

# 山东荣泰感应科技有限公司

## Shandong Rongtai Inductive Technology Co., Ltd.



*Build a Global Brand of Induction Melting & Heating System  
'Made in China' to be Redefined!*



Shandong Rongtai Inductive Technology Co.LTD was established in 1997, with a registered capital of 10 million, is a famous high-tech enterprise that includes R&D, engineering and production service

As one of the largest induction heating equipment manufacturers, for over 19 years, Rongtai has been focusing on providing users with stable and efficient solutions for induction heating. Fully automated forging heating equipment is our core product, our principle is "To improve users' operating efficiency through technology and innovation, to enhance customers' competence by improving power efficiency"

山东荣泰感应科技有限公司成立于1997年，注册资金1000万，是国内著名的集技术研发、工程技术、生产制造于一体的高新技术企业，19年来专注于为用户提供稳定高效的高端感应加热装备解决方案，是国内最大的感应加热装备制造者。以全自动锻前加热装备为我们的核心产品，山东荣泰秉承“以科技创新提升客户经营效益，为推进社会的节能环保不懈努力”经营使命，致力于打造中国感应加热装备的国际品牌。





## THE FIRST-CLASS INDUCTIVE HEATING EQUIPMENT

### 为客户提供一流的感应加热装备

1. Provide upscale inductive-heated system
2. Product design and components selection & purchasing with critical and highest standard. Strict and high standard vendor evaluation and quality control. The core parts and devices all from top brands.
3. Set up a city-level enterprise technology center; focus on inductive heating equipments' research, design and manufacturing technique upgrade. Guarantee equipments have stable function and power efficiency, make sure customers have the maximum value.
4. Build a strict quality control system, control quality in raw materials, technology design, manufacturing process and after sales service.

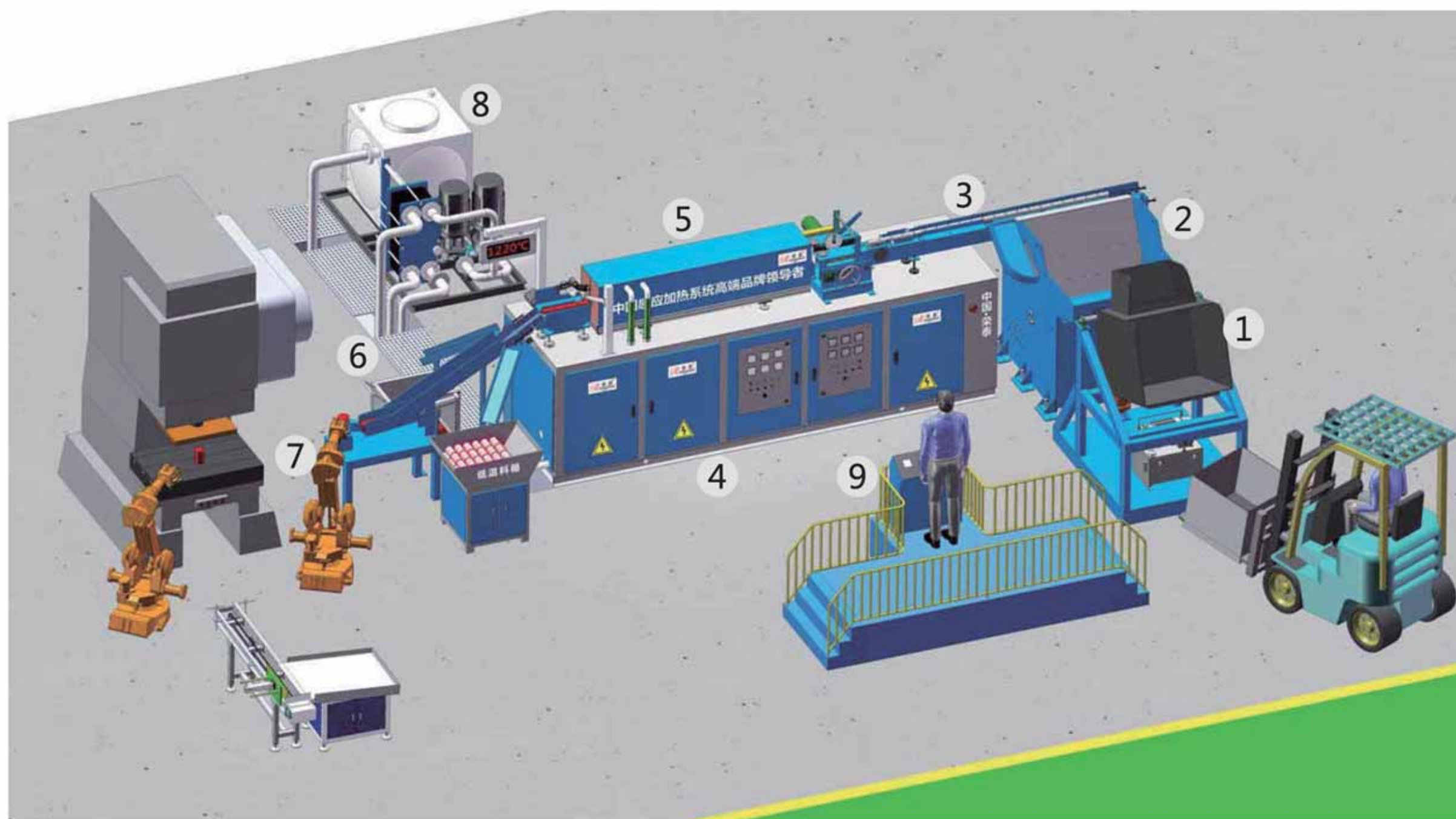
- 1、提供稳定高效的感应加热系统解决方案
- 2、我们的市场定位是向客户提供一流的锻造加热设备，为此我们总是按照最高标准来进行产品的设计和原材料的选型以及采购。用严格的供应商筛选体系保证原材料的品质，并选择顶级知名品牌作为核心器件的供应商。
- 3、设立市级企业技术中心，专业致力于感应加热设备的研发、设计、制造工艺改进，最大程度的保证客户选用的设备的可靠性能和节能高效，保证客户使用价值的最大化！
- 4、建立严格的质量管控体系，从原材料、技术设计、生产过程、售后服务各环节检验品质，并持续优化，以此保障做出一流产品。





## NEWEST ENERGY SAVING FORGING HEATING PRODUCTION LINE

### 新式节能中频感应自动线布局图



- |                              |         |
|------------------------------|---------|
| ① Roller feed                | 翻料装置    |
| ② Ladder feed                | 搓板上料机构  |
| ③ Chain feed                 | 进料机构    |
| ④ Power supply               | 感应加热主体  |
| ⑤ Inductor                   | 感应器     |
| ⑥ Discharging device         | 出料三分选装置 |
| ⑦ Manipulator grab           | 机械人抓取   |
| ⑧ Cooling device             | 冷却系统    |
| ⑨ Intelligent control device | 智能控制系统  |



## 荣泰第六代 新式节能锻前加热生产线

**Fully automatic, stable and energy saving.**

消化国际先进技术，自主研发，整线全自动控制，设备稳定可靠，高效节能。



### Power supply system :

Provide stable and efficient inductive power supply; single machine power can be 8000KW; frequency ranges from 200HZ to 10000HZ; design the best power supply according to different requests.

Power supply with a fully open rectifier design, so high power factor and minimum harmonics achieved.

Electronic control use digital mode. All digital signal transferred through optical fiber.

Very competitive power consumption rate.

International standard of electric safety design.

### 供电系统：

●荣泰为市场提供稳定高效的感应电源系统，其单机功率可达8000KW，频率范围从200HZ-10000HZ，可以根据不同的应用提供最佳的电源选择

●整流满开放，功率因数高，高次谐波小

●光纤传输触发信号，电子控制采用数字化模式

●极具竞争力的耗电量指标

●符合国际国内规范的电气安全设计标准

### Blank heating system:

High level of automation, little occupation

Stable speed of billet delivery.

Precise tapping temperature, little temperature difference, precise size of forging pieces, long life-time of mould.

The quick exchange device can effectively shorten the time of changing inductors.

Intelligent control panel makes operation be simple and friendly, which can design different parameters for different work pieces, making the process more precise and stable.

### 坯料加热系统：

●自动化程度高，占地面积小

●坯料输送速度平稳

●出炉温度精准，芯表温差小，锻件成形尺寸精度高，模具寿命长

●感应器快速切换装置可以有效缩短感应器更换时间

●智能化集中控制，操作界面简单友好，可以设定不同工件的生产工艺参数，重复精度高，加热效果稳定





## 节能专家

以年产能8000T，每度电费0.7元为例，  
荣泰第六代新式节能电炉节能效果如下：

参数	荣泰第六代新式节能电炉	传统电炉
吨耗电量	350度	400-550度

吨耗电量	节约/吨	节约/年	节省电费/年
450度	100度电	80万度	56万元
550度	200度电	160万度	112万元

由上图数据显示，在生产成本与人力资源成本不断增长的情况下，越来越多的用户关注加热设备的节能性，以降低运营成本，从而选择山东荣泰感应科技的第六代新式节能产品。



节省1120000元

### 单位加热模块所需功率降低

比起常规线路可以降低功率值10%左右。同样产能的中频设备，意味着变压器可以减小12%左右。

### 耗电量低

能耗相对国内甚至国际中频电源低（吨耗电量绝对值≤350度）。

### 原发故障率接近为零

主控线路我公司保障长达3年保修期，这在中国感应加热行业属于首创。

### 全智能操控界面

操控界面简单易学，中英文双界面，包括自动化机械动作设定、控制、温度设定、控制、故障报警、故障检测排除指示、生产数据记录存储分类等各类自动化、智能化控制功能。可根据用户ERP生产管理需求设定程序。

### 功率因数始终大于0.95

开机即达到满功率输出，加热全过程保障超功率因数输出。

### 采用调节频率调功

频率适应范围宽，控制板自适应负载谐振频率。

### 谐振电源是谐振式滤波电路

能改善输出电压的波形畸变，获得很好的正弦波，有效地防止了谐波峰值，谐波含量低（≤10%）。

## NATIONAL AUTHORITY IDENTIFICATION 权威鉴定



## 国家电炉质量监督检验中心

公开 公平 公正 高效

### 国家电炉质量监督检验中心完成山东荣泰感应科技有限公司可控硅串联感应透热成套设备现场检验

On 2015, Oct, 24, the State Electric Furnace Product Quality Supervision and Inspection Center has tested our product GT800-1KGCL for our client (FAW FORGE (JILIN) CO.,LTD). The tested result revealed the tested product's every technical parameters are in line with the national standard. In the report, the billet diameter is 75mm, temperature rise from 20 degree room temperature to 1220 degree, and the power factor is 0.99. After consistent testing for 3 production periods, the average power consumption is 316.9kW·h/t, which reached international level of power consumption.

2015年10月24日，国家电炉质量监督检验中心在吉林省长春市一汽锻造(吉林)有限公司对山东荣泰感应科技有限公司设计生产GT800-1KGCL可控硅串联感应透热成套设备进行了现场检验。额定功率、额定频率、坯料直径、主电路平均功率、功率因数、额定温度、单位电耗、受热构件表面温升等8项检验项目符合国家标准GB/T10066.1-2004/GB/T10067.3-2005.GB5959.3-2008的技术要求，详见“检验结果汇总表”。

经检验该产品各项技术指标均符合国家标准技术要求，其中，坯料直径75mm，由室温20℃加热至1220℃，功率因数为0.99，连续测试三个生产周期，平均单位电耗为316.9kW·h/t，达到国际先进水平。





## 与1600T热模锻设备配套的高端感应透热设备

Upscale Inductive Forging Equipment for FAW FORGE(JILIN) CO.,LTD 1600T hot die forging



服务用户：一汽锻造有限公司

### 设备特点：

- 1、任意情况下功率因数始终0.99以上
- 2、经权威机构《国家电炉质量监督检验中心》检测加热 $\phi 75$ 坯料到1220摄氏度，单位电耗为316.9kw·h/t

## 与1000T热模锻设备配套的感应透热设备

Inductive Forging Equipment for 1000T hot die forging device



高档特种防爆工具企业使用现场



## 全自动锻造坯料感应加热成套设备

Fully Automated Forging Billet Inductive Forging Equipment



### 设备特点：

适用汽车零部件产品：链轨节、半轴、万向节、转向节等

## 全自动锻造坯料感应加热成套设备

Fully Automated Forging Billet Inductive Forging Equipment



### 设备特点：

五金工具、索具类大批量生产的产品



## 4000KW曲轴快速辊锻全自动加热线

4000KW Bent Axle Quick Rolling Forging Fully Automated Heating Line



产品：发动机曲轴、汽车前桥等

### 设备特点：

- 1、自动阶梯上料，夹棍连续进料加热，快速出料分选
- 2、采用双线布置，结构紧凑，控制灵活
- 3、加热温度精度高，芯表温差、轴向温差小，满足锻造工艺要求

## 石墨喷乳自动化感应加热温锻线

Graphite spray automatic inductive forging line

### 设备特点：

- 1、预热、喷石墨乳、二次加热一体化设计
- 2、特殊设计的坯料输送机构，保证石墨乳均匀喷到断面等各个部位



重汽配套企业使用现场--齿轮产品



## 长棒料全自动感应透热生产线

Long Bar Fully Automated Inductive Forging Production Line



### 设备特点：

- 1、适用于长棒料整体连续加热，全自动上料、进料装置
- 2、加热速度快，效率高，产品一致性好
- 3、采用感应加热，独有的感应线圈技术，耗电量低至320kw·h/t
- 4、加热炉设计快换结构，更换方便快捷

## 全自动锻造坯料感应加热成套设备

Fully Automated Forging Billet Inductive Forging Equipment



### 设备特点：

- 1、成套设备包含：自动上料装置、夹棍连续送料装置、感应加热炉、快速出料分选装置、感应加热电源装置、计算机智能控制系统等。适合大批量生产的锻件坯料快速感应加热。
- 2、故障自诊断功能：PLC通过检测主控板上的信号进行故障自动诊断，通过触摸屏进行显示，并提示解决办法，用记使用起来更方便、直观；



## POWER SUPPLY TECHNOLOGY

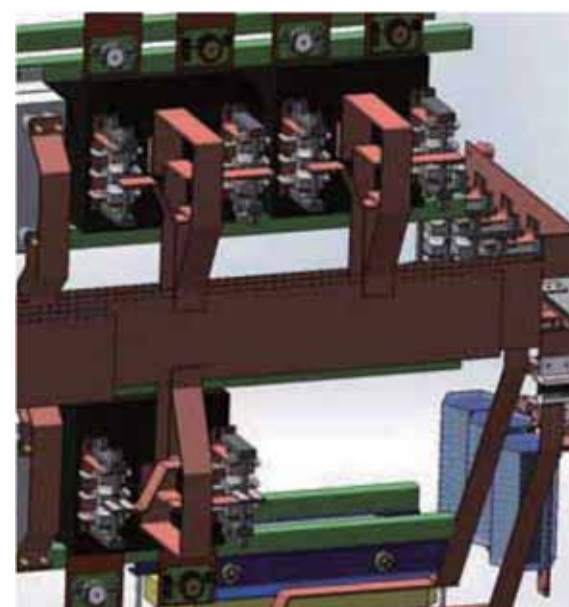
### 电气技术

World leading technology, independent R&D capability

1. Provide stable inductive power supply, provide the best power choice according to requirements.
2. Power supply with a fully open rectifier design, so high power factor and minimum harmonics achieved.
3. Electronic control use digital mode. All digital signal transferred through optical fiber, so the signal has more stable system and high anti-noise capability.
4. Very competitive power consumption rate.
5. International standard of electric safety design.
6. International furnace structure design, equipments are reliable and easy to be maintained.

消化吸收国际先进技术，拥有自己独特的技术优势：

- 荣泰为市场提供稳定高效的感应电源系统，可以根据不同的应用提供最佳的电源选择。
- 整流满开放，功率因数高，高次谐波小。
- 光纤传输触发信号，电子控制采用数字化模式，数字化控制电路，信号传输全部通过光纤实现，抗干扰能力强，系统更稳定。
- 极具竞争力的耗电量指标。
- 符合国际规范的电气安全设计标准。
- 国际化电源结构设计，设备安全可靠，易维护。



## INDUCTOR

### 感应器



- 1、Inductor coil design adopts the advanced 3D simulation software.
- 2、Inductor coil is specially processed, shorten tem spacing, increase the power density, improve heating efficiency, reducing energy consumption.
- 3、Effectively prevent oxidation peel off, protect induction coil.
- 4、Induction coil adopt international knot technique, which can extend the service life of furnace lining.

- 1、感应线圈采用先进三维模拟软件进行线圈设计，保证坯料加热良好的首尾、芯表温度差要求；
- 2、感应线圈特殊处理，缩短匝间距，增加功率密度，提高加热效率，降低能耗；
- 3、有效防止氧化皮脱落造成感应线圈打火，保护感应线圈；
- 4、感应线圈采用国际先进打结工艺，延长炉衬使用寿命。



## AUTOMATIC FEEDING MECHANISM

### 自动化上料机构



Automatic feeding mechanism can realize automatic feeding, so human intervention is not needed. This mechanism is applicable to a variety of long bars with different diameters, which is simple and easy to use.

自动化上料机构即搓板（阶梯式）上料机，能够实现自动上料，而且全程无需人工干预，减少了客户现场的理料，排料人员的设置。而且适用于多种料径即料长的棒料，结构简单，使用方便。



#### 中频感应加热系统配套装置： 自动上料机构

##### 机构优势一览：

- 1、坯料一次放入自动上料机中，实现自动化理料、上料、自动输送、送到指定位置。
- 2、实现坯料连续加热。降低劳动强度，减少空加热现象。
- 3、全自动化锻造，将人为因素影响降到最低。

## INTELLIGENT CONTROL SYSTEM

### 感应加热智能控制系统

The network system is composed of computer, digital control panel, PLC and other devices, and it can be extended by switches, such as remote control and other functions. The intelligent system can be used on data collection, transmission and monitoring process.

智能控制系统通过计算机和数字化主控板以及PLC等设备组成一个网络系统，并且可以通过交换机扩展，如远程控制等功能，可以对每台设备实现数据采集、传输和监控。

#### Power Usage Inspection Device 电量检测装置

The system can detect the electrical parameters in the process of equipment operation, including the voltage, current, as well as active power, reactive power, power factor, power consumption and other very practical parameters. In terms of power factor, companies in different area have relatively high requirement on power consumption, and high or low power factors are closely related to the equipment working conditions. Through this system, we can clearly know our power consumption status, and it is easy for us to adjust it in a timely manner.

#### Multi-channel temperature measurement and control Device 多路温度测控装置

1. More temperature measuring points, simple wiring.
2. Can be real-time observed temperature, temperature display, make the operator a measurable concept value, which can be compared with usual numerical data to find the problem, and to bring great convenience by eliminating corresponding position of over temperature breakdown.
3. Different components of the equipment alarm values can be set automatically according to need.
4. Temperature sensor repair is cheaper and low cost. Installing crystal plug is very convenient and easy no matter troubleshooting or replacement.



此系统可检测设备运行过程中的各项参数，包括各项电压、电流、以及有功功率、无功功率、功率因数、工作时间、耗电量等非常实用的参数，特别是对于功率因数来说，各个地区对用电企业都有比较高的要求，而功率因数的高低与设备的工作状态又密切相关，通过本系统可以很明确用电状态，便于及时作出调整。

1. 测温点数多、接线简单。
2. 可实时观测温度，温度值显示，使操作者有一个可以衡量的概念值，可以与往常数值进行比较来发现问题，并对相应超温位置故障的排除带来极大的方便。
3. 根据不同元器件的报警值可以自行设定。
4. 温度传感器维修更换简单，价格低廉。安装使用水晶插头，无论是检查排除故障还是更换都非常方便易行。



## WATER COOLING SYSTEM 水冷系统



### 全封闭冷却系统优点：

- 1、全封闭式循环冷却，杜绝杂物引起的管路堵塞
- 2、采用软水循环冷却，无水垢生成，避免因水垢引起的电源、可控硅、电容器、IGBT模块、感应线圈等损坏现象
- 3、不需水池和冷却塔、占地小、移动方便
- 4、散热效率高、运行成本低
- 5、封闭式循环，水耗量很小，符合环保节能的要求



### Fully closed cooling unit advantage:

- A、Fully closed circulating cooling, eliminate dust caused by pipeline blockage.
- B、Cooling use soft water, which can largely reduce scale.
- C、No need for water pool and cooling tower, little place occupation and convenient for moving.
- D、High cooling efficiency, low operation cost
- E、The closed circulating water consumption is little, which is in line with the requirements of environment protection and energy saving requirement.

## NEW ALTITUDE. NEW TECHNOLOGY 跃高度·跃科技

Since 2011, Rongtai has started circuit chip upgrade, now Rongtai has introduced the sixth generation smart chip technology, which can realize international level of circuit control.

The system can guarantee the medium-frequency equipment's stable operation in the whole working process.

The multiple intelligent monitoring system can realize functions such as fault detection, which can help users set up a self-service after-sales service, convenient and efficient.

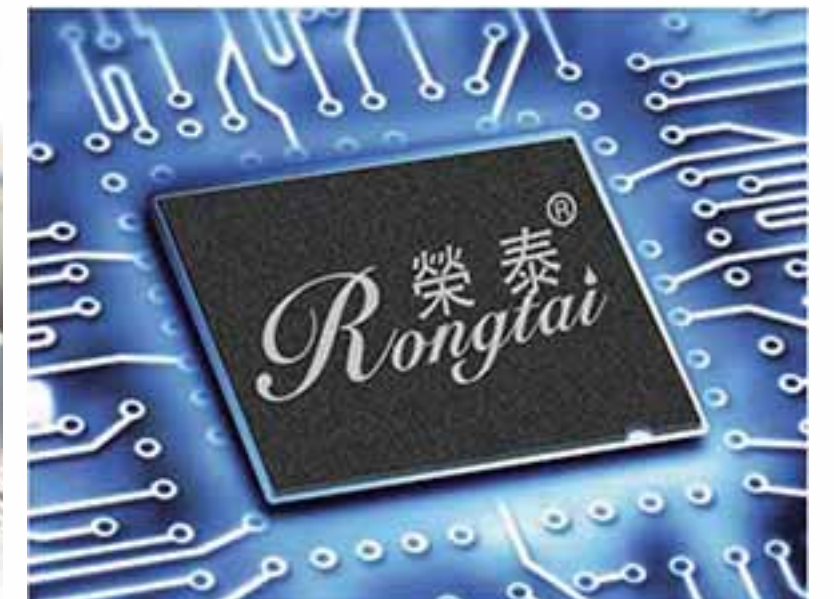
The customized data management platform can realize data management, storage and real-time analysis. More can be combined with enterprise ERP system to build modern production management module.

自2011年第一次线路芯片升级，荣泰感应科技已经推出了第六代智能芯片技术，在行业内首次引入工控系统，实现国际先进标准的智能化电器控制。

系统保障中频设备在运行过程中的水、电动关、启、检测、保护、纠错、程序完善、稳定可靠。

多元智能化监控功能可实现故障检测、报警、解决提示、为用户搭建了自助式售后服务模式，简捷高效。

量身定制的数据管理平台，可为用户实现班组数数据管理、存储、实时分析。更可与企业ERP管理系统相结合，打造现代化生产管理模块。





## MANAGEMENT THEORY 精益管理



1. Improve enterprise's comprehensive quality, optimize working environment and motivate the staffs' initiatives.
2. Reduce defective index, focus on details, pursuing the best.
3. Strict quality control, check important equipment parameters.
4. Optimize production process, reduce maintenance costs, reduce artificial costs, and to provide users long-term plans.
5. In the engineering field, we can provide you the most qualified products and solutions.

- 1.提升企业综合素质，优化工作环境，员工积极性提高
- 2.减少废品率，制作细节严谨认真，精益求精
- 3.严格质量管控，监测重要的设备参数，各环节设有关键质量管控点，严把质量关
- 4.工艺流程优化，降低维护成本，减少人工，为用户提供长远计划
- 5.在各个工程领域，我们能够为您提供最合格的产品和解决方案

## STRICT QUALITY CONTROL SYSTEM

### 严格的质量管控系统



Strict controlled manufacturing inspection system  
认真严谨的过程检验



Real time tracking of technology inspection  
实时跟踪的工艺检验



No-load test before delivering  
出厂前整机空载试验

Rongtai equipment's core components are all chosen from top famous brand, and establish a strict supplier access mechanism, establish a rigorous system of purchased parts quality inspection at the same time. Establish mobile cards for each component, to ensure components installed are controllable and traceable.

荣泰所制作装备的核心元器件均选用顶尖知名品牌，并建立有严格的供应商准入机制，同时建立有严谨的外购件质检体系，每个装机元器件都建立有流通卡，保证装机的每一套元器件质量均为可控可追溯。





## RONGTAI HONORS

### 荣泰荣誉



- 荣获企业信用评价AA级信用企业
- 中国锻压协会理事单位
- 优秀锻造装备供应商
- 热处理设备十大品牌
- 优秀金属成形设备供应商
- 中国电工协会电炉工业分会理事单位
- 省级高新技术企业
- 市级企业技术中心

Congratulation on Shandong Rongtai self-made the sixth generation high efficient inductive melting equipment acquired the annual Energy Saving Awards.

热烈祝贺山东荣泰自主研发第六代高效节能感应加热装备荣获年度节能成果奖。



Rongtai's the sixth generation power-efficient melting device adopts the international advanced new SCR tandem resonance technology, the control panel can automatically adjust when resonance frequency changes, which makes the equipments operate more stable.

荣泰第六代高效节能感应加热装备采用国际先进的新式可控硅串联谐振技术，调频调功，频率适应范围宽，控制板自适应负载谐振频率，设备运行稳定高效。

## PRODUCTS

### 产品系列

#### 锻造领域 FORGING FIELD

- |                                                  |                  |
|--------------------------------------------------|------------------|
| Medium-frequency induction heating equipment     | 中频感应透热成套设备       |
| Forging mechatronics inductive-heated equipments | 锻造用机电一体化感应加热设备   |
| Forging heating production line                  | 锻造加热生产线          |
| Supporting press forging heating production line | 配套万吨级压力机用锻造加热生产线 |
| Energy saving diathermanous equipment            | 节能型透热成套设备        |

#### 热处理设备 HEAT TREATMENT EQUIPMENT

- |                                                                            |                |
|----------------------------------------------------------------------------|----------------|
| Pin tempering production line                                              | 销轴调质生产线        |
| Round steel tempering production line(pipe)                                | 圆钢（管）调质生产线     |
| Oil production line of vitrified clay pipe                                 | 油缸管调制生产线       |
| pumping rod production line                                                | 抽油杆调制生产线       |
| Car lifting oil cylinder tempering production line                         | 汽车举升油缸调质生产线    |
| Coal mine single prop tempering production line                            | 煤矿单体支柱调质生产线    |
| Mining(Marine)satin adjusting quality production line                      | 矿用（船用）锻条调质生产线等 |
| Medium-frequency, super audio surface quenching complete sets of equipment |                |
| 中频、超音频表面淬火成套设备                                                             |                |

#### 铸造领域 FOUNDRY FIELD

- |                                                                                                    |         |
|----------------------------------------------------------------------------------------------------|---------|
| SCR series resonant medium-frequency melting furnace                                               |         |
| 可控硅串联谐振中频熔化炉                                                                                       |         |
| Series resonance(one to one)                                                                       | 串联谐振一拖一 |
| Series resonance(one for two)                                                                      | 串联谐振一拖二 |
| Series resonance(multi split)                                                                      | 串联谐振一拖多 |
| Medium-frequency melting furnace selective equipment(include dust-extraction device, charging car) |         |
| 中频熔化炉配套可选设备（包括除尘装置、加料小车等）                                                                          |         |

