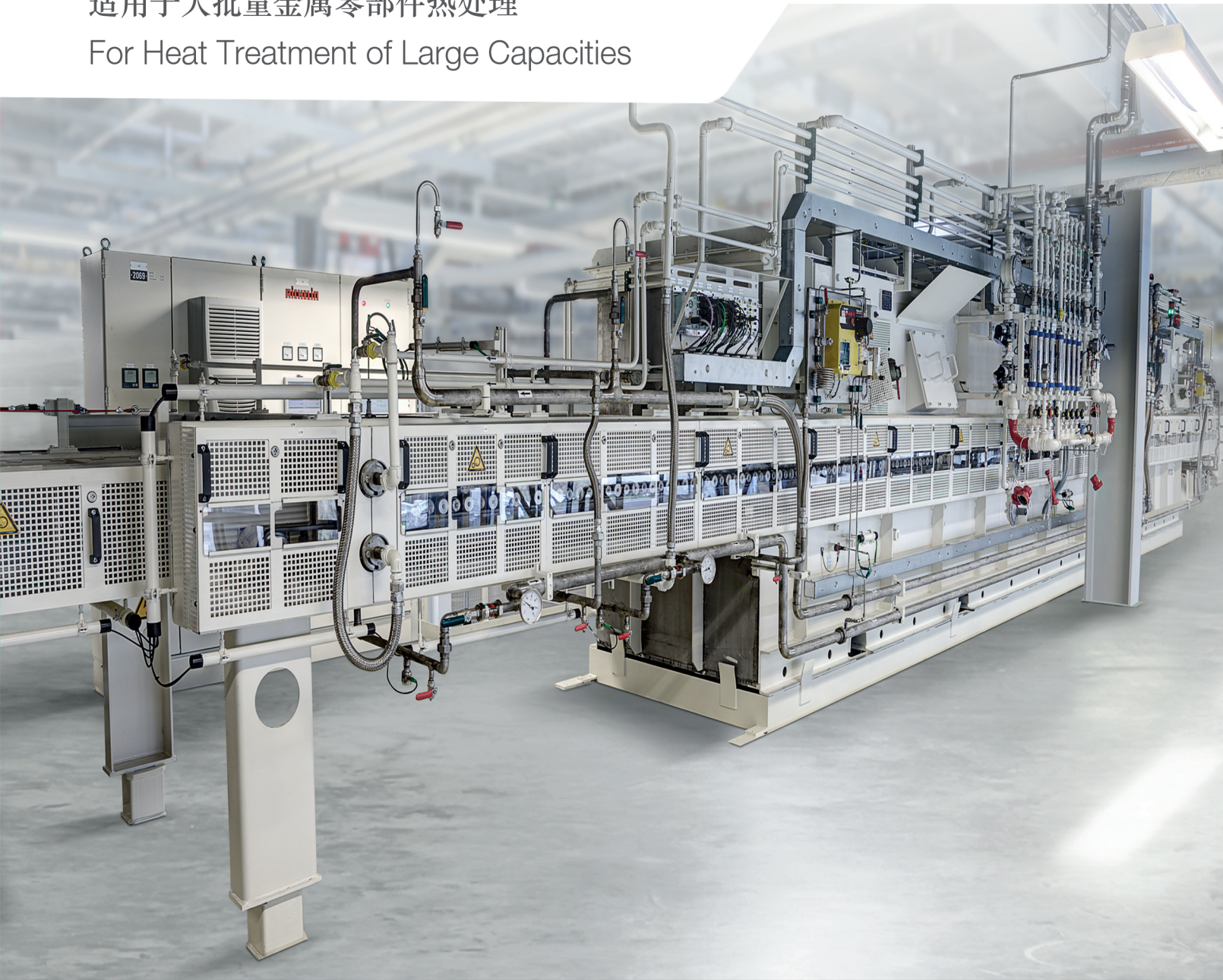


辊底式可控气氛加热、盐淬 / 油淬生产线

Roller Hearth Controlled Atmosphere Heating, Salt / Oil Quenching Furnace Plants

适用于大批量金属零部件热处理

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.

辊底式可控气氛加热、盐淬/油淬生产线

Roller Hearth Controlled Atmosphere Heating, Salt Quenching / Oil Quenching Furnace Plants

爱协林辊底式可控气氛热处理生产线工艺适用范围广，可进行等温球化退火、正火、淬火、回火等热处理工艺；有油淬、盐淬、压床限形淬火等方式选择，实现马氏体、贝氏体组织转变。生产线布局灵活多样，在轴承、风电等行业应用广泛。

AICHELIN roller hearth controlled atmosphere heat treatment production line has a wide range of applications. It can be used for isothermal spheroidizing annealing, normalizing, quenching, tempering and other heat treatment processes; there are oil quenching, salt quenching, press shape-limiting quenching, etc. Martensite and bainite microstructure transformation can also be realized. With the flexible and multiple layouts, it is widely welcomed in bearing, wind power industries, etc.

辊底式可控气氛盐浴淬火自动生产线

ROLLER HEARTH ATMOSPHERE - CONTROLLED SALT QUENCHING AUTOMATIC FURNACE PLANTS

生产线组成 INTRODUCTION

本生产线主要由辊底式上料台、前清洗烘干机、辊底式加热炉、盐浴淬火槽、等温盐槽（或马氏体回火炉）、后清洗机、后冷却烘干机、风冷台、熔盐槽、盐水蒸发装置、温度、碳势程序控制系统等组成。

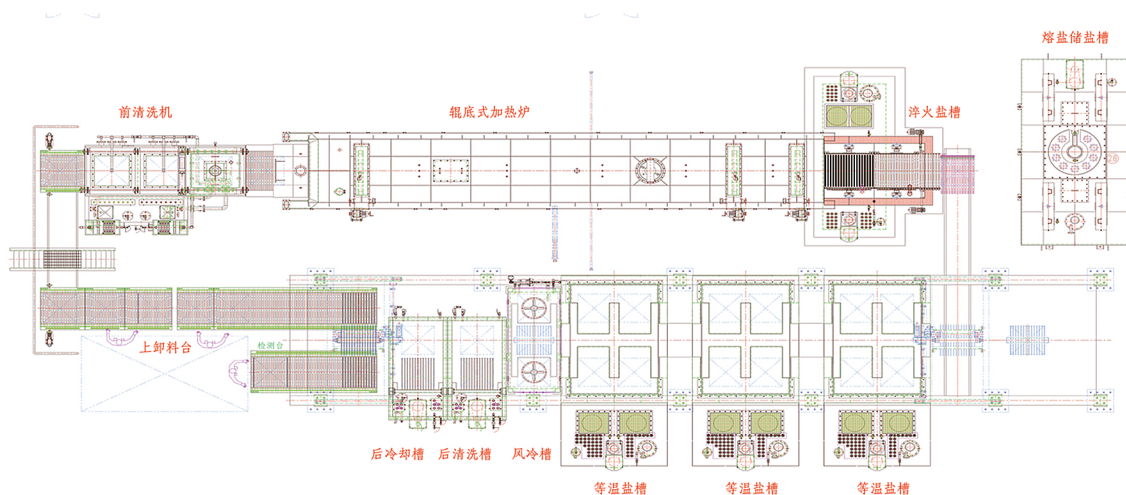
The production line mainly consists of roller type loading table, pre-washing and drying machine, roller type heating furnace, salt quenching tank, isothermal tank (or Martensite tempering furnace), post washing machine, post cooling and drying machine, air cooling machine, molten salt tank, brine evaporator, temperature / carbon potential program control system, etc.



生产线特点 FEATURES

本生产线特别适用于轴承套圈的马氏体分级淬火或贝氏体等温转变。利用盐浴淬火无蒸汽膜阶段，高温冷速快，低温冷速慢的特点，产品变形小，硬度均匀。通过调节盐浴的水含量还可以调节冷却速度，淬透性更强。

It is especially designed for martensite step quenching or bainite isothermal transformation of bearing rings. Taking the advantages of salt bath quenching without steam film, faster cooling speed of the high temperature and slower cooling speed of the low temperature, which can make the product deformation small, and the hardness uniform. By adjusting the water content of the salt bath, the cooling rate can also be adjusted, and the hardenability is stronger.



生产线布局示意图 Layout of Roller Hearth Furnace Plant

辊底式盐浴等温淬火线 ROLLER TYPE SALT BATH AUSTEMPERING FURNACE LINE

高碳铬轴承钢贝氏体组织比马氏体组织具有更高的冲击韧性、断裂韧性及尺寸稳定性，且表面应力为压应力状态，因此盐浴等温淬火在铁路轴承、轧机轴承、风电轴承、矿山凿岩机械、以及球墨铸铁ADI处理等得到广泛应用。

Comparing to martensite microstructure, the bainite microstructure of high carbon chromium bearing steel has below advantages:

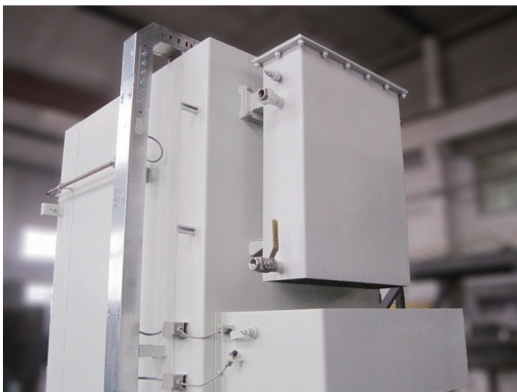
- higher impact toughness
- higher fracture toughness
- higher dimensional stability
- with the surface stress state is press stress

So, the salt bath austempering furnace line has successfully and popularly applied in railway bearings, rolling mill bearings, wind power bearings, mine mechanical bearings and ADI ductile iron, etc.

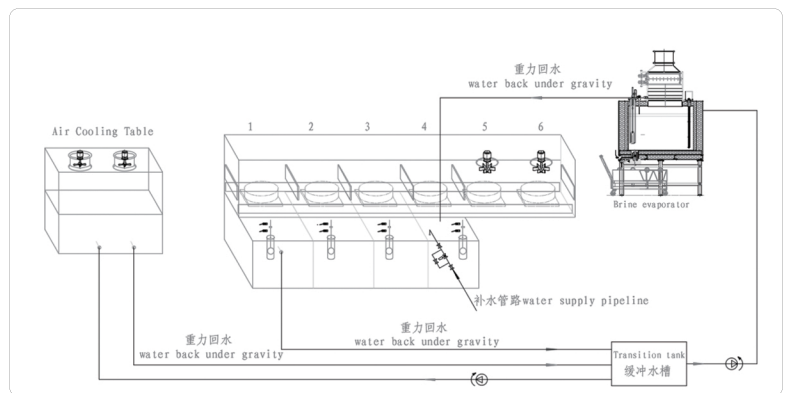
盐蒸发器及回收利用 SALT EVAPORATOR AND SALT RECYCLE

采用盐水浓度控制仪自动控制清洗槽水因工件带入硝盐而引起的浓度变化，并将浓的含盐缓冲槽水或作为盐淬火槽补水或进入盐蒸发器收集残盐，实现亚硝酸盐的零排放。

The nitrate concentration controller is used to automatically control the concentration change of the washing tank caused by the nitrate brought from the workpiece, and the concentrated salt-containing buffer tank water can be used as a salt quenching tank to replenish water or enter the salt evaporator to collect residual salt, realizing zero emissions of nitrite.



▲ 盐蒸发器 Salt Evaporator



▲ 残盐回收装置 Residual Salt Recycle System

先进的控制系统 ADVANCED CONTROL SYSTEMS

整条自动线由多台主控PLC和多台操作终端面板通过PROFIBUS现场总线进行通讯。实时监控和控制设备各单元的状态并可以实时操作。整个程序中使用了以太网通讯，OPC数据采集，条码扫描等系统，实现了整个生产线的全自动控制和多品种工艺的快速调整。通过C/S实现了客户局域网内的数据共享和远程控制、诊断。

The whole automatic line is communication with multi - PLCs and operation panel through PROFIBUS. It can achieve real-time monitoring and control. The whole program adopts Ethernet communication, OPC data acquisition and bar code scanning systems, to realized whole production line automatic control and multi species process quickly adjustment. Data sharing and remote control and diagnosis in the LAN are realized through C/S.



▲ 盐浴淬火 Salt Quench

辊底式可控气氛加热、盐淬/油淬生产线

Roller Hearth Controlled Atmosphere Heating, Salt Quenching / Oil Quenching Furnace Plants

辊底式可控气氛油淬-回火生产线

ROLLER HEARTH ATMOSPHERE-CONTROLLED OIL QUENCHING-TEMPERING FURNACE PLANTS

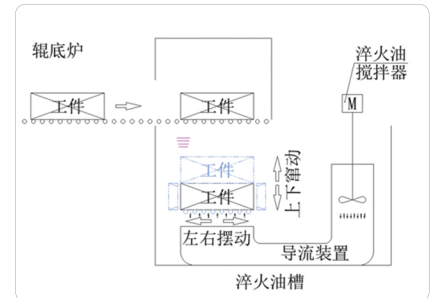
生产线组成 INTRODUCTION

本生产线主要由辊底式上料台、前清洗烘干机、辊底式加热炉、淬火槽、后清洗、后冷却烘干机、风冷台、卸料台、温度、气氛及动作程序控制系统和计算机等组成。

The production line mainly consists of roller type loading table, pre-washing and drying machine, roller type heating furnace, quenching tank, post washing machine, post cooling and drying machine, air cooling machine, temperature and atmosphere control system, etc.

本生产线适用于大批量生产的轴承套圈、滚子、紧固件等零件的淬火回火。独特的淬火升降台设计，不仅可以上下窜动，工件还可以左右摆动，消除淬火阴影影响，冷却更均匀。

This production line is designed for quenching and tempering of large capacities production of bearing rings, rollers, fasteners, and other parts. The unique quenching lifting table design can not only move up and down, but also the workpiece can swing left and right, eliminating the influence of quenching shadow and cooling more evenly.



▲ 淬火槽 Quenching Tank

主要炉型规格及配置 (可定制)

TECHNICAL DATA AND CONFIGURATION (CUSTOMIZED)

	炉膛通过宽度(mm) Passby Width	炉膛长度(mm) Furnace Chamber Length	产能 Capacity (kg/h)
小辊棒膜片弹簧压淬线 Diaphragm Spring Press Quenching Plants	450	2000	100-150
	800	6400	100-200
	450	2000	100-150

系列 Series	装料方阵 Charging (L*W*H) mm	最大产能 Max. Capacity (kg/h)
淬火系列 Quenching	650*650*250	350-400
	750*750*300	450-550
	850*850*300	550-650
	1000*1000*300	550-650
	1250*1250*450	550-800
	1450*1450*600	550-800
	1500*1500*600	550-1000
1800*1800*600	550-1000	
退火系列 Annealing	1500*1150*450	750-1200

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