

浙江东源智造有限公司 Dongyuan

创新可靠的
热处理解决方案

Innovative and Reliable
Solutions for Heat Treatment



WE MAKE THE DIFFERENCE

我们与众不同

***FUTUR* 对流加热系统**

***2R* 上下交替冷却系统**

***2×2R* 上下及水平交替冷却系统**

***TMS* 热处理工艺控制系统**

***COOL PLUS* 集成式深冷系统**

***eSS* 节能系统**

***RD PLUS* 360度环形冷却系统**

***2PLUS* 集成独立冷却室**

***MULTIR* 可换向多方向环形+轴向冷却系统**

***RA* 360度环形+轴向冷却系统**

ABOUT US

关于东源智造

公司简介

浙江东源智造有限公司是一家国际领先的高端工业热处理解决方案供应商，是全球真空炉市场的领导者，也是全球行业内唯一能够提供大型真空处理设备的一家供应商之一。公司主营业务分为两类，一是各种热处理设备的设计、生产和销售，二是为存量设备客户提供设备维护服务、进行配件销售。公司目前已为50多个国家和地区提供服务；安装保有量高达5,700套。近年来，中国市场订单快速增长，占比已达40%以上。

四大品牌

浙江东源智造有限公司旗下拥有德国益发（IVA）、德国施迈茨（SCHMETZ）、法国B.M.I.和德国马勒（MAHLER）等热处理品牌。集团拥有近80年的热处理研发、制造经验，全球400多名员工在5个研发制造中心，产品包括各式真空炉、气氛炉以及渗氮炉等。致力于为航空航天、汽车、商业热处理、能源、医疗和工模具等领域的客户提供优质、高性价比的技术和服务。

厂房建设

集团总部新厂房目前已建设完毕，项目建设规模为年产量180套高端智能化热处理设备。项目一期计划投入24000万元，土地面积60亩，总建筑面积33000余平米。未来核心的零部件及关键技术将国产化，服务于航空航天、军工业、半导体行业等多元化高端市场。届时国内外基地将统一由集团总部负责，共享技术及市场信息。



Company Profile

Zhejiang Dongyuan Intelligent Manufacturing Co., Ltd. is an internationally leading supplier of high-end industrial heat treatment solutions, a global leader in the vacuum furnace market, and one of only two suppliers worldwide in the industry capable of providing large-scale vacuum processing equipment. The company's main business falls into two categories: first, the design, production and sales of various heat treatment equipment; second, the provision of equipment maintenance services and parts sales for existing equipment customers. Currently, the company has provided services to more than 50 countries and regions, with an installed base of up to 5,700 units. In recent years, orders in the Chinese market have grown rapidly, accounting for more than 40% of the total.

Four Major Brands

Zhejiang Dongyuan Intelligent Manufacturing Co., Ltd. owns several heat treatment brands including Germany's IVA, Germany's SCHMETZ, France's B.M.I., and Germany's MAHLER. The group has nearly 80 years of experience in the R&D and manufacturing of heat treatment, with over 400 employees worldwide across 5 R&D and manufacturing centers. Its products include various types of vacuum furnaces, atmosphere furnaces, and nitriding furnaces, among others. The company is committed to providing high-quality and cost-effective technologies and services to customers in the aerospace, automotive, commercial heat treatment, energy, medical, and tool and die industries, as well as other fields.

Plant Construction

The new factory building of the group headquarters has now been completed, with a project scale of an annual output of 180 sets of high-end intelligent heat treatment equipment. The first phase of the project plans to invest 240 million yuan, covering a land area of 60 mu (approximately 40,000 square meters) with a total construction area of over 33,000 square meters. In the future, core components and key technologies will be localized to serve diverse high-end markets such as aerospace, military industry, and the semiconductor industry. By then, domestic and overseas bases will be uniformly managed by the group's headquarters, sharing technology and market information.



HORIZONTAL FURNACES

卧式真空炉



基本参数

Standard useful dimensions (horizontal furnaces)

序号/NO	有效尺寸/load dimension W×L×H(mm)	装炉量/load weight 千克 (毛重) /kg(gross)
01	300 × 300 × 300	50
02	300 × 450 × 300	80
03	400 × 600 × 400	200
04	600 × 600 × 400	400
05	400 × 600 × 600	400
06	500 × 600 × 500	300
07	600 × 900 × 600	800
08	900 × 900 × 600	800
09	600 × 900 × 900	800
10	900 × 1200 × 600	1000
11	900 × 1000 × 900	1000
12	800 × 1200 × 800	1500
13	900 × 1200 × 700	1000
14	900 × 1200 × 900	2500
15	900 × 1500 × 900	3000
16	1000 × 1500 × 1000	1000
17	1200 × 1500 × 1000	1500
18	1000 × 1500 × 1200	1500
19	1200 × 2000 × 1200	5000
20	1500 × 2000 × 1500	7000
21	1200 × 2500 × 1200	7000
22	1500 × 2500 × 1500	10000

淬火	Hardening
回火	Tempering
钎焊	Brazing
烧结	Sintering
退火	Annealing
其他	etc.

技术特点

- 工作温度范围： 200℃ 至最高约 1,600℃
- 隔热/加热材料： 石墨硬毡 / 高纯石墨， 可选钼或铬-镍合金
- 真空范围： 10⁻¹ ~ 10⁻⁷ mbar
- 冷却气体压力： 0.9/2/6/10/13 bar(abs.)或更高(N₂)
- I型： 方形石墨热区， 石墨硬毡隔热层
- E型： 全金属热区， 冷却喷嘴360度环形分布
- RD PLUS型： 专门为大型压铸模具设计的底部强化冷却圆形热区结构

- Data**
- Operating temperature range :** 200°C to approximately 1,600°C maximum
 - Insulation/heating :** internals graphite, alternative molybdenum or chromium-nickel
 - Vacuum range:** 10⁻¹-10⁻⁷mbar
 - Cooling gas pressure :** 0.9/2/6/10/13 bar(abs.)or higher(N₂)
 - Typ I:** square hot zone, graphite insulated
 - Typ E:** round all-metal hot zone with nozzles
 - Typ RD PLUS:** round graphite hot zone with all around nozzle cooling.

*FUTUR*系统

对流加热系统，快速加热到奥氏体化温度，且工件内温差很小

*2R*系统

方形热区可选*2R*上下交替冷却方式

*2×2R*系统

方形热区可选*2×2R*上下、左右交替冷却方式

*TMS*系统

热处理工艺控制系统，菜单式界面，优化记录与存档，操作直观便捷

*COOL PLUS*系统

集成式全自动深冷系统，最低温度-145°C，大大减少残余奥氏体，获得更小的变形量，更高的硬度，同时操作更方便、更安全

*2PLUS*系统

可在标准炉型上附加冷却室，加热、淬火分别完成，淬火效率更高，效果更好

*eSS*系统

方形热区可选节能系统，可节电10%-20%，缩短工艺时间10%，提升淬火效率10%

SYSTEM *FUTUR*
convective heating-up

SYSTEM *2R*
cooling from two directions with
direction reversal

SYSTEM *2×2R*
vertical/horizontal cooling from two
directions with direction reversal

SYSTEM *TMS*
Thermprocess-Management-System
menu-guided programming of the
vacuum furnace with optimised
recording and documentation

SYSTEM *COOL PLUS*
integrated fully automatic "sub-zero"
process down to -145°C

SYSTEM *2PLUS*
standard furnace equipped with an
additional cooling chamber to increase
cooling speeds

SYSTEM *eSS*
at least 10% current saving, shorter
cycles, higher cooling speed.

NOTE:
can also be retrofitted in case of an
exchange of the hot zone.



FURNACES FOR HORIZONTAL CHARGING

水平装料真空炉



VERTICAL FURNACES

立式真空炉



技术特点

工作温度范围：200 °C 至最高约 1,600 °C
 隔热/加热材料：石墨硬毡 / 高纯石墨，可选钼钨合金
 真空范围：10⁻¹ ~ 10⁻⁷ mbar
 冷却气体压力：0.9/2/6/10 bar(abs.)或更高(N₂)

Data

Operating temperature range: 200°C to approximately 1,600°C maximum
Insulation/heating: internals graphite, alternative molybdenum or chromium-nickel.
Vacuum range: 10⁻¹-10⁻⁷ mbar
Cooling gas pressure: 0.9/2/6/10 bar(abs.) or higher(N₂)

FUTUR 系统

对流加热系统，快速加热到奥氏体化温度，且工件内温差很小

SYSTEM *FUTUR*

convective heating-up

*RA*系统

可选*RA*冷却系统，360度环形冷却+轴向冷却，全方位冷却

SYSTEM *RA*

Radial/ Axial cooling of the load

*2R*系统

可选*2R*冷却系统，轴向双向换向冷却，适用于杆状工件

SYSTEM *2R*

Cooling from two directions with direction reversal

*MULTIR*系统

可换向式多方向环形冷却+轴向冷却系统，最全面的冷却方案，冷却彻底无死角

SYSTEM *MULTIR*

Multi-directional radial/axial cooling possibility

*TMS*系统

热处理工艺控制系统，菜单式界面，优化记录与存档，操作直观便捷

SYSTEM *TMS*

Thermprocess-Management-System menu-guided programming of the vacuum furnace with optimised recording and documentation

基本参数

Standard useful dimensions (vertical furnaces)

型号/size	有效尺寸/load dimension 直径x 高/Φ×H(mm)	装炉量/load weight 千克(毛重)/kg(gross)
22	1200 × 1200	1500
23	1200 × 1500	2000
33	1500 × 1500	2500
34	1500 × 3000	3000
44	1800 × 1800	3000
55	2100 × 2100	3500
64	2500 × 1800	4000
66	2500 × 2500	4000
77	2700 × 2700	4000
86	3000 × 1500	5000
88	3000 × 3000	5000



淬火

Hardening

回火

Tempering

钎焊

Brazing

烧结

Sintering

退火

Annealing

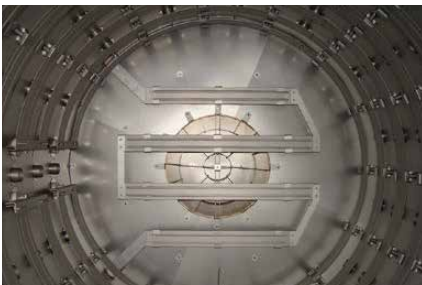
其他

etc.



FURNACES FOR VERTICAL CHARGING

垂直装料真空炉



产品线 PRODUCT LINE

箱式多用炉

ATMOSPHERE FURNACE

益发施迈茨可控气氛箱式多用炉，可根据需求选择单门进出式和双门贯通式。前后二室密封设计，后室实现加热、渗碳工艺，前室实现缓冷或油淬工艺，并可实现二次淬火工艺。

IVA SCHMETZ atmosphere multi-purpose furnaces, can be divided into 2 categories: single door (in/out) furnaces and double-door (in-through) furnaces. The front chamber and rear chamber are air-tight, while the rear chamber is used for heating and carburizing processes, and the front one is used for slow cooling or oil quenching processes. The furnace is capable of secondary quenching process.

益发施迈茨可控气氛多用炉与周期式回火炉、清洗机、装卸料车等设备可根据用户需求组成多种形式的热处理生产线以满足不同工艺和生产节拍的需求。主要用于淬火，回火，气体渗碳，碳氮共渗，气体渗氮，氮碳共渗等热处理工艺过程。公司深耕热处理行业数十年，积累了丰富成熟的热处理设备制造和热处理工艺技术经验，在吸收和消化欧美先进成熟技术基础上，广泛采纳各个工业领域的最新成果，持续对产品优化升级，用一流的技术与品质，实惠的价格，更好的服务于国内外的广大用户。

IVA Schmetz controlled atmosphere multi-purpose furnaces and periodic tempering furnaces, washing machines, loaders, etc form various types of heat treatment production lines to implement different processes and production paces. The ATM furnaces are mainly used for quenching, tempering, gas carburizing, carbunitriding, gas nitriding, nitrocarburizing and other heat treatment processes. IVA Schmetz has been deeply engaged in heat treatment industry for decades, and has accumulated rich experience in heat treatment equipment manufacturing and heat treatment process technology. On the basis of absorbing and digesting advanced and mature technologies abroad and domestically, IVA Schmetz has widely adopted the latest technical achievements from various industrial fields, and continues to optimize and upgrade our furnaces, with first-class technology and quality, affordable price, to better serve our customers from home and abroad.



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炉型及基本参数 FURNACE BASIC SPECIFICATIONS

型号 Furnace Model		装炉量 Capacity	炉膛有效尺寸 Load Dimension	装运重量 Shipping Weight
单门进出 In/Out	双门贯通 In-through	(公斤) (Kg)	(L x W x H) (mm)	(公斤) (Kg)
SHQ(F)-1/1-E/G	DHQ(F)-1/1-E/G	400	910 x 610 x 610	8500
SHQ(F)-2/1-E/G	DHQ(F)-2/1-E/G	800	1220 x 760 x 610	10000
SHQ(F)-2/2-E/G	DHQ(F)-2/2-E/G	1000	1220 x 760 x 760	12000
SHQ(F)-3/1-E/G	DHQ(F)-3/1-E/G	1000	1220 x 910 x 610	13000
SHQ(F)-3/2-E/G	DHQ(F)-3/2-E/G	1200	1220 x 910 x 760	14000
SHQ(F)-3/3-E/G	DHQ(F)-3/3-E/G	1500	1220 x 910 x 910	15000
SHQ(F)-4/1-E/G	DHQ(F)-4/1-E/G	1800	1520 x 1220 x 610	17000
SHQ(F)-4/2-E/G	DHQ(F)-4/2-E/G	2200	1520 x 1220 x 760	18000
SHQ(F)-4/3-E/G	DHQ(F)-4/3-E/G	2500	1520 x 1220 x 910	19000
SHQ(F)-5/5-E/G	DHQ(F)-5/5-E/G	5000	1800 x 1500 x 1200	30000

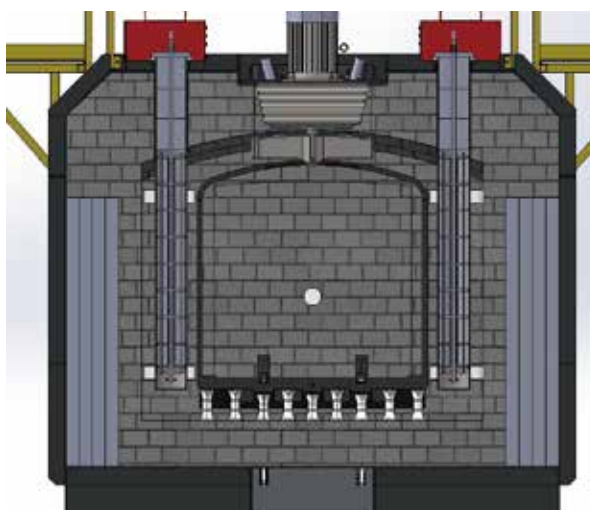
技术特点 TECHNICAL FEATURES

- 区别于传统设计，加热室的加强筋板置于壳体外侧，可以有效减少保温层的热量损失。炉衬由轻质抗渗碳耐火砖及优质保温材料砌筑而成，并加厚保温层，使炉膛保温性能更好，散热更小，更加节能降耗。炉膛两侧装有耐热钢精密铸造而成的气密辐射管，可根据需要选择鼠笼（集束）式电加热元件或燃气加热元件进行加热。
- Different from traditional design, stiffener plates are welded in the outer shell of heating chamber, thus can effectively reduce heat loss of the thermal insulation layer. Furnace lining is made of lightweight anti-carburizing firebricks, high quality insulation materials, and thickened insulation layers, so that the furnace insulation performance is better, more energy saving. Both sides of the furnace are equipped with gas-tight radiation tubes made of precise-casted heat-resistant steel, which can be heated by squirrel-cage (cluster) electric heating element or gas heating element as required.

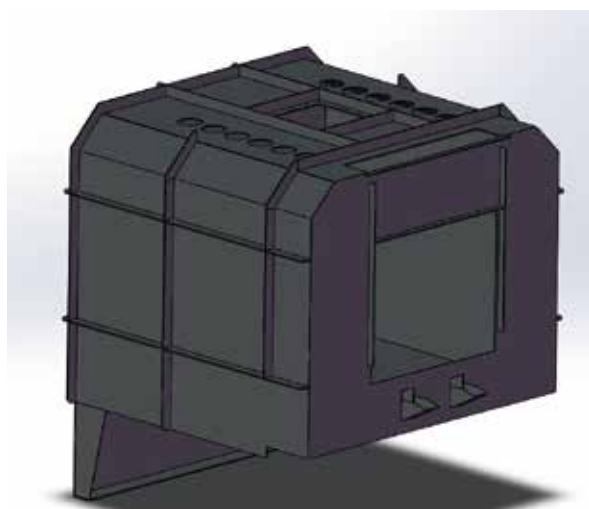
产品线 PRODUCT LINE

箱式多用炉

ATMOSPHERE FURNACE



两侧和炉顶炉衬墙增加纤维钙板进一步提升保温性能
Additional fiber calcium plates on both sides and lining walls on top, further improves thermal insulation performance.



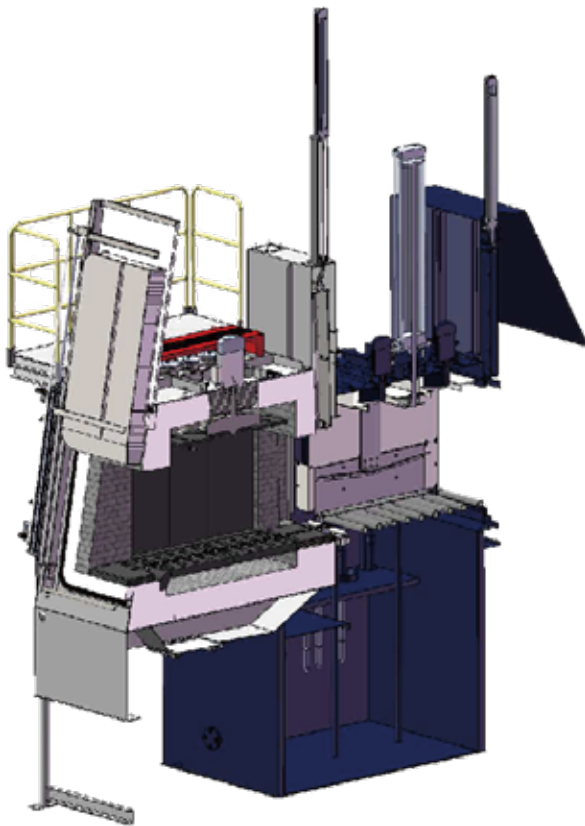
筋板外置结构,保温性能更好
External stiffener plate structure for better insulation performance

技术特点 TECHNICAL FEATURES

- 淬火室进 / 出料门垂直开启, 采用平行压向炉门盘根的新型设计, 确保炉门的压紧和可靠密封。
- 为了确保炉气强有力的循环和良好的热传递, 在加热室的顶部装有与水冷式电机直连的耐热合金气氛循环风扇; 在淬火室, 循环保护气氛通过炉壁进行冷却, 工件通过循环气氛及油冷炉壁带走热量得到冷却。
- 炉料传送采用更平稳可靠的推料方式。传送链分段设计, 淬火区冷链和加热区热链分别由不同材料制成, 冷链传送炉料, 成本低; 热链耐热抗变形, 抗渗碳, 使用寿命长。
- 采用分体设计的碳化硅导流罩、马弗侧板、炉拱和炉底板, 炉膛有效容积更大, 更确保在整个工作区域内都有最佳的炉温均匀性和气氛均匀性。维修时也只需更换损坏件, 大大节约维护时间和成本。
- Furnace door opens vertically, and utilizes a new design of imposing parallel pressure to the door to ensure the door's reliability and air-tight.
- At the top of the heating chamber is equipped with water-cooled atmosphere circulation fan made of heat resistant alloy. In quenching chamber, the circulating atmosphere is cooled by the furnace wall, and the workpieces are cooled by the circulating atmosphere and the oil-cooled furnace wall.
- It adapts pushers for load transfer. Load transfer chains consist 2 segments made of different materials. Cold chains involve charge transfer, while hot chains withstand high temperature and carburizing, serve longer life.
- Sectional silicon carbide (SiC) guide sleeve and hearth plate, increase effective size of furnace chamber, also increase furnace gas and temperature uniformity. When damaged, only needs to replace the damaged pieces, thus greatly saves repair cost and time.



炉膛内部
 Furnace Chamber View



主炉结构
 Furnace structure

- 加大淬火油槽，降低淬火时油温温升，提高工件的淬透性；炉壁油冷、淬火油风冷，避免了冷却水流入淬火油槽的安全风险。
- 独特设计的“加强淬火系统”可以保证油槽内不同位置淬火油匀速分散流动，并有效穿透工件间隙，使各个位置的工件都获得均匀一致的冷却效果。尤其适合低淬透性和淬硬性的低合金钢的淬火。
- 除可选用传统吸热气氛，氮 - 甲醇气氛，氮碳共渗气氛外，还可选用“直渗式”气氛。该气氛不需要气体发生器，将原料气与空气直接注入炉内生成可控气氛。工艺高效，极大节约原料气用量，而且能够保证快速、均匀、可再现的碳传递。
- Enlarged quenching oil tank, for lower oil temperature rising when quenching, thus improves the hardenability of the workpieces. That oil cooling for Furnace wall and air cooling for quenching oil, avoids the dangerous risk of cooling water entering quenching oil tank.
- “Intensified Quench” system guarantees even dispersion and mobility of oil, as well as its effective flow in the gaps between parts, thus all parts receive uniform cooling. It is especially suitable for low alloy steel hardening.
- Besides traditional Endo-gas, Nitrogen-Methanol, nitrocarburising atmospheres, our furnace can also utilize “Direct Injection” process. It involves direct injection of natural gas and air into the furnace chamber without gas generator. Apart from being highly efficient and minimized gas consumption, this process ensures quick, uniform and reproducible carbon transfer.

产品线 PRODUCT LINE

箱式多用炉

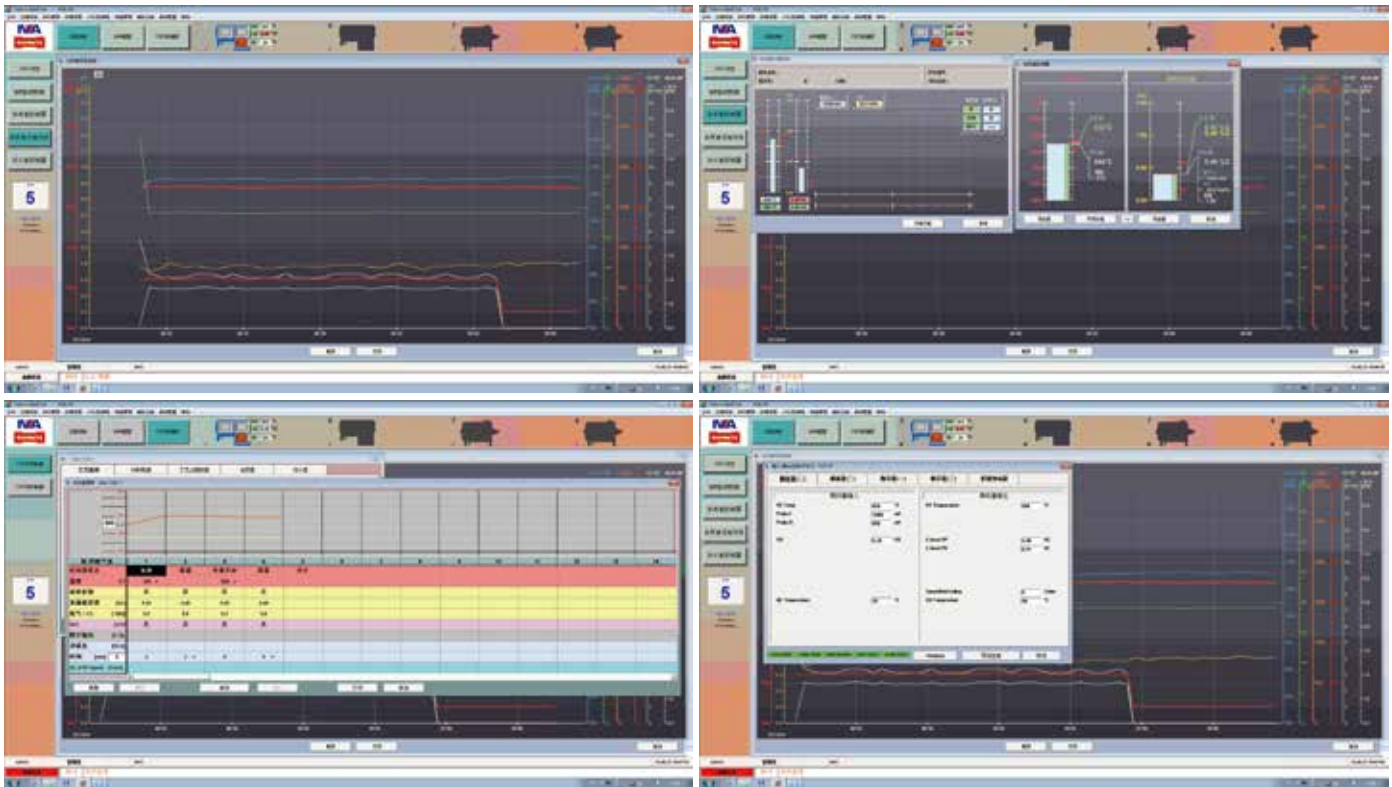
ATMOSPHERE FURNACE

采用德国先进成熟的 Carb-o-MultiCon (CMC) 计算机专家渗碳控制系统用于对多用炉生产线中单个 / 多个多用炉进行温度和碳势的集中控制, 可对整个渗碳过程中的热处理工艺实现模拟、测量、控制、记录和归档, 并连续、实时地计算炉内的碳扩散层和表面碳浓度。该系统最多可以同时计算并控制四个通道。稳定可靠, 操作直观简便, 实现了热处理过程的全智能化精确控制。

The advanced and time-proven Carb-o-MultiCon (CMC) computer expert carburizing control system from Germany is used to centrally control the temperature and carbon potential of single/multiple furnaces in the production line. It can simulate, measure, control, record and archive everything in the whole carburizing process. The carbon diffusion layer depth and surface carbon concentration in the furnace are calculated continuously and in real time. The system can calculate and control up to 4 channels simultaneously. Thanks to its stability and reliability, intuitive and simple operation, of all those realize the full intelligent and accurate control of heat treatment process.

- 渗碳温度、碳势集成控制
- 渗碳热处理过程模拟
- 渗碳、扩散自适应在线控制
- 可定制的过程数据测量、控制、记录和炉料归档
- 多种渗碳气氛类型可选
- 方便操作的工艺程序库和材料数据库
- 用户操作权限管理系统保证重要数据的安全
- 多通道控制系统及多语言界面切换
- 方便用户操作的多项实用辅助功能
- Centralized control of carburizing temperature, carbon potential
- Simulation of carburizing process
- Adaptive online control of carburizing and diffusion
- Tailored process data measurement, control, recording and charge archiving
- Optional for various types of carburizing atmosphere
- Convenient operation of process recipes and material database
- User account management system guarantees the security of important data
- multi-channel switch control system and multi-language switch
- Many other useful auxiliary functions for user convenience





工艺设置及炉子状态监控
Process Setting and Furnace State Monitoring

完备的安全保护措施 COMPLETE SAFETY MEASURES

- 配有淬火室压力及温度监控及显示装置。如电源或保护气体供应发生故障，炉内自动充氮气净化。当炉内温度降至安全点 750°C 以下时或炉子运行失控时，炉内也能自动充氮气。配有手动充氮保护开关，供紧急情况使用。
- 淬火室排气口未点燃时，炉内传送机构不能工作，工件不能进入淬火室。
- 工件在炉内传送未达到规定位置时；淬火油温过高或过低；淬火油面过高或过低，淬火程序均不能执行。
- 热电偶不工作或炉内超温时，安全装置会切断主加热回路，炉子停止加热。
- 淬火油搅拌发生故障时报警，外置式油冷却器发生故障时报警，但淬火程序要执行。
- 炉门火帘未点燃时，炉门不能开启。
- 工件在炉内的传送动作未能在规定的时间内完成，则报警以提示。
- 工件在炉内的传送有保护功能，以免在工作位置上重复装料。
- It equips pressure and temperature monitoring and display devices for quenching chamber. When there's power supply or malfunction of the protective gas supply, the furnace will automatically fill with nitrogen for purification. When the furnace temperature drops below 750 °C or furnace runs out of control, the furnace will also fill with nitrogen. It equips with manual nitrogen charging switch for emergency use.
- When quenching chamber exhaust unburns, furnace transfer mechanism fails, the workpiece shall not go into the quenching chamber.
- When load inside furnace fails to reach the preset position, or quenching oil temperature is too high or too low; or the quenching oil level is too high or too low, the quenching procedure shall not be executed.
- When thermocouples malfunction or furnace chamber over temperature, the safety device will cut off the main heating circuit, stop the furnace from heating.
- When quenching oil string fails, external oil cooler fails, furnace shall alarm, but quenching process shall be executed.
- If flame curtain fails to burn, the chamber door shall not open.
- If the load's movements fail to perform within preset time in furnace, furnace shall alarm.
- There's protective measure for load transfer in furnace, to avoid repeated loading in the working position.

产品线 PRODUCT LINE

预抽真空渗氮炉

EVACUABLE NITRIDING FURNACE

预真空渗氮/回火炉基本参数 BASIC SPECIFICATIONS OF MODEL RH...RVE/G SERIES

炉膛有效尺寸 Load Size	RHN-644-VE	RHN-966-VE/G	RHN-1299-VE/G	RHN-1899-VE/G	RHN-18120-VE/G
长 Length (mm)	600	900	1200	1800	1800
宽 Width (mm)	400	600	900	900	1200
高 Height (mm)	400	600	900	900	1000
最大装料重量 (kg) Max. charging weight	300	600	1500	2500	3000
额定温度 Working temperature(°C)	750	750	750	750	750

预抽真空渗氮炉采用前门装/卸料设计，最高工作温度750°C

可进行以下热处理工艺：

- 渗氮, 可选有 / 无预氧化工艺。
- 氮碳共渗, 可选有 / 无预氧化工艺。
- 渗氮, 可选有 / 无水蒸气后氧化工艺。
- 氮碳共渗, 可选有 / 无水蒸气后氧化工艺。
- 可选 Kn 控制的渗氮和氮碳共渗工艺，用氨裂解气进行 Kn 控制。
- 氮气 / 氨裂解气保护回火。
- 氮气保护下, 温度不超过 750°C 的退火。

Evacuatable Nitriding Furnace utilizes front door for loading/unloading, maximum working temperature is 750 °C

The following heat treatment processes can be carried out:

- Nitriding, optional pre-oxidation process.
- Nitrocarburising, optional pre-oxidation process.
- Nitriding, optional water post-oxidation process.
- Nitrocarburising, optional water post-oxidation process.
- Optional Kn value controlled nitriding and Nitrocarburising (Kn control is realized by ammonia cracking gas).
- Tempering under protective gas/ammonia cracking gas.
- Annealing under protective gas, at temperatures not exceeding 750 °C.



渗氮/氮碳共渗(软氮化)工艺有以下优点

Nitriding/ Nitrocarburising processes have the following advantages

- 很好的表面硬度与耐磨性
- 很高的疲劳强度
- 很高的热强度
- 很低的摩擦系数
- 很好的抗腐蚀性能
- 工件变形很小

- Excellent surface hardness and abrasive resistance
- High fatigue strength
- High thermal resistance
- Very low friction coefficient
- Excellent corrosion resistance
- Very low distortion



技术特点 TECHNICAL FEATURES

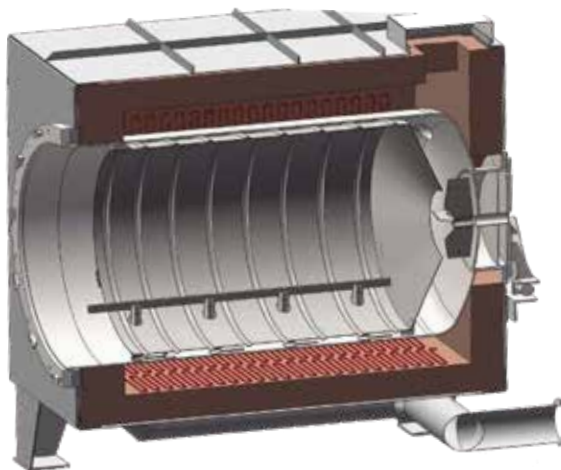
- 全智能化计算机精确渗氮控制系统, 直观, 便捷。
- 可对工件预氧化处理, 提升渗氮效率, 渗层更均匀。
- 渗氮前后可分别抽真空, 提升工件质量和杜绝空气污染。
- 渗氮后可进行缓冷或快冷, 有效减少工件变形或防止针状氮化物析出。
- 可后氧化处理, 提升工件防腐性。
- 可在保护气氛下冷却, 有效防止工件氧化及变形。
- 强制炉气循环, 保证更好的炉温均匀性和气氛均匀性。

- IVANIT / CITROX / ALECS control software helps users achieve intuitive, precise control.
- Optional pre-oxidation treatment for faster nitriding and a better infiltration layer.
- Provides improved surface and internal part quality, as well as no pollution during both vacuum and post-vacuum.
- Optional slow cooling or fast cooling in the furnace for reducing distortion or preventing nitride precipitation.
- Optional post-oxidation treatment for increased anti-corrosive properties.
- Optional cooling under protective gas for anti-oxidation and distortion.
- Compelled furnace gas circulation, guarantees better temperature uniformity and atmosphere uniformity.

产品线 PRODUCT LINE

预抽真空渗氮炉

EVACUABLE NITRIDING FURNACE



电加热渗氮炉内部结构
Internal structure of electric heating nitriding furnace

- 可选外置式内冷系统，将炉气抽出罐体，经水冷换热器冷却后送回炉罐，大大提高冷却效率。
- 另有井式预抽真空渗氮炉，箱式渗氮回火炉可供选择。
- Optional external cooling system, extracts hot gas from the chamber, then sent it back after cooling down by water heat exchanger, which greatly improves the cooling efficiency.
- Additional pit type evacuable nitriding furnaces and box type nitriding furnaces for options.

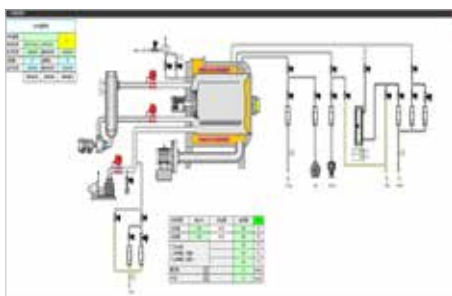
真空系统用于炉罐的快速换气，例如在渗氮或回火工艺开始前将炉内预抽真空，排除炉内空气(氧气)。相比传统的长时间向炉内通保护气(如氮气)以置换空气或废气的方式，预抽真空方式不仅能显著缩短置换时间，省时省气，且换气更彻底。通过预抽真空，使炉内达到负压状态，有利于工件表面污物及清洗剂残留物的蒸发和清除，从而起到进一步清洁工件表面，保证产品质量的作用。

The vacuum system is used for rapid gas extraction from the furnace, such as pre-vacuuming the furnace to remove the air (oxygen) before the nitriding or tempering process begins. Compared to the traditional way of filling protective gas (such as nitrogen) into the furnace for a long time to replace air or waste gas, the pre-vacuum method can not only significantly save the time and gas, but also clean the air more thoroughly. Through pre-vacuuming, the furnace can reach the negative pressure state, which is conducive to the evaporation and removal of the contamination and cleaning agent that reside on the workpiece surface, so as to further clean the surface of the piece and ensure the quality of the product.

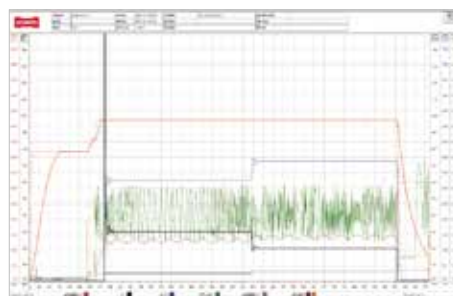




编辑工艺程序
Process Recipe Setting



设备视图
Equipment Overview



工艺曲线记录
Process Recipe Archive



设备配备完备的安全措施。当氮气和冷却水压力正常，后燃装置执勤点火头点燃后，且进行抽真空动作后炉子才能运行工艺程序，气氛面板才能启动；

当遇到停电，炉压异常，热电偶故障，氮气或冷却水故障，点火头异常，裂解器压力异常均会停止工艺，发出声光报警并采取相应的应急处置措施。

The furnace is equipped with complete safety measures. Only when the pressure of nitrogen and cooling water is normal, the post-burner ignition nozzle is burning, and vacuum action is carried out, the furnace can run the process and the atmosphere panel can be operated.

When encountering any of power failure, furnace pressure anomaly, thermocouple failure, nitrogen or cooling water failure, ignition head anomaly, ammonia cracker pressure anomaly, the furnace will stop the process, send out sound and light alarm and take corresponding emergency measures immediately.

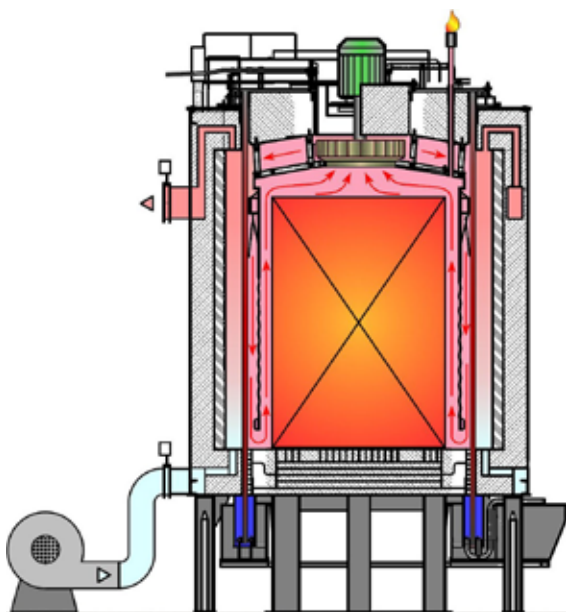
产品线 PRODUCT LINE

井式炉

PIT TYPE FURNACE

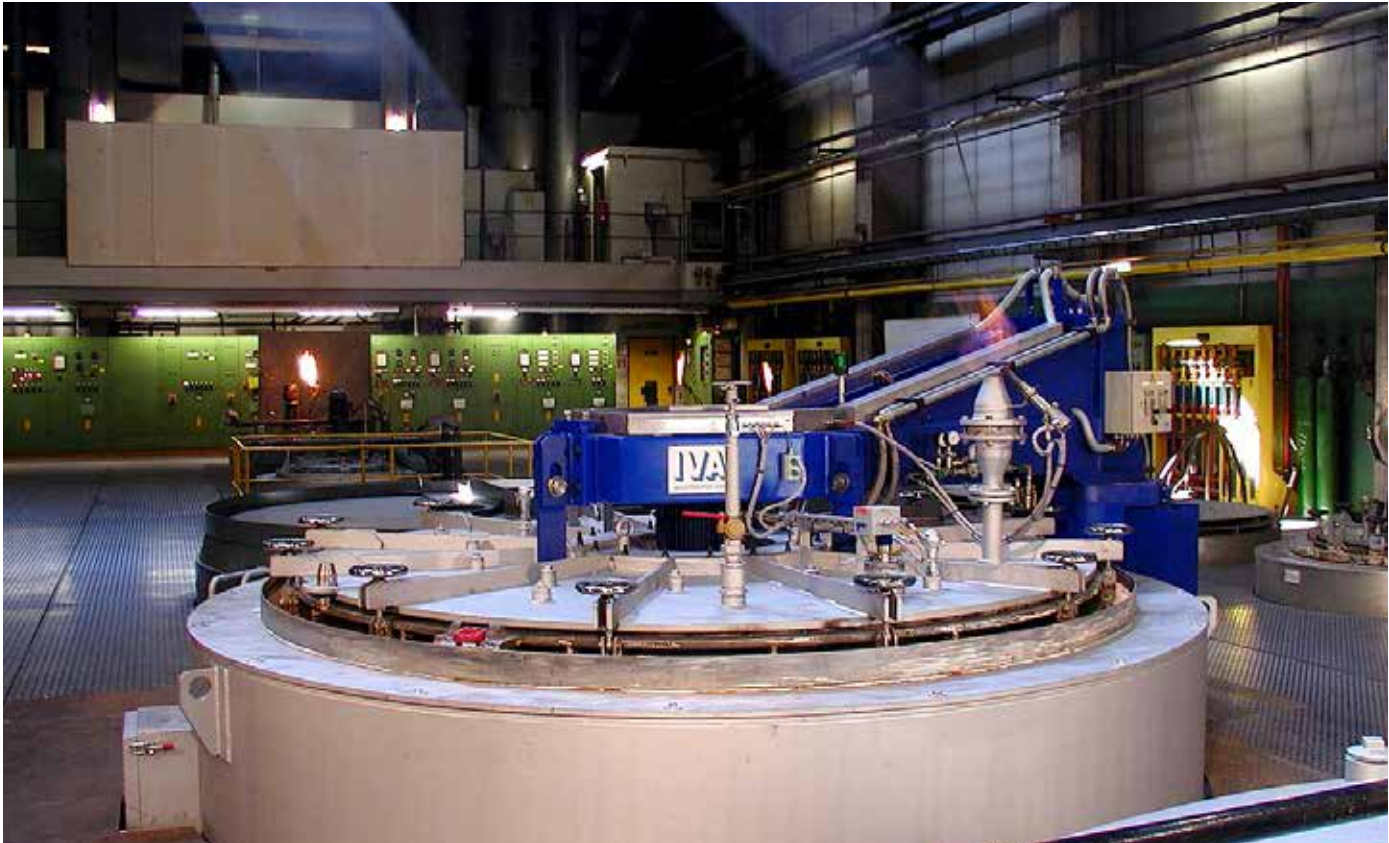
可选有马弗或无马弗设计，有马弗设计气氛和温度均匀性更好，无马弗设计尤其适合特大型工件的渗碳淬火。

Pit type furnaces option for with/without muffle design. With muffle design features better atmosphere uniformity and temperature uniformity, without muffle design especially suits for carburizing and quenching for extra-large loads.



技术特点 TECHNICAL FEATURES

- 用于渗碳，碳氮共渗，渗氮，氮碳共渗，保护气氛下退火，回火等工艺。
- 最大装炉量 5 吨。
- 气加热和电加热方式可供选择。
- 低蓄热式炉衬设计，温度急剧变化承受能力更强，温度控制更精确，同时能耗也更低。
- 全智能化计算机精确控制系统，更直观，更便捷。
- 马弗罐，导流筒，循环风叶可选抗渗氮材料，使用长期稳定。
- 可进行缓冷或快冷，有效减少工件变形或防止针状氮化物析出
- 完善的连锁保护功能，炉盖开启，炉内压力异常，自动关闭加热器或切断电源。
- 预留通讯接口，用户可对炉子数据采集并集中管控。
- 尾气充分燃烧后排放，安全，无污染。
- Suitable for carburizing and carbonitriding, nitriding, carbonitriding, annealing under protective atmosphere, and tempering process etc
- Max.load capacity 5 tons.
- Gas burner and electrical burner for option.
- Low-storage insulation better withstands rapid temperature changes and ensures more accurate temperature control, and even lower energy consumption.
- Unique control system and advanced sensor help users achieve intuitive, precise control.
- Muffle tank, guiding sleeves, circulation fan blades are optioned with anti-nitriding materials for longer service life.
- Optional in furnace slow cooling for reducing distortion or fast cooling for preventing nitride precipitation.
- Safety Interlocks, feature automatic heating shut down or power cutoff when furnace door opens or furnace pressure goes abnormal.
- Reserved communication interface for user's further data collection.
- Exhaust gas is fully burned before discharge, resulting in no environmental pollution.



T···e/g(V)系列井式炉常用型号(特殊型号可按要求制作)

SHAFT FURNACE T..E/A (V) SERIES (ADDITIONAL SIZES ON REQUEST)

常用型号 Model	T9/12 e/g(V)	T12/15 e/g(V)	T17/23 e/g(V)
炉膛有效尺寸 Load Size			
直径 Diameter(mm)	900	1200	1700
高 Height(mm)	1200	1500	2300
装料重量 Charging weight			
Up to 750℃	1500	2500	5000
Up to 950℃	1000	1600	5000
额定温度 Working temperature(℃)	1000/750	1000/750	1000/750

IVA Schmetz热处理生产线自动控制系统

IVA SCHMETZ FULLY AUTOMATIC CONTROL SYSTEM FOR ATM PRODUCTION LINE

为应对热处理行业对大规模，多品种生产的需求，提升热处理品质，降低人工成本，实现热处理行业的自动化、智能化、数字化，IVA Schmetz 为热处理生产线量身打造的全自动控制系统正好满足热处理行业智能工厂的需求。

To meet the heat treatment industry's rising demand for large-scale and multi-variety production, to improve the quality of heat treatment, reduce labor costs, and to achieve the automation, intelligence and digitalization of the heat treatment industry, IVA Schmetz tailor-made the automatic control system for the atmosphere production line, just meet the needs of the smart factory of the heat treatment industry.

技术特点 TECHNICAL FEATURES

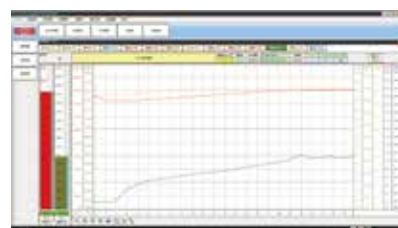
- 设有手动、半自动、全自动三种控制方式；自动控制时仅需操作者激活工艺程序，点击“装料确认”按钮即可，一键完成全部热处理工序。
- 简洁直观的人机界面，类似 CMC 界面。
- 集散式控制，按预设的工艺完成生产，工件在系统内的状态一目了然。
- 全自动的相互连锁，避免误操作造成的人员伤害和设备损坏
- 方便查看程序的历史信息。
- 便于长期存档，备份炉料数据。
- 强化用户权限管理，保证系统数据安全。
- 用户友好性强。可兼容更多我司或其他公司设备，可接入用户数据系统，灵活多样，生产效率更高。
- Manual, semi-automatic, automatic, three control modes. During automatic control, the operator only needs to activate the process and click the "Loading Confirmation" button to complete the whole heat treatment process with one click.
- Intuitive user interface, similar to CMC Process Software.
- The system adapts distributed control, and production is fulfilled according to the preset process, and it's very clear to observe the state of the workpiece in the line.
- Automatic interlockings avoid operator injury and equipment damage caused by misoperation.
- Easy access to program history information.
- Facilitates long-term archiving and backup of charge data.
- Enhanced user management to ensure system data security.
- More user-friendly. Compatibility with more equipment of our company or other companies, easy access to user data system, result in more flexible and diversified, and higher production efficiency.



生产线设备视图
Production Line Overview



生产工艺流程数据库
Production Process Data Base



热处理过程监控
Process Monitoring



数字化设定、显示设备基本参数，如空炉温度、碳势、油温等
Digitalized setting & displaying of equipment parameters, eg. Empty furnace temperature, Carbon potential, oil temperature, etc



热处理工艺程序数据库
Process Recipe Data Base



全线设备管理
Total Equipment Management

配套设备 Ancillary Equipment



回火炉
Tempering Furnace



清洗机
Washer



生产线中的全自动料车
Automatic Loader



棍棒料台
Roller Sequencer

- 清洗机、回火炉、装 / 卸料车、升降台为多用炉生产线中的配套设备,成熟稳定,操作便捷,故障率低。
- 清洗机在工作过程为浸泡、在液槽中上下晃动、清水喷淋、烘干,并自动对清洗液进行油水分离。
- 回火炉是二室设计,后室加热,前室处理工件。通过炉顶导流系统,把热量通过前室底部传输对工件加热等,并通过底部分板可调整回火炉达到最佳的炉温均匀性。
- 生产线配置的转移装 / 卸料车,装料和卸料都为推送料形式,推送机构不易变形,双速行走,运行平稳、安全。
- 升降台为方便装料和卸料,设计中充分考虑了易于装卸料的高度和料盘(料框)在滑辊上的安全性,配有安全装置。
- Washers, tempering furnaces, loaders, sequencers are ancillary equipment for atmosphere furnace production line, which feature proven stable performance, convenient to operate, and very low failure rate.
- Cleaning machine's working processes are soaking, agitating up and down in the liquid tank, water spraying, drying, and with automatic separation function of oil and water in cleaning liquid.
- Tempering furnace consists two chambers, the rear one is for heating, the front one is for processing workpieces.
- Through the top of furnace is gas guiding system. The heat transfers through the bottom of the front chamber for heating workpieces, to achieve the best temperature uniformity.
- Loaders adapt pushers for loading and unloading, which features its robust mechanism, double-speed, smooth and safe operation.
- In order to facilitate loading and unloading, the sequencer takes into full consideration the height for convenient loading/unloading and the safety of the tray on the sliding roller, and is equipped with safety devices.

真空气淬炉系列

VACUUM GAS QUENCHING FURNACES

B8_T

凭借专利旋转流高压冷却技术，可提供无与伦比的淬火均匀性。B8_T 系列真空炉可用于一般热处理、高温钎焊，尤其擅长精密淬火处理。

The BMI vacuum furnaces of the B8_T family are designed for the main heat treatments and brazing at high temperature and especially for sensitive quenching treatments thanks to the rotating flow cooling patented by BMI, which provides incomparable quenching uniformity.



VSE8_T

VSE8_T 系列底装料立式真空炉，主要用于垂直装料的一般热处理与高温钎焊。全自动炉底装料系统，满足装卸精密工件需求（紧挨炉底正前方装卸料，方便紧凑）。该炉型属于 B8_T 系列卧式炉的立式版本。

The vertical lift-sole furnaces of the VSE8_T furnace family are designed for the main heat treatments and brazing at high temperature of vertical loads. The completely automatic system of movements of the hearth facilitates the loading of delicate parts to be handled (front cutting edge clearance angle of the sole). These furnaces are the vertical versions of the horizontal vacuum furnaces of the B8_T furnace family.



BMICRO

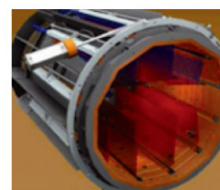
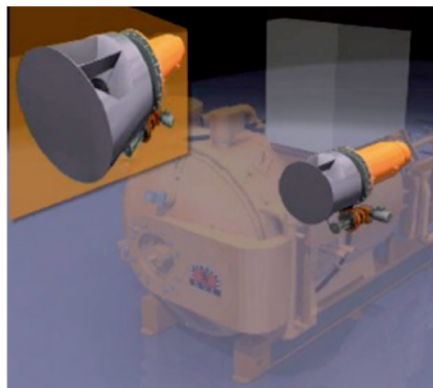
BMICRO 是一款紧凑型真空炉，专门为小型综合生产、实验室、研发中心、大学，和所有希望掌控其产品的制造及真空热处理工艺的企业所研发。该款小型真空炉成本低廉，维护简便，是完美替代热处理代加工的解决方案。

BMICRO is a compact vacuum furnace designed for integrated small productions, laboratories, Research and Development centers, universities, etc. and for all companies that wish to control all of their manufacturing processes, including vacuum heat treatment. Thanks to its low cost and reduced maintenance charges, small vacuum furnace is an economical alternative to subcontracting.



技术亮点 Focus

旋转流冷却技术提供了无与伦比的快冷均匀性。该技术已在众多使用 B8_T 系列真空炉的客户工厂得到了充分的验证。



真空油淬炉系列

VACUUM GAS QUENCHING FURNACES

B5_TH

B5-TH 系列单室真空油淬炉，加热室与淬火室整合在一起，炉内炉料传送由结实耐用的链式系统全自动完成。紧凑的结构，使整个传输可在约 15 秒完成，带来更好的产品结果重复性。同时，相比传统炉料传送方式，带有可控气氛保护，更安全，工件质量更好。

The BMI vacuum furnaces of the B5_TH family are designed for vacuum oil quenching applications. The heating chamber of this single-chamber furnace is integrated in the quenching chamber of the equipment. The load transfer is fully automatic and is carried out by a robust chain system that permits a transfer time in the order of approx. fifteen seconds. The installation fully automatic allows perfect reproducibility of the results and offers an economical and safely alternative to the conventional transfer furnace solutions, with a controlled atmosphere.



B6_TH

B6-TH 系列多用途双室真空炉，可同时用于真空气淬和真空油淬。该设计使单一设备可以应对非常多不同钢种的热处理，紧凑的设计也大大节约运行及设备场地的支出。

The BMI vacuum furnaces of the B6_TH family are multipurpose two-chamber vacuum furnaces for oil and gas quenching. The possibility offered by vacuum gas quenching thus helps to treat a large variety of steel grades. This furnace has a simple and compact design that limits operating and heat treatment costs as well as ground space.



P16_TH

P16-TH 系列卧式双室真空油淬炉，为处理大型工件设计，同时也为大批量生产提供专属可靠的解决方案。

The BMI vacuum furnaces of the P16_TH family are two-chamber vacuum oil quenching furnaces for the treatment of large loads as an alternative to atmospheric transfer furnaces. This furnace offers a solution designed for mass-production industries through exclusive and reliable solutions.



V6_TH

V6-TH 系列立式双室真空油淬炉，P16-TH 系列炉型立式版本，专门为处理大型工件设计，尤其适合处理如飞机起落架类似的长、重型工件。

The BMI vacuum furnaces of the V6_TH family are two-chamber vertical vacuum oil quenching furnaces for the treatment of large loads as an alternative to atmospheric pit and shaft furnaces. These furnaces are the vertical versions of the vacuum furnaces of the P16_TH family and are particularly well adapted for the treatment of any long and heavy parts for example landing gears.



低温真空炉系列

LOW TEMPERATURE VACUUM FURNACES

B5_R

B5_R 系列低温真空炉，是 B8_T 或 VSE8_T 淬火炉的理想搭档。该炉型尤其适合于真空回火，真空退火，时效，去应力等工艺...

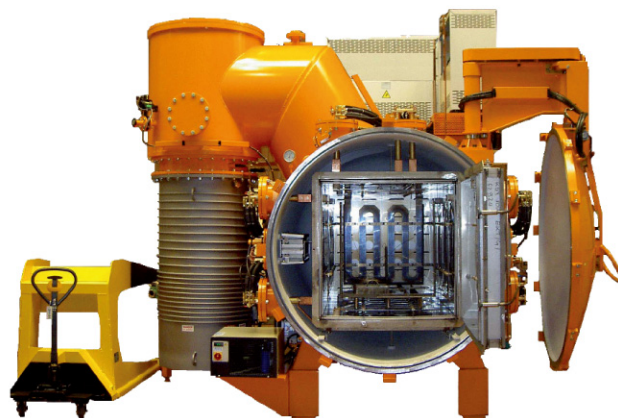
The BMI vacuum furnaces of the B5_R family are designed for main low-temperature heat treatments and are often the perfect supplement to B8_T or VSE8_T hardening furnaces. These furnaces are particularly well suited to inert gas convection treatments after vacuum purge such as: tempering, annealing, ageing, stress relieving...



BA5_

BA5_ 系列低温真空炉专门为真空铝钎焊设计，可选 6 区独立控温，温度均匀性可达 $\pm 3^{\circ}\text{C}$ 。

The BMI vacuum furnaces of the BA5_ family are specifically designed to meet the requirements of aluminium brazing under vacuum conditions, and complete the range of brazing and sintering furnaces offered by BMI (B5_T and B5_TM furnaces).



特定设备

SPECIFIC EQUIPMENTS

技术亮点 Focus

B53IVD (B5_R 系列真空炉的衍生炉型) 真空涂铝炉，应对批量小型工件或单个大型工件生产都可胜任。



高温真空炉系列

HIGH TEMPERATURE VACUUM FURNACES

B5_T

B5_T 系列真空炉用于高温真空处理，无需快速冷却（可加压至最高 2bar abs）的工艺。该炉型适用于真空退火，时效，钎焊及烧结。

The BMI vacuum furnaces of the B5_T family are designed for the main high-temperature heat treatments that do not require high cooling rates (high pressure of up to a maximum of 2 bars abs can be applied to the equipment). These furnaces are perfectly suited for the applications of vacuum annealing and ageing as well as brazing and sintering.



B5_TM

B5_TM 系列真空炉以 B5_T 真空炉为设计原型，专门为真空烧结，尤其是金属注射成型 (MIM) 研发。除了配备大尺寸真空泵组外，该系列真空炉还可以在最高 1500°C 的温度运行，并可选石墨热区或金属热区（钼与不锈钢热区）。

The B5_TM vacuum furnaces have been specifically designed on the basis of B5_T vacuum furnaces especially for MIM (Metal Injection Molding) vacuum sintering. In addition to the over-sized pumping units, the B5_TM vacuum furnaces, designed for operating at temperatures as high as 1500°C, are available with graphite or metal insulations (superpositions of molybdenum and stainless steel shields) according to the sensitivity of the alloys to be sintered.



特定设备

SPECIFIC EQUIPMENTS

技术亮点 Focus

B59T700型真空炉为钛合金焊接组件去应力设计，炉膛有效尺寸 2500x1500x7000mm，配有全金属热区和4台真空泵组，代表了 B.M.I. 生产的最大尺寸炉型。



专业全面的热处理工艺技术

THERMOCHEMICAL AND SPECIAL TREATMENTS

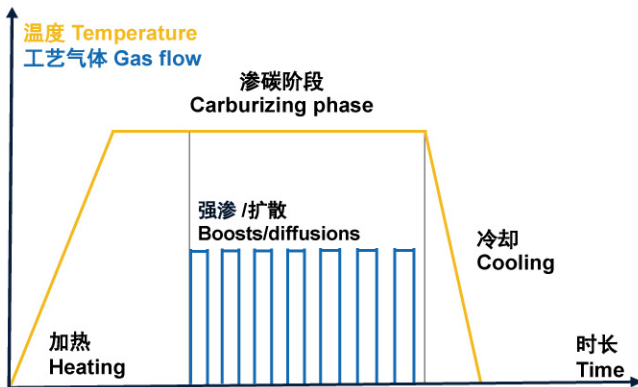
ALLCARB®真空低压渗碳

ALLCARB® Low-pressure Carburizing

已经成功商用近 30 年的 ALLCARB® 低压渗碳系统在所有高温炉型都可选配。它创新地使用不饱和烃作为渗碳载体，能让如细孔内部都能达到出色的渗层深度。简洁稳定的全智能的计算机控制，使工艺编制更简单，无需过多调整。现有的所有渗碳和碳氮共渗工艺都可以用 ALLCARB® 低压渗碳系统实现，在不锈钢和构造钢渗碳方应用也能达到很理想的效果。

Used commercially for nearly 30 years, ALLCARB® low-pressure carburizing is ready to equip in all BMI high temperature furnaces. It creatively use unsaturated hydrocarbons as carburization gas, provides excellent results especially in deep penetration in the smallest bores. Intuitive, precise automated control system simplifies programming and reduces adjustment.

All current carburisation and carbonitriding applications can be treated in low pressure due to ALLCARB®. Very interesting results are also obtained on much more specific applications such as carburisation of stainless steels or construction steel with very high depths.



ALLNIT®低压渗氮

ALLNIT® Low-pressure Nitriding

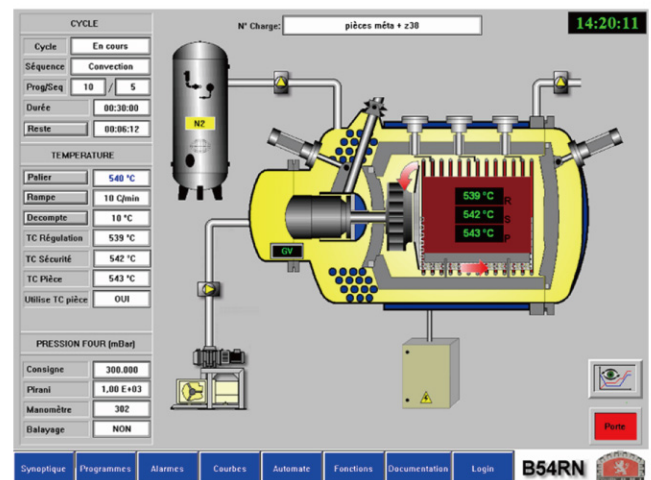
作为 B5_R 系列回火炉的选配功能，使用更灵活，渗氮效率更高更精准。通过精准调控渗氮气氛的压力，对炉料心部工件的沟槽及孔的渗氮也可以轻易实现，尤其是密集装料及大型工件。B5_R 出色的产品性能保证了渗氮及氮碳共渗优良产品均一性，工艺周期短，氨气消耗量只有常规气体渗氮的 25%，更高的白亮层及渗氮层的致密度，及出色的结果重复性。

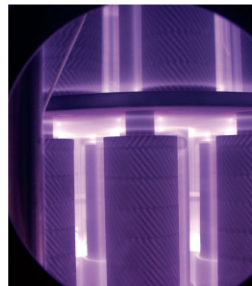
应用涵盖所有传统渗氮领域，机械部件耐磨，耐腐蚀 (ALLNIT-OX® 后氧化工艺实现)，热作工具 (模具、冲压件、紧固件、挤出或注射喷嘴等)，冷作工具和高速钢切削工具等都有优异的表现。对不锈钢和钛合金的渗氮也有理想的效果。

ALLNIT® is an option that allows providing the B5_R range of furnaces, already highly effective in tempering, with the low-pressure nitriding function. The user thus gets equipment with latest technology that is flexible, productive and precise.

The original ALLNIT® method works on the principle of using reduced pressure of an ammonia based nitriding atmosphere. Extreme penetration into cavities and even within the load makes it very easy to implement, specifically with the possibility of very dense loads and bulk loads. Association with the proven thermal homogeneity of the B5_R range guarantees limited cycle times and remarkable reproducibility of the nitriding or nitrocarburising results.

The applications cover all conventional nitriding fields: mechanical components subjected to friction, to rolling and/or to corrosion (through the ALLNIT-OX® post-oxidation process), hot work tools (molds, dies, punches, screws and extrusion or injection nozzles, etc.), cold work tools (shears, combs roll, etc.) and cutting tools with excellent results on high speed steels.





离子渗氮

Plasma nitriding

VI6_ 系列钟罩式冷壁立式炉配备等离子渗氮功能。该炉型设计紧凑, 非常适合工业应用。可选配第二炉底, 该设计可以在很短的时间内完成工件装卸料, 大大提高生产效率。

工件放置在最新一代研发的等离子发生器的阴极, 炉体作为阳极。通过中性和反应气体低压放电而生成的等离子体围绕在工件周围, 进行无氨渗氮, 工件表面活化, 渗氮效率更高。优异的表面钝化的效果使其也可以处理不锈钢以及其他非传统材料。

在特定的应用场景, 离子渗氮也可以替换为 ALLNIT® 低压渗氮。这两种渗氮工艺实际上是补充性的, 我们将根据您的实际需求推荐最佳方案。

This method is offered on the VI6_ line of vertical furnaces with dome and cold walls, exclusively dedicated to plasma nitriding. This equipment, which is very compact and extremely suitable for industrial applications, integrates the dome handling system and in some cases two furnace shelves to allow their loading and unloading during concurrent operation time.

The load is placed at the cathode of a latest generation plasma generator and the furnace at the anode. The plasma, thus created around the load by electric discharge under reduced pressure of neutral and reactive gases, enables nitriding without ammonia, with greater ease of freeing the surfaces. The effectiveness of the depassivation of surfaces can also treat stainless steels and other unconventional materials.

Depending on the application, low pressure nitriding may prove to be an interesting alternative to ALLNIT® low pressure nitriding. These two processes are actually complementary and our teams will advise you in choosing the one that is most suited to your needs.

COOL PLUS, 低温深冷处理

COOL PLUS, sub-zero cryogenic treatment

根据不同应用与材料, 对工件进行低温深冷处理, 可以完成回火结构的转变。深冷处理通常在淬火与回火工艺之间进行, 能够显著减少残余奥氏体含量, 从而获得更小的变形量, 更高的硬度, 更好的耐腐蚀能力, 更长的使用寿命。

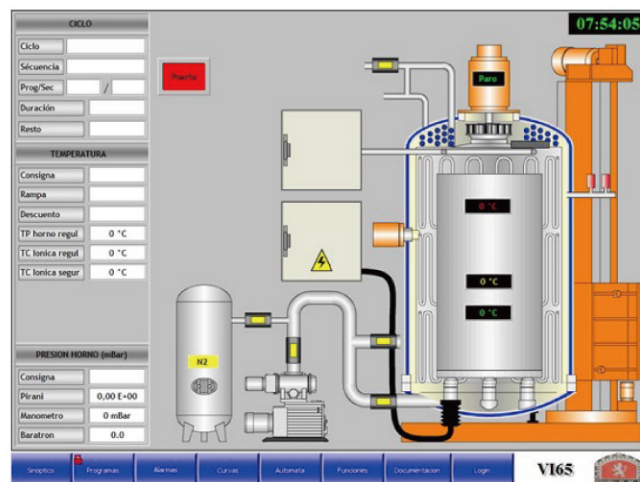
B5_R 系列真空炉上可以选配深冷功能, 该款真空炉以其出色的回火性能世界闻名。最低温度可达 -120°C, 满足绝大部分深冷处理的需求。

各个炉型的基础功能都可通过 GRAPHITIL® 软件界面进行编程, 使用便捷, 安全可靠。

Depending on the application and material, cryogenic treatment of steels allows completing the transformation of the tempered structures. Usually performed between the quenching and tempering operations, it allows reduction in the residual austenite content, thereby stabilising the part both mechanically and dimensionally.

This feature is available as an option in furnaces of the B5_R range, already internationally recognised for their tempering performance. Supplying the furnace with liquid nitrogen injects vaporised nitrogen at very low temperature into the work chamber in a controlled manner. The convection principle is identical to the one used in tempering and helps in achieving production temperatures of -120°C, thus covering most needs of the sub-zero process.

All features of the base furnace are naturally available and programming through our GRAPHITIL® interface still allows a user-friendly, reproducible and safe use of the machine.



炉型系列及主要参数

FURNACES RANGE

	装料方式 Type	炉料规格 Charge load				标配参数 Standard			选配选项 Options	可实现工艺 Processes
型号 Model	卧式 / 立式 Horizontal/Vertical	装炉量 Weight (kg)	宽度 Width (mm)	高度 Height (mm)	深度 Depth (mm)	最高温度 Max. Temp. (°C)	真空度 Vacuum (mbar)	冷却压力 Cooling pressure (bar)	主要选配选项 Main options	Allcarb® 低压渗碳 Allnit® 低压渗氮 *Cool Plus® 深冷工艺
B83T	卧式 Horizontal	200	450	450	600	1250	5×10 ⁻²	5	对流加热 Convection 5×10 ⁻⁶ mbar 12 bar Max.1350/1500°C 全金属热区 Full Metal hot zone	Allcarb® 钎焊 Brazing
B84T		600	600	600	900					
B85T		1000	900	700	1200					
VSE83T	立式 Vertical	300	600	600		1250	5×10 ⁻²	5	对流加热 Convection 5×10 ⁻⁶ mbar 12 bar Max.1350/1500°C 全金属热区 Full metal hotzone	ALLCARB® 钎焊 Brazing
VSE84T		800	900	900						
VSE84T120		1000	900	1200						
VSE84T150		1200	900	1500						
VSE85T		1300	1200	1200						
VSE85T150		1800	1200	1500						
VSE86T		2000	1500	1500						
VSE86T200		3000	1500	2000						
BMICRO 20/30	立式 Vertical	20	200	300		1250	5×10 ⁻²	5	对流加热 Convection 5×10 ⁻⁶ mbar	ALLCARB®
BMICRO 30/45		50	300	450						
B53TH	卧式 Horizontal	200	450	450	600	1050	5×10 ⁻²			ALLCARB® 真空油淬 Oil Quench
B54TH		600	600	500	900					
B63TH	卧式 Horizontal	200	450	400	600	1250	5×10 ⁻²	1.2	5×10 ⁻⁶ mbar 气淬 (6 bar) Gas Quench	ALLCARB® 真空气淬 / 油淬一体 Gas/Oil quench
B64TH		400	600	500	900					
P164TH	卧式 Horizontal	800	600	600	900	1050	5×10 ⁻²	1.2	对流加热 Convection	ALLCARB® 双室油淬 2-chamber Oil Quench
P165TH		1200	900	800	1200					
V64TH160	立式 Vertical	1200	900	1600		1050	5×10 ⁻²	0.9	对流加热 Convection 5×10 ⁻⁶ mbar	ALLCARB® 双室油淬 2-chamber Oil Quench
V66TH300		2000	1500	3000						
B53R	卧式 Horizontal	200	450	450	600	750	5×10 ⁻²	1.2		ALLNIT® *COOL PLUS®
B54R		600	600	600	900					
B55R		1000	900	700	1200					
B56R		1500	1000	1000	1500					
BA53	卧式 Horizontal	150	450	450	600	700	5×10 ⁻⁶	1.2		铝钎焊 Al Brazing
BA54		300	600	600	900					
BA55		400	900	900	1200					
BA55-150		400	900	900	1500					
B53T	卧式 Horizontal	200	450	400	600	1250	5×10 ⁻²	1.4	5×10 ⁻⁶ mbar > 1.4 bar Max.1350/1500°C 全金属热区 Full metal hot zone	ALLCARB® 去应力 Stress Relieving
B54T		600	600	600	900					
B55T		1000	900	700	1200					
B56T		1500	1000	1000	1500					
B57T		2000	1200	1200	1800					
VI63	立式 Vertical	80	500	500		600	5×10 ⁻²	0.9	第二炉底 Second sole	离子渗氮 Plasma Nitriding
VI64		400	600	1000						
VI65		1500	850	1500						
VI66		1500	1050	1500						

* 如需了解其他炉型参数, 请与我们联系。

* For any other dimensions or useful loads, feel free to contact us.

客户第一，服务至上

CUSTOMER SERVICE AND SPARE PARTS

为确保 BMI 真空炉更加稳定可靠的运行, 我们致力于提供最及时、专业的技术支持与服务。

现场维护之前, 请先致电联系我们, 对设备和现场进行必要的评估。凭借高品质的服务与丰富的国际支持经验, BMI 80% 的业务是在国际市场上实现的。

因此, 无论 BMI 真空炉在世界何处安装, 我们都可以确保我们设备的最佳运行。

近 80 年的丰富经验, 可以满足您对真空炉的一切需求, 并为您提供全套个性化的系统的安装服务。

我们的服务项目包括:

- 新设备调试
- 设备交付培训: 操作, 维护保养与工艺技术
- 设备升级, 确使其符合最新标准(NADCAP、DMP11 等)
- 进行预防性维护与检修 - 签订维护合同 - 使用氦光谱仪泄漏检测
- 使用经认证的设备进行测量、检查与校准
- 通过专门的技术支持为客户提供专业帮助
- 工艺技术支持与优化
- 设备搬迁
- 二手 BMI 设备翻新与维修
- 所有类型真空炉的维修, 包括非 BMI 生产炉型(热区、炉壳等)
- 旧炉型的电气与控制系统升级(更换电气柜、控制系统等)
- 配件与辅助配套设备(料车、气体缓冲罐、冷却水系统等)

In order to provide our clients with an optimal rate of availability and productivity of BMI vacuum furnaces, we undertake to share our expertise with our clients and to intervene as quickly as possible.

Before any on-site intervention, an analysis is carried out by telephone or by modem (if the furnace is equipped with it).

Thanks to our competent customer service and our international experience, BMI realizes 80% of its business on the international market. We can thus assure you that your furnaces will operate in an optimal manner, no matter where they are installed in the world.

Our experience helps us to guide you in defining the additional requirements of the furnaces and to offer you as well as to install turnkey systems.

The intervention programme of our customer service includes :

- Commissioning the new furnaces
- Training your staff as regards the use, maintenance and metallurgical techniques
- Upgrading the installations to adapt the furnaces to new standards or their variations (NADCAP, DMP11...)
- Curative and preventive maintenance - maintenance contracts - leak detection with helium spectrometer
- Measurements, verifications and calibrations with certified equipment
- Assistance via our technical support dedicated to our customers
- Optimization of industrial process and metallurgical technical support
- Removal of turnkey installations
- Repairing of BMI equipment bought second hand
- All types of repairs (heating chambers, frames, etc.)
- Electrical and electronic data processing upgrading of old furnaces (replacement of electrical control cabinets and piloting and supervision systems)
- Spare parts and peripherals (loader, gas buffer tank, Chilled water closed circuit)



德国 Germany



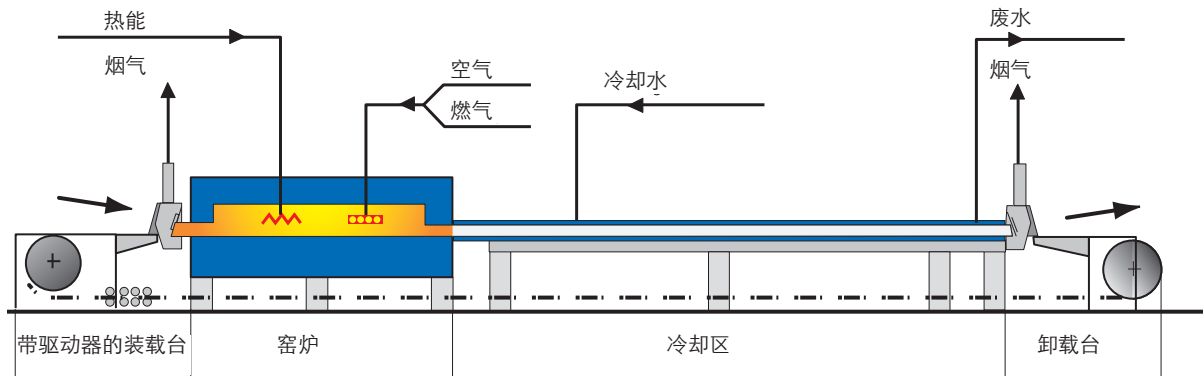
泰国 Thailand



俄罗斯 Russia

连续式无马弗炉

在保护气氛下对低碳钢和铜制造的机械部件进行热处理。



特殊窑炉特征：

- 输送系统采用传送带或辊道炉床
- 加热：
电加热或燃气加热
- 热区无马弗
- 通过集成式保护气体发生器产生保护气氛
- 由于在窑炉内产生保护气体，从而节省能源

选项：

- 氮气，氢气
- 氮气



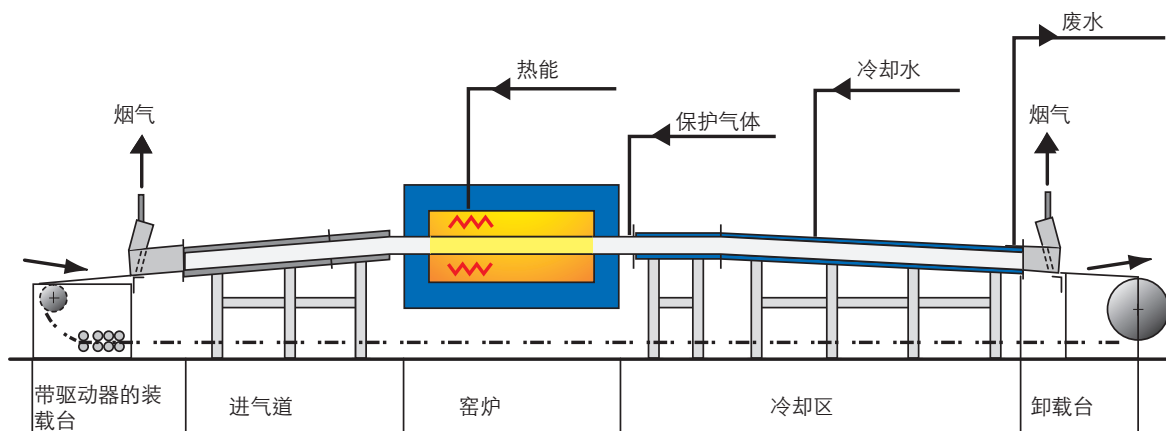
尺寸：

输送系统宽度	最大 1.300 mm
总体高度	最大 300 mm
加热区长度	最大 10.000 mm
工作温度范围	500 至 1.150 °C

根据请求可提供特殊尺寸。

连续式无马弗炉

在保护气体气氛下对容易氧化的碳化钢合金（不锈钢、工具钢）和铜合金（黄铜等）制造的机械部件进行热处理的连续式炉。



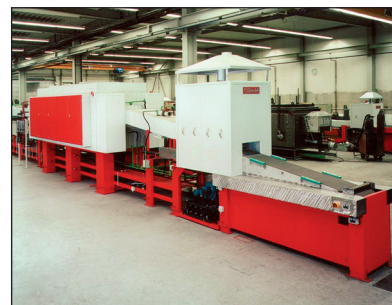
附件

适用于两种窑炉

- 窑炉参数的可视化系统、计算机控制和连续记录
- 窑炉气氛的自动控制和/或监测
- 利用保护气体的数量根据部件高自动设置装载和卸载门的高度（马 勒专利）
- 加热区后的气体淬火系统
- 对流冷却区
- 自动气流调节控制
- 冷却水二次冷却系统
-及其他

特殊窑炉特征：

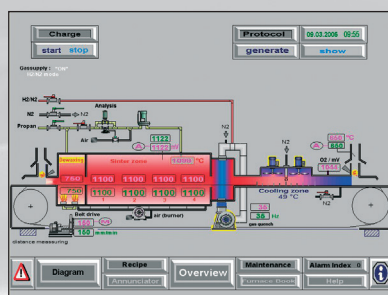
- 水平或桥式炉设计
- 加热：
电加热或燃气加热
- 热区有马弗
- 保护气体：
氢气、氮气或裂解氨气
- 气氛分区



尺寸：

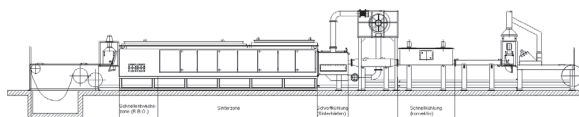
输送系统宽度	最大 1.200 mm
总体高度	最大 500 mm
加热区长度	最大 8.000 mm
工作温度范围	500 至 1.150 ° C

根据请求可提供特殊尺寸。



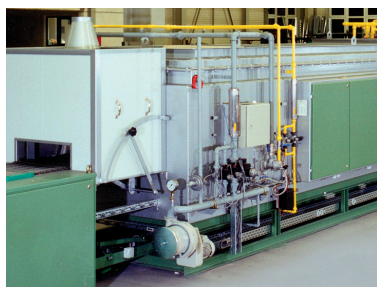
烧结炉

马勒烧结炉以其技术和构造设计令人信服：



- 快速脱蜡区

通过控制压缩空气的添加量，可在混乱气流中快速、均匀地对烧结部件进行加热和脱蜡



从部件中逸出的蜡蒸汽会与烧结区的保护气氛一起燃烧

- 烧结区

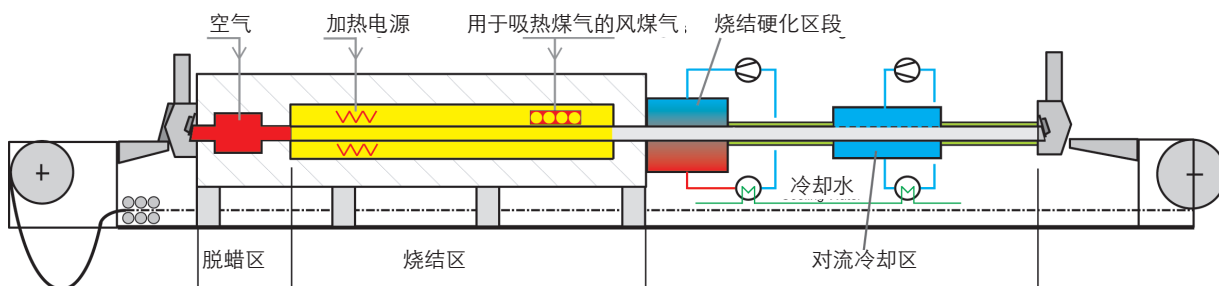
陶瓷马弗为特殊几何形状，使用寿命极长。

- 加热：电加热或通过陶瓷换热燃烧器加热气体。

- 保护气氛：吸热煤气
烧结区内置的保护气体发生器会产生运行所需的吸热煤气。

- 工艺控制

采用烧结区内置的氧传感器自动测量并调节所生成的吸热煤气中的含碳量，从而确保烧结部件的质量持续稳定并可复制。独立于皮带负载，直接记录皮带速度，从而监测烧结期。另外，还监测冷却区内的窑炉气氛。



节约高达 50% 能源。

根据客户要求或基于应用，我们可以制造具有长脱蜡区的间接加热式马弗炉。

氮气/氢气

由于配有附加气体进给装置，所有烧结炉亦可使用 N_2/H_2 。

- 气体平衡的控制

完全自动化控制窑炉与窑炉出口之间保护气氛的分布，并防止外部空气进入。

- 对流冷却区

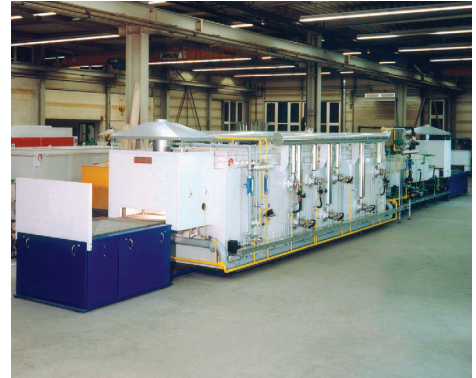
大幅度缩短冷却区的长度，进而缩短整个窑炉的长度。

我们的技术 - 您的优势

技术数据

摘自我们的项目（有效尺寸）：

皮带宽度 (mm)	烧结区长度 (mm)	生产能力 (kg/h)	窑炉长度 (m)
300	3000	130	16
300	4.500	190	20
450	4.500	290	19
450	5.250	330	20
600	5.250	440	21
600	8.000	670	26
1.000	6.000	830	23



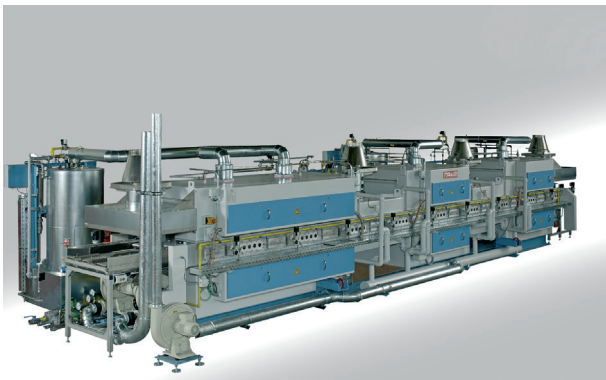
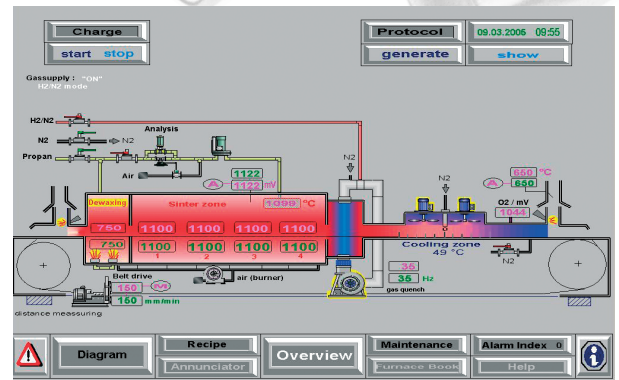
烧结硬化和回火

具有足够备用能力的大尺寸风机和换热器可实现最快冷却速度。由于配有流量优化设备，低温气流会在整个皮带宽度范围内均匀覆盖粉末金属部件。

此外，烧结炉还可以选配“回火模块”。

工艺可视化

- 工艺状况可视化
- 工艺数据记录在硬盘中
- 利用窑炉参数绘制图形
- 适用于各种烧结工艺的不同方案
- 报警会显示修复故障的说明
- 窑炉手册中提供维护历史记录和建议
- 调制解调器连接



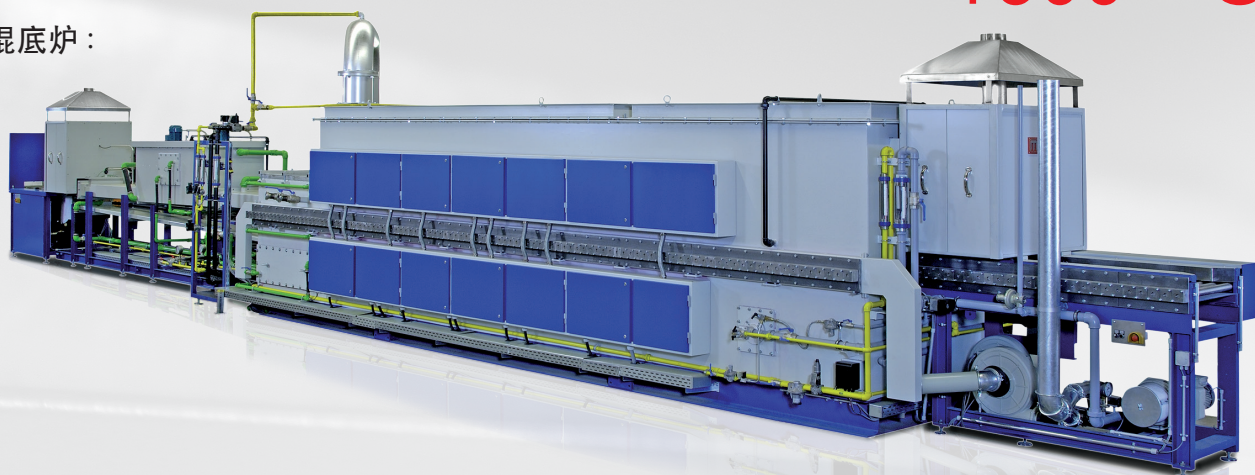
马勒工业窑炉专为客户设计，各型号系列均为定制。

马勒售后服务关注所需备件以及马勒和第三方产品的维护。

高温烧结

1300° C

辊底炉：

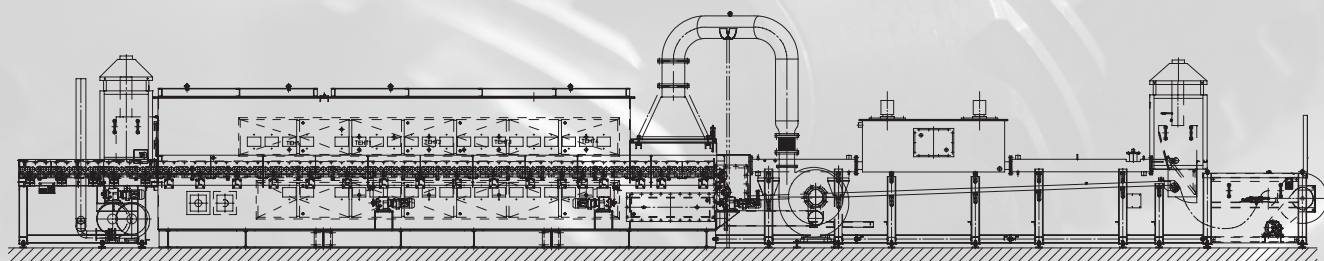


优势

- 生产能力高
- 设计紧凑
- 能耗需求低
- 温度均匀性优越
- 维护成本低，设计简单
- 适用于多种应用

特征

- 有效宽度：定制
- 生产能力：最高 500 kg/h
- 气氛：100% 氢气或 N_2 /混合气体
- 温度：1300° C 及更高温度



蒸汽氧化炉

优势

- 生产能力高
- 氧化层均匀
- 电加热或天然气加热
- 温度均匀性优越
- 多重功能集一身：：
氧化和低温热处理
- 公认的马勒品质



特征

- 皮带宽度：定制
- 生产能力：定制
- 气氛：蒸汽或氮气

铝材烧结炉

优势

- 生产能力高
- 温度均匀性优越
- 根据 T1-T6 进行热处理
- 公认的马勒品质
- 批量生产质量久经考验



特征

- 皮带宽度：定制
- 生产能力：定制
- 气氛：氮气



浙江东源智造有限公司旗下拥有德国益发 (IVA)、德国施迈茨 (SCHMETZ)、法国 B.M.I. 和德国马勒 (MAHLER) 等热处理品牌。集团拥有近80年的热处理研发、制造经验，全球400多名员工在5个研发制造中心，产品包括各式真空炉、气氛炉以及渗氮炉等。致力于为航空航天、汽车、商业热处理、能源、医疗和工模具等领域的客户提供优质、高性价比的技术和服务。

Zhejiang Dongyuan Intelligent Manufacturing Co., Ltd. owns a number of heat treatment brands including Germany's IVA, Germany's SCHMETZ, France's B.M.I., and Germany's MAHLER. The group has nearly 80 years of experience in the R&D and manufacturing of heat treatment, with more than 400 employees worldwide across 5 R&D and manufacturing centers. Its products include various types of vacuum furnaces, atmosphere furnaces, and nitriding furnaces, etc. The company is committed to providing high-quality and cost-effective technologies and services for customers in the aerospace, automotive, commercial heat treatment, energy, medical, and tool and die industries, among other fields.

浙江东源智造有限公司

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