**麦格雷博电子（深圳）有限公司**
**Shenzhen Magnet Laboratories CO.,LTD.**

ADD：深圳市龙华区大浪街道华宁路117号（中科院创新和育成中心）A栋11楼
11th Floor, Building A, (CAS Innovation and Development Center)No.117 HuaNing Road; Dalang Street; LongHua District; Shenzhen; China
TEL：86 755-26584313 / 86 755-26614246
FAX：86 755-26610820
E-mail：sale@szmglb.com
Http：//www.szmglb.com

**株式会社マグネットラボ**

ADD：东京都中野区大和町3丁目43番3号
TEL：03-3330-7450
FAX：03-3330-7450

**Thai Magnet Labo. CO., TD**

ADD：33/27 m.9 Praram2 Road, Soi 30, Bangmod, Jomthong Bangkok 10150
TEL：662-4521070 / 02-8639646 02-8639554
E-mail：sh_mura@hotmail.com

**Shenzhen Magnet Laboratories CO.,LTD.**
**Representative office in Germany**

Add：Ratinger Strasse 9, 40213 Duesseldorf, Germany
Tel：0049-211-54085348
E-mail：GER.Marketing@szmglb.com

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# 麦格雷博

## 磁能产业技术开发国际先驱

International Pioneer of Technology Development in Magnetic Energy Industry

# 公司简介
# COMPANY PROFILE

麦格雷博，Magnet Lab.磁实验室的英文音译，磁能技术开发领域国际知名品牌。

1979年5月由佐佐木俊一先生在日本东京创立麦格雷博株式会社。2003年1月，麦格雷博电子（深圳）有限公司在深圳高新技术园区正式成立。从麦格雷博品牌诞生时起，就定位于服务全球高端制造业，立志为世界知名品牌提供磁能产业开发技术和设备。经过近40年的发展，麦格雷博凭借强大的磁能技术优势，构建了在线整体充磁、高精度磁测量、快速磁场取向、磁编码器磁环等四大核心产品线，获得了在线自动充磁检测、多极电机永磁转子整体充磁、超多极磁环等十多项发明和实用新型专利。服务的客户包括：日本丰达集团、电产集团、TDK、先锋音响、佳能、东京磁铁、信浓马达、日立、松下等日系跨国公司。

为满足中国迅猛增长的磁能产业技术需求，麦格雷博的中日技术专家团队不断的研发和创新。2013年8月获得深圳市高新技术企业认定；2015年6月获得国家高新技术企业认定。产品应用领域覆盖了新能源汽车驱动电机，智能手机等消费类电子，稀土永磁材料、无人机、工业自动化控制及机器人、电梯曳引电机、伺服电机、轨道交通、风力发电电机，核磁共振、靶向给药磁场装置等高端医疗等战略发展产业和新兴行业，为宁波韵升、中国中车、横店东磁、中山大洋电机、南京埃斯顿、厦门宏发等行业龙头企业和知名上市公司提供了优化的整体充磁、磁检测、磁场取向等磁能技术解决方案，优异的品质、完善的服务受到国内外广大用户的一致好评。

佐佐木俊一先生
Mr. SASAKI SHUNICHI

展望未来，麦格雷博将肩负“创新磁能产业技术，助力全球智能制造”的时代使命，整合国内外磁能技术领域的各类优质资源，建立磁能产业技术开发研究院，努力打造新能源汽车整体充磁工程技术中心、精密磁测量工程实验室、磁探伤联合实验室、磁能医疗技术开发、磁能技术人才”等技术及服务平台，开拓进取，为客户创造价值，努力将麦格雷博打造成客户引以为豪的战略合作伙伴，为振兴中国的磁能产业做出贡献。

Magnet Lab. is an international well-known brand in the field of magnetic energy technology development.

Magnet Laboratories Company was founded by SASAKI SHUNICHI in Tokyo, Japan, in 1979. Magnet Laboratories Electronic (Shenzhen) Co., Ltd. was formally established in Shenzhen High- tech Park in January 2003. Since the birth of the Magnet Lab brand, it has been positioned to serve the world's high-end manufacturing industry, determined to provide world-renowned brands with magnetic energy industry development technology and equipment. After nearly 40 years of development, Magnet Lab has built four core product lines, including on-line integral magnetization, high-precision magnetic measurement, fast magnetic orientation and magnetic encoder magnetic ring by virtue of powerful magnetic energy technology advantages and obtained more than ten inventions and patents for utility models, such as on-line automatic magnetization detection, integral magnetization of multi-stage motor permanent magnet rotor and super multi-pole magnetic ring. Customers include: Japan Fonda Group, Electric Power Group, TDK, Pioneer Audio, Canon, Tokyo Magnets, Shinano Motor, Hitachi, Panasonic and other Japanese multinational companies.

In order to meet the rapid growth of China's magnetic energy industry technology, the team of Chinese and Japanese technical experts has continued to develop and innovate. It was recognized by Shenzhen High-tech Enterprise in August 2013; it was recognized by the National High-tech Enterprise in June 2015. Product applications cover new energy vehicles drive motors, smart phones and other consumer electronics, rare earth permanent magnets, unmanned aerial vehicles, industrial automation control and robots, elevator traction motors, servo motors, rail transit, wind power generators,

# 企业文化
# CORPORATE CULTURE

**经营理念：** 为客户创造价值
**愿　　景：** 磁产品应用解决方案的领导者，客户引以为豪的战略合作伙伴
**使　　命：** 创新磁能开发技术，助力全球智能创造
**价 值 观：** 创新、高效、信任、合作

**Business Philosophy:** Create value for our customers
**Vision:** Magnetic product application solution leader and strategic partner highly praised by customers
**Mission:** Innovative magnetic energy development technology, Help global smart manufacturing
**Sense of Worth:** Innovation, efficiency, trust and cooperation

nuclear magnetic resonance, targeted drug delivery magnetic field devices and other high-end medical strategic development industries and emerging industries. it provides optimized overall magnetization, magnetic detection, magnetic field orientation and other magnetic energy technology solutions for the leading enterprises and well-known listed companies including Ningbo Yunsheng, CRRC, Hengdian Dongci, Zhongshan Dayang Electric, Nanjing Eston, Xiamen Hongfa and other industries. Excellent quality and perfect service have been praised by customers at home and abroad.

Looking forward to the future, Magnet Lab will shoulder the mission of "innovating the technology of magnetic energy industry, boosting global intelligent manufacturing", integrate all kinds of high-quality resources in the field of magnetic energy technology at home and abroad, establish the research institute of magnetic energy industry technology development, and strive to build the new energy vehicle magnetization engineering technology center, precision magnetic measurement engineering experiment lab, magnetic flaw detection joint laboratory, magnetic energy medical technology development, magnetic energy technical personnel and other technology and service platforms, forge ahead, create value for customers, and strive to make Magnet Lab a strategic partner for customers to be proud of and contribute to the revitalization of China's magnetic energy industry.

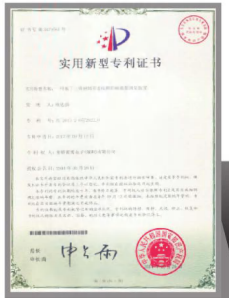
# 企业荣誉 CORPORATE HONOR


超多极磁环专利
Patent for super multi-pole magnetic ring


新型磁场取向电源退磁结构专利
Patent for new type of magnetic field oriented power demagnetization structure


新型磁场分布扫描用传感器专利
Patent for new magnetic field distribution scanning sensor


多极电机永磁转子整体充磁专利
Patent for integral magnetizing of multi-pole permanent magnet rotor




窄脉冲磁场峰值检测结构专利
Patent for narrow pulse magnetic field peak detection structure


低发热电池铁芯机构专利
Patent for low heating battery core mechanism


限流式电压自动恒定控制装置专利
Patent for current limiting voltage automatic constant control device


在线自动充磁检测专利
Patent for online automatic magnetization test


多极电机永磁转子整体充磁方法及装置
Multi-pole motor rotor integral magnetization method and equipment


在线自动充磁检测方法及装置
Online automatic magnetization inspection method and equipment


一种海尔贝克磁阵列的制造方法及其所使用的充磁装置
A kind of making method about Halbach Array and magneting device

# 发展历程 DEVELOPMENT HISTORY


国家高新技术企业认定
Identification of national high and new technology enterprises


深圳市创新型中小企业重点培育单位
The key nurturing unit of innovative small and medium enterprises in Shenzhen


深圳市高新技术企业认定
Identification of Shenzhen high and new technology enterprises

**2018**

获得3项专利：①多极电机永磁转子整体充磁方法及装置专利；②在线自动充磁检测方法及装置专利；③一种海尔贝克磁阵列的制造方法及其所使用的充磁装置

Got three patents in 2018, ①Multi-pole motor rotor integral magnetization method and equipment; ②Online automatic magnetization inspection method and equipment; ③A kind of making method about Halbach Array and magneting device

**2016**

在线自动充磁检测装置专利获得授权

Patent for online automatic magnetization detection device is authorized

**2016**

被列入深圳市创新型中小企业重点培育梯队

It is listed in the key cultivation stage of small and medium innovative enterprises in Shenzhen

**2015**

获得国家高新技术企业认定

Recognized as National High-tech Enterprise

**2014**

整体充磁设备成功地应用于新能源汽车领域

The whole magnetizing device has been successfully applied in the field of new energy vehicles

**2013**

获得深圳市高新技术企业认定

Recognized as Shenzhen High-tech Enterprise

**2008**

泰国麦格雷博公司在曼谷成立

Thailand Magnet Laboratories Company was founded in Bangkok

**2003**

麦格雷博电子（深圳）有限公司在深圳成立

Shenzhen Magnet Laboratories Co., Ltd. was established in Shenzhen

**1995**

为日本发那科Fanuc机器人提供整体磁设备

Providing integrated magnetic equipment for the robots of Japanese's FANUC

**1979**

佐佐木俊一在日本东京创立麦格雷博株式会社

SASAKI SHUNICHI founded Magnet Laboratories Company in Tokyo, Japan

# 行业应用
# INDUSTRY APPLICATION

## 以客户需求导向的企业文化
## Corporate Culture Oriented In Customer Demand

| | | | | |
|---|---|---|---|---|
| 磁材取向<br>Magnetic material orientation | 充退磁<br>Magnetization and demagnetization | 工艺优化<br>Process optimization | 技术研发<br>Technology research and development | 品质保障<br>Quality assurance |

| | | | |
|---|---|---|---|
| 磁场取向电源<br>Magnetic field oriented power supply | 充退磁设备<br>Magnetization and demagnetization equipment | 设备改进、线体优化<br>Line optimization of equipment improvement | 磁场仪器/仪表<br>Magnetic field instrument |

| | | | | | |
|---|---|---|---|---|---|
| OA | SCM | CRM | ERP | SRM | HRM |

新能源动力汽车 | New energy powered vehicle

轨道交通
Rail transit

曳引及工程机械
Traction and construction machinery

无人机 | UAV

电声+
Electro-acoustic +

风力发电
Wind Power Generation

磁性材料
Magnetic material

工业机器人
Industrial robot

企业技术中心及科研院所
Enterprise technology center and research institute


## ● 新能源电动汽车驱动电机在线整体充磁检测系统

Online Magnetizing Detection System For Driving Motor
Of New Energy Electric Vehicle


- 充磁电压可调，充磁电流，磁通有监控
- 模块化设计，便于扩容
- 支持外径500mm，高度1000mm
- 电容充放电次数≥2000万次
- LCD触控屏操作

- Magnetizing voltage adjustable, magnetizing current, flux monitored
- Modular design for easy expansion
- Support the external diameter of 500mm, height of 1000mm
- Capacitors charge and discharge times ≥20 million times
- LCD touch screen operation


### · 整体充磁技术概述

在线整体充磁技术，是国际先进的磁处理解决方案。早在1995年麦格雷博已将其成功地应用于日本发那科（Faunc）株式会社，目前已成熟地应用于新能源汽车电机、伺服电机、无刷直流电机等自动化生产工艺中。其基本原理是：使用未充磁磁钢组装转子，然后在自动生产线上对电机转子进行整体自动充磁。与使用已充磁磁钢组装转子的传统工艺相比，减少了工伤损害，杜绝了磁极装反，生产效率极大提高。

### · Overview of integrated magnetization technology

The online integral magnetizing technology is an international advanced magnetic processing solution. As early as 1995, Magnet Lab had successfully applied it to Faunc, Japan. At present, it has been used in the automatic production process of motor, servo motor and brushless DC motor of new energy vehicles. The basic principle is that the rotor is assembled with un-magnetized magnets, and then the whole rotor is automatically magnetized on the automatic production line. Compared with the traditional process of assembling rotor with magnetized steel, the damage caused by work is reduced, the reversal of magnetic pole is eliminated, and the production efficiency is greatly improved.

# 产品介绍
# PRODUCT INTRODUCTION

## 单体与整体充磁对照表

| | 生产方 | | | | | | | | | | | 购买方 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 磁石成型 | 厂内各工序间流转 | 充磁地点 | 磁石检测 | | 磁石包装 | | | 生产效率 | 综合结论 | 磁石检测 | | 磁石装配 | | | 产品品质 | | | | 生产效率 | 综合结论 |
| | | | | 外形检测 | 磁通检测 | 磁屏蔽 | 单件隔离 | 包装难易 | 高/低 | | 外形检测 | 磁通检测 | 带磁作业 | 装配方式 | 装配难易 | 减退磁影响 | 磁石吸附异物 | 极性反向 | 一次性饱和磁化 | 高/低 | |
| 单体充磁 | 厂内 | 人工装盘，单件隔离 | 厂内 | 有 | 有 | 有 | 有 | 难 | 低 | 制造人工和材料成本高，生产效率低，产品良品率低 | 有 | 有 | 有 | 人工 | 难 | 有（高温灌胶） | 有 | 有 | 无 | 低 | 制造人工和材料成本高，生产效率低，产品良品率低 |
| 整体充磁 | 厂内 | 单件无隔离，可自动装盘 | 无 | 有 | 无 | 无 | 无 | 易 | 高 | 工序减少，人工和材料成本降低，生产效率提高，产品良品率高 | 有 | 无 | 无 | 可上自动化产线 | 易 | 无 | 无 | 无 | 有 | 高 | 工序减少，人工和材料成本降低，生产效率提高产品良品率高 |

## Unit and Integral Magnetization Comparison Table

| | Producer | | | | | | | | | | Purchaser | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Magnetite molding | Transfer between processes in the plant | Magnetizing location | Magnetite detection | | Magnetite packing | | | Production efficiency | Comprehensive conclusion | Magnetite detection | | Magnetite assembly | | | Product quality | | | | Production efficiency | Comprehensive conclusion |
| | | | | Shape detection | Magnetic flux detection | Agnetic shielding | Single isolation | Difficulty in packing | High / low | | Shape detection | Magnetic flux detection | Magnetic field operation | Assembly mode | Difficulty in assembly | Reduction of magnetic effects | Magnetite adsorb foreign body | Polarity revers | One time saturation magnetization | High / low | |
| Single magnetization | Plant | Manual loading, single isolation | Yes | Yes | Yes | Yes | Yes | Hard | Low | High manufacturing and material costs, low productivity, and low product yield. | Yes | Yes | Yes | Artificial | Hard | Yes (high temperature glue) | Yes | Yes | N\A | Low | High manufacturing and material costs, ow productivity, and low product yield. |
| Integral magnetization | Plant | Single piece without isolation, automatic self loading | N\A | Yes | N\A | N\A | N\A | Easy | High | Reduced process, low labor and material costs, improved production efficiency, high yield products | N\A | N\A | N\A | Automated production line. | Easy | N\A | N\A | N\A | Yes | High | Reduce process, low labor and materiel costs, improved production efficiency, high yield products |

## ● 整体充磁设备
## Integral Magnetizing System

### · 设备特点

① 耗电量少，效率高，放电波形稳定，可长时间持续使用
② 系统采用自动控制方式，提供预留端口，便于升级改造
③ 提供多重保护和报警输出，保证系统安全
④ 操作简单，故障一键复位，触摸屏精准监控
⑤ 实时生产监控，良品与不良品做实时计数并报警提示
⑥ 提供以太网接口，可将数据上传到监控主机
⑦ 充磁电压可调充磁电源支持扩容、升级，电容充放电次数≥2000万次
⑧ 内置数字式磁通计
⑨ 充磁线圈独立于充磁台结构设计，换型拆装方便
⑩ 充磁线圈使用寿命≥5万次@额定充磁电流

### · Equipment Features

① Low power consumption, high efficiency, stable discharge waveform and long lasting use
② The system adopts the automatic control mode, with reserved ports for upgrading
③ With multiple protection and alarm output for system safety
④ Simple operation, one button reset, and touch screen precise monitoring
⑤ Real-time production monitoring, real-time counting and warning for good and defective products
⑥ With Ethernet interface, it can upload data to monitor host
⑦ Magnetizing voltage adjustable, magnetizing power supply supports expansion and upgrading, and capacitance charge and discharge times ≥ 20 million times.
⑧ Built- in digital fluxmeter
⑨ The magnetizing coil is designed to be independent of the magnetizing table, convenient for replacement and disassembly
⑩ Magnetizing coil life ≥ 50 thousand times@ rated magnetizing current

## ● 充磁+磁通表磁检测一体机
## Magnetizing & Magnetic Analysis System

## 主要技术指标 | Main Technical Indicators

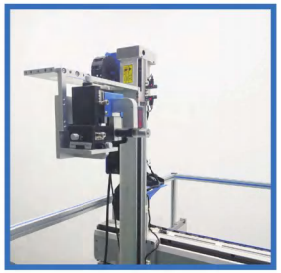
| | |
|---|---|
| 输入电源 \| Input power supply | AC220±5% 50/60Hz |
| 额定功率 \| Rated power | 4KW |
| 额定电流 \| Rated current | 18A |
| 需求压力 \| Demand pressure | 0.6Mpa |
| 需求流量 \| Demand flow | 0.5m³ / min |
| 动作周期 \| Action cycle | 90S |
| 工作流程 \| Workflow | 机器人上料 → 自动充磁+磁通检测 → 喷码 → 表磁检测<br>Loading by robot → Automatic magnetization + Flux detection → Marking → Surface magnetic detection |
| 特点 Characteristics | 1. 耗电量少，效率高，放电波形稳定，可长时间持续使用　2. 速度快，动作周期及通道节拍可在触摸屏设定<br>3. 系统采用自动控制方式，提供预留端口，便于升级改造　4. 提供多重保护和报警输出，保证设备安全<br>5. 操作简单，一键复位，触摸屏精准监控　6. 实时生产监控，良品与不良品做实时计数并报警提示<br>7. 提供以太网接口，可将数据上传到监控主机<br>1. Low power consumption, high efficiency, stable discharge waveform and long lasting use.<br>2. Fast speed, movement cycle and channel beats can be set on touch screen.<br>3. The system adopts automatic control mode to provide reserved ports for upgrading.<br>4. With multiple protection and alarm output for equipment safety.<br>5. Simple operation, one- button reset, touch screen precise monitoring.<br>6. Real- time production monitoring, real -time counting and warning for good and defective products.<br>7. With Ethernet interface, it can upload data to monitor host. |

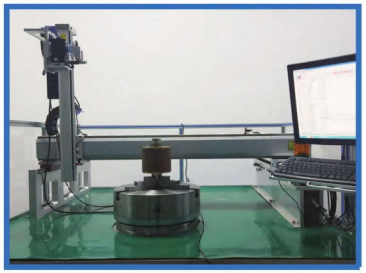
## ● 动铁充减磁+电声测试一体机
### Moving-Iron Magnetization And Demagnetization & Electro Acoustic Measuring Equipment

## 主要技术指标 | Main Technical Indicators

| | |
|---|---|
| 输入电源 \| Input power supply | AC220±5% 50/60Hz |
| 额定功率 \| Rated power | 2KW |
| 需求压力 \| Demand pressure | 0.4~0.6Mpa |
| 需求流量 \| Demand flow | 0.1m³ / min |
| 动作周期 \| Action cycle | 20S |
| 充磁电流 \| Magnetizing current | 100A Max（脉冲定电流式）<br>(Pulse constant current) |
| 减磁电流 \| Demagnetizing current | 50A Max（脉冲定电流式）<br>(Pulse constant current) |
| 磁化磁场 \| Magnetized magnetic field | 1T Max |
| 工作流程 Workflow | 上料 → 充磁 → 减磁 → 测试 → 修正 → 测试 → 结果输出<br>Loading → Magnetization → Demagnetization → Test → Correction → Test → Result output |
| 特点 Characteristics | 1. 耗电量少，效率高，高稳定电流输出控制<br>2. 带多种修正功能，产品良品率高<br>3. 系统采用自动控制方式，提供外部对接I/O，便于衔接自动化产线<br>4. 提供多重保护和报警输出，保证设备安全<br>5. 多种型号参数存储，一机兼容多型号产品<br>1. Low power consumption, high efficiency, high stable current output control<br>2. With a variety of correction functions, high yield rate<br>3. The system adopts automatic control mode, providing external docking I/O, which is easy to connect automatic production line.<br>4. With multiple protection and alarm output for equipment safety<br>5. variety of model parameters are stored, and one machine is compatible with multiple models |

## ● 表磁检测设备
### Magnetic Analysis System





### · 表磁检测设备概述

表磁检测设备是由高斯计、测试系统软件和操作台等组成的磁场分布测试装备，实现对表面磁路分布检测，具有数据存储、实时上传、超限报警、不良品追踪等综合功能。

产品应用领域覆盖了新能源汽车驱动电机，智能手机等消费类电子，稀土永磁材料、无人机、二业自动化控制及机器人、电梯曳引电机、伺服电机、轨道交通、风力发电电机，核磁共振、靶向给药磁场装置等高端医疗等战略发展产业和新兴行业。

### · Overview of surface magnetic testing equipment

The surface magnetic testing equipment is a kind of magnetic field distribution testing equipment composed of Gauss meter, test system software and operating table, which can realize the detection of magnetic circuit distribution on the surface, and has the comprehensive functions of data storage, real-time upload, over-limit alarm and defective product tracking.

Product applications cover new energy vehicles drive motors, smart phones and other consumer electronics, rare earth permanent magnets, unmanned aerial vehicles, industrial automation control and robots, elevator traction motors, servo motors, rail transit, wind power generators, nuclear magnetic resonance, targeted drug delivery magnetic field devices and other high-end medical strategic development industries and emerging industries.

### · 表磁检测设备特点

① 高精度测量，±1%的测量精度（满量程）
② 实现对产品的磁场强度峰值、角度和面积的判断
③ 磁场分布曲线显示：二维、三维及极坐标显示
④ 历史数据查询和分析
⑤ 操作员和管理员权限分级
⑥ 测量判据自主设置
⑦ 探头自动定位并带安全防护防撞功能
⑧ 整体机构设计稳定，维护简单方便

### · Characteristics of surface magnetic testing equipment

① High precision measurement, ± 1% accuracy (full scale)
② It can realize the judgment of the peak intensity, angle and area of the magnetic field of the product
③ The magnetic field distribution curve: 2D, 3D and polar coordinates display
④ Historical data query and analysis
⑤ Operator and administrator privilege classification
⑥ Self determination of measurement criteria
⑦ Automatic positioning of probe and safety protection and collision avoidance functions
⑧ The whole mechanism is stable and easy to maintain

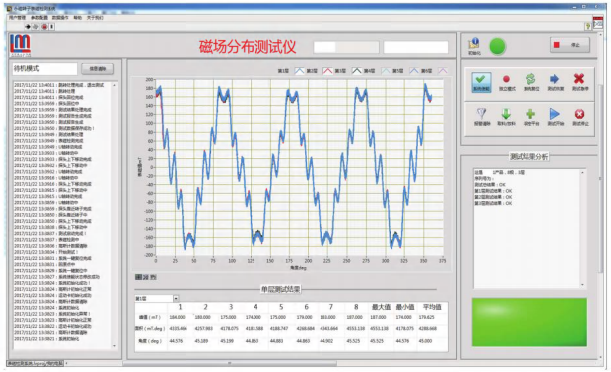
## 表磁检测设备尺寸
## Size of surface magnetic testing equipment

1000W * 1200D * 1600H



| 设备使用环境<br>Equipment usage environment | |
|---|---|
| 工作温度范围<br>Working temperature range | -10℃~45℃ |
| 工作湿度范围<br>Working humidity range | ≤95% |
| 输入电源要求<br>Input power requirements | AC220±5%V 50Hz |
| 输入气压要求<br>Input air pressure requirement | 0.5~0.7 MPa<br>要求良好接地<br>Well grounded required |

## 表磁检测软件界面
## Software interface for surface magnetic detection




| 技术规格参数 \| Technical specification parameters | | | | | | |
|---|---|---|---|---|---|---|
| 电压级别 \| Voltage level | 1000V | 1500V | 2500V | 3500V | 4500V | 6500V |
| 输入电压 \| Input voltage | AC200/220V Or 380V 50/60Hz 1Φ | | | | | |
| 输入电流 \| Input current | 依电容量和充电时间要求不同而有差异<br>There are differences due to different requirements in terms of electrical capacity and charging time | | | | | |
| 充电电压 \| Charging voltage | 50~1000V | 50~1500V | 50~2500V | 50~3500V | 100~4500V | 100~6000V |
| 充磁峰值时间<br>Peak time of magnetization | 0.1ms~250ms 依充磁线圈而定 / depending on the magnetizing coil | | | | | |
| 充磁节拍 \| Magnetized beat | ≥1s | ≥1.5s | ≥2s | ≥3s | ≥5s | ≥8s |
| 控制器 \| Controller | SCR | | | | | |
| 最大输出电流<br>Maximum output current | 50KA | 50KA | 50KA | 50KA | 50KA | 50KA |
| 电容容量 \| Capacitance capacity | 100~50000μF | 100~50000μF | 100~50000μF | 100~50000μF | 100~50000μF | 100~50000μF |
| 能量 \| Energy | 50~25KJ | 112~56.25KJ | 312~156KJ | 612~306KJ | 1~506KJ | 1.8~900KJ |
| 附件 \| Enclosure | 输入输出信号控制线缆各1根（电线）<br>One input signal control cable and one output signal control cable | | | | | |

# 产品介绍
# PRODUCT INTRODUCTION

## ● L型充磁机（低阻抗高功率型）
## L Type Magnetizer (Low- Impedance High - Power Type)

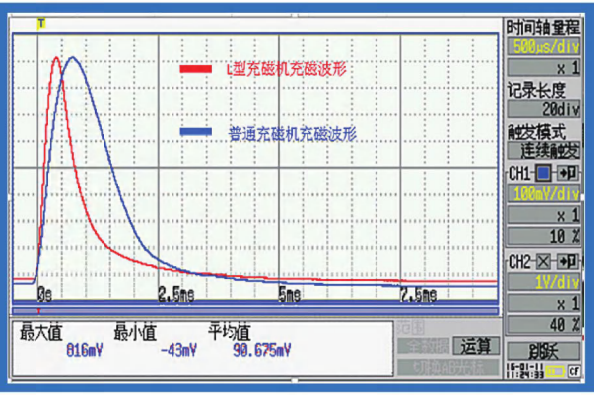
| 主要技术指标 Main technical indicators | |
|---|---|
| 输入电源 Input power supply | 1ΦAC220V OR 3Φ AC380V |
| 输入电流 Input current | ≤35A |
| 充磁电压 Magnetizing voltage | 50-2500Vdc 电压等级任选 50-2500Vdc voltage level optional |
| 充磁电流 Magnetizing current | ≤30KA |
| 充磁节拍 Magnetizing beats | ≥1.5s |

### · 产品特点

该充磁机采用专业定制的低阻抗元器件。使之高效输出充磁电流、使电流衰减时间达到最短。当使用（市面上的）普通充磁机连续充磁时，充磁线圈温度升高易导致充磁线圈本身故障以及导线电阻增加、充磁电流减弱等等充磁不足的问题。L型（低阻抗型）可使充磁线圈发热量降低为原来的1/5。另外，针对特定使用负荷，也能够制作超低阻抗。

### · Product features

The magnetizer adopts the customized low impedance component. It can output magnetizing current efficiently and reduce the current decay time to the shortest. When ordinary magnetizer is used for continuous magnetization, the increase of the temperature of the magnetizing coil will easily lead to the fault of the magnetizing coil itself and the problems of insufficient magnetization, such as the increase of conductor resistance and the decrease of magnetizing current. L type (low impedance type) can reduce the calorific value of the magnetizing coil to 1/5 of the original. In addition, ultra low impedance can be produced for specific load.




L型充磁机与普通充磁机波形对比

Waveform comparison between L type magnetizer and ordinary magnetizer

L型 | L Type

## 用途 | Purpose

- 适用于充磁线圈发热量大、使用寿命短的稀土类小型多极充磁
- 适用于固定充磁量的高精度充磁场合
- 适用于小型马达、小径多极、极间距小、导线1-2圈，需使用大电流充磁的场合
- 适用于小径多极PM型步进马达、主轴电动机、小型拾音器等充磁

- For small multi-pole magnetization of rare earths with high calorific value for magnetizing coils, especially for the occasion of poor durability of magnetizing coils
- For high precision magnetization with fixed amount of magnetization
- For magnetization of small motor with narrow gap of magnetic pole, 1-2 coils of conductor, requiring large current.
- For magnetization of small-diameter multi -pole PM stepper motor, spindle motor and small pickup.

## ● 退磁机
## Demagnetizer

**何为退磁？**

生产过程中不可或缺的“退磁”指的是？

例如：铁，通常被称为“磁体”。它很容易受周围磁场的影响而磁化。把被磁化的磁体中磁性去除的过程叫做“退磁”。磁体被磁化后将产生如下问题：如机械加工等过程中吸附铁粉影响OA机、测量仪的精确度、影响电镀效果。

**What is demagnetization?**

The "demagnetization" is indispensable in the production process.

For example, iron is often referred to as "magnet". It is easily magnetized by the surrounding magnetic field. The process that magnetism from magnetized magnets is removed is called demagnetization. Magnets magnetized will produce the following problems: for example, in the mechanical processing, adsorption of iron powder can affect the accuracy of OA machine, measuring instrument, and the effect of plating.

退磁可分为“距离衰减式”与“电流衰减式”两种

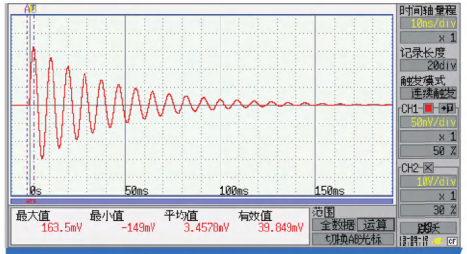
距离衰减式：对线圈施加一定程度的交变磁场，然后慢慢拉开距离，从而逐渐弱化磁场，其主要应用：精密磨具。医疗器械，汽车马达轴承，刀具等的退磁。

电流衰减式：通过逐渐减小线圈中通过的交变电流，以逐渐弱化磁场。其主要应用永久磁石，磁粉，喇叭磁石，微型电机磁石，伺服电机磁石等再利用时的退磁。

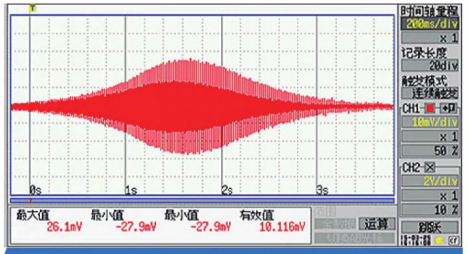
Demagnetization can be divided into two types: "distance attenuation" and "current attenuation".

Distance attenuation: a certain degree of alternating magnetic field is applied to the coil, and then the distance is slowly pulled apart, thereby gradually weakening the magnetic field, its main application: Demagnetization of precision abrasive tools, medical devices, automotive motor bearings, cutting tools, etc.

Current attenuation mode: the magnetic field is gradually weakened by the gradual decrease of the alternating current through the coil. It is mainly applied in demagnetization of permanent magnet, magnetic powder, horn magnet, micro motor magnet and servo motor magnet when they are reused.




电流衰减式退磁电流波形
Demagnetization current waveform with current attenuation




距离衰减式退磁电流波形
Demagnetization current waveformwith distance attenuation

## 电流衰减式专用退磁机
## Current Attenuation Special Demagnetizer

| 主要技术指标 \| Main technical indicators | |
|---|---|
| 输入电源 \| Input power supply | 1ΦAC220V OR 3Φ AC380V |
| 输入电流 \| Input current | ≤65A |
| 退磁电压 \| Demagnetization voltage | 50~3500Vdc |
| 退磁电流 \| Demagnetization current | ≤10KA |
| 退磁时间 \| Demagnetization time | ≥50ms |
| 退磁节拍 \| Demagnetization beat | ≥3s |

## 距离衰减式退磁线体
## Demagnetization Line With Distance Attenuation

**主要技术指标**
**Main technical indicators**

| | |
|---|---|
| 输入电源 \| Input power supply | 1ΦAC220V OR 3Φ AC380V |
| 输入电流 \| Input current | <30A |
| 退磁时间 \| Demagnetization time | 5s-1min（时间可调 \| adjustable） |
| 中心磁场 \| Central magnetic field | ≥200GS |
| 残磁 \| Residual magnetic field | <2GS |
| 工作方式 \| Operation mode | 连续工作 \| Continuously |

## ● 磁场取向电源
## Magnetic Field Oriented Power Supply




**主要用途 | Main Uses**

应用于铁氧体、钕铁硼、钐铁氮等磁材在压缩，注塑和挤压成型的取向。
It is applied in the direction of compression, injection and extrusion molding of Ferrite, NdFeB and SmFeN.

| 主要技术指标 \| Main technical indicators | |
|---|---|
| ① 直流型取向电源 \| DC oriented power supply | |
| 输入电源 \| Input power supply | 1ΦAC200V/220V OR 3ΦAC360V/380V |
| 输入电流 \| Input current | 依机型而定 \| Depending on type |
| 输出电压 \| Output voltage | 0-200V |
| 正向充磁电流 \| Positive magnetization current | 0-200V / 0-1500A 规格任意选择 \| Optional |
| 反向退磁电流 \| Reverse demagnetization current | 0-50V / 0-500A 规格任意选择 \| Optional |
| 输出调整 \| Output adjustment | 充填、充磁和退磁/定电流控制。<br>Filling, magnetization and demagnetization / constant current control. |
| 重复精度 \| Repetition precision | 充磁、退磁 / 1% \| Magnetization and demagnetization / 1% |
| 时间设定 \| Time setting | 充、退磁时间根据成形机充磁指令时间而定，<br>充磁与退磁休止时间：0.05s~以上任意设定。<br>The magnetization and demagnetization time is determined accorcing to the magnetization instruction time of the shaper. The rest time of magnetization and demagnetization is: arbitrarily set at 0.05s-above 0.05s. |
| 冷却方式 \| Cooling mode | 水冷式 \| Water cooling |
| 工作方式 \| Operation mode | 0.5s~10s 交替连续运转 \| Alternately and continuously |
| 报警 \| Alarm | 电流上下限报警，时间超限水流量，温度，外部报警。<br>Alarm for upper and lower current limits, time limit, water flow, temperature, external alarm. |

| ② 脉冲式取向电源 \| Pulse oriented power supply | |
|---|---|
| 输入电源 \| Input power supply | 1ΦAC200V/220V OR 3ΦAC360V/380V |
| 输入电流 \| Input current | ≈＜350A (MAX) |
| 充磁电压 \| Magnetization voltage | 0-1600V（规格任意选择 \| Optional） |
| 充磁电流 \| Magnetization current | ＜30KA |
| 退磁电压 \| Demagnetization voltage | 0-1600V（规格任意选择 \| Optional） |
| 退磁电流 \| Demagnetization current | ＜10KA |
| 输出调整 \| Output adjustment | 定电压或定电流控制 \| Constant voltage or constant current control. |
| 重复精度 \| Repetition precision | 充磁、退磁电压/±0.5%；充磁、退磁电流/±1%<br>Magnetization, demagnetization voltage / ± 0.5%; magnetization, demagnetization current / ± 1% |
| 时间设定 \| Time setting | 脉冲时间间隔：0.2s，1-99次可设定；充磁与退磁休止时间：0.2s-3s可任意设定。<br>Pulse interval: 0.2s, set for 1-99 times; Rest time of magnetization and demagnetization: it can be set arbitrarily between 0.2s and 3s. |
| 冷却方式 \| Cooling mode | 风冷式 \| Air cooling |
| 工作方式 \| Operation mode | MAX 0.3s　交替连续运转 \| Alternately and continuously |
| 报警 \| Alarm | 电流上下限报警，时间超限水流量，温度，外部报警。<br>Alarm for upper and lower current limits, time limit, water flow, temperature, external alarm. |

| ③ 直流+脉冲式取向电源 \| DC + pulse oriented power supply | |
|---|---|
| 输入电源 \| Input power supply | 1ΦAC200V/220V OR 3ΦAC360V/380V |
| 输入电流 \| Input current | 依机型而定 \| Depending on type |
| 充磁电压 \| Magnetization voltage | 直流：0-200V / 脉冲：0-1600V（规格任意选择）<br>DC: 0-200V / Pulse: 0-1600V (Optional) |
| 充磁电流 \| Magnetization current | 直流：0-1500V / 脉冲：30KA（规格任意选择）<br>DC: 0-1500V / Pulse: 30KA (Optional) |
| 退磁电压 \| Demagnetization voltage | 直流：0-50V / 脉冲：0-1600V（规格任意选择）<br>DC: 0-50V / Pulse: 0-1600V (Optional) |
| 退磁电流 \| Demagnetization current | 直流：0-500A / 脉冲：10KA（规格任意选择）<br>DC: 0-500A / Pulse: 10KA (Optional) |
| 输出调整 \| Output adjustment | 定电压或定电流控制<br>Constant voltage or constant current control. |
| 重复精度 \| Repetition precision | 充磁、退磁电压/±0.5%；充磁、退磁电流/±1%<br>Magnetization, demagnetization voltage / ± 0.5%; magnetization, demagnetization current / ± 1% |
| 时间设定 \| Time setting | 0~10s（任意设定 \| Can be set arbitrarily） |
| 冷却方式 \| Cooling mode | 水冷式 \| Water cooling |
| 工作方式 \| Operation mode | 连续运转 \| Continuous operation |
| 报警 \| Alarm | 电流上下限报警，时间超限水流量，温度，外部报警。<br>Alarm for upper and lower current limits, time limit, water flow, temperature, external alarm. |

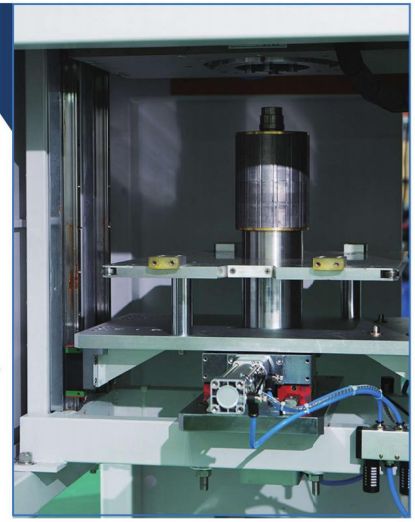
## ● 自动充磁台 | Automatic Magnetizing Station

### 半自动充磁台
### Semi- Automatic Magnetizer

· 兼容三种以上产品充磁设计
· 双键启动，防止误动作设计
· 磁通自动检测设计
· 模块化，可拆装设计，方便快捷
· 磁通，电流 · 异常报警设计

· Magnetization design compatible with more than three products
· Design of double- key startup to prevent misoperation
· Design of flux automatic detection
· Modular, removable design, convenient and quick
· Design of abnormal alarm for magnetic flux and current

### 线体嵌入式自动充磁台
### Line Body Embedded Automatic Magnetizing Machine



· 手动、自动切换设计
· 自动顶升，取料设计
· 一键启动，防误动作设计
· 磁通自动检测设计
· 模块化，可拆装设计
· LCD触控屏操作
· 数据可上传服务器，生产不良记录可追溯

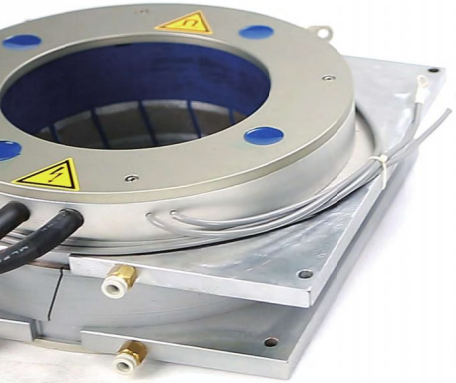
· Manual and automatic switching design
· Automatic jacking and reclaiming design
· Button start, anti-misoperation design
· Design of flux automatic detection
· Modular, removable design
· LCD touch screen operation
· Data can be uploaded to the server, and bad production record can be traced

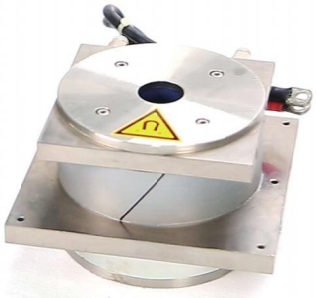
## 线体嵌入式自动充磁台
## Line Body Embedded Automatic Magnetizing Machine

- 可同时进行十个产品充磁
- 采用强制间接水冷，提高充磁线圈寿命
- 提供多种保护报警，避免异常操作
- 多种输入输出接口，可对外进行PLC通信
- 磁线圈可按要求切换，不使用的线圈可以关闭
- 可对磁环的放置进行监控，无磁环和磁环放置不到位，将报警提示，并且不能开始充磁
- 维护方便，可随时监视冷却水流量，更换充磁线圈方便

- Ten products can be magnetized at the same time
- Using indirect forced water cooling to improve the life of magnetizing coil
- Providing a variety of protection alarms to avoid abnormal operation
- A variety of input and output interfaces for external PLC communication
- The magnetic coil can be switched as required, and the coil not used can be closed
- The placement of magnetic rings can be monitored. If there is no magnetic ring and magnetic rings cannot be in place, the alarm will be prompted, and magnetization cannot be started
- It is easy to maintain, monitor the cooling water flow and replace the magnetizing coil at any time

## ● 充磁夹具 / 充磁线圈
## Magnetizing Fixture / Magnetizing Coil





## 麦格雷博充磁线圈的五大优势

### 1.波形可控

充磁效果的好坏对马达、传动装置、传感器等产品性能的影响非常大；随着机械制品体积越来越小、功能越来越强大，对充磁波形控制的要求也越来越苛刻。本公司可根据客户对波形的要求设计磁路的走向。

### 2.耐用性好

作为生产设备，充磁线圈的耐用性直接影响着生产成本。提高线圈的耐用性，才能降低客户的生产成本，同时赢得广大客户的信赖。充磁线圈的耐用性与其散热量密切相关，为有效降低散热量，提高线圈耐用程度，我司着力采取以下改善措施：

①避免线圈发热，根据低能量的充磁机设计出效率更高的线圈来满足客户产品需求；

②提高线圈散热条件，设计出利于散热的线圈形状，研究加入气冷装置；

③提高线圈耐热水平，高标准选择绕线种类、磨具材质。

### 3.方便维修

公司设计出可维修线圈，有故障的线圈经过维修再利用因而降低顾客的生产成本，减少社会资源的消耗。如线圈的磁极部件与水冷部件可分离。当充磁线圈损坏时，只更换磁极部件。而水冷部件得以继续使用。

### 4.操作便利

对于产线上使用的充磁线圈，其可操作性以及准确性十分重要。如操作设置困难，或者充磁后产品难以快速取出，会导致产线无法正常工作。为密切配合产线的生产需要，本公司设计出各种专用的充磁线圈和充磁机构，从形式上分为：人工取出方式，半自动机构装置，全自动化方式。

### 5.本社生产

麦格雷博贯彻理解客户需求，实践于经营、设计、制造环节，为生产满足客户需要的充磁线圈，从绕线工序到树脂涂层、成品、发货检查均在本公司内部完成。

## Five Advantages of Magnet Lab Magnetizing Coil

### 1. Waveform controllable

The magnetizing effect has great influence on the performance of motor, transmission device and sensor; with the mechanical products becoming smaller and more powerful, the requirement of magnetizing waveform control is becoming more and more stringent. The company can design the direction of the magnetic circuit according to the requirement of the customers.

### 2. Good durability

As production equipment, the durability of magnetizing coil directly affects the production cost. Improve the durability of the coil can reduce customer production costs, and win the trust of our customers. The durability of magnetizing coil is closely related to its heat dissipation. In order to effectively reduce the heat dissipation and improve the durability of coil, we focus on the following improvement measures:

① To avoid coil heating, we design a more efficient coil according to the low-energy magnetizer to meet customer product needs;
② To improve the cooling condition of the coil, we design the coil shape for cooling, and add the air cooling device;
③ To improve the heat resistance of the coil, we choose the type of wire winding and the material of the abrasive tool.

### 3. Convenient for maintenance

The company has designed repairable coils. The faulty coils are repaired and reused, thereby reducing customer production costs and the consumption of social resources. For example, the magnetic pole parts of the coil can be separated from the water-cooled parts. When the magnetizing coil is damaged, only magnetic pole parts are replaced and the water-cooled components can continue to be used.

### 4. Convenient for operation

The operability and accuracy of magnetizing coil used in production line is very important. If the operation settings are difficult, or the products are difficult to remove quickly after magnetization, the production line will not work properly. In order to closely meet the production line needs, the company has designed a variety of special magnetizing coil and magnetizing mechanism, which are divided into in terms of form: manual removal mode, semi-automatic mechanism device, automatic mode.

### 5. Company production

Magnet Lab has stuck to and understood customer needs, and practiced in business, design, manufacturing links; the winding process, resin coating, finished products, and shipment inspection are completed within the company to produce magnetizing coils to meet customer needs.

## 充磁线圈 | Magnetizing Coil

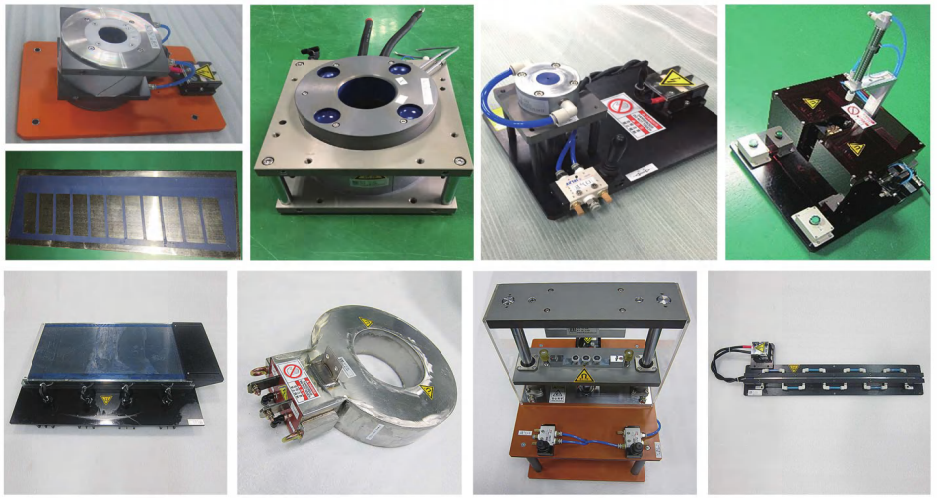
平面多极充磁
Plane multi-pole magnetization

扭转多极充磁
Torsional multi-pole magnetization

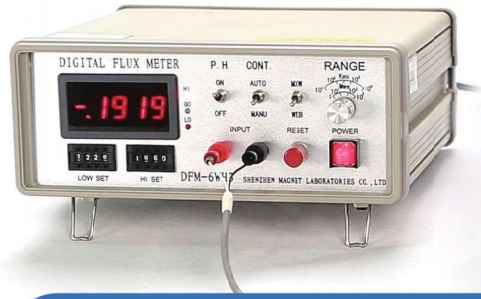
表贴式外充磁
Surface mounted external magnetization

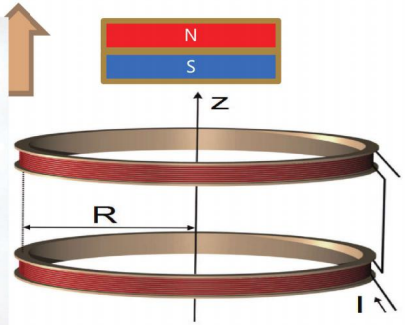
嵌入式内充磁
Embedded internal magnetization

大型尺寸充磁
Large -size magnetization



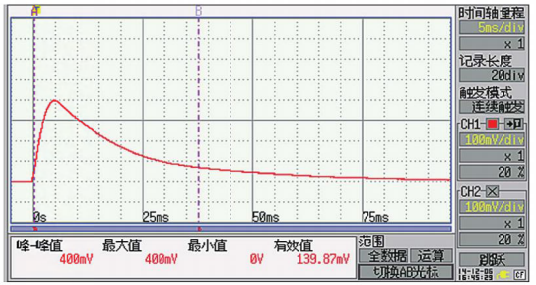
## 磁测量仪器
## Magnetic Measuring Instrument




### 数字积分磁通计 | Digital Integrating Flux Meter

| 型号 \| Model | | DFM-6WH3 |
|---|---|---|
| 特性规格 Characteristic specification | 输入电源 Input power supply | AC 100V-230V，50/60Hz |
| | 测量范围 Measuring range | 0-3.9x10$^4$ KMx.T |
| | 测量量程 Measurement range | 10$^1$、10$^2$、10$^3$、10$^4$ KMx.T |
| | 测量精度 Measurement accuracy | ±1%+Digit |
| | 安定度 \| Stability | 安定度1分钟以上，一键归零，无需模拟调零位<br>The stability is more than 1 minute, a key to zero, without need to simulate zero adjustment |
| | 显示 \| Display | 功能丰富的LED表头数显 \| LED display with rich functions |
| | 校准 \| Calibration | 日制标准磁石和线圈，附深圳市计量研究院校准报告<br>Daily standard magnet and coil, with calibration report of Metrology Institute of Shenzhen |
| 主要用途 Main applications | | 圆筒形或扁平型磁铁着磁后，自动或手动提升测量其磁通量<br>When a cylindrical or flat magnet is magnetized, the magnetic flux is measured automatically or manually. |



## 数字式高斯计 | Digital Gauss Meter

| | |
|---|---|
| 型号 \| Model | TM-10 |
| 输入电源 \| Input power supply | AC 100V-230V，50/60Hz |
| 测量范围 \| Measuring range | 0-10T |
| 测量量程 \| Measurement range | 0.1T / 1T / 10T |
| 测量精度 \| Measurement accuracy | 静态磁场±1%（量程），脉冲磁场±3%（量程）<br>Static magnetic field ± 1% (range), Pulse magnetic field ± 3% (range) |
| 灵敏度 \| Sensitivity | 100uT |
| 探头特性<br>Probe characteristics | 柔性探头寿命长，温度系数优于-0.06%/℃<br>The Flexible probe with long life and temperature coefficient is better than -0.06%/℃. |
| 显示 \| Display | 6位LCD液晶屏显示 \| 6 - bit LCD display |
| 校准 \| Calibration | 日制标准磁石，附深圳市计量研究院校准报告<br>Japanese standard magnet, with calibration report of Metrology Institute of Shenzhen |
| 主要用途<br>Main applications | 圆筒形或扁平型磁铁着磁后的表磁测量（静态磁场），脉冲磁场测量<br>The measurement of the surface magnetism of a cylindrical or flat magnet after magnetization (static magnetic field), and the measurement of pulsed magnetic field |


## 手持数字式高斯计
## Hand-Held Digital Gauss Meter

| | |
|---|---|
| 型号 \| Model | ML-3GT |
| 输入电源<br>Input power supply | 9V 6F22（S-006P）<br>电池1个 \| One battery |
| 测量范围<br>Measuring range | 0-2T |
| 测量量程<br>Measurement range | 2T |
| 测量精度<br>Measurement accuracy | ±2% |
| 灵敏度<br>Sensitivity | 100uT |
| 探头特性<br>Probe characteristics | 柔性探头寿命长，温度系数优于-0.06%/℃<br>The Flexible probe with long life and temperature coefficient is better than -0.06%/℃. |
| 显示 \| Display | 4位LCD液晶屏显示 \| 4 - bit LCD display |
| 校准 \| Calibration | 日制标准磁石，附深圳市计量研究院校准报告<br>Daily standard magnet, with calibration report of Metrology Institute of Shenzhen |
| 主要用途<br>Main applications | 磁材表磁测量和脉冲磁场测量<br>Magnetic measurement and pulsed magnetic field measurement of magnetic materials |

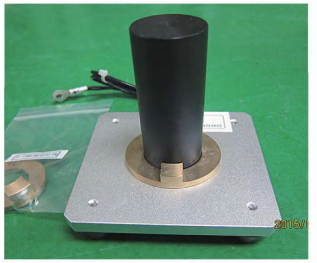
## 磁测量线圈
## Magnetic Measuring Coil

标准磁石及测量线圈
Standard magnets and measuring coils

亥姆赫兹测量线圈
Helmholtz flux coils

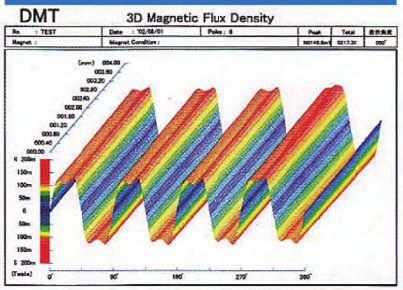
平面2极磁石磁通检测线圈
Planar 2-pole magnetic flux detection coil

马达定子磁通检测线圈
Motor-stator flux detection coil



磁石磁通检测线圈
Magnetic flux detection coil

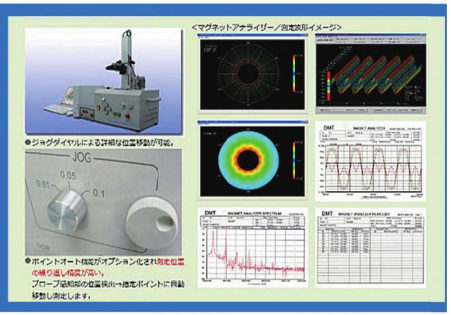
## 磁场分布测试仪
## Magnetic Field Distribution Tester




## 特性规格 | Characteristic Specification

| | |
|---|---|
| 型号 \| Model | MF-301R |
| 输入电源<br>Input power supply | AC 100V-220V，50/60Hz |

| 特性规格 \| Characteristic Specification | |
|---|---|
| 测量范围<br>Measuring range | 0-4T |
| 测量量程<br>Measurement range | 40mT（400Gs）、400mT（4KGs）、4T（40KGs） |
| 测量精度<br>Measurement accuracy | ±0.5%（量程），角度误差＜0.5度、最大角度分解10000/Turn<br>± 0.5% (range), angle error ＜ 0.5 degree, maximum angle decomposition 10000/Turn |
| 探头特性<br>Probe characteristics | 日制高精度传感器，温度系数优于-0.06%/℃<br>The temperature coefficient of the high-precision sensor is better than -0.06%/℃ |
| 测量尺寸<br>Measurement size | Φ2~Φ78mm，自动轴移动最大200mm<br>Φ2~Φ78mm, the maximum movement of automatic shaft is 200mm |
| 周波特性<br>Cycle characteristics | DC-5kHz/-3dB |
| 显示 \| Display | 高斯计4位LED显示，人机界面波形2D和3D显示<br>Gauss 4-bit LED display, human-machine interface waveform 2D and 3D display |
| 校准 \| Calibration | 日本电气计量检定所 \| JEMIC |
| 主要用途<br>Main applications | 自动测量着磁后的圆形/扁平型磁铁的磁束分布，而且可以解析充磁波形、各极的磁束量、充磁角度及面积等的装置。通过X轴表示回转角度，y轴表示表面磁束密度、Z轴表示高度方向的位置来进行3D测量。<br>The magnetic beam distribution of the circular/flat magnet after magnetization is measured automatically, and the device for analyzing the magnetization waveform, the amount of magnetic beams at each pole, the magnetization angle and the area can also be used. The rotation angle is represented by the X axis, the magnetic beam density on the surface is represented by the Y axis, and the position in the direction of height is represented by the Z axis for 3D measurement. |




| 特性规格 \| Characteristic Specification | |
|---|---|
| 型号 \| Model | MAD-310RAS |
| 输入电源<br>Input power supply | AC 100V-220V，50/60Hz |
| 测量范围<br>Measuring range | 0-4T |
| 测量量程<br>Measurement range | 40mT（400Gs）、400mT（4KGs）、4T（40KGs） |

| | |
|---|---|
| 测量精度<br>Measurement accuracy | ±0.5%（量程），角度误差＜0.5度、最大角度分解43200/Turn<br>± 0.5% (range), angle error ＜ 0.5 degree, maximum angle decomposition 43200/Turn |
| 探头特性<br>Probe characteristics | 日制高精度传感器，温度系数优于-0.06%/℃<br>The temperature coefficient of the high-precision sensor is better than -0.06%/℃ |
| 测量尺寸<br>Measurement size | Φ2~Φ78mm，自动轴移动 X-MAX 200mm, Y-MAX 150mm, Z-MAX 250mm<br>Φ2~Φ78mm, the movement of automatic X-MAX 200mm, Y-MAX 150mm, Z-MAX 250mm |
| 周波特性<br>Cycle characteristics | DC-5kHz/-3dB |
| 显示 \| Display | 高斯计4位LED显示，人机界面波形2D和3D显示<br>Gauss 4-bit LED display, human-machine interface waveform 2D and 3D display |
| 校准 \| Calibration | 日本电气计量检定所 \| JEMIC |
| 主要用途<br>Main applications | 自动测量着磁后的圆形/扁平型磁铁的磁束分布，而且可以解析充磁波形、各极的磁束量、充磁角度及面积等的装置。通过X轴表示回转角度，y轴表示表面磁束密度、Z轴表示高度方向的位置来进行3D测量。<br>The magnetic beam distribution of the circular/flat magnet after magnetization is measured automatically, and the device for analyzing the magnetization waveform, the amount of magnetic beams at each pole, the magnetization angle and the area can also be used. The rotation angle is represented by the X axis, the magnetic beam density on the surface is represented by the Y axis, and the position in the direction of height is represented by the Z axis for 3D measurement. |

# 产品介绍
# PRODUCT INTRODUCTION

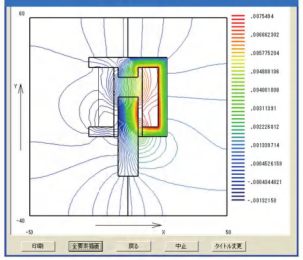
## 优势 | Advantages

- 利用有限单元法，Excel即可实现满足应用精度的仿真分析，只要懂得简单的Excel操作方法，即可使用
- 每个仿真项目都有专用的宏来构成，设置少量的参数，就可进行计算并得出结果（针对每个系列进行销售）
- Excel格式，操作简单（工具栏执行、表格储存。活用Excel图表）
- GUI模型+自动生成空间数据+2D · 轴对称FEM解析机+彩色等高线装备的一体化类型
- 仅需复制、修正基本的Excel数据，就可进行分析
- 利用DXF导入功能进行定义、从材料数据备库中选择材料，在任意坐标点上可作成磁场分布图表
- 性价比高，购买软件后可提供一年的免费售后支持

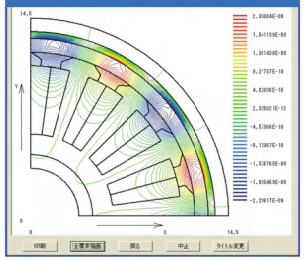
- With the finite element method, Excel can realize the simulation analysis satisfying the application precision, and you can use it as long as you understand the simple operation method of Excel
- Each simulation project is formed of dedicated macro, with a small number of parameters set, you can calculate and get results (for each series of sales)
- Excel format, simple operation (toolbar execution, table storage and application of Excel chart)
- Integration type of GUI model - automatic generation of spatial data+2D axial symmetry FEM Parser + color contour line equipment
- Only by copying and modifying the basic Excel data can we analyze it.
- We can define by DXF import function and select material from material data repository to make the magnetic field distribution diagram at any coordinate point
- High cost performance. After purchasing software, you can be provided with one year's free after-sales support

## 软件应用 | Software Application

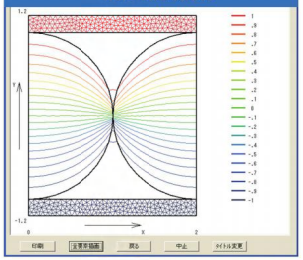
促进器的吸引力解析
Analysis of attractiveness of promoter



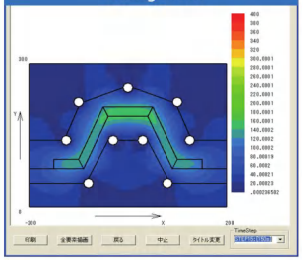
马达的着磁扭矩解析
Analysis of magnetic torque of motor



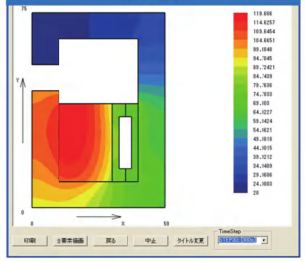
导电体的电场、应力解析
Analysis of non-conduction electric field and stress



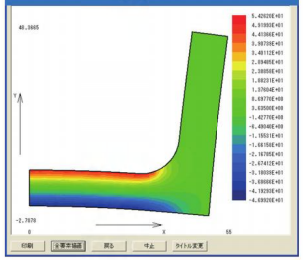
发热、冷却回路温度解析
Temperature analysis of heating cooling circuit



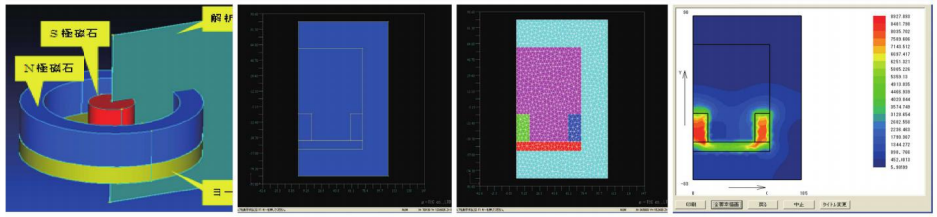
高频加热线圈温度解析
Stress and thermal stress analysis of structures



结构物应力及热应力解析
Stress and thermal stress analysis of structures

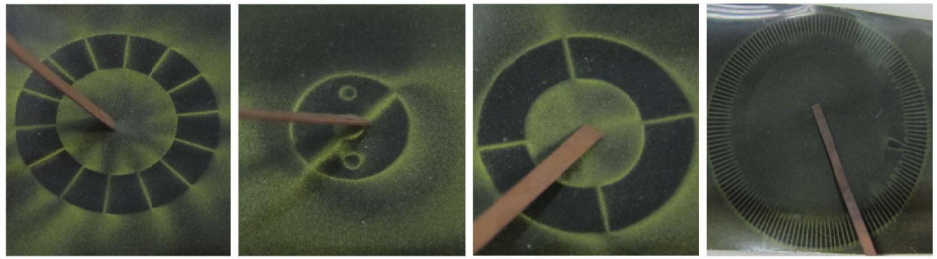


每个分析主题附带有宏以及表格，使得操作起来更轻松简便
Each analytical topic comes with macros and tables, making operation easier

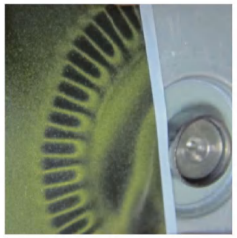



## ● 磁编码器 / 磁环系列
## Magnetic Encoder / Magnetic Ring Series

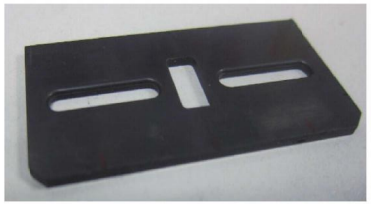
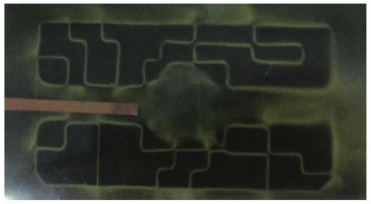
- √ 可实现400+极充磁
  400+pole magnetization can be realized
- √ 最小极间距0.33mm
  Minimum pole spacing is 0.33mm
- √ 峰值偏差 ± 1%
  Peak deviation ± 1%
- √ 极间相位偏差 ± 1%
  Inter-phase deviation ± 1%
- √ 轴向/径向/平面充磁
  Axial / radial / planar magnetization

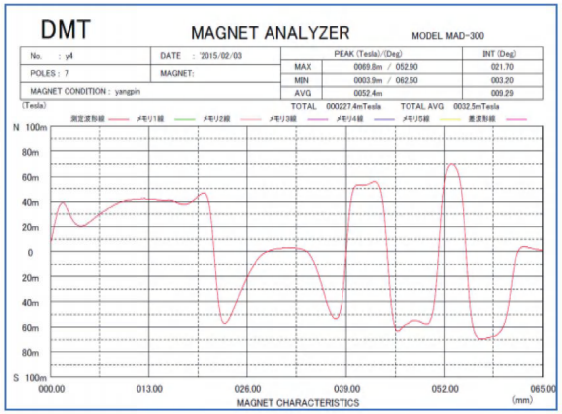




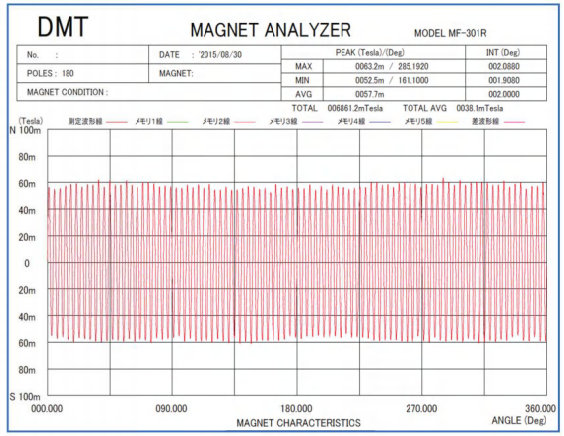



## ● 充磁实例
## Examples Of Magnetization

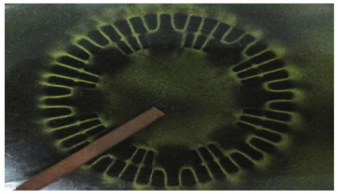



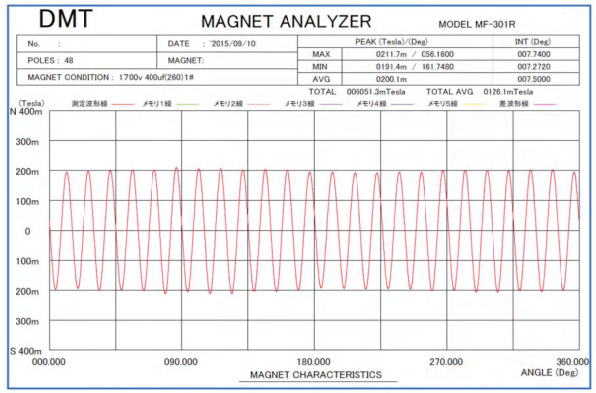


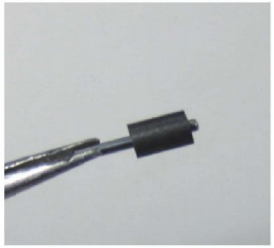
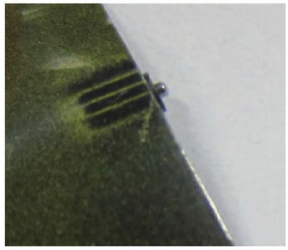


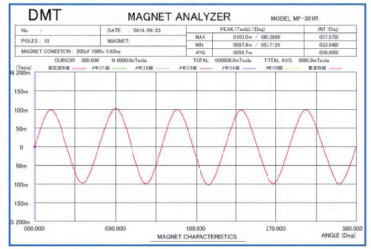




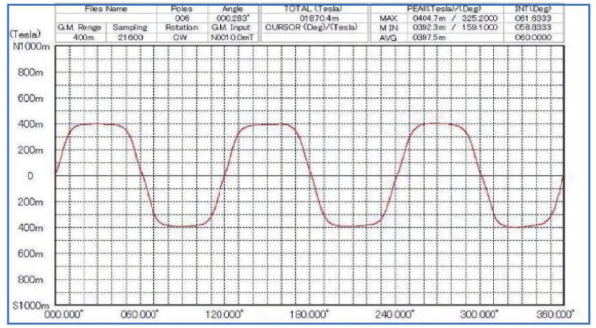




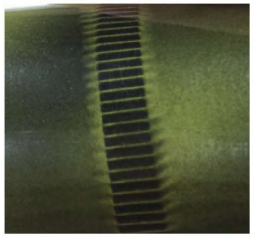




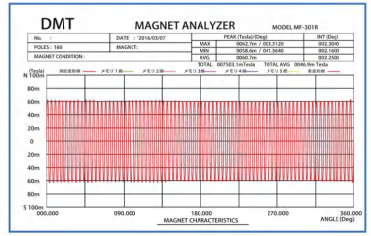












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