通锦精密

新能源 New energy

高品质 High quality

低能耗 Low-energy

智能伺服压装机
Intelligent Servo Press Machine

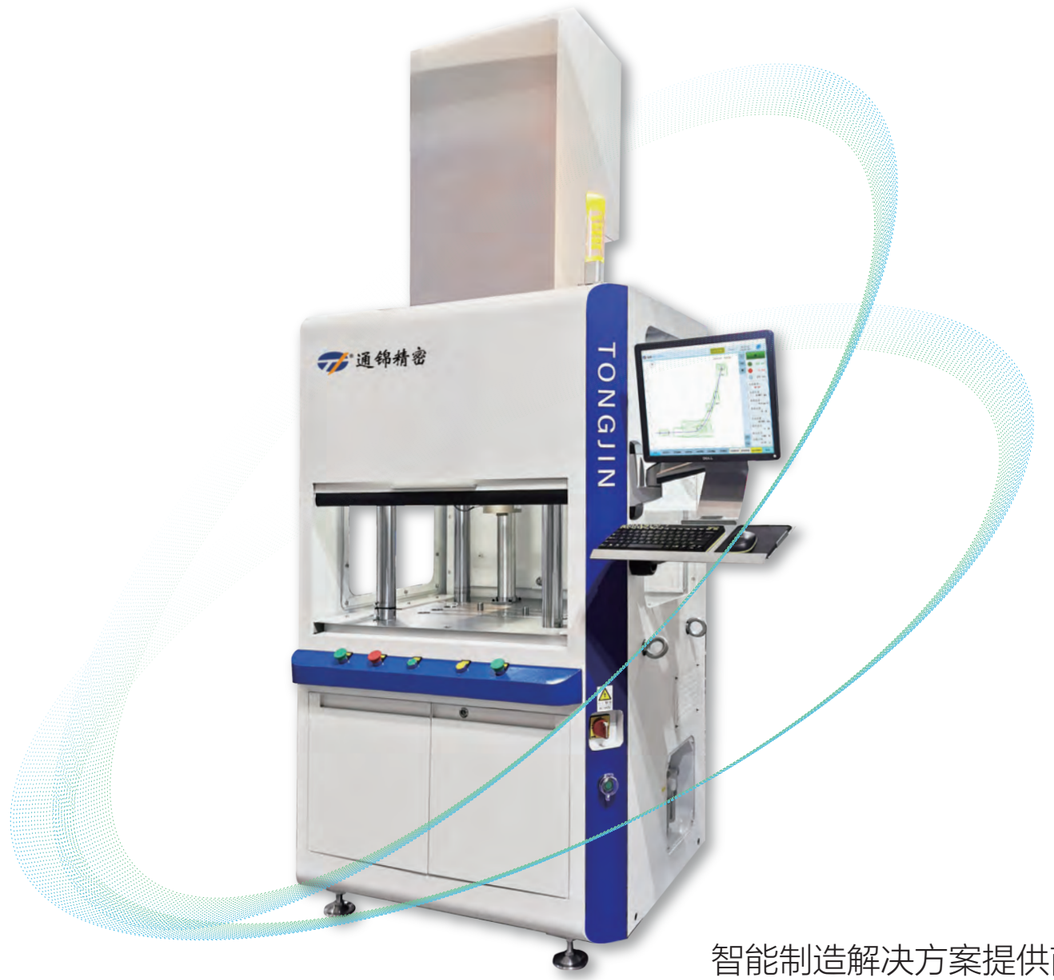
微信公众号
Wechat public account

微信视频号
Wechat video account

样册电子版
Electronic catalogue

为客户制定自动化整机和运动控制系统
提供一站式自动化系统整体解决方案

Developing automation and motion control systems and providing one-stop automation system overall solutions for customers.



智能制造解决方案提供商
Intelligent manufacturing solutions provider

苏州通锦精密工业股份有限公司
Suzhou Tongjin Precision Industry Joint-stock Co.,Ltd

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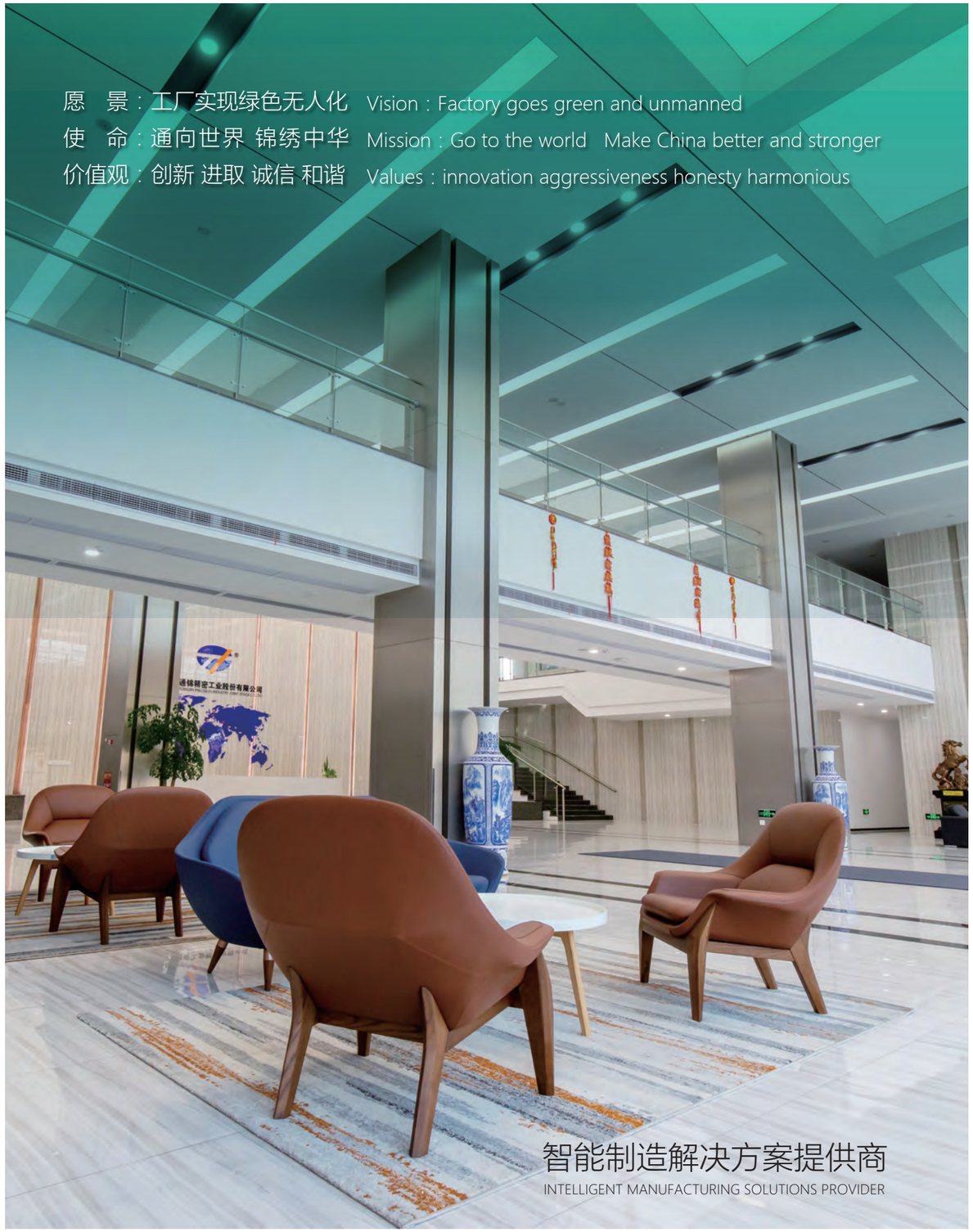


愿　景：工厂实现绿色无人化　Vision：Factory goes green and unmanned

使　命：通向世界 锦绣中华　Mission：Go to the world　Make China better and stronger

价值观：创新 进取 诚信 和谐　Values：innovation aggressiveness honesty harmonious

智能制造解决方案提供商
INTELLIGENT MANUFACTURING SOLUTIONS PROVIDER

关于通锦
ABOUT TONGJIN

苏州通锦精密工业股份有限公司成立2002年12月，目前座落于苏州市高新区建林路411号，注册资本4536万元，2015年9月股改，2016年5月18日在全国中小企业股份转让系统挂牌，股票代码837453，现有员工近300人，其中大专以上学历占比85%，研发人员80余人，核心技术人员有世界500强企业从业经验。

Suzhou Tongjin Precision Industry Co., Ltd. was established in December 2002, is currently located at No. 411 Jianlin Road, Suzhou New District. The registered capital is 45.36 million yuan. It underwent a stock reform in September 2015 and was listed on the National Small and Medium Enterprise Stock Transfer System on May 18, 2016. The stock code is 837453. Currently, there are nearly 300 employees, of which 85% have a college degree or above. There are over 80 research and development personnel, and core technical personnel have working experience in Fortune Global 500.

多年来公司深耕精密装配行业，广泛用在汽车零部件、新能源电机、家电等行业，通过实时工艺过程展示与数据分析，实现从单一的设备提供商向设备软件硬件整套解决方案服务商的数字化转型。结合六关节机器人为客户提供一站式工厂智能装备自动化系统整体解决方案，实现工业4.0。

Over the years, the company has been deeply involved in the precision assembly industry, widely used in industries such as automotive parts, new energy motors, and home appliances, By showing real-time process and data analysis, we realize the digital transformation from a single equipment provider to a complete solution service provider of equipment software and hardware. Combined with the six-joint robot to provide customers with a one-stop factory intelligent equipment automation system overall solution to achieve Industry 4.0.

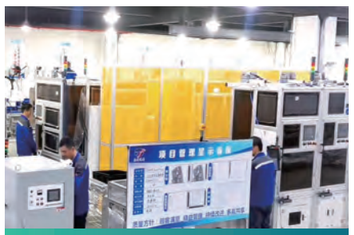
行业标准
推动者
Industry Standard Promoter

自主研发
自动化核心部件
Independently developed automation core components

智能制造
整体解决方案
Intelligent manufacturing overall solution

·自建厂房生产基地
·Self-built factory production base

·研发中心
·Research and development center


·装配调试车间
·Assembly and debugging workshop

知识产权
INTELLECTUAL PROPERTY

200+
申请专利
Apply for a patent

110
有效授权专利
Validly granted patent

35
授权发明专利
Authorized invention patent

74
授权实用新型专利
Authorized utility model patents

14
软件著作权
Software copyright

截至2024年01月
As of January 2024

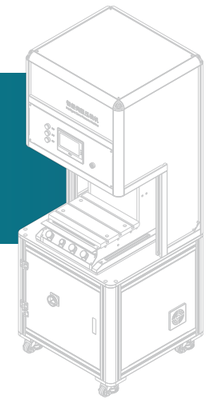
资质荣誉
QUALIFICATION HONOR

- 国家级专精特新小巨人企业
- 中国非标自动化集成商全国百强
- 江苏省专精特新中小企业
- 江苏省智能制造领军服务机构
- 江苏省高新技术企业
- 江苏省智能机械手工程技术研究中心
- 江苏省研究生工作站
- 江苏省民营科技企业
- 苏州市智能伺服压装机工程技术研究中心
- 华东理工大学、苏州大学研究生工作站
- 南京航空航天大学研究生培养基地
- 江苏省HV电机自动化产线首台套项目
- 江苏省智能制造服务示范企业
- ISO9001:2015质量管理体系认证
- ISO14001:2015环境管理体系认证
- 知识产权贯标体系
- 两化融合管理体系

"National specialized special new small giant Enterprise"
"China's Top 100 Non-standard Automation Integrators"
"Jiangsu Province specialized new small and medium-sized Enterprises"
"Jiangsu Intelligent Manufacturing Leading Service Organization"
"High-tech Enterprise in Jiangsu Province"
"Jiangsu Intelligent Manipulator Engineering Technology Research Center"
"Jiangsu Graduate Workstation"
"Jiangsu Private Science and Technology Enterprise"
"Suzhou Intelligent Servo Press Machine Engineering Technology Research Center"
"East China University of Science and Technology"&
"Suzhou University Graduate Workstations"
"Nanjing University of Aeronautics and Astronautics Graduate Training Base"
"The first set of HV motor automation production line in Jiangsu Province"
"Jiangsu Province Intelligent Manufacturing Service Demonstration Enterprise"
"ISO9001:2015 Quality Management System Certification"
"ISO14001:2015 Environmental Management System Certification"
"Intellectual Property Standards Implementation System"
"Two integration management System"

质量方针
QUALITY POLICY

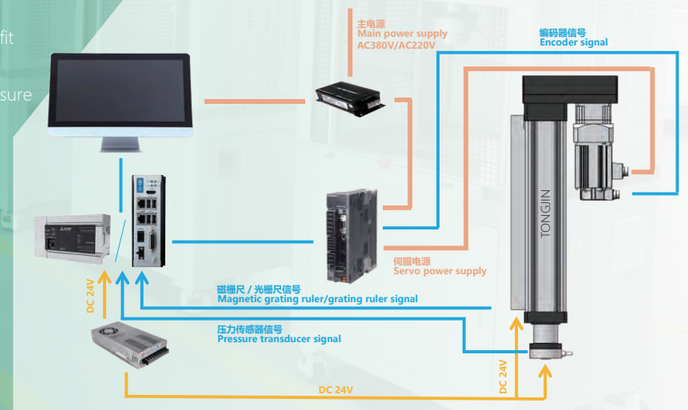
· 顾客满意 · 精益求精 · 持续改进 · 多赢共享
· Customer satisfaction · Strive for excellence · Continuous improvement · All win and share



结构介绍
STRUCTURE INTRODUCTION

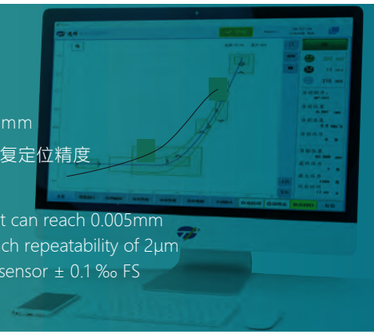
多种压装模式
Multiple press-fit modes
自动补偿精度
Automatic compensation accuracy
数据可追溯性和远程监控
Data traceability and remote monitoring
在线压装质量检测
On-line press-fit quality inspection
环保、节能、安全、操作成本低
Environmental protection, energy saving, safety, low operating costs
精确控制压装装配尺寸
Precise control of the dimensions press-fit assembly
精确控制压装停止位置
Precise control of the stop position of press-fit
精确控制压装时间及压力
Precise control of the press-fit time and pressure
精确控制压装停止力
Precise control of the press-fit stop force

通锦TJSP系列伺服压装机适用于力范围
0.5-1000kN 精密装配
Tongjin TJSP series servo press machine is suitable for force range of 0.5-1000KN Precision Assembly



- ☑ 节能环保 Energy conservation and environmental protection
- ☑ 智能生产 Intelligent production
- ☑ 数据追溯 Data traceability
- ☑ 精度精密 Accuracy and precision
- ☑ 自研软件 Self developed software
- ☑ 拓展广泛 Expand widely

位移重复定位精度可达到0.005mm
外置位置传感器可实现2微米重复定位精度
力传感器测量精度±0.1‰FS
The repeatability of displacement can reach 0.005mm
External position sensors can reach repeatability of 2μm
Measurement accuracy of force sensor ± 0.1 ‰ FS



基本操作
BASIC OPERATION

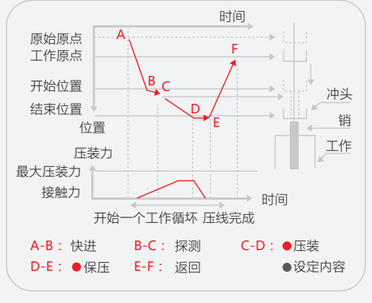
01 示教模式 Teaching mode

可以设定相关的参数。
Teaching mode: relevant parameters can be set.

02 运行模式 Operation mode

启动按钮，伺服压装机按照已经设定的参数开始运行（如下图示曲线）。

Operation mode: start button, the servo press machine starts to run according to the set parameters (as shown in the curve below).



03 外部控制模式 External control mode

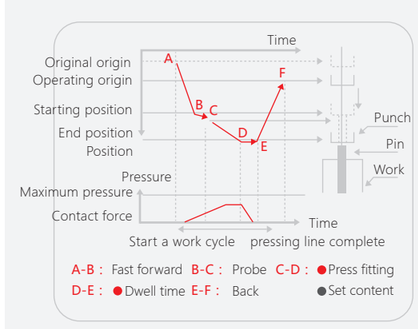
伺服压装机可以通过外部I/O端口接受运行指令进行工作。

External control mode: the servo press machine can work by receiving running instructions from external I/O ports.

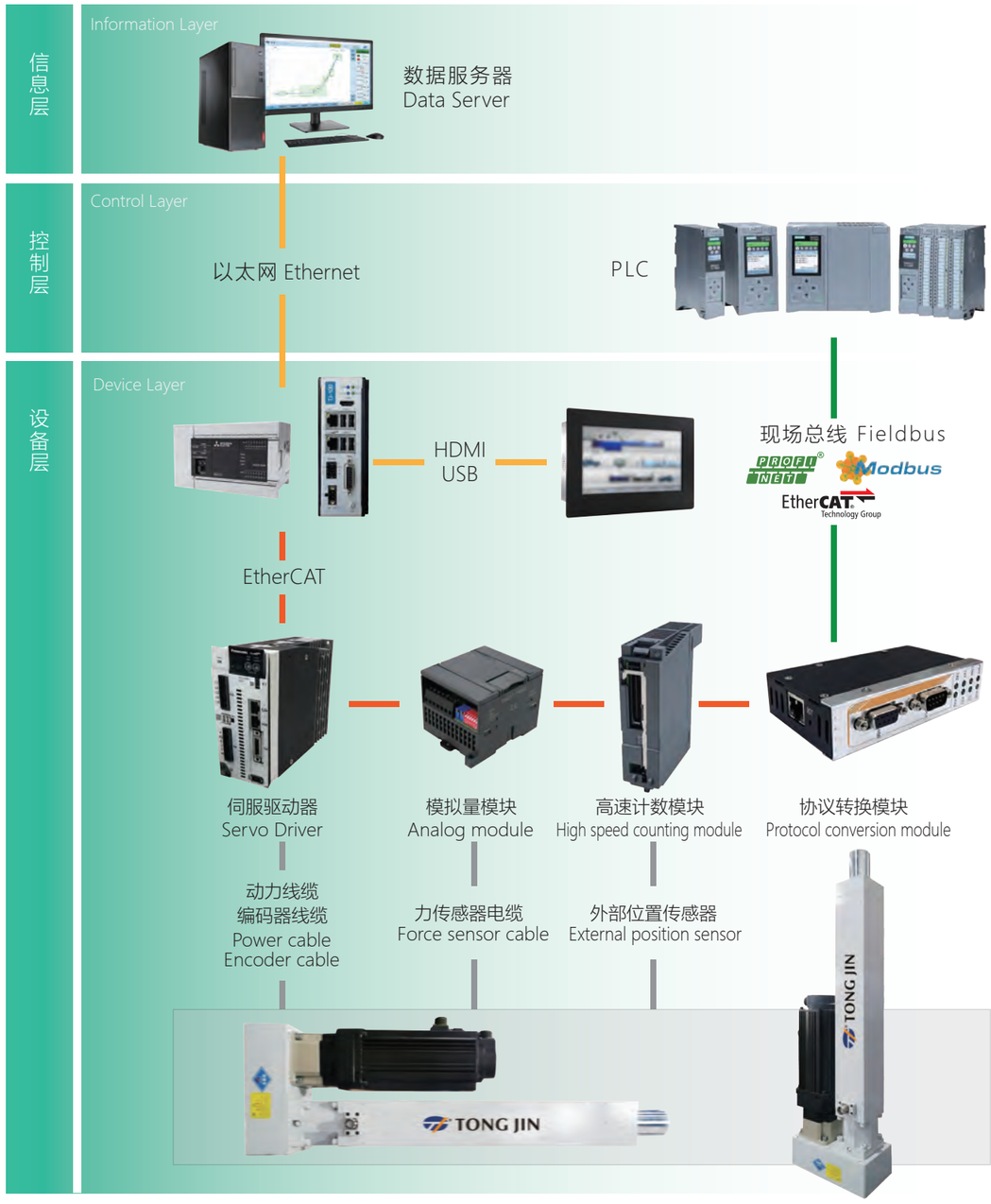
04 编辑功能 Editing function

允许在压装过程中进行多种条件设置去控制压装速度和停止位置，实现设定判定窗口和增量控制等应用。

Editing function: allow multiple conditions to be set during the pressing process to control the pressing speed and stop position, achieving applications such as setting judgment windows and incremental control.



网络系统图
NETWORK SYSTEM DIAGRAM



伺服压装机软件
SERVO PRESS MACHINE SOFTWARE

通锦伺服压装机在对产品的压入过程中，实时显示当前压装位置、压装力，并及时准确的判断过盈量是否大小合适，同时显示出整个力与位移的压装曲线，很好的解决了传统压机只能压入不能检测、试验机效率低不能批量生产的弊端；

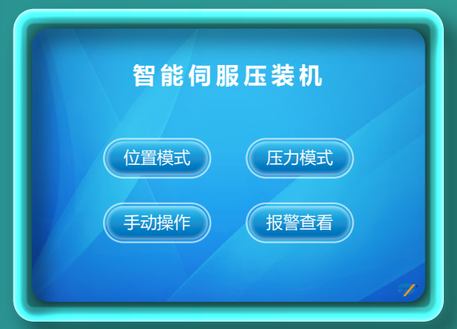
In the process of pressing the product, Tongjin servo press machine displays the current pressing position and pressing force in real time, and judges whether the interference is appropriate in time and accurately. At the same time, it displays the pressing curve of the entire force and displacement, which solves the disadvantages of traditional presses that can only be pressed and cannot be detected, and the low efficiency of the testing machine cannot be mass-produced.

√ 界面友好	√ 易于操作	√ 一键模式	√ 快速查看
Friendly interface	Easy to operate	One-click mode	Quick look

操作共分为位置模式操作，压力模式操作，手动操作三部分，位移压力曲线可放大缩小，操作简单，控制方便。
Operation is divided into position mode operation, pressure mode operation, manual operation three parts, the displacement pressure curve can be enlarged and reduced, simple operation, easy control.

最大压力 Maximum pressure	工作行程 Working stroke	下行速度 Down speed
1000KG	**50-1000MM**	**0~80MM/S**
工作速度 Working speed	上行速度 Up speed	重复定位精度 Repeatability
0~50MM/S	**0~150MM/S**	**±0.01MM**
压力精度 Pressure accuracy	电压 Voltage	功率 Power
±1%F.S	**单相Single Phase220V 三相Three Phase380V**	**0.1-24KW**

触摸屏设置界面
Touch screen settings interface



数控压装系统
CNC PRESS-FIT SYSTEM

A

自主研发控制系统软件，涵盖运动控制规划、曲线采集处理、曲线绘制、曲线评估等功能，实现生产数据管理。

Independently developed control system software, covering motion control planning, curve acquisition and processing, curve drawing, curve evaluation and other functions to achieve production data management.

B

菜单简洁明了，精简优化了功能层级，两步可达需求页面。

The menu is concise and clear, with streamlined and optimized functional levels, reaching the required page in two steps.

C

过程监控页面参数设置页面及调试页面均有快速跳转按钮，减少复杂操作逻辑，学习成本低、易记、易上手。

The process monitoring page, the parameter setting page and the debugging page all have quick jump buttons, reducing complex operation logic, making learning cost low, easy to remember, and easy to get started.

主界面介绍
INTRODUCTION TO THE MAIN INTERFACE

状态栏介绍 Introduction to Status Bar

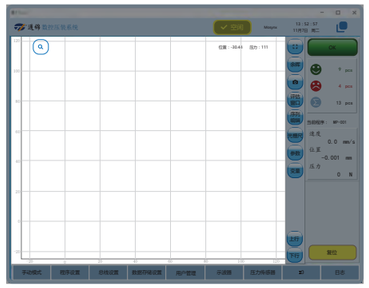
1、公司logo
2、设备状态：空闲，急停，运行
3、用户登录
4、时间日期
5、设备关机

1. Company logo
2. Device status: idle, emergency stop, running
3. User login
4. Time Date
5. Device shutdown

主菜单 Main menu

主菜单主要包括：手动模式，程序设置，总线设置，数据存储设置，用户管理，示波器，压力传感器，IO表，日志，全屏模式，余晖，评估窗口，序列编辑，光栅尺，参数，变量。

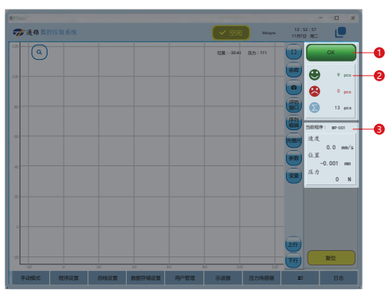
The main menu includes: manual mode, program settings, bus settings, data storage settings, user management, oscilloscope, pressure sensor, IO table, log, full screen mode, persistence, evaluation window, sequence editing, raster ruler, parameters, variables.



曲线区域 Curved area

显示当前程序压装过程中的实时曲线，以及当前程序设置的评估窗口。

Display the real-time curve during the current program pressing process, as well as the evaluation window set by the current program.



压装状态和结果 Pressing status and results

1、当前压装后的结果：OK 为成功，NOK 为失败。
2、当前产品合格不合格统计。
3、当前程序：速度，位置，压力。

1.The current result after pressing: OK indicates success, NOK indicates failure.
2.Current product qualification and non conformity statistics.
3.Current program, speed, position, pressure.

手动模式
Manual mode

手动模式分有两种模式：连续模式和增量模式，当在连续和增量模式下时，前进和后退按钮使能打开，如下图所示。
There are two modes of manual mode: continuous mode and incremental mode. When in continuous and incremental mode, the forward and backward buttons are enabled, as shown in the following figure.

手动模式包括如下参数：
The manual mode includes the following parameters:

1. **手动速度** 1. Manual speed
2. **手动最大位置** 2. Manual maximum position
3. **手动最大压力** 3. Manual maximum pressure
4. **手动最大扭矩** 4. Manual maximum torque
5. **增量步长** 5. Incremental step size

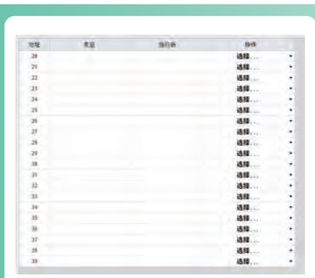
程序设置
Program settings

程序设置主要是用于程序的选择，如左图所示，支持128 个程序选择。
Program settings are mainly used for program selection, as shown in the left figure, supporting 128 programs.

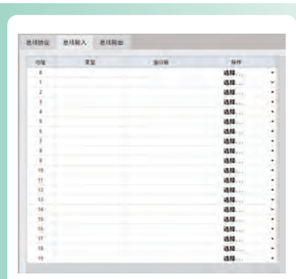
总线设置包括：总线协议，总线输入，总线输出。
The bus settings include: bus protocol, bus input, and bus output.

总线协议
Bus protocol

总线输入
Bus input



总线输出
Bus output



数据存储设置
Data storage settings

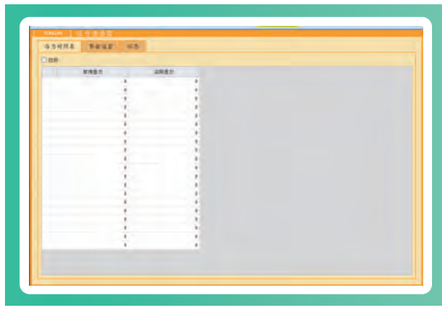
数据存储：本地存储，可移动存储，FTP 远程存储。
Data storage: local storage, removable storage, FTP remote storage.

用户管理
User Management

示波器和变量
Oscilloscope and variables

用于现场调试和问题快速定位。
Used for on-site debugging and rapid problem localization.

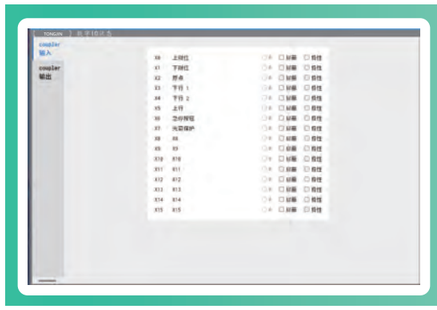
压力传感器
Pressure sensor

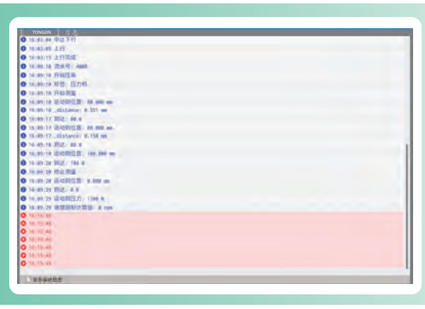


压力参数表、参数设置、状态
Pressure parameter table, parameter settings, status

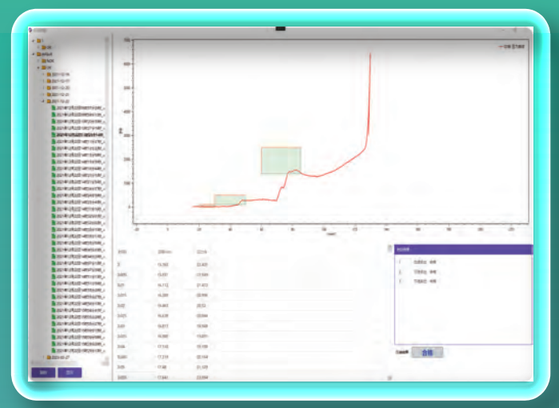
IO

日志
Log





电脑操作设置界面
Computer operation settings interface

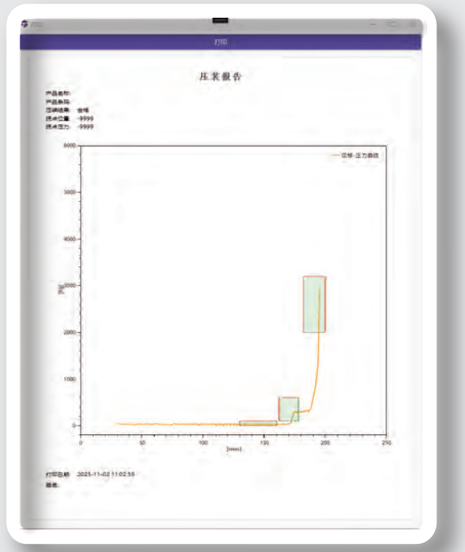


历史数据界面，可以显示历史数据，可以根据日期，产品型号保存历史数据信息，显示历史产品曲线，通过历史数据可以反推产品工艺细节，方便客户优化产品工艺等。

The historical data interface can display historical data, save historical data information based on dates and product models, display historical product curves, and reverse product process details through historical data to facilitate customers to optimize product processes.

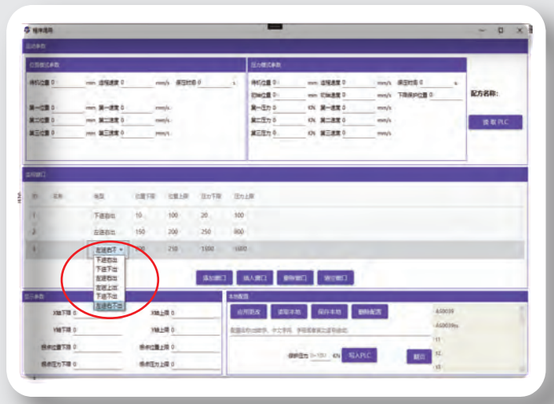
扫码枪可配置，串口或网口扫码枪，记录产品条码与历史数据做绑定，可具体查询和追溯。

The scanner can be configured with a serial or network port, which records product barcode and binds them to historical data for specific query and traceability.



配置打印机，可打印历史数据的文档，方便客户线下查看数据信息和曲线。

Configure a printer to print historical data documents, which facilitates customers to view data information and curves.



曲线判断框可根据客户工艺添加，判断框类型有6种，根据需求添加即可。

The curve judgment box can be added according to the customer's process, and there are 6 types of judgment boxes that can be added according to needs.

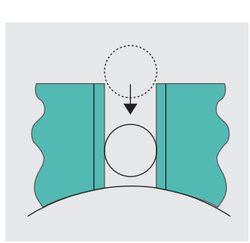
功能应用
FUNCTIONAL APPLICATION

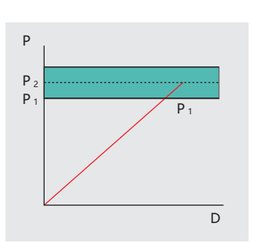
精确控制压装装配尺寸
Precise control the dimension press-fit assembly

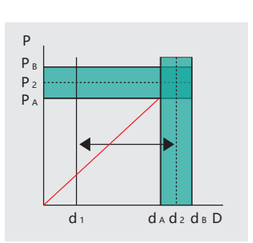
100%
装配精度
Assembly precision

伺服压装机按照设定的压入深度精确试压，可以补偿工作尺寸公差，保证最终装配精度。同时可以设定压力和位移质量判定区域，在线检测确保产品压装 100%合格。

The servo press machine can accurately test the pressure according to the set pressing depth, which can compensate for the working dimensional tolerance and ensure the final assembly precision. At the same time, the pressure and displacement quality judgment area can be set, and online testing can ensure that the product is 100% qualified when press-fit.





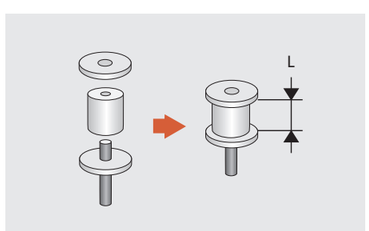


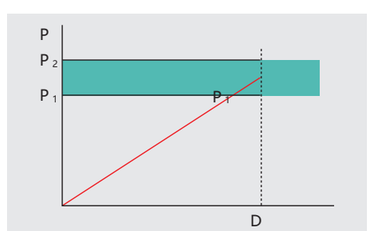
精确控制压装停止位置
Precise control the stop position of press-fit

100%
停止位置
Stop Position

导轮装配在两个定位托盘之间，装配要求精确压装托盘以保证尺寸。
设定精确停止位置，检测停止时的压力。

The guide wheel is assembled between two positioning discs, and the assembly requires precise pressing of the discs to ensure dimension.
Set the precise stop position and detect the pressure at the stop.



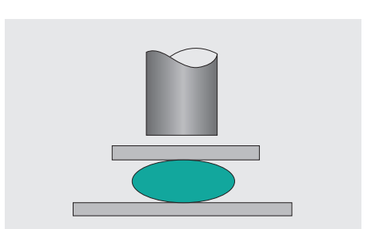


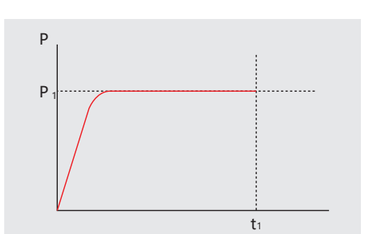
精确控制压装时间及压力
Precise control the press-fit time and pressure

100%
定时定压
Timing and Constant Pressure

伺服压装机可以实施精确的定时定压作业以保证安全可靠的粘接，广泛应用在粘接作业和超声波焊接过程中。

The servo press machine can carry out precise timing and constant pressure operation to ensure safe and reliable adhesion. It is widely used in adhesion operation and ultrasonic welding.



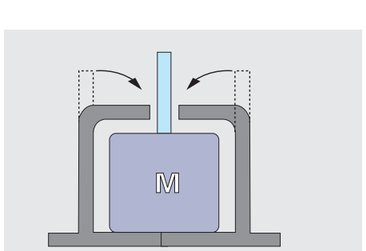


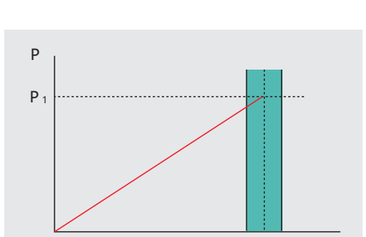
精确控制压装停止力
Precise control press fit stop force

100%
停止控制
Stop Control

铝罩壳的封装，需要精确的力和位移控制，精确设定压力，控制压装终止时的位置，以避免马达受到压力破坏。

The encapsulation of the aluminum housing requires accurate force and displacement control, precise pressure setting, and control of the position at the termination of the pressing to avoid pressure damage to the motor.





主要功能特性
MAIN FUNCTIONAL FEATURES

多种压装模式
Multiple press-fit modes

满足高精度精确生产和质量控制要求
Meet high precision production and quality control requirements

伺服压装机可以精确控制压装速度、位置和压力。设定多种压装程序，包括恒定压装速度、设定精确位置停止、设定精确力停止、设定精确压装位移停止等多种工作模式，很容易完成两段或多段压装工作要求。在行程之内，可以任意设定机器精确位置停止，不必使用昂贵的精密模具来保证压装精度。位置重复精度为±0.01mm，压力控制精度为± 1%额定压力。

The servo press machine can accurately control the press-fit speed, position, and pressure. Setting various press-fit procedures, including constant press-fit speed, setting precise position stop, setting precise force stop, setting precise press-fit displacement stop, and other working modes, makes it easy to complete the requirements of two or more stages of press-fit work. Within the stroke, the precise position of the machine can be arbitrarily set to stop, without the need to use expensive precision molds to ensure the precision of press-fit. The positional repeatability is ± 0.01mm, and the pressure control accuracy is ± 1% of the rated pressure.

自动补偿精度
Automatic compensation accuracy

满足特定工况下的精密装配要求
Meet the requirement of precise assembly under certain working conditions

对于精度超差工作之间的精密压力装配要求，对机架变形影响精密压力装配的要求，伺服压装机有独特的解决方法。即：软件自动补偿，系统动态补偿或外部触发停止功能。

The servo press machine has a unique solution to the precision pressure assembly requirements between the precision superpoor work and the influence of frame deformation on precision pressure assembly. Namely: software automatic compensation, system dynamic compensation or external trigger stop function.

数据追溯
Data traceability

数据可追溯性和远程监控
Data traceability and remote monitoring

压装过程中数据可实时追溯存储及远程监控，确保其产品后续品质跟踪。

The data during the press-fit process can be traced, stored, and remotely monitored in real time to ensure the follow-up quality tracking of its products.

在线压装质量检测
Online press-fit quality inspection

满足压装全过程品质控制和数据管理
Meet the whole process of quality control and data management

在作业完毕后，所有作业设定和结果数据及压力位移曲线可以显示在伺服压装机的人机界面上，有效控制过盈配合质量，同时满足作业数据可追溯管理、检测并去除不良品，避免造成更大的损失。同时，也可以帮助优化工艺参数和设计。
具备在接触到力时，检查此时位置功能，判定工作有无和方向是否正确。
具备在任意压装位移范围内检测压力和对各项压力值（最大值、增量和其他数值）取样，从而判定是否满足设定的质量控制条件。
具备在终止位置检测压力和位置，判定是否满足终止位置设定的质量控制条件。

After the completion of the work, all working settings, result data, and pressure displacement curves can be displayed on the human-machine interface of the servo press machine, effectively controlling the quality of interference fit, while meeting the traceability management of working data, detection, and removal of defective products, to avoid causing greater losses. At the same time, it can also help optimize process parameters and design.
Having the function of checking the position when in contact with force and determining whether it is working and the direction is correct.
Capable of detecting pressure within any range of press-fit displacement and sampling various pressure values (maximum, increment, and other values) to determine whether the set quality control conditions are met. Capable of detecting pressure and position at the termination position to determine whether the quality control conditions set for the termination position are met.

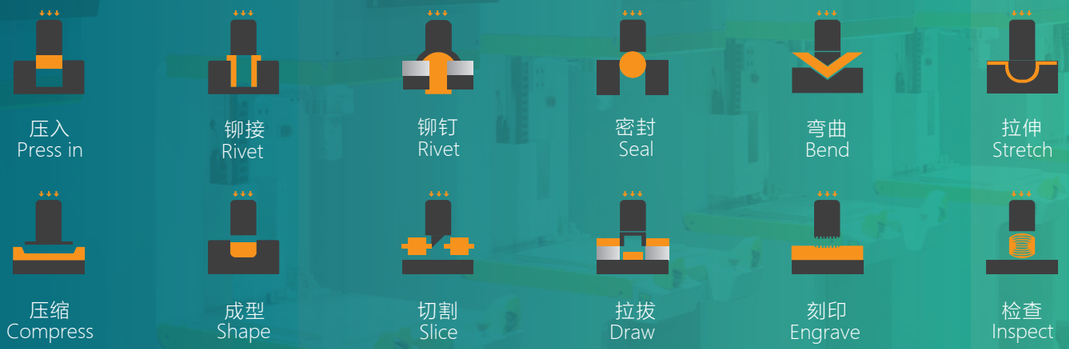
环保 节能 安全
Environmental protection energy saving and safety

环保、节能、安全、操作成本很低
Environmental protection, energy saving, safety, low operating cost

交流伺服电机驱动装置提供洁净的工作环境，满足不同洁净车间的特色要求。
伺服压装机和气压、液压设备相比节能约80%,且满足国际环保标准（ISO14000）。

The AC servo motor drive device provides a clean working environment that meets the unique requirements of different clean workshops.
Compared with pneumatic and hydraulic equipment, the servo press machine can save about 80% energy and meet international environmental standards (ISO14000).

工艺应用
PROCESS APPLICATION

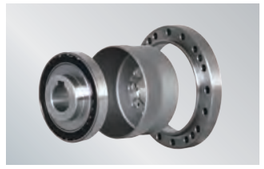


伺服压装机的应用领域
APPLICATION FIELD AND CASE OF SERVO PRESS MACHINE

微电机与伺服电机组件装配
Assembly of micromotor and servo motor component

汽车水泵组件精密装配
Precise assembly of auto water pump component

家　电
Household appliances



减速机组件精密压装
Precise press- mounting of gearbox component

压力精确检测位移及压力
Pressure test accurately detects displacement and pressure

副车架
Subframe

发动机组件装配
Assembly of generator Component

柱销/套压力装配
Assembly of pin/sleeve pressure

燃料电池精密压装
Precise press-fit of fuel cell

传动轴
Transmission shaft

轴承压力装配
Assembly of bearing pressure

新能源电机
New energy motor

1 汽车行业>>
Auto industry

发动机：连杆衬套、连杆销、轴承盖销、发动机缸盖阀座、缸盖导管、水泵等压装。

变速箱：链轮轴承、拨叉衬套、空心定位销、密封圈等压装。

底盘系统：转向节轴承、摆臂衬套、连杆衬套、转向节轮毂、副车架等压装。

轮毂相关：轮毂轴承、齿圈、油封、螺栓等压装。

Engine: press-fit of connecting rod bushing, connecting rod pin, bearing cover pin, engine cylinder head valve seat, cylinder head conduit, water pump, etc.
Gearbox: press-fit of sprocket bearing, fork bushing, hollow positioning pin, seal ring,etc.
Chassis system: press-fit of steering knuckle bearing, swing arm bushing, connecting rod bushing, steering knuckle wheel hub, subframe, etc.
Hub related: press-fit of hub bearing, gear ring, oil seal, bolt, etc.

2 家电行业>>
Household appliance industry

洗衣机：滚筒、外壳、内槽.....等。
电视机：背板的金属框架。
Washing machine: drum, housing, inner tank, etc
Television: metal frame of the backboard

3 机电行业>>
Electromechanical industry

电机转子、电机轴承、电机轴承盖等压装。
Motor rotor, motor bearing, motor bearing cover, etc.

4 新能源行业>>
New energy industry

氢燃料电池电堆压装站。
双极板和膜电极密封压装压力与位移监控。
Hydrogen fuel cell stack press-fit station
Bipolar plate and membrane electrode seal press-fit pressure and displacement monitoring.

产品支持
PRODUCT SUPPORT

使用培训 USE TRAINING

快速上手
Get started quickly

普通操作工人可在短时间内快速掌握伺服压装机的使用方法，简约的界面设计，简化的操作流程，降低了使用门槛。操作员在界面可快速学会使用，几次简单的点击即可完成操作。

Ordinary operators can quickly master the use of servo press machine in a short time, simple interface design, simplified operation process, and lower the threshold of use. The operator can quickly learn to use the interface and complete the operation with a few simple clicks.

赋能管理者
Empower managers

教学如何维护压机软件，这对管理者来说至关重要，一旦掌握其中奥妙，将从强大的数据化能力中长期受益。由新手进阶到专家，可提供详尽的管理者培训，让管理者掌握随时培训下属团队的能力。

It is crucial for managers to teach how to maintain press software. Once you master the secret, you will benefit from the powerful data ability in the long term. From novice to expert, we can provide detailed manager training, so that managers can master the ability to train subordinate teams at any time.

售后维护 AFTER-SALES MAINTENANCE

维修便捷
Convenient maintenance

核心供应链位于国内，保障维修周期短、响应迅捷、工作日内快速电话响应，24小时内出具解决方案。

The core supply chain is located in China, ensuring short maintenance cycle, quick response, quick phone response within working days, and solution issuance within 24 hours.

全程质量监控
Whole-process quality control

在交付前将对设备的质量、规格、性能、数量等进行全面、细致的检验，并出具符合合同规定的检验合格证书。

Before delivery, the quality, specifications, performance and quantity of the equipment will be comprehensively and carefully inspected, and the inspection certificate in accordance with the contract will be issued.

Case

汽车变量泵精密自动伺服压装生产线
Precision automatic servo press assembly production line for automotive booster pumps

一、生产线简介 Introduction to the production line

苏州通锦为某汽车变量泵定制的精密自动伺服压装生产线，在国内属于首创。在整个装配过程中，以泵体为装配基础，即在装配线的各机台上均需对泵体扫描二维码作为产品追踪识别码，便于在后续使用过程中进行产品质量追踪，同时进行数据存储和数据追溯。

泵体作为装配基础，在装配过程中通过托盘在各机台间周转，直到最后一步组装下线后，托盘通过下层倍速链进行回收，完成一个组装循环。

The precision automatic servo press assembly production line customized by Suzhou Tongjin for a certain automotive variable pump is the first in China. Throughout the entire assembly process, the pump body is used as the assembly basis, which means that the pump body needs to be scanned with a QR code as the product tracking identification code on each machine on the assembly line, facilitating product quality tracking during subsequent use, as well as data storage and traceability.

As the assembly foundation, the pump body is rotated between various machines through pallets during the assembly process until the last assembly step is off the line. The pallets are recycled through the lower speed chain to complete an assembly cycle.

二、产线功能介绍及布局 Introduction and layout of production line functions

OP10
压球涨式堵头
Pressure ball expansion plug

OP20
压油封
Pressure oil seal

OP30
组装泵轴组件
Assembly of pump shaft components

OP40
组装前侧板、四大件总成
Assemble the front side panel and four major parts assemblies

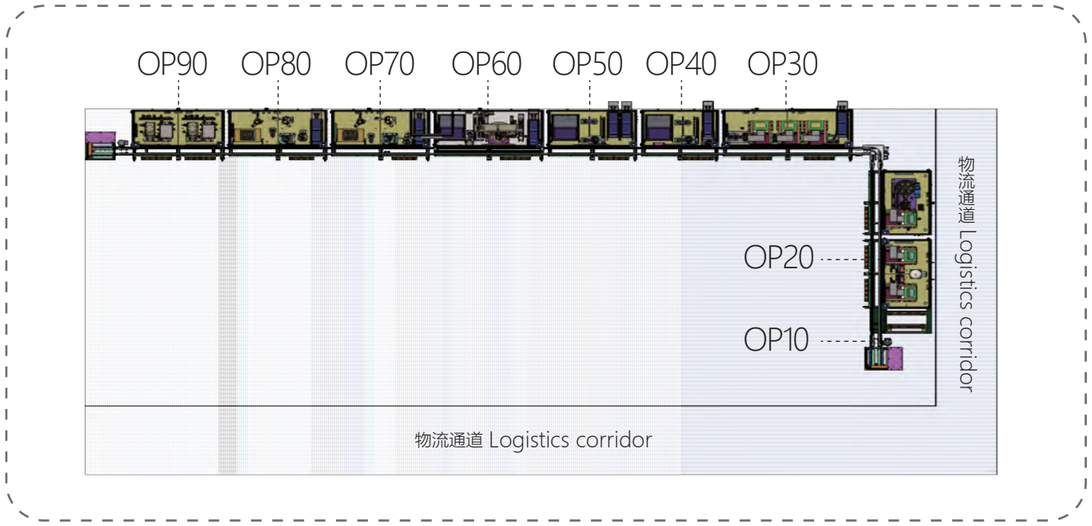
OP50
组装后侧板、配油盘、密封圈
Assemble the rear side panel, oil distribution disc, and sealing ring

OP60
组装后盖、锁螺栓
Assemble the rear cover and lock bolts

OP70
组装弹簧、阀体、锁阀孔螺塞
Assemble the spring, valve body, and lock valve hole plug

OP80
组装弹簧、锁阀孔螺塞
Assemble the spring and lock valve hole plug

OP90
气密性测试
Air tightness test



Case 副车架衬套压装生产线 Production line for subframe bushing press-fit

一、压装方案 Press fit plan

OP10

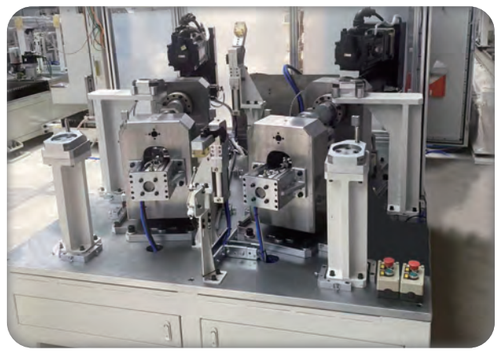
压装工位采用一台由一个PLC控制的双头双工位立式压装机，可同时压装两个衬套，在压完一个工位的前两个衬套后，夹具自动前移，两个压头自动调整进行压装后两个衬套。在压完OP10工序两个衬套后，机器人抓取车架至OP20压装工位；

The press-fit station adopts a double head and double station vertical press machine controlled by a PLC, which can press-fitting two bushings simultaneously. After pressing the first two bushings of one station, the fixture automatically moves forward, and the two pressing heads automatically adjust to press-fit the last two bushings. After pressing the two bushings in the OP10 process, the robot grabs the frame to the OP20 press-fit station;

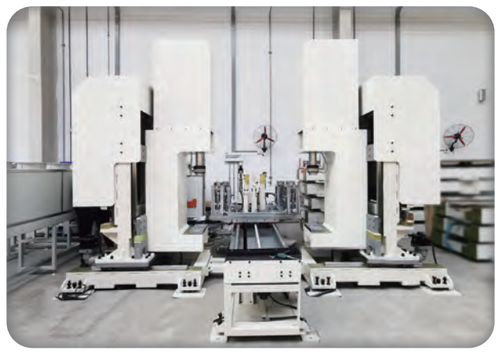
OP20

压装工位采用一台由一个PLC控制的立式专用压装机，压装副车架后悬置衬套一次压装一个衬套，在压完两个衬套后，中空旋转平台旋转压装副车架后横臂衬套，四轴机器人自动上衬套，自动压装，压装完成机器人下料至皮带线下料；

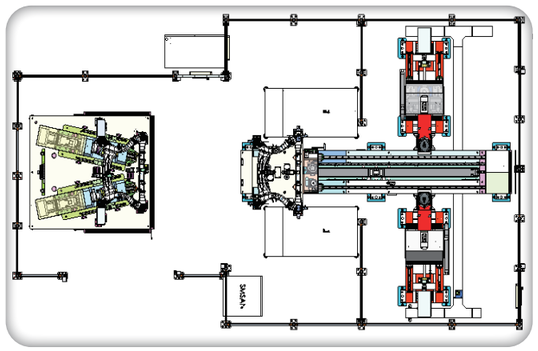
The press-fit station adopts a vertical specialized press machine controlled by a PLC. After pressing the subframe, suspending the bushing once and press-fitting one bushing. After press-fitting two bushings, the hollow rotating platform rotates the press-fit subframe rear transverse arm bushing. The four axis robot automatically loads the bushing and presses it. After press-fit is completed, the robot unloads the material to the belt line;



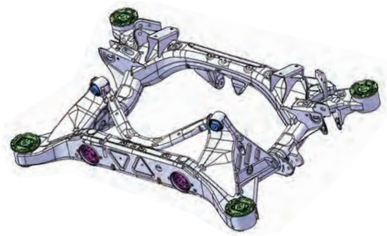
OP10



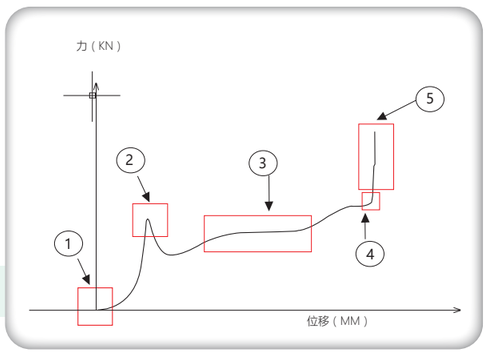
OP20



整体布局 Overall layout



产品展示Product Display



二、监控框功能说明 Function Description of Monitoring Box

1号框 Box one

表示对衬套进入套管刚接触时产生陡升力的位移进行监控。

Indicates the monitoring of the displacement of steep lift force generated when the bushing is pressed into and just contacted with the sleeve.

2号框 Box two

表示对衬套在导边进入套管后直到平稳压入的这一过程中，可能出现的最大压入力进行监控。

Indicates the monitoring of the maximum possible pressing force that may occur during the process of the bushing is pressed into the sleeve with the guide edge until it is smoothly pressed in.

3号框 Box three

进入压装平稳状态的压入力变化，常规的压入力范围可由此框进行监控。

The change in pressing enters a stable state of press-fit, the regular pressing force range can be monitored from this box.

4号框 Box four

表示对压装过程中的最大压入力进行判断，可在预设的保险位移（5MM）内对最大压入力进行判断。

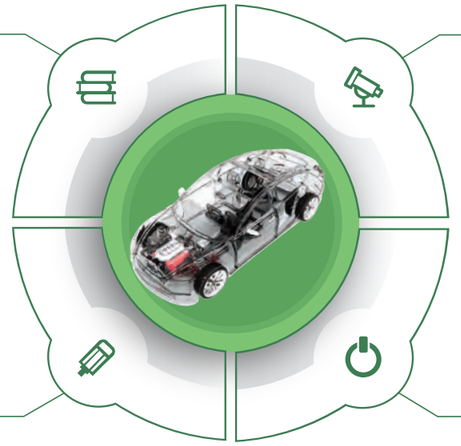
Indicates the judgment of the maximum pressing force during press-fitting process, which can be judged within the preset safe displacement (5MM).

5号框 Box five

表示对压装结束时的判断，在压入结束的压头行程内，可预设保险位移（5MM）。

Indicates the judgment of the end of press-fit, and within the stroke of the pressing head at the end of pressing, the safety displacement (5MM) can be preset.

聚焦新能源
FOCUS ON NEW ENERGY



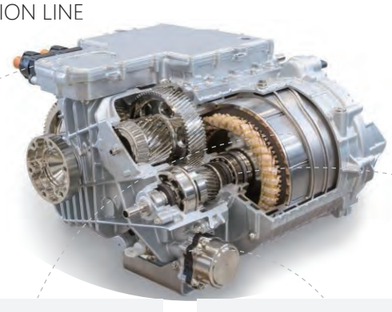
电 池 Battery
- 燃料电池
- 电池测试系统
- 电池前段工艺
- Fuel cell
- Battery testing system
- Battery front process

智能驾驶 Intelligent Driving
- HUD
- 摄像头Camera
- 域控制器Domain controller
- 毫米波/激光雷达 Millimeter wave/Laser radar
- Telematics BOX

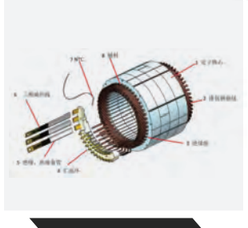
电 机 Motor
- 定转子Stator& rotor
- 减速器Decelerator
- 电驱动力总成Electric drive power assembly

电 控 Electric Control
- PDU
- 逆变器Inverter All-in-one OBC
- 多合一OBC
- DCDC/DCAC

新能源电机产线
NEW ENERGY MOTOR PRODUCTION LINE



控制器装配 Controller assembly



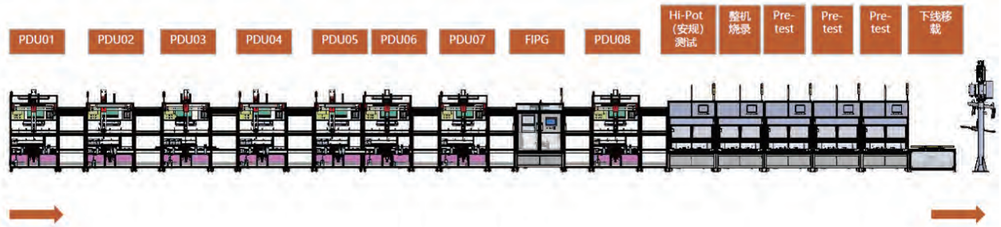
扁线定子装配 Flat copper wire stator assembly

总成装配 Assembly

转子装配 Rotor assembly

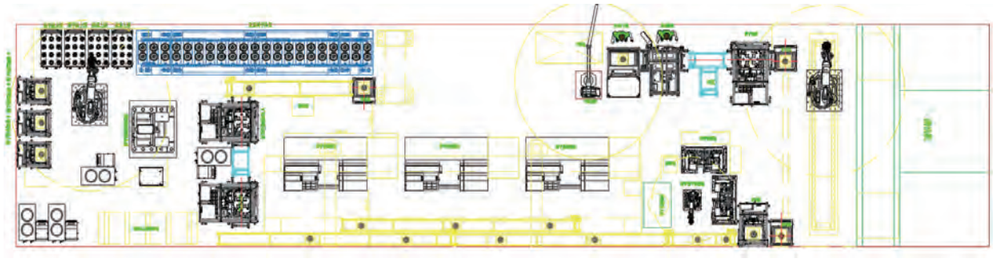
应用案例
APPLICATION CASE

扁线电机电源线 Flat wire motor power cord



01	PDU01 装配站1 Assembly Station one	08	PDU01 装配站8 Assembly Station eight
02	PDU01 装配站2 Assembly Station two	09	Hit-Pot（安规）测试 (safety regulations) testing
03	PDU01 装配站3 Assembly Station three	10	整机烧录 Whole machine burning
04	PDU01 装配站4 Assembly Station four	11	Pre-test 01
05	PDU01 装配站5 Assembly Station five	12	Pre-test 02
06	PDU01 装配站6 Assembly Station six	13	Pre-test 03
07	自动点胶 Automatic Dispensing	14	下线 Off the (assembly) line

感应电机转子线 Assembly production line for induction motor rotor



01	铁芯上线 Iron core on (the assembly) line	09	转子反电势测试 Rotor back electromotive force test
02	转轴上料 Spindle loading	10	转子动平衡 Rotor dynamic balance
03	转子铁芯加热 Heating the iron core of rotor	11	转子去毛刺 Rotor deburring
04	转子铁芯叠压 Stacking the iron core of rotor	12	充磁/表磁检测 Magnetization/Meter Magnetic specting
05	转子冷却 Rotor cooling	13	全尺寸检测 Full imension inspecting
06	过盈环加热压入 Interference ring heating and pressing in	14	激光打标 Laser marking
07	激光打标 Laser marking	15	涂油 Greasing
08	转子外径精车 Precision turning of rotor outer diameter	16	成品下料 Finished product unloading

伺服压装机产品定义型号
SERVO PRESS MACHINE PRODUCT DEFINITION CODE

TJ	通锦字母简称 The abbreviation for Tongjin
SP	压装机字母简称 The abbreviation for Servo Press Machine
10	实际吨位 The actual tonnage 01：100KG 05：500KG 10：1T 100：10T 200：20T
C	伺服压装机型号代号 Servo press machine type C：C型代号 C-Type F：四柱型代号 Four-column D：桌面型代号 Desktop
T	伺服压装机控制形式 Servo press machine control form T：触摸式代号 Touch screen C：电脑型代号 Computer

具体技术参数请与我们的研发人员联系沟通，在此之外的各型式伺服压装机均作为**非标机型**，另外备注写明。
Please contact our R&D personnel for specific technical parameters. In addition, all other types of servo press machine are considered as non-standard models and will be noted separately.

例如：原则上C型伺服压装机不大于5吨，桌面型伺服压装机不大于2吨。
TJ-SP-10CT表示"C型1吨触屏式伺服压机"；
TJ-SP-80FC表示"四柱型8吨电脑式伺服压机"；
TJ-SP-05DT表示"桌面型500Kg触屏式伺服压机"；
TJ-SP-10CC表示"C型1吨电脑式伺服压机"。

For example: in principle, the C-type servo press machine is no more than 5 tons, and the desktop type servo press is no more than 2 tons.
TJ-sp-10ct means "C-type 1 ton touch screen servo press machine";
TJ-sp-80fc means "Four-column type 8 tons computer servo press machine";
TJ-sp-05dt means "Desktop type 500Kg touch screen servo press machine";
TJ-sp-10cc means " C-type 1 ton computer servo press machine".

单机介绍
SINGLE MACHINE INTRODUCTION

- C型触摸屏伺服压装机
  C-type touch screen servo press machine
- C型电脑式伺服压装机
  C-type computerized servo press machine
- 四柱型触摸屏伺服压装机
  Four-column touch screen servo press machine
- 四柱型电脑式伺服压装机
  Four-column computerized servo press machine

- 两柱型触摸屏伺服压装机
  Two-column touch screen servo press machine
- 两柱型电脑式伺服压装机
  Two-column computerized servo press machine
- 电脑一体式伺服压装机
  Computer integrated servo press machine
- 电脑带机架伺服压装机
  Computer with rack servo press machine

产品型号及技术参数
ITEM CODE AND TECHNICAL SPECIFICATION

C型电脑式选型参数表
C-type computer selection parameter table

项目 Items	型号 Type	单位 Unit	TJ-SP -01CC	TJ-SP -05CC	TJ-SP -10CC	TJ-SP -20CC	TJ-SP -30CC	TJ-SP -50CC	TJ-SP -70CC	TJ-SP -100CC	TJ-SP -150CC	TJ-SP -200CC	TJ-SP -300CC	TJ-SP -500CC
压力范围 Pressure range	最大值 Maximum value	KN	1	5	10	20	30	50	70	100	150	200	300	500
	允许范围 Allowance range	KN	0.1-1	0.5-5	1-10	2-20	3-30	5-50	7-70	10-100	15-150	20-200	30-300	50-500
	设定单位 Unit	N	1	1	1	1	1	1	1	1	1	1	1	1
	最小检测值 Minimum detection value	最大压力值的0.2% 0.2% of the maximum pressure value												
行程 Stroke	最大值 Maximum value	mm	200	200	200	200	250	350	350	500	500	500	500	500
	设定单位 Unit	mm	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
速度 Velocity	压 装 Press mounting	mm/s	0-35	0-35	0-35	0-35	0-35	0-35	0-35	0-35	0-30	0-25	0-15	0-15
	快进/返回 Fast forward/Return	mm/s	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-50	0-30	0-30
	设定单位 Unit	mm/s	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
保压时间 Dwell time	最大值 Maximum value	s	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
	设定单位 Unit	s	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
重复定位精度 Repeatability		mm	±0.01	±0.01	±0.01	±0.01	±0.01	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02
功 率 Power		kw	0.4	0.75	1.5	2.2	3.5	5.5	7.5	7.5	7.5	7.5	11	24
电 压 Voltage	三 相 Three-phase	V	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380

产品型号及技术参数
ITEM CODE AND TECHNICAL SPECIFICATION

C型触摸屏式选型参数表
C-type touch screen type selection parameter table

项目 Items	型号 Type	单位 Unit	TJ-SP -01CT	TJ-SP -05CT	TJ-SP -10CT	TJ-SP -20CT	TJ-SP -30CT	TJ-SP -50CT	TJ-SP -70CT	TJ-SP -100CT	TJ-SP -150CT	TJ-SP -200CT	TJ-SP -300CT	TJ-SP -500CT
压力范围 Pressure range	最大值 Maximum value	KN	1	5	10	20	30	50	70	100	150	200	300	500
	允许范围 Allowance range	KN	0.1-1	0.5-5	1-10	2-20	3-30	5-50	7-70	10-100	15-150	20-200	30-300	50-500
	设定单位 Unit	N	1	1	1	1	1	1	1	1	1	1	1	1
	最小检测值 Minimum detection value	最大压力值的0.2% 0.2% of the maximum pressure value												
行程 Stroke	最大值 Maximum value	mm	200	200	200	200	250	350	350	500	500	500	500	500
	设定单位 Unit	mm	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
速度 Velocity	压 装 Press mounting	mm/s	0-35	0-35	0-35	0-35	0-35	0-35	0-35	0-35	0-30	0-25	0-15	0-15
	快进/返回 Fast forward/Return	mm/s	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-50	0-30	0-30
	设定单位 Unit	mm/s	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
保压时间 Dwell time	最大值 Maximum value	s	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
	设定单位 Unit	s	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
重复定位精度 Repeatability		mm	±0.01	±0.01	±0.01	±0.01	±0.01	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02
功 率 Power		kw	0.4	0.75	1.5	2.2	3.5	5.5	7.5	7.5	7.5	7.5	11	24
电 压 Voltage	三 相 Three-phase	V	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380

产品型号及技术参数
ITEM CODE AND TECHNICAL SPECIFICATION

四柱型电脑式选型参数表
Four-column computer type selection parameter table

项目 Items \ 型号 Type		单位 Unit	TJ-SP-01FC	TJ-SP-05FC	TJ-SP-10FC	TJ-SP-20FC	TJ-SP-30FC	TJ-SP-50FC	TJ-SP-70FC	TJ-SP-100FC	TJ-SP-150FC	TJ-SP-200FC	TJ-SP-250FC	TJ-SP-300FC	TJ-SP-1000FC
压力范围 Pressure range	最大值 Maximum value	KN	1	5	10	20	30	50	70	100	150	200	250	300	1000
	允许范围 Allowance range	KN	0.1-1	0.5-5	1-10	2-20	3-30	5-50	7-70	10-100	15-150	20-200	25-250	30-300	50-1000
	设定单位 Unit	N	1	1	1	1	1	1	1	1	1	1	1	1	1
	最小检测值 Minimum detection value	最大压力值的0.2% 0.2% of the maximum pressure value													
行程 Stroke	最大值 Maximum value	mm	200	200	200	200	250	350	350	500	500	500	500	500	1000
	设定单位 Unit	mm	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
速度 Velocity	压 装 Press mounting	mm/s	0-35	0-35	0-35	0-35	0-35	0-35	0-35	0-35	0-30	0-25	0-20	0-15	0-15
	快进/返回 Fast forward/Return	mm/s	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-50	0-50	0-30	0-30
	设定单位 Unit	mm/s	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
保压时间 Dwell time	最大值 Maximum value	s	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
	设定单位 Unit	s	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
重复定位精度 Repeatability		mm	±0.01	±0.01	±0.01	±0.01	±0.01	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02
功 率 Power		kw	0.4	0.75	1.5	2.2	3.5	5.5	7.5	7.5	7.5	7.5	11	11	24
电 压 Voltage	三 相 Three-phase	V	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380

产品型号及技术参数
ITEM CODE AND TECHNICAL SPECIFICATION

四柱型触摸屏式选型参数表
Four-column touch screen type selection parameter table

项目 Items \ 型号 Type		单位 Unit	TJ-SP-01FT	TJ-SP-05FT	TJ-SP-10FT	TJ-SP-20FT	TJ-SP-30FT	TJ-SP-50FT	TJ-SP-70FT	TJ-SP-100FT	TJ-SP-150FT	TJ-SP-200FT	TJ-SP-250FT	TJ-SP-300FT	TJ-SP-1000FT
压力范围 Pressure range	最大值 Maximum value	KN	1	5	10	20	30	50	70	100	150	200	250	300	1000
	允许范围 Allowance range	KN	0.1-1	0.5-5	1-10	2-20	3-30	5-50	7-70	10-100	15-150	20-200	25-250	30-300	50-1000
	设定单位 Unit	N	1	1	1	1	1	1	1	1	1	1	1	1	1
	最小检测值 Minimum detection value	最大压力值的0.2% 0.2% of the maximum pressure value													
行程 Stroke	最大值 Maximum value	mm	200	200	200	200	250	350	350	500	500	500	500	500	1000
	设定单位 Unit	mm	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
速度 Velocity	压 装 Press mounting	mm/s	0-35	0-35	0-35	0-35	0-35	0-35	0-35	0-35	0-30	0-25	0-20	0-15	0-15
	快进/返回 Fast forward/Return	mm/s	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-50	0-50	0-30	0-30
	设定单位 Unit	mm/s	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
保压时间 Dwell time	最大值 Maximum value	s	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
	设定单位 Unit	s	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
重复定位精度 Repeatability		mm	±0.01	±0.01	±0.01	±0.01	±0.01	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02
功 率 Power		kw	0.4	0.75	1.5	2.2	3.5	5.5	7.5	7.5	7.5	7.5	11	11	24
电 压 Voltage	三 相 Three-phase	V	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380/220	380

压装机征询配置表
PRESS MACHINE REQUEST CONFIGURATION TABLE

客户单位：
Company name

客户名字：
Customer name

项目名称：
Project name

联系方式：
Contact information

项目背景（启动原因）：
Project background (Reason for startup)

项目目标（投入时间、预算等）：
Project objectives (investing time, budget, etc.

您希望采用何种形式集成压装机
Which way do you prefer to integrate press machine

☐ 自动装配线 Automatic assembly line ☐ 半自动工作站 Semi-automatic workstation ☐ 单机工作 Single machine operation

您希望能够达到的最大压力 _____ KN
The maximum pressure you want to be able to achieve

您所需要的最大工作行程 _____ mm
The maximum working stroke you need

您所需要的最大工作速度 _____ mm/s
The maximum working velocity you need

最大压力下需要最长的保压时间 _____ sec
Maximum dwell time is required at maximum pressure

设备运行最小间隙时间 _____ sec
Minimum interval time of device operation

是否有拉力的应用（若有请具体说明应用）
Whether there is a tension application (if yes, please specify the application)

☐ 是 Yes _____ ☐ 否 No

压头模具重量 _____ Kg
The weight of press head mould

您需要何种安全防护措施
What safety precautions do you need

☐ 安全光幕 Safety light curtain ☐ 双手启动按钮 Two-hand start button ☐ 手动操作安全门 Manually operate the safety door

☐ 全自动安全门 Fully automatic safety door ☐ 安全栅栏防护 Safety fence protection

需要切换的工艺数量
Number of processes that need to be switched

☐ 1套 1 set ☐ 1-10套 1-10 sets ☐ 10套以上 more than 10 sets

是否使用PLC控制
Whether to use PLC control

☐ 是 Yes ☐ 否 No

如果使用PLC，希望通过何种方式与压装机信号交互
If using PLC, which way do you prefer to interact with the signal of the press machine

☐ PROFIBUS ☐ I/O接口 I/OPort ☐ INTERBUS-S ☐ CAN-BUS

如果不使用PLC，您希望如何对程序进行切换 _____
If you do not use PLC, how would you like to switch the program

需要配置以下何种附件
Which of the following accessories need to be configured

☐ 电器柜 Electrical cabinet ☐ 电器安装板 Electrical mounting plate ☐ 机架 Base frame

☐ 操作显示屏 Operation diaplay ☐ 电缆套件 Cable kit ☐ 传感器 Sensor

如果不能给出设备工作节拍，以及间隔时间，可以做一下压装任务简单描述
If you dot not have the working rhythm and interval time,you can fill in the information as follows.

步骤 Step	运动方式 Motion mode	运动行程mm Stroke	运动速度mm/s Velocity	压装压力KN Pressure	其 他 Other
1	快速进给 Rapid traverse				
2	延　　时 Delay				
3	慢速工进 Slow work-feeding				
4	压力控制 Pressure control				
5	保　　压 pressure maintaining				
6	快速返程 Quick return				
7	延时等待 Delayed awaiting				