

博尔顿智能装备

中高端金属成型装备及自动化系统研发制造
R&D And Manufacturing Of Medium And High-End Metal Forming Equipment And Automation Systems

技术研发 设计创新
Technology R & D, Design Innovation

● 客户服务

系统开发，工程仿真，研发制造，安装调试，专业维保，贯彻设备整个生命周期。

● 客户领域

航天/军工/电梯行业/安防门行业/家电行业/家居行业/汽车行业/新能源行业/3C行业/钣金加工行业/物流行业/传统制造产业。

● 工作理念

赢在创新，赢在执行！

● 公司使命

全力把博尔顿智能装备技术研究院打造成为技术高端、专业诚信、社会认可、国际知名的高端钣金智能装备和自动化生产线的科技创新企业。

Customer service: system development, engineering simulation, R&D and manufacturing, installation and commissioning, professional maintenance, implementation of the entire life cycle of the equipment.

Customer fields: aerospace / military / lift industry / security door industry / home appliance industry / house and home industry / automotive industry / new energy industry / 3C industry / sheet metal processing industry / logistics industry / traditional manufacturing industry.

Work philosophy: Win in Innovation, win in executive force

Company Mission: Make every effort to build Boltaton Intelligent Equipment Technology Research Institute into a professional, honest, socially recognized, internationally renowned, technological and innovative enterprise with high-end sheet metal intelligent equipment and automation production line.

自动化智能装备 品质更值得信赖
Automated Intelligent Equipment Trusted Quality

高端品质服务 为您的企业保驾护航
High-quality Service for your Company

INTELLIGENCE

北京博尔顿智能装备技术研究院有限公司
Beijing Boltaton Intelligent Equipment Technology Research Institute Co., Ltd.



北京博尔顿智能装备技术研究院有限公司

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公司简介

北京博尔顿智能装备技术研究院有限公司成立于2020年，在响应国家发展高端制造业及《中国制造2025》的号召下，以智能制造为主要发展方向而成立的科技研发公司，公司已取得北京中关村高新技术企业等级证书。

博尔顿智能装备技术研究院自成立以来，以服务为宗旨、以创新为驱动，致力于中高端金属成型装备及自动化系统研发制造，专注各类钣金加工智能装备技术研发、设计创新、成果转化、方案咨询、人才培养等，为航天、航空、汽车、家居、电梯、电柜、电子等行业提供工业智能制造的解决方案。

公司凝聚了一批经验丰富的机械设计、电气设计、机器人应用等领域的高级专业人才，他们拥有丰富的非标项目设计经验、机器人系统集成设计经验，能实现从系统设计、实时仿真模拟、工装设计、系统控制、安装调试的全过程服务即交钥匙工程。

公司目前成功研发了钣金折弯机器人工作站、激光自动化柔性生产线、冲压生产线、剪切分选线、材料合成热压机生产线、智能存储料库、非标自动化生产线及配套设备、工业软件等产品。一直以来依托各类先进钣金装备（如：数控折弯机、数控冲床和激光切割机、开卷线等产品），以输送线和机器人作为纽带、串联起各种设备、建立起中控系统，集成产线上各种设备，实现与客户ERP及MES等软件模块无缝对接。

为确保整条产线的自动化、无人化、智能化和信息化，公司引入远程维护、大数据和云平台，最大程度满足客户个性化定制需求，更加快速、便捷地为客户提供服务。

未来，博尔顿智能装备技术研究院将围绕智能制造创新发展，以高端钣金智能装备和自动化生产线建设为主要攻坚方向，不断壮大科研队伍，加强关键技术的创新，研发出具有竞争力的新产品、新工艺和新技术，为中国智能制造业提供优质的智能装备和技术服务，扎实推进智能装备产业发展。

Beijing Boltaton Intelligent Equipment Technology Research Institute Introduction

Beijing Boltaton Intelligent Equipment Technology Research Institute Co.,LTD was established in 2020, which was in order to in response to the national call for the development of high-end manufacturing industries and Made in China 2025, and we are a technology research and development company with intelligent manufacturing as our main development direction. The company has obtained the Beijing Zhongguancun high-tech enterprise grade certificate.

Since our founding, Boltaton Intelligent Equipment Technology Res ated to the research and development and manufacturing of medium and high-end metal forming equipment and automation systems with the aim of service and innovation, focusing on all kinds of sheet metal processing intelligent equipment technology research and development, design innovation, transformation of results, programme consultation and personnel training, providing industrial intelligent manufacturing solutions for aerospace, aviation, automotive, household, lift, electric cabinet, electronics and other industries.

Our company has assembled a group of experienced high level professionals in the fields of mechanical design, electrical design and robotics application. They have rich experience in non-standard project design and robotics system integration design and are able to provide one-stop service from system design, real-time simulation, tooling design, system control, installation and commissioning, i.e. turnkey projects.

Our company has successfully developed sheet metal bending robot workstations, laser automation flexible production lines, stamping production lines, cutting and sorting lines, material synthesis hot press production lines, intelligent storage repository, non-standard automation production lines and ancillary equipment, industrial software and other products. We have been relying on various advanced sheet metal equipment (e.g. CNC press brakes, CNC punching machines and laser cutting machines, uncoiling lines, etc.), taking conveyor lines and robots as links, linking up various equipment, establishing central control systems, integrating various equipment on production lines, and achieving seamless interface with customers' ERP and MES software modules.

To ensure that the entire production line is automated, unmanned, intelligent and informatization, our company has introduced remote maintenance, big data and a cloud platform to maximize customer satisfaction with individual customization and to serve customers more quickly and conveniently.

In the future, Boltaton Intelligent Equipment Technology Research Institute will focus on the innovative development of intelligent manufacturing, take high-end sheet metal intelligent equipment and automated production line construction as the main direction of researching, continuously grow the scientific research team, strengthen the innovation of key technologies, develop new products, processes and technologies with strong competitiveness. Thus, we are able to provide high-quality intelligent equipment and technical services for China's intelligent manufacturing industry, and solidly promote the development of intelligent equipment industry.



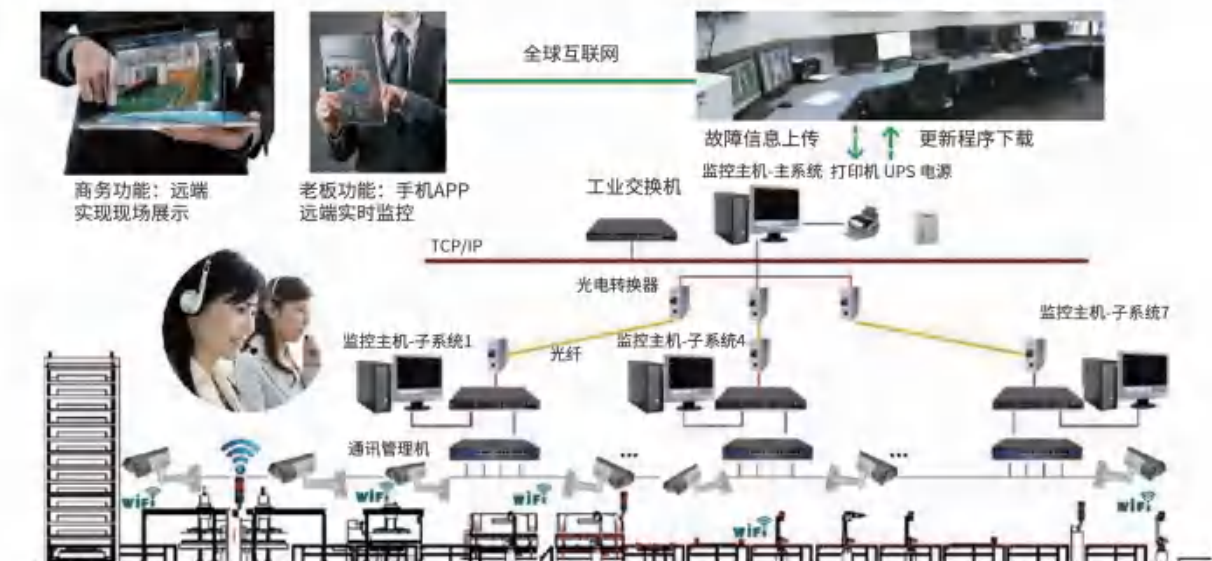
北京博尔顿智能装备技术研究院有限公司

设备控制系统原理架构 Principle framework of equipment control system

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设备远程服务系统原理图 Schematic diagram of equipment remote service system



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激光切割单元 自动折弯单元 智链生产线

Combined Production Line of laser cutting unit and automatic bending unit

三维效果布局图

3D effect layout



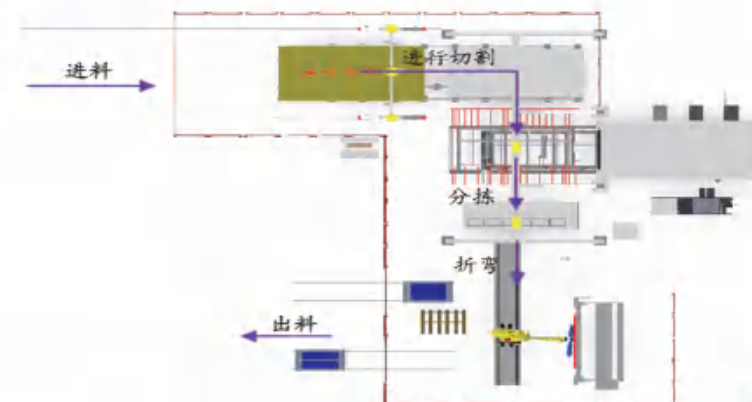
说明

explanation

- 借助自动上下料功能，让激光切割单元与自动折弯单元实现连续生产作业，生产更高效，更符合工艺要求，充分提高生产效率和产品质量，缩减生产周期。
- 板材厚度自动识别，自动分离提高了生产安全性。
- 机器人折弯更精准，效率更高，可24小时不间断作业。
- 具有与中控系统集成功能，支持以太网口通信，进行数据交互。
- 可与ERP生产管理系统及MES生产执行系统相互通讯，将产能产值数据及运行状态实时反馈。
- 模块化结构设计，并可根据客户工艺需求进行最佳定制生产方案。
- The automatic loading and unloading function allows the cutting and bending systems to operate continuously, making production more efficient and more in line with the process requirements and fully improving product quality, production efficiency and equipment utilization and saving production cycles.
- Automatic plate thickness identification, automatic separation to improve the safety.
- Robot bending is more accurate and efficient and can operate 24/7, saving production cycles.
- Features integration with central control systems and supports Ethernet port communication for data interaction.
- Communication with ERP production management systems and MES production execution systems for real-time feedback of production output data and operational status.
- Modular design and optimum production solutions can be customized according to customer process requirements.

物料走向

Material Direction



生产对象

Processed work piece



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产线组成

Structural composition

- 1.激光切割单元分别由：激光切割机、地面移动行吊、原材料车、废料收集车、自动上下料桁架、半成品周转台等组成。
- 2.自动折弯单元分别由：数控折弯机、机器人(6+1)、对中台、双出料车组成。

- 1.The laser cutting unit consists of a laser cutting machine, a ground moving crane, a raw material truck, a waste collection truck, a loading and unloading transplanter, a sorting transplanter and a semi-finished tumbler.
- 2.The automatic bending unit is composed of NC bending machine, robot (6 + 1), centering stage and double discharging car.

技术参数

AUTOMATIC BENDING STATION PARAMETERS

设备组成 Equipment composition	名称 Name	基本参数 Basic parameter
龙门行吊 Gantry Crane	起吊重量 Lifting weight	10t
	龙门跨距 Gantry Span	5500mm
自动上下料桁架 Automatic loading and unloading truss	最大板材 Maximum Plate	L4000mm x W2000mm
	最大负载 Maximum load	500kg
	机械手行程 Manipulator travel	10m
激光切割机 Laser cutter	加工范围 Processing Range	L4000mm x W2000mm
	激光功率 Laser power	2500w
折弯机 Bending machine	工作压力 Working pressure	160t
	工作台长度 Length of work table	4000mm
	特殊开口尺寸 Special opening size	1000mm
机器人折弯 Robot bending	工作负载 Workload	165kg
	地轨有效行程 Effective travel of earth orbit	6000mm



HEAVY DUTY BENDING STATION

重型自动折弯工作站

Heavy duty automatic bending station

产品介绍: Product introduction

1.用途

此自动折弯工作站应用于中厚钣金的折弯成型，适用范围：厚度4mm~20mm，长度3000mm~16000mm。

2.特点

- 1) 折弯定位装置，通过导轨丝杠传动，高精度伺服驱动，保证定位精度在 ± 0.2 。
- 2) 前定位台装置安装有自动输送机构，在工件折弯完成后，自动输送至下一个工位。
- 3) 折弯机下模安装有开口自动调节模具，可折弯不同规格尺寸的板材，通过程序控制，自动调节开口大小，以完成工件不同角度的折弯工作。
- 4) 可增加上料平台、龙门桁架、滚筒输送线、下料平台等，实现工件的自动上、下料抓取、码垛与输送等工作任务。

1.The project uses two sets of loading and unloading gantry manipulators, press brakes, front and rear feeding devices and conveying devices to achieve fully automated production, solving many of the customer's problems in the molding process, greatly improving production efficiency, making a major breakthrough in the sheet metal equipment industry, filling the gaps in the heavy sheet metal equipment industry in China, with far-reaching implications.

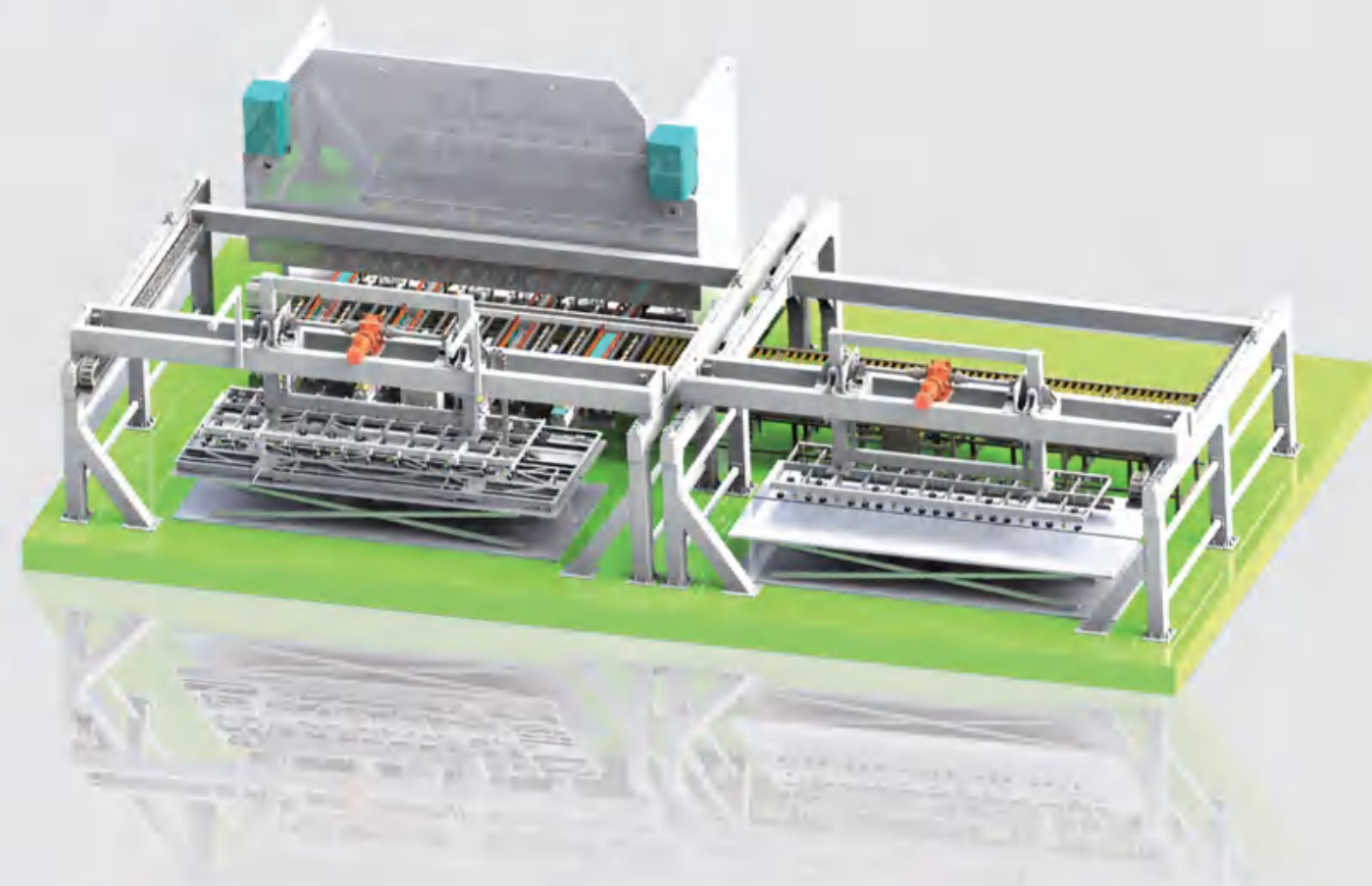
2.Its features include automatic loading, 3D vision material inspection, automatic feeding, automatic positioning, automatic program call, automatic adjustment of lower die opening, bending angle detection, automatic correction of bending angle, automatic material discharge, automatic gripping and palletizing, etc. for large sheets.



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三维效果布局图

3D effect layout



技术参数

Equipment composition

设备名称 Name of equipment	参数名称 Parameter name	参数规格 Parameter specification
折弯机 Bending machine	工作压力 Working pressure	300t~2000t
	工作台长度 Length of work table	3000mm~16000mm
折弯定位装备 Bending fixture	有效宽度 Effective width	500mm~3000mm
	长度 Length	3000mm~16000mm
	输送长度 Conveying length	依据工件长度 Based on the length of the workpiece
	平台最大承载 Maximum bearing capacity of platform	200kg/m
下模开口自动调节模具 Automatic adjusting die for lower die opening	最大承受压力 Maximum stress	$\leq 600t/m$
	开口调节范围 Opening range	V50mm~V370mm
	槽口深度 Notch depth	200mm
	模具长度 Die Length	4m~16m

激光切割机& 机械手上下料单元

Loading and unloading unit of manipulator of laser cutting machine



说明

Account for

本项目为激光全自动上下料单元，实现全天无人化生产过程。

- 1.可按照生产任务单，线上批量下单，实现24小时不间断生产。
- 2.产线布局紧凑，整体结构布局合理，充分利用空间，缩减占地面积。
- 3.抓手可自动侧厚，成品与半成品抓取过程中无需更换抓手。
- 4.激光切割工作完成后，平台自动交换，机器人自动抓取码垛至出料小车。

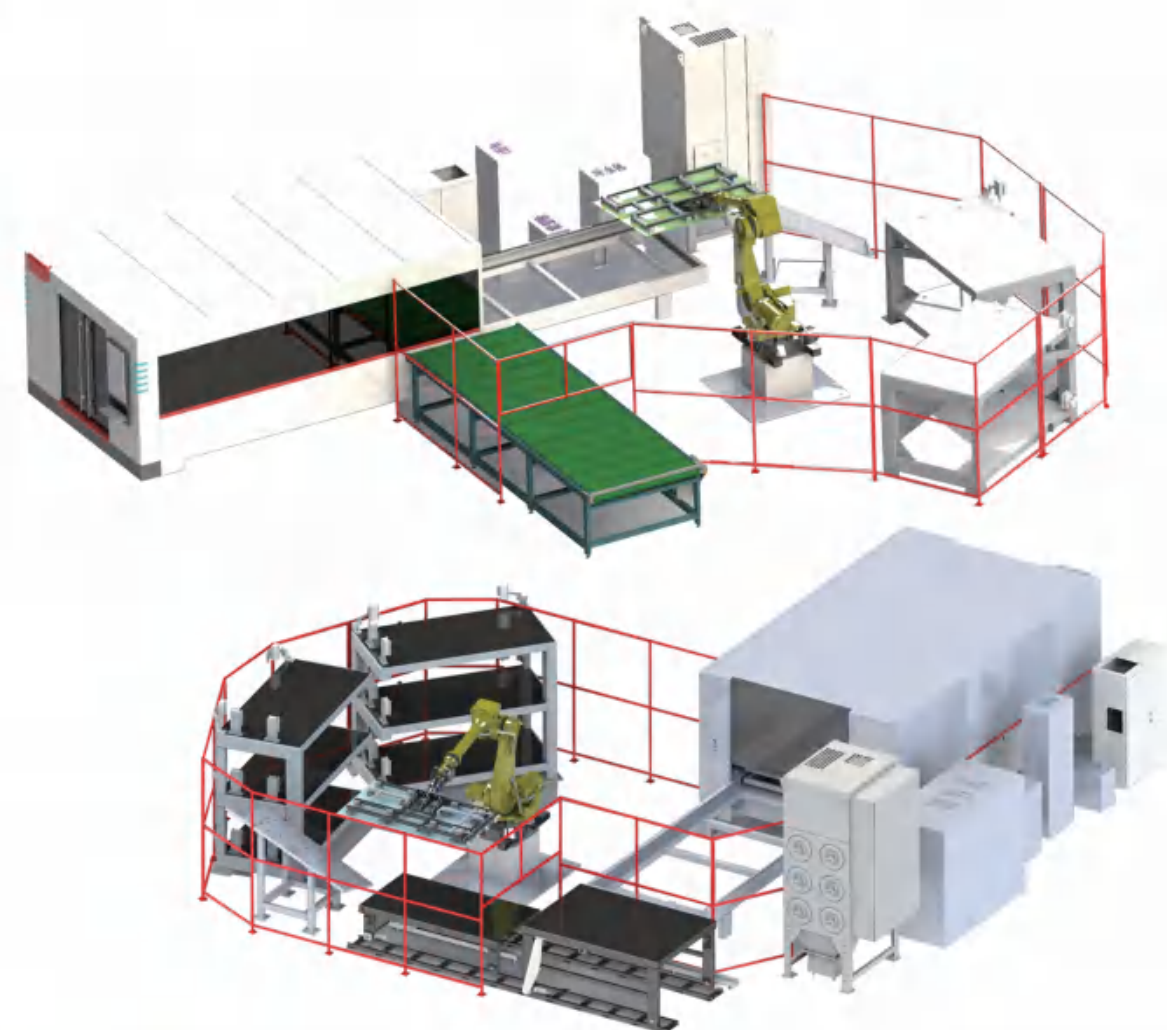
This project is a laser full-automatic loading and unloading unit, realizing full-day unmanned production process.

- 1.Remote batch orders can be placed in accordance with the production task list to achieve 24-hour uninterrupted production
- 2.The compact layout of the production line and the rational layout of the overall structure make full use of the space and reduce the occupied area.
- 3.The gripper can be automatically side thickened, so there is no need to change the gripper during the gripping of finished and semi-finished products.
- 4.After the laser cutting work is completed, the platform is automatically exchanged and the robot automatically grips and palletizes to the outfeed trolley.

三维效果布局图

3D effect layout

3D EFFECT LAYOUT



技术参数

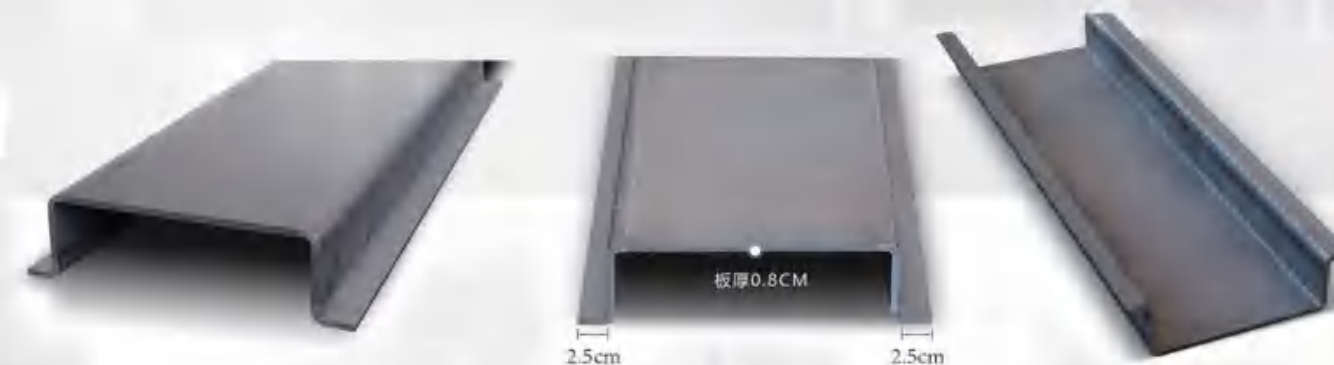
Technical parameter

设备组成 Equipment composition	名称 Name	基本参数 Basic parameter
激光切割机 Laser cutter	激光功率 Laser power	3000W
	加工范围 Processing Range	L3000mm x W1500mm
机器人 Robots	工作负载 Workload	165kg
	抓取结构 Grab structure	海绵吸盘组合 Sponge sucker assembly
钣金存储料库 Sheet Metal Storage	承载 Load bearing	3吨/层
	层数 Number of layers	2层/3层
出料车 Discharge car	承载 Load bearing	300kg
	运行方式 Operation Mode	上下交互 Up and down interaction

中厚板折弯单元

Bending Units for Medium Thick Plates

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自动折弯站特点

FEATURES OF AUTOMATIC BENDING STATION

- 提高产品质量和生产效率，减少次品。
- 节约人力成本。
- 机器人24小时运行，维护保养费用低。
- 投资回报周期短。
- Increase production output and product quality and reduce defective products.
- Savings in labour costs.
- Low maintenance costs with robots running 24 hours a day.
- Short return on investment cycle.

折弯工作站提供批量加工生产模式，减轻繁重重复的加工任务，实现24小时不间断生产。根据折弯工艺要求，可自动更换夹具工装，减少人工干预环节，经济实用、性价比高。

折弯工作站由折弯机、机器人、地轨、对中台、翻面架、进出料车或托盘、分张测厚机构和控制单元组合而成。板材从上料到折弯、再到成品出料完全实现自动化和无人化，机器人折弯不仅提高产品的合格率，而且还能降低人力成本。同时控制系统配有远程维护功能，足不出户就可以解决现场设备故障，为正常生产保驾护航。控制系统选配上位机与MES、ERP系统连接，可实现线上下单，实时监控设备的生产信息和工作状态，为数据处理提供数据源。

Bending workstations provide a single workpiece batch production mode, relieving the need for heavy and complex machining tasks and enabling 24/7 work. Automatic clamp change according to bending process requirements, reducing manual intervention and other links. Economical and cost effective.

The bending workstation consists of a combination of press brake, robot, ground rail, alignment table, turning frame, feeding and outfeeding truck or pallet, sheeting inspection facility and control unit. The sheet is automated and unmanned from loading to bending and then to the finished material. The robot bending not only improves the qualification rate of the bent product, but also reduces labour costs. The control system is also equipped with remote maintenance functions, so that machine malfunction can be solved on site without leaving home, guaranteeing normal production. The control system is optionally connected to the ERP system to realize online, offline orders, real-time monitoring of equipment information and status, providing a data source for big data processing.

自动折弯站参数

AUTOMATIC BENDING STATION PARAMETERS

折弯机器人 Bending robot

机器人负载 Robot load	210kg
机器人轴数 Axis number of robot	6+1
最大工件 Maximum workpiece	1250X3000(单位/mm)unit/mm
工作半径 Working radius	2655mm

地轨 Ground rail

移动范围 Moving range	0-12000mm
运行速度 Running speed	2000mm/s
精度 Precision	±0.1mm
	/





工作原理:

Account for

淋胶复合板材后,将板输送至热压机工作平台,压机根据工作台是否高温高压下胶水固化。计时完毕,工作台打开出料输送,出料工作台至下一工序,往复循环。

After drenching composite plate, the plate is transported to the hot press working platform, according to whether the working platform under high temperature and high pressure to solidify glue. Timing is complete, the worktable opened the delivery, the delivery worktable to the next process, and back and forth cycle.

三维效果布局图

3D effect layout

3D EFFECT LAYOUT



技术参数

Technical parameter

型号	品牌	压力方式	最大压力	压板尺寸	压板厚度	型实际压板尺寸	层数	开口间距	液压站、液压阀组	加热循环电机	液压系统电机功率	油缸和数量	提升油缸（柱塞缸）	加热系统功率	最高温度	前输送平台	后接料平台
HRV-100T(1)	亨特	上往下压式	100吨	13000mmX1300mm	90mmx2 件	12500mmx1200mm	1层	0-250mm	1套（增加接油盘）	2.2kwx2 台	7.5kw	16个 70mmx250mm	4个 100mmx2500mm	4个 45kw+1个 45kw	100度	1.3X1.3米（平分3个连接）	1.3X1.3米（平分3个连接）

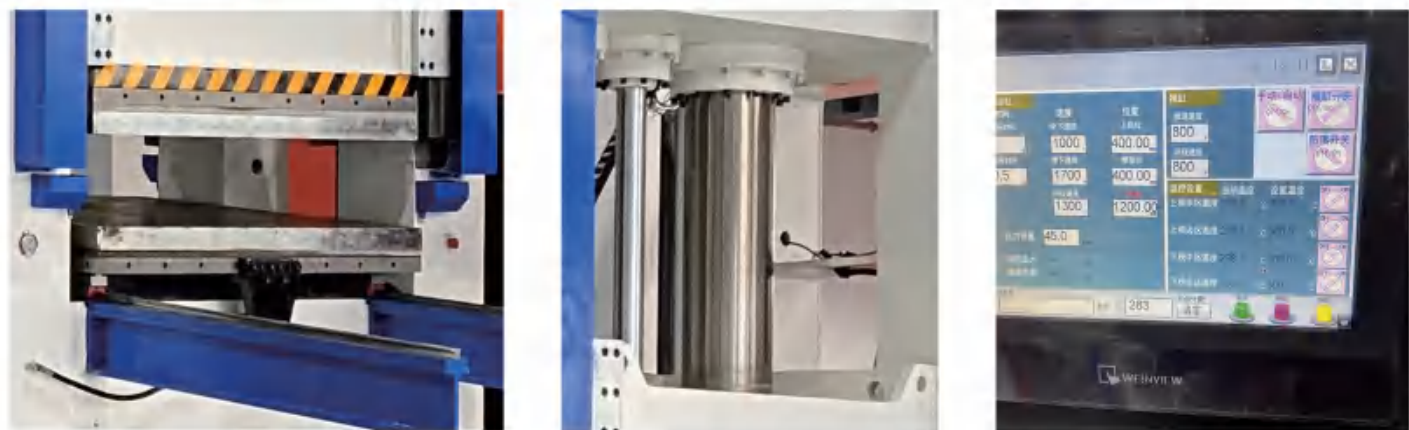
■ 框架式热压机展示图

Frame Press presentation



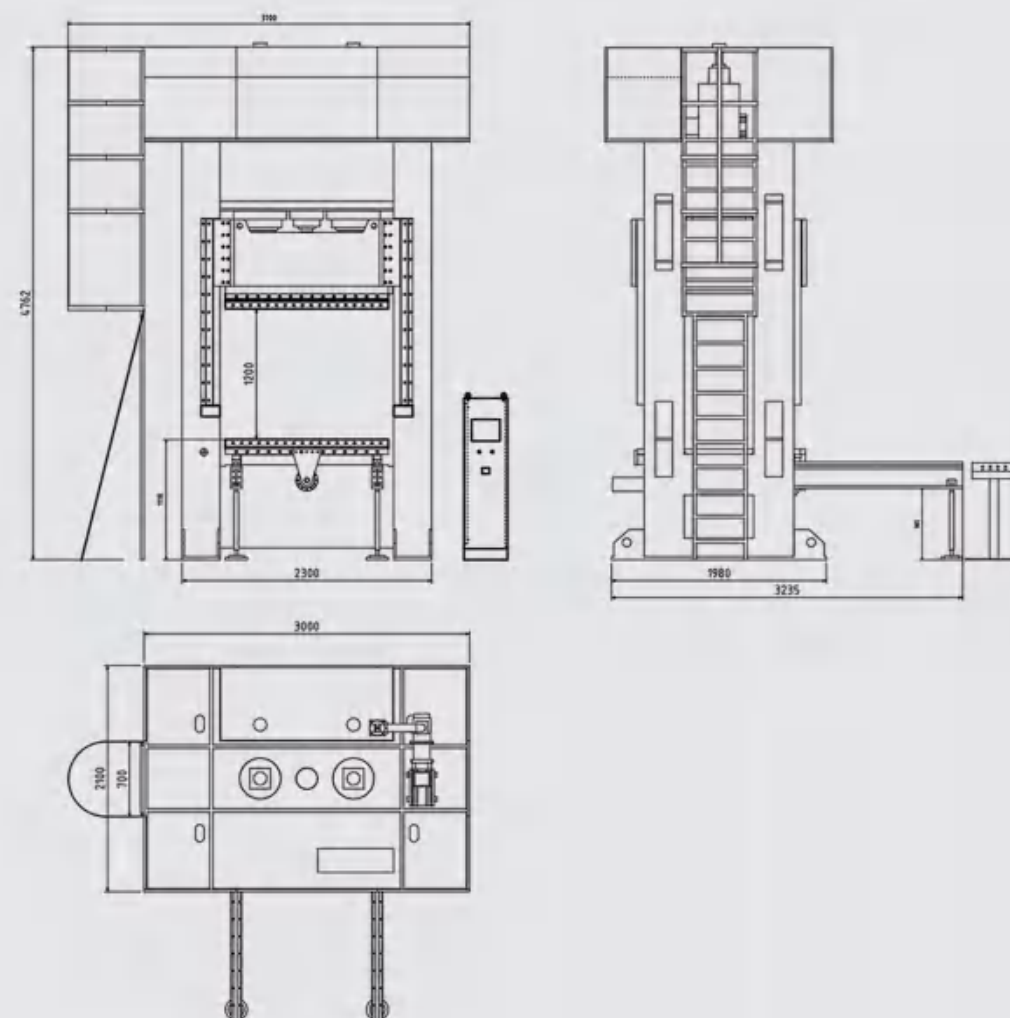
■ 细节展示图

Detail Diagram



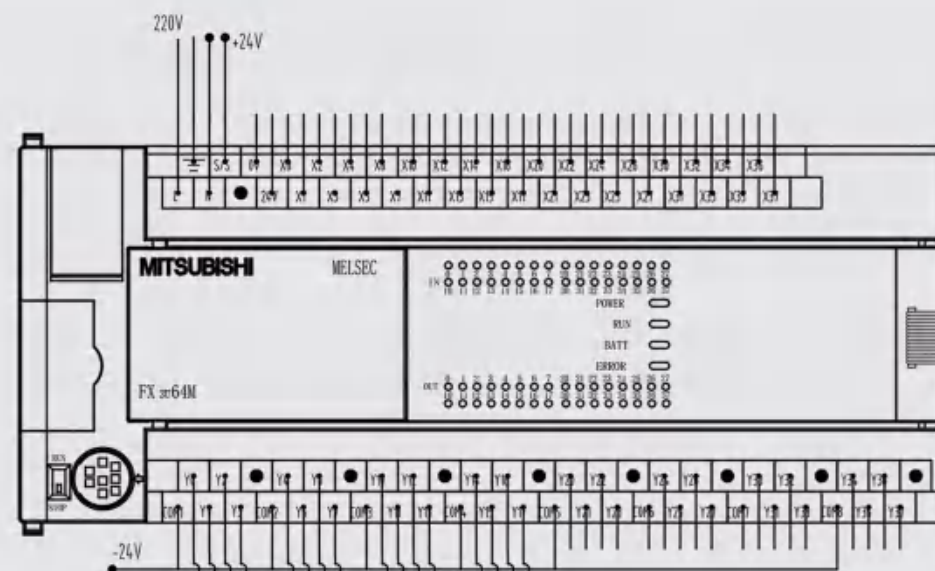
二维设计图及参数

2-D DESIGN DRAWING AND PARAMETERS



主要技术参数

项 目	单 位	规 格
主缸公称力	ton	315
液体最大工作压力	bar	200
主缸最大行程	mm	1200
开口高度	mm	1200
回程公称力	ton	19
回程工作压力	bar	150
快下速度	mm/s	200
慢下速度	mm/s	1-10
回程速度	mm/s	70
有效尺寸 左右	mm	1500
有效尺寸 前后	mm	1500
伺服电机功率	kW	22
工作台距地面高度	mm	1050
重量	T	约28
用油量 (48#-68#)	L	600L



X0	主A向	Y0	大泵高压
X1	主B向	Y1	小泵低压
X2	主回零	Y2	安全阀
X3	油压启动	Y3	充液阀
X4	油压停止	Y4	快下
X5	手/自动	Y5	慢下
X6	主点上	Y6	回程
X7	主点下	Y7	超快下
X10	光栅保护	Y10	
X11	油温保护	Y11	伺服上电
X12	双手	Y12	伺服转动
X13	双手	Y13	
X14	伺服报错	Y14	润油
X15	急停	Y15	黄
X16		Y16	红
X17	主下极限	Y17	绿
X20	报警复位	Y20	推油缸进
X21	原点复位	Y21	推油缸退
X22	气缸进限位	Y22	气缸进
X23	气缸出限位	Y23	气缸退
X24	急停	Y24	上模温控
X25	推缸进限位	Y25	上模温控
X26	推缸出限位	Y26	下模温控
X27	推缸退	Y27	下模温控

证书编号：Certificate No. 900790215-001

证书编号：Certificate No. 900790215-001

苏州市计量测试院

Suzhou Institute of Metrology

校准证书

Calibration Certificate

委托单位：Customer ***材料研究院（苏州）有限责任公司

单位地址：Address of customer

样品名称：Name of Sample 表面加热台

制造单位：Manufacturer 北京博尔顿智能装备技术研究院有限公司/监制

型号规格：Model Specification YHL6-315TS

样品编号：No. of sample 20210206001

校准日期：Date of Calibration 2021 - 03 - 08 接收日期：Receive Date 2021 - 03 - 08

批准人员：Approved by 胡涵星 职务：Position 主管

签发日期：Date of Issue 2021 - 03 - 08



(证书专用章)

网址：www.szjl.com.cn HTTP 地址：苏州市吴中区文曲路69号 Address: No. 69, Wenqu Road, Wuzhong District, Suzhou

本机构是国家法定计量检定机构, 计量授权证书号：（苏）法计(2018)1005号。
This laboratory is a national legal metrological verification institution. Authorization certificate No. (2018) 1005.

本次校准所依据的方法规范：Reference documents for the calibration methods
SZSW-0292-C-2016《电加热板表面温度校准规范》

本次校准结果判定所依据的技术规范：Technical specifications for the determination of the results of calibration

本次校准所使用的主要计量器具：Main measurement standards used in the calibration					
名称Name	编号No.	测量范围Measure Range	不确定度或准确度等级或最大允许误差Uncertainty or Accuracy Class or MPE.	溯源机构Traceability Mechanism	证书编号/有效期Certificate No./Due Date
表面温度计Surface Thermometer	81980013	(室温~300)℃	MPE: ±1.2℃ MPE: ±1.2℃	苏州市计量测试院	801553499/ 2022-01-11
热电偶Thermocouple	1#	(-20~150)℃	I级 Class I	苏州市计量测试院	801459334/ 2021-08-13

校准地点和环境条件：Location and environmental condition for the calibration
地点：苏州市相城区春耀路 客户现场(on site)
Location

温度：(21 ~ 23)℃ 相对湿度：56 %~ 60 % 其他：/
Ambient Temperature Relative Humidity Others

注：Statement 1、未经本院批准授权，不得部分采用本证书。Partly using this certificate will not be admitted unless allowed by SIM.
2、本证书的校准结果仅对当时所校准样品有效。The results of this certificate are only responsible for the item calibrated.
3、本证书未加盖校准专用章无效。The certificate is invalid without official stamp.
4、证书结果中“P”代表“合格”，“F”代表“不合格”，“N/A”代表“不适用”。In the results of the calibration, “P” stands for “Pass”, “F” stands for “Fail”, and “N/A” stands for “No applicable”.
5、除特殊情况，本报告给出的符合性说明未考虑不确定度。Except for special cases, the conformance statement given in this certificate does not consider uncertainty.

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PARTNER BRAND

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