术: 直流正弦波矢量变频
转 速: 1000-8500 rpm

产品特点: 软硬件自主研发
正弦波变频驱动, 无冲击, 噪音低
能效比高达3.0, 节能省电、安全可靠



◎ Electric vehicle air conditioning system controller

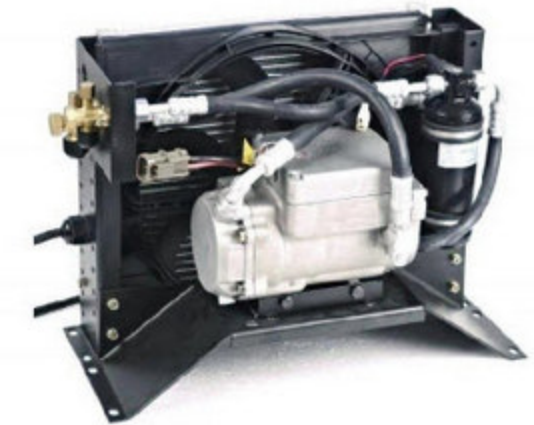
Application: electric passenger vehicle, logistic vehicle
Power supply: DC200V-DC750V (customized design)
Control technology: DC sine wave vector inverter control
Rotational speed: 1000-8500 rpm

Features: Independent research and development of software and hardware, sine wave inverter drive, no impact, low noise, EER up to 3.0, energy saving, safety and reliability.

◎ 纯电动汽车空调

适用车型: 电动车、物流车等
供电电压: DC12V-DC560V
制 冷 量: 800W-4500W
制 热 量: 1000W-4500W
调速范围: 1200RPM-6000RPM (根据压缩机匹配)

技术特点: 正弦波变频驱动, CAN总线通讯
PWM调速, 模糊频率控制技术
制冷、制热响应速度快, 温控精度高
力矩控制技术, 震动小



◎ Electric Vehicle HVAC

Application: EV, logistics vehicle
Supply Voltage: DC12V-DC560V
Cooling Capacity: 800W-4500W
Heating Capacity: 1000W-4500W
Speed Range: 1200RPM-6000RPM (Depends on compressor rating)

Specification: Sine wave inverter drive, CAN bus communication
PWM speed regulation, fuzzy frequency control
Fast cooling/ heating, high precision temperature control
Torque control, low vibration



longertek

朗进科技

朗进造 = 用心造

◎纯电动汽车空调

适用车型：物流车、重型卡车
供电电压：DC310V-DC540V
额定制冷量：800W-4500W
额定制热量：1000W-4500W
调速范围：1200RPM-6000RPM（根据压缩机匹配）

技术特点：正弦波变频驱动，CAN总线通讯
模糊频率控制技术、力矩控制技术
制冷、制热响应速度快，温控精度高
抗震、抗粉尘等特殊环境设计



◎ Electric Vehicle HVAC

Application: Logistics vehicle, heavy truck
Supply Voltage: DC310V-DC540V
Cooling Capacity: 800W-4500W
Heating Capacity: 1000W-4500W
Speed Range: 1200RPM-6000RPM (Depends on compressor rating)

Specification: Sine wave inverter drive, CAN bus communication
Fuzzy frequency control, torque control
Fast cooling/ heating, high precision temperature control
Anti-shock, anti-dust and other special environmental designs

◎动车高铁空调

适用车型：动高铁车辆
供电方式：AC380V/AC440V
额定制冷量：30-40kW
额定制热量：9-30kW

产品应用：主要应用于动车和高速铁路，目前有CRH380A、混合动力动车组、内燃动车组项目。

产品特点：完全自主知识产权、变频热泵、优化风场、压力波控制、密封性高



◎ High-speed Train

Applicable to: High-speed Rail Vehicle
Power supply: AC380V/AC440V
Rated cooling capacity: 30-40kW
Rated heating capacity: 9-30kW

Application: Mainly used in motor car and high-speed railway vehicle, currently CRH380A, hybrid rail motor set and diesel rail motor set in progress.

Features: Completely proprietary intellectual property rights, inverter heat pump, optimized wind field, pressure wave control and high sealing.



朗进造 = 用心造

市域城际空调

适用车型: 市域城际列车
供电方式: AC380V
额定制冷量: 29~44kW
额定制热量: 9~30kW

产品应用: 主要应用于市域或城际线路, 目前有北京新机场线(四方、长客)、西安机场线、长客市域车、台州S1线(在研)、四方城际车(在研)等项目。

产品特点:
变频、热泵制热、优化风场、压力波控制



High-speed Train

Applicable to: inter-city rail vehicle
Power supply: AC380V
Rated cooling capacity: 29~44kW
Rated heating capacity: 9~30kW

Application: Mainly used in commuter or inter-city rail lines, currently such projects in process as Beijing's new airport line (SIFANG, Changchun Railway Vehicles(CRV)), Xi'an airport line, CRV commuter rail vehicle, Taizhou S1 line (under research), and SIFANG inter-city vehicles (under research).

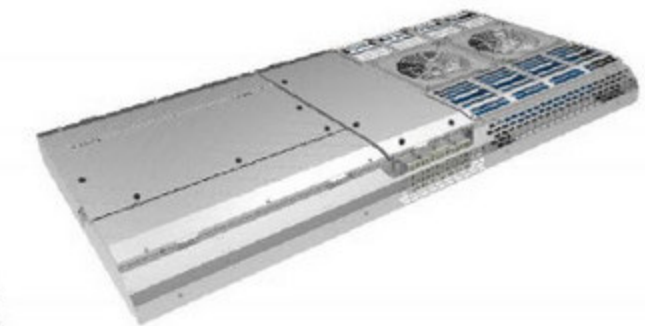
Features: Inverter heat pump, optimized wind field, pressure wave control

地铁车辆空调

适用车型: A/B/C 快轨
供电方式: DC750V/AC380V
额定制冷量: 25~44kW
额定制热量: 15~30kW
高度: 300~480mm

产品应用: 北京、上海、广州、深圳、沈阳、长春、大连、乌鲁木齐、成都、郑州、贵阳、福州、青岛、济南、哈萨克、伊兹密尔、马来西亚等 18 余个城市的 39 余条线路

产品特点:
变频、热泵制热、耐高温高湿、超低温、防雨雪、低噪音、除湿、无人驾驶智能控制



Urban rail vehicle air conditioning system

Applicable to: A/B/C rapid rail vehicle
Power supply: DC750V/AC380V
Rated cooling capacity: 25~44kW
Rated heating capacity: 15~30kW
Height: 300~480mm

Application: Over 39 lines in more than 18 cities including Beijing, Shanghai, Guangzhou, Shenzhen, Shenyang, Changchun, Dalian, Urumqi, Chengdu, Zhengzhou, Guiyang, Fuzhou, Qingdao, Jinan, Kazakh, Izmir and Malaysia, etc.

Features: Inverter control, heat pump heating, resistant to high temperature and ultra-low temperature, protective against rain and snow, low noise, dehumidification and driverless intelligent control.



TECHNICAL 科技评定

>>> EVALUATION

◎ 国家发改委节能技术评定

· 摘要 ·

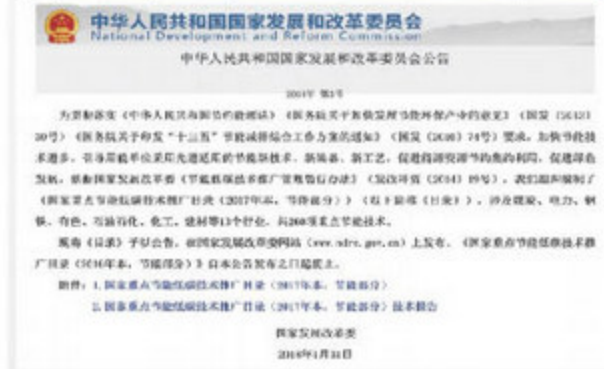
朗进车辆空调直流供电变频空调节能技术入选国家发展改革委《国家重点节能低碳技术推广目录》。

Energy-saving assessment of NDRC

The DC inverter energy saving technology of Longterek railway vehicle air conditioning system was included in NDRC "National Key Energy-saving Low-carbon Technology Promotion Directory".



序号	名称	主要内容	所属行业
248	基于城小磁悬浮轨道车辆的变频节能技术	该技术采用变频调速驱动，具有节能、调速性能好、维护方便等优点。适用于城市轨道交通车辆牵引系统，能有效降低能耗，提高运行效率。	城市轨道交通
249	轨道交通变频节能技术	该技术采用变频调速驱动，具有节能、调速性能好、维护方便等优点。适用于城市轨道交通车辆牵引系统，能有效降低能耗，提高运行效率。	城市轨道交通



HONOR AND 荣誉和资质

>>> QUALIFICATION

◎ 企业成就

- 2001年将变频热泵节能空调技术引入交通行业
- 拥有全部变频车载空调核心自主知识产权的高科技企业
- 具备变频车载空调自主研发和定制生产能力
- 完成8个城市（先后八年）车辆空调技术节能对比测试

In 2001, we took the lead in introducing the inverter heat pump energy-saving air conditioning technology into the rail transit industry. We are a high-tech enterprise having core independent intellectual property of rail transit inverter vehicle air conditioner. We have the independent R&D and custom production capacity of rail transit inverter air conditioner. We have completed technology energy-saving comparison test of a variety of rail transit air conditioners in eight cities (in eight years).

行业引领

29个国内外城市
20年运营经验
引领行业技术发展

Industry Leader
29 domestic and foreign cities
20 years of operating experience
Lead the industry technology development

国家认可

朗进车辆空调变频节能技术入选国家发展改革委《国家重点节能低碳技术推广目录》

State Recognition
The inverter energy saving technology of Longterek railway vehicle air conditioner were included in the NDRC "National key energy-saving low-carbon technology promotion directory"

高精装备

109项专利
直流直进供电技术成为行业标准
变频车辆空调地方行业标准主要起草单位

High Precision Equipment
109 patents
Direct DC power supply technology has become the industry standard
The drafting committee of inverter air conditioning system industry standard

行业认可

中车、比亚迪、金龙、中通等主流车厂合格供应商
BOMBARDIER
ALSTOMCAT、GE
合格供应商

Industry Recognition
Qualified supplier of mainstream automotive manufacturers such as CRRC, BYD, King Long, and Zhong Tong
Qualified supplier of BOMBARDIER ALSTOMCAF, and GE

企业荣誉

国家级空调检测中心
省级高新技术企业
省级工程技术研究中心
省级智能功率模块实验室
铁总科技进步三等奖

Honors
National Air Conditioner Testing Center
Provincial High-Tech Enterprise
Provincial Engineering Technology Research Center
Provincial Intelligent Power Module Laboratory
Third Prize of China Railway Corp. Science and Technology Progress Award

创领未来

全球首款碳纤维壳体、5D全智能变频热泵空调
超薄、超轻、超静音、超高能效、大数据和主动运维等空调新技术

Lead the Future
The first type of carbon fiber shell, 5D all intelligent inverter heat pump air conditioner in the world
New air-conditioning technologies such as Ultra-thin, ultra-light, ultra-quiet, ultra-high energy efficiency, big data and active operation and maintenance



QUALITY 管理体系 MANAGEMENT SYSTEM



PRODUCTION LINE 生产线和质量管控 AND QUALITY CONTROL



AFTER-SALES 售后服务体系 SERVICE SYSTEM

客户需求

在项目范围内的任何服务请求，包括咨询、问题申报、投诉和建议等。

Customer Needs

Any service request within the scope of the project, including consultation, issue declaration, complaint and suggestion, etc.

- > 提供7*24小时售后服务支持
- > 定期进行巡检和客户满意度调查
- > 快速响应的现场技术支持

7*24 after-sales service support
Regular inspection and customer satisfaction survey
Quick response technical support on site

质量监督体系

为保障服务的质量制定相关的服务等级协议，通过满意度调查等方式评估服务的提供是否正常进行内部质量监督。

Quality Supervision System

Relevant service level agreements are made to guarantee the quality of the service, through satisfaction surveys and other methods to evaluate internal quality supervision

响应体系

第一时间受理客户的需求，以最快的速度解决问题，遇突发事件启动应急预案，保障客户系统尽快恢复正常。

Response System

Accept customers' demands at the first time, solve problems in the shortest time, launch emergency plans in case of emergencies, and ensure customer system to return to normal as soon as possible

- > 第一时间响应用户故障需求
- > 提供远程技术支持

Response to customer at the first time
Provide remote technical support

维护体系

对客户系统进行主动式服务，发现并解决系统隐患，优化系统性能，并提出合理的改进和升级建议。

Maintenance System

Provide active service to customer, find and solve system's latent fault, optimize system performance, provide reasonable improvement and upgrade suggestions

