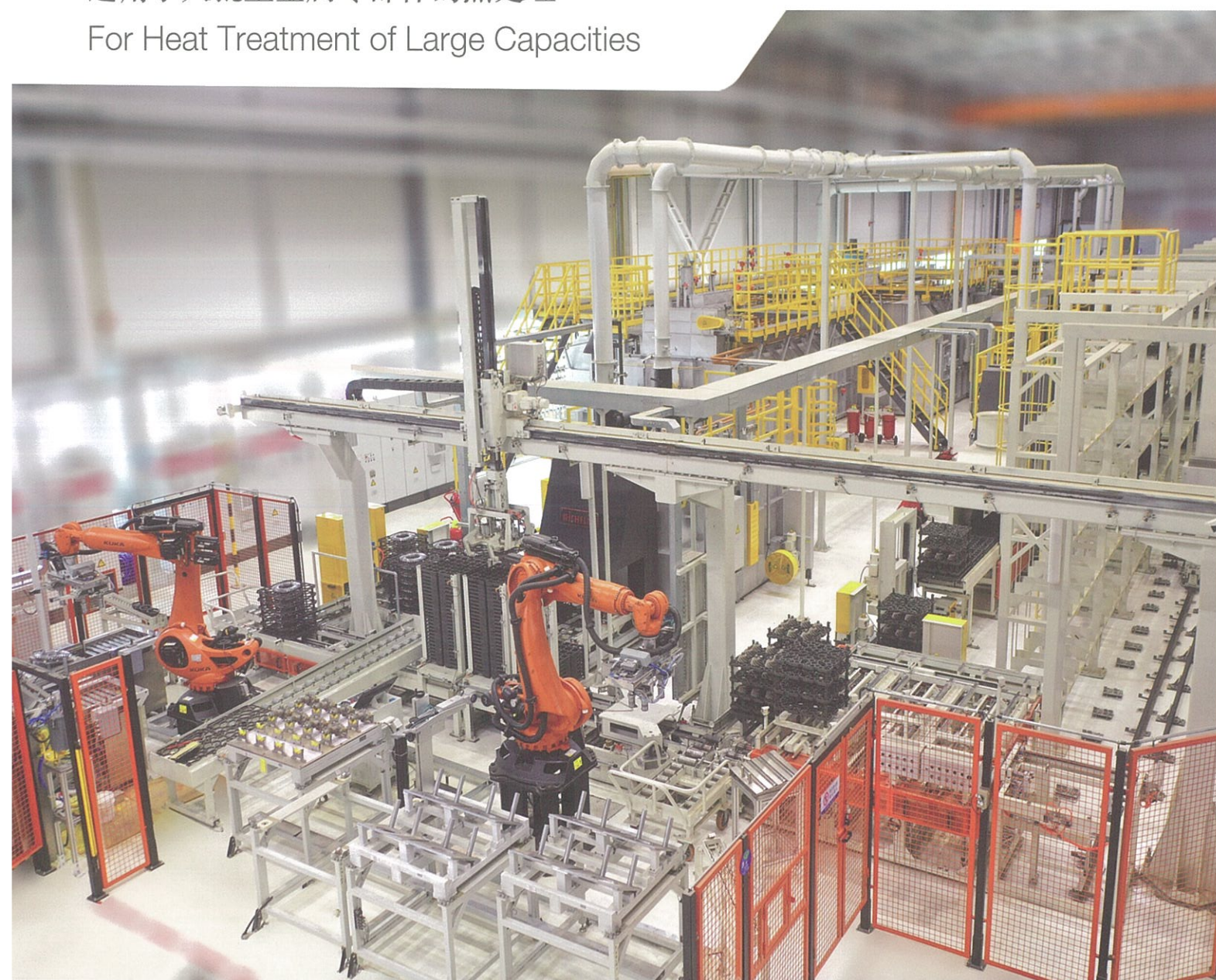


推盘式炉热处理生产线

Pusher Type Gas Carbonitriding Furnace Plants

适用于大批量金属零部件的热处理

For Heat Treatment of Large Capacities



Reliability at Work

爱协林热处理系统（北京）有限公司
AICHELIN Heat Treatment Systems (Beijing) Co., Ltd.

推盘式炉热处理生产线

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生产线概述 INTRODUCTION

本生产线设计独特，构造巧妙，性能稳定可靠，节能效果显著，深受汽车、齿轮、轴承等大批量、连续性生产行业用户的欢迎，可实现渗碳淬火回火、渗碳后缓冷、碳氮共渗淬火回火等热处理工艺。有双推盘炉和单推盘炉生产线可供选择。双推盘炉可实现不同层深产品的同炉渗碳。

The advanced design of this line with higher reliability and energy saving, especially is suitable for continuous heat treatment of large capacities of automobile parts, gears, bearings, etc. Applicable of various processes such as carburizing - quenching - tempering, car burizing-related cooling, carbonitriding - quenching - tempering, etc. The double -track pusher type furnace can further obtain different carburizing depths in one furnace.

生产线一般由装料机构、预氧化炉、加热炉、渗碳炉、扩散炉、淬火槽、清洗机、回火炉、卸料装置和控制系统等组成。采用爱协林创新技术 - 底装料结构和油自循环冷却风扇、淬火油风冷装置、油下工件转移装置、全密封淬火油槽，可在工艺中设定搅拌电机的转速。

This production line in general consists of loading device, pre-heating furnace, heating furnace, carburizing furnace, diffusing furnace, quenching tank, washing machine, tempering furnace, unloading device and control system, and etc. Adopts AICHELIN's innovative technology-bottom-loading device and self-cooling oil gitator. Also equipped with air-cooling device for quenching oil, transfer device under oil and fully sealed quenching oil tank. The speed of agitator can be set in process programme.



▲ 推盘式炉热处理生产线图 Pusher Type Gas Carbonitriding Furnace Plant



▲ 机器人上卸料，可实现生产线无人化作业

规格型号 Type	料盘尺寸 Tray Size (L*W) mm	装料高度 (Loading Height) mm	最大生产能力 (Max. capacity) kg/h	加热功率 Heat Power kW	装机容量 Installed Capacity kVA
TKEs-56/56/70	560*560	650	300	478	585
STKEs-60/60/75	600*600	700	750	900	1030
TKEs-80/60/40	800*600	350	400	375	470
TKEs-85/80/85	850*800	800	1600	380	450
TKEs-115/70/70	1150*700	650	1500	568	644

▲ 主要炉型规格及配置(可定制) Technical Data and Configuration (Customized)

生产线特点 ADVANTAGES

- 采用爱协林创新技术-底装料机构，取消炉门火帘，炉门密封效果更好；装料后炉气碳势波动小，节气节能效果更加显著；

Adopts AICHELIN's innovative technology: Bottom-loading device without flame curtain to obtain better tightness and lower fluctuation in the carbon potential of the furnace atmosphere to achieve lower gas and energy consumption.

- 采用爱协林创新技术-油自循环冷却风扇和淬火油热管风冷装置，不需循环冷却水池、水泵、冷却塔、水处理设备、水管等辅助设施，极大降低辅助安装费用；

Adopts AICHELIN's innovative technology: self-cooling oil agitator and air-cooling device for quenching oil. No need of water cooling device, which can noticeably lower the costs of auxiliaries and installation.

- 爱协林全密封淬火油槽，通过潜泳式出料，无需火帘，不进入空气，可大大提高安全操作、产品内氧化程度轻，碳势稳定，产品质量稳定；

AICHELIN's fully sealed quenching oil tank with special design of submersible discharge and no flame curtain, no air enters, which can greatly improve the safe operation, and with lower oxidation, stable carbon potential and quality performance.

- 先进的计算机管理系统，可跟踪料盘和工件信息，监督设备运行状态，模拟工艺并计算热处理数据。运行成本低，安全可靠；

Advanced computer controlling system can realize the process control automatically. Diagrams and curves of the processes are also can be simulated along with the carburizing process.

- 精心选用世界著名品牌元器件，先进的设计，精心的制造，确保设备运行的稳定性、可靠性和耐久性；

Well-designed structure and elaborate manufacture provide the plant with high liability, stability, and longevity.

- 自动化程度高：可实现手动、全自动操作模式，并可配对立体仓库，实现无人化作业；

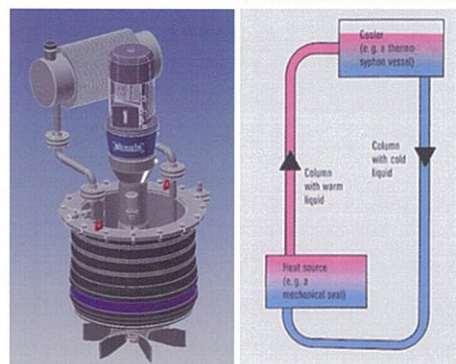
High automation: manual and fully automatic operation modes can be realized, and with stereoscopic warehouse can realize un-manned operation.

- 严格执行高标准安全设计，安全设施完善，确保运行中操作人员、设备和产品的安全。

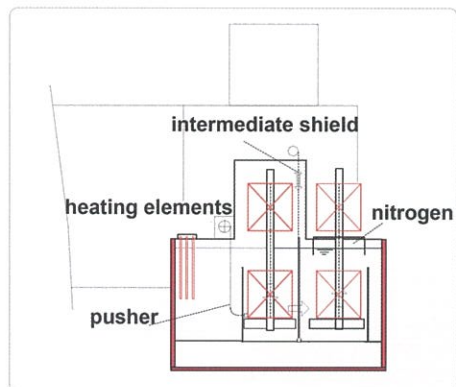
Strictly implement high standard design. Reliable safety device secures operator, equipment, and products.



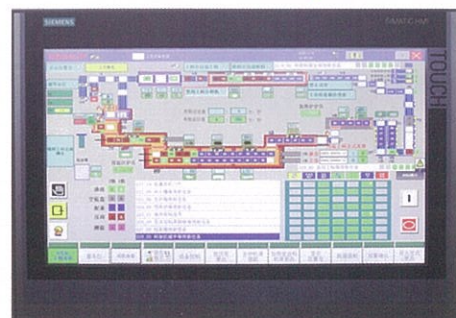
▲ 爱协林自主研发技术-底装料机构



▲ 爱协林自主研发技术-油自循环冷却风扇



▲ 爱协林全密封淬火油槽



▲ 控制画面示意图 Control Display Diagram

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机器人自动上卸料、压淬保温室、立体料库

LOADING AND UNLOADING BY ROBOTS/ PRESS QUENCHING AND INSULATING CHAMBER/ STEREOSCOPIC WAREHOUSE

本生产线由机器人与转移机械手配合，可实现主动齿轮与被动伞齿轮的自动装卸料、工件二维码扫描追踪、热后打印，实现工件的全过程参数记录跟踪，完全达到信息化管理目标。

压淬保温室采用独特的设计：炉门不动，层垛工件逐层上升，由取料机械手逐层取出工件和隔盘，再由机器人将热的工件放到压床上淬火；隔盘、料盘放到返回线上冷却后再由码垛机械手放到立体料库备用。压淬后的工件由机器人取出放到返回线上的料盘上码垛传输到下工序。

底料盘和中间隔盘进行定期翻面，减少工装变形，延长使用寿命。

By equipped with a robot and a transfer manipulator, this production line can realize the automatic loading and unloading of the driving gear and the passive bevel gear, the QR code scanning and tracking of the workpiece, and laser coding of workpiece after heat treatment, which can record and track of the whole process parameters of the workpiece, and fully achieve the goal of information management.

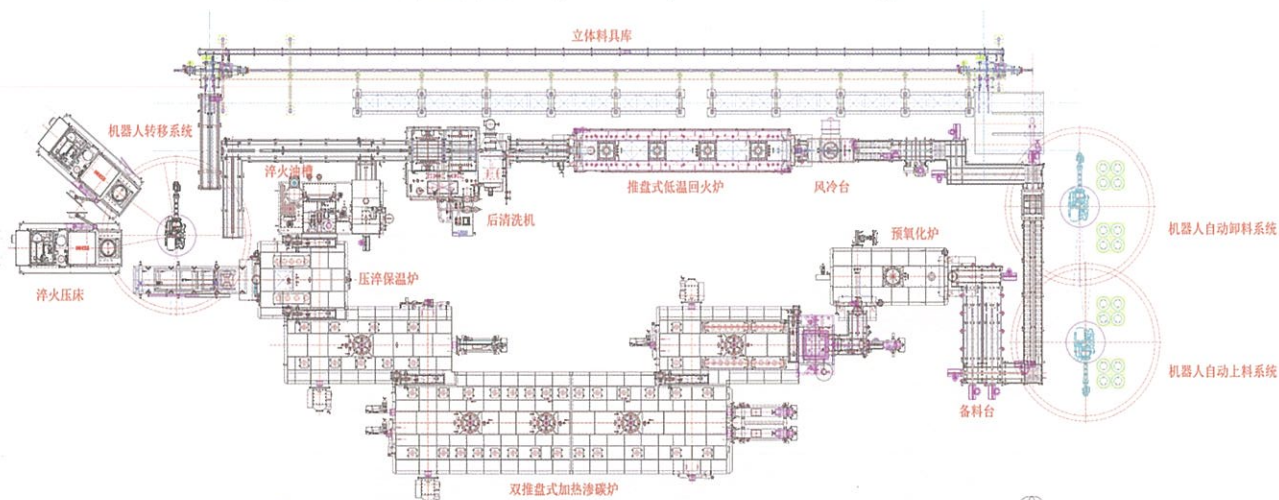
The press quenching and insulating chamber adopts a unique design: the furnace door does not move, the stacked workpieces rise layer by layer, the workpiece and the isolate trays are taken out layer by layer by the reclaiming manipulator, and then the robot puts the hot workpiece on the press for quenching; The intermediate isolate trays and bottom trays are placed on the return line to cool, and then transferred to the stereoscopic warehouse by the palletizing manipulator for reuse. The workpiece after press quenching is taken out by the robot and placed on the tray on the return line for stacking and transmission to the next process.

The bottom trays and the intermediate trays are flipped regularly to reduce the deformation of the tooling and prolong the service life.



▲ 压淬线机器人 Robot for Quenching Plant

全自动推盘炉生产线布置图示例 Layout of Fully Automatic Pusher Type Furnace Plant



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