



Add:No.3 Juhe Fifth Street, Jufuyuan Industrial Zone, Tongzhou, Beijing, China
Tel:+86 10 80529798 80529270 80529275
Fax:+86 10 80529171
Post code: 101127
E-mail: james@tenon.com.cn

地址1:北京市通州区聚富苑工业区聚和五街三号
地址2:天津自贸试验区(空港经济区)航空路80号
电话: 010 80529798 80529270 80529275
传真: 010 80529171
邮编:101127
电子邮件: sales@tenon.com.cn

TENON(BEIJING)EQUIPMENT CO.,LTD
北京特能设备有限公司
利江特能(北京)设备有限公司
特能(天津)自动化设备有限公司

Manufacturer reserves the right of changes, this brochure will not be used as the appendix or the basis for the acceptance of the contract.
制造商保留对以上内容变更之权利,本册不作为合同附件或验收依据。

Since 1987

TENON











www.tenon.com.cn



利江特能(北京)设备有限公司
特能(天津)自动化设备有限公司

ABOUT US
关于我们



Our Mission
Our Value

"TENON", the pioneer of China insulating glass equipment, has been deeply engaged in glass industry since 1987. It has always been committed striving international high-quality products and serving high-quality customers. Through intelligent connection control, it develops glass processing technology, responds to market demand and future trends.
Customer's needs are our mission. In the past few decades, we have provided stand-alone machines one by one. In the future, we hope that you can enjoy one stop solution provided by TENON according to the needs of various customers. In the fierce market competition, TENON will stand out with you!

"特能",国内中空玻璃设备的开拓者,深耕三十余载,始终以打造国际高品质产品为目标,服务高品位客户为己任,通过智能化连线控制,以玻璃加工工艺为先导开发产品,不断应对市场需求和未来趋势,开发最前沿的玻璃加工设备,和我们的客户一起推动玻璃深加工行业的现代化进程。您的需求就是我们的使命,过去几十年我们提供的是一台台机器,未来的岁月里更希望您能受益于特能根据不同用户需求提供的整体解决方案,在激烈的市场竞争中,我们和您一起脱颖而出!







TE-T SERIES
WARM SPACER LINE
T系列暖边中空生产线

TE-T系列全自动暖边中空生产线

TE-T系列生产线为热塑性暖边中空玻璃(TPSS)专用生产线。完整的全自动生产线包括：自动上片、除膜、清洗、TPT、板压充气、木垫粘贴、打胶、自动下片等多个功能模块，其中核心设备TPT是特能研发并注册，可适用于市场上多个品牌TPSS密封胶的专用挤胶敷条设备。作为暖边中空玻璃的代表之一，热塑性暖边的加工过程摒弃了传统中空玻璃的铝条切割、折弯、灌装、丁基涂布、粘敷铝框等繁得工序，使中空玻璃仅在一条线上加工完成，极大地减少了人工，真正实现了自动高效的流水线作业。

TE-T Series Automatic Thermoplastic Warm Edge Spacer Production Line

TE-T series is a technological innovation that further optimizes and integrates the insulating glass production process. It is the most advanced and efficient insulating glass production program in the world. This line, with automatic thermoplastic warm edge application machine as the core, combines automatic vertical loader, edge deletion, cork pad applicator, sealing robot and vertical unloader, etc. It performs at high speed, which improves efficiency furthermore lower labor cost and the impact of human factors on product quality.

特点

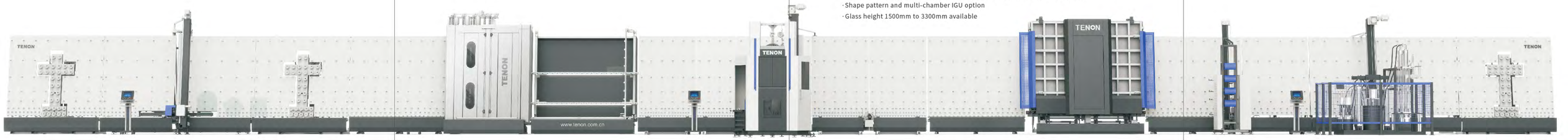
· 支持MES对接,打通中空加工与前后端工序数据交互,实现工业4.0
· CODESYS操作系统配合EtherMAC总线传输,多轴精密伺服驱动,完美实现速度与精度的配合
· 灵活多变的自由组合,可加工柔性暖边,亦可配备传统铝制隔条装置
· 多种异型图库和多腔体中空供选择
· 可定制从1500mm--3300mm的多种高度规格,满足不同客户需求场景

Features

· Support ERP/MES integration, connect the data interaction between the IG processing and other upstream/downstream equipment to achieve Industry 4.0
· The CODESYS operating system, the EtherMAC bus transmission and multi-axis precision servo drive, perfectly combine speed and accuracy
· Capable of processing flexible warm spacers and traditional aluminum spacer
· Shape pattern and multi-chamber IGU option
· Glass height 1500mm to 3300mm available

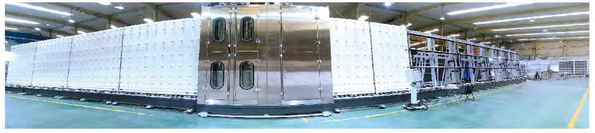






We are willing to create a global technical solution network platform for the customer's amazing experience while fostering the growth of international glass processing brands and others.





我们给客户提供的不仅是设备和生产线，而是中空玻璃加工的一站式暖边系统解决方案。

TE-F SERIES
WARM SPACER LINE
F系列暖边中空生产线

TE-FGPD全自动暖边双板压生产线

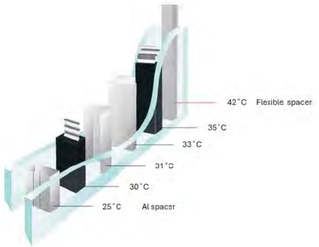
除具备普通TE生产线的各项技术特点外，配备了全自动上条机和双板压在线充气，性能卓越的柔性暖边材料辅以高效可靠的充气技术，使中空玻璃的U值显著降低，更适合大尺寸和超大尺寸的中空玻璃的加工。

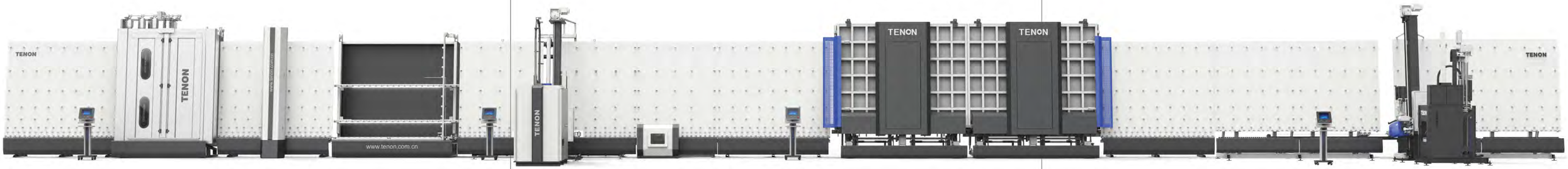
TE-FGPD Warm Edge Spacer Double Plate Press Production Line

In addition to the features of the TE production line, this line is equipped with Super Spacer robot and double pressing with gas filling. It has excellent performance with flexible warm edge materials, along with efficient and reliable gas filling technology. This combination reduces the U-value of insulating glass, making it more suitable for processing large and jumbo insulating glass units.

Flexible Spacer













特点

- 双板压或多板压设计，可实现7000mm以上的玻璃压合、充气一次完成
- 可定制多种加工高度：2500mm，2800mm，3000mm，3300mm
- 可定制多种加工长度：5000mm~12000mm
- 可根据用户现场和生产需要组合多种功能
- 可加工柔性暖边条，也可兼容传统铝条
- 可加工三玻和大小片中空玻璃，也可定制四玻三腔中空玻璃
- 单片玻璃清洗厚度可达50mm，成品中空单片重量可达2吨

Features

- Ideal gas filling application 7000mm glass length with precise dual/multi press system
- Glass height: 2500mm, 2800mm, 3000mm,3300mm
- Glass length: from 5000mm to 12000mm
- Configuration can be adjusted based on production need
- Multi-functional design for Flexible Spacer and aluminium spacer
- Stepped and Triple glass. Quad option
- Single lite glass thickness up to 50mm, max. bearing(single IGU) up to 2000kg

型号	Model	1500/2000/2500/2800/3000/3300mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	300mm x 500mm
电源	Electrical power	3P、380V、50Hz
中空厚度	I.G.U thickness	15mm-80mm
传送速度	Conveying speed	0-40m/min

(customized size available 特殊规格可定制)

TE-NGP SERIES
GAS FILLING PRESS LINE
自动充气板压线

TE-NGP系列自动充气式生产线

TE-NGP系列生产线除具备普通TE系列生产线的各项技术特点外，增加了在线充气功能，采用总线控制、伺服压合、智能分区、流量监控等先进技术与国际通用的底部气幕式充气方式相结合，并可选配在线氩气检测系统，使充气作业实现了高速度、高浓度、低消耗。用户可根据使用工况和玻璃特点选择传统高效的背轮传输或无接触的导梁式传输。可定制高度从1500~3300mm的多种规格。

TE-NGP Aluminum Spacer IG Line with Automatic Gas Filling

TE-NGP series in addition to the ordinary TE technical characteristics, added online gas filling function. Utilizing high technologies: EtherMAC system, servo control pressing, flow monitoring and bottom air-curtain charging method to achieve high speed, high penetration rate with less consumption. Customer has choices on conveyor, traditional inspection conveyor or contactless guided-beam conveyor, based on the level of automation and production of glasses. Customized size 1500mm - 3300mm can be available.







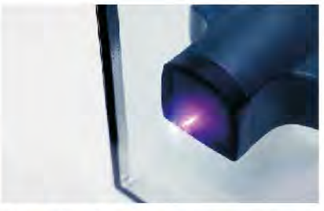
型 号	Model	1500/2000/2500/2800/3000/3300mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	250mm x 400mm
电 源	Electrical power	3P、380V、50Hz
中空玻璃厚度	I.G.U thickness	15mm-80mm
传送速度	Conveying speed	0-40m/min

(customized size available 特殊规格可定制)

Valuable Productivity





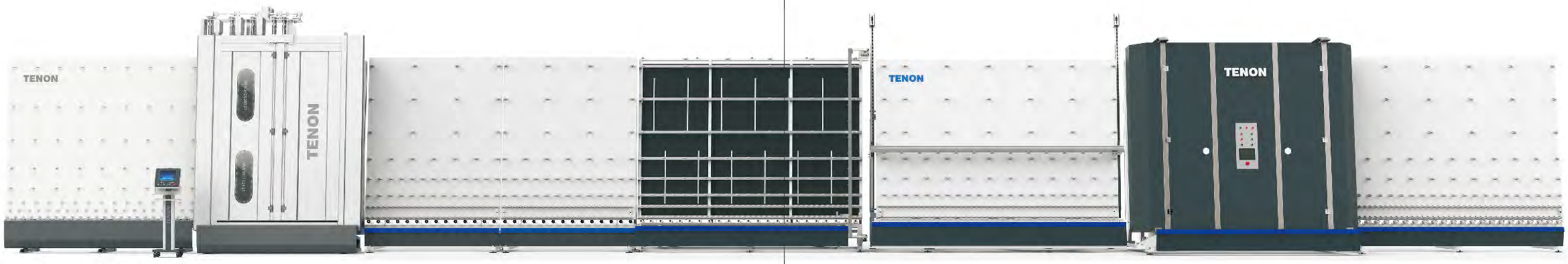




TE-LP SERIES
TRADITIONAL IG LINE
自动中空玻璃生产线

TE-LP系列自动中空玻璃生产线

采用传统外合片方式或内外合片结合方式，适用大部分传统中空玻璃的加工。可定制超大版面生产线至3300×8000mm。









Simple & Convenience

特 点

- 可定制多种加工高度:2500mm，2800mm，3000mm，3300mm
- 可根据用户现场和生产需要组合多种功能
- 快速方便传统铝条加工
- 可加工三玻
- 节能

Features

- Glass height: 2500mm, 2800mm, 3000mm,3300mm
- Configuration can be adjusted based on production need
- Fast speed and convenient for aluminium spacer
- Available triple glazing
- Energy saving and compact style

TE-LP Series Out-Assembly Insulating Glass Production Line

It is suitable for the processing of most traditional insulating glass.It can customize the production line of super large layout to 3300×8000mm.

型 号	Model	1500/ 2000/2500/ 2800/3000/3300mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	250mm x 400mm
电 源	Electrical power	3P、380V、50Hz
中空玻璃厚度	I.G.U thickness	15mm-60mm
传送速度	Conveying speed	0-40m/min

(customized size available 特殊规格可定制)





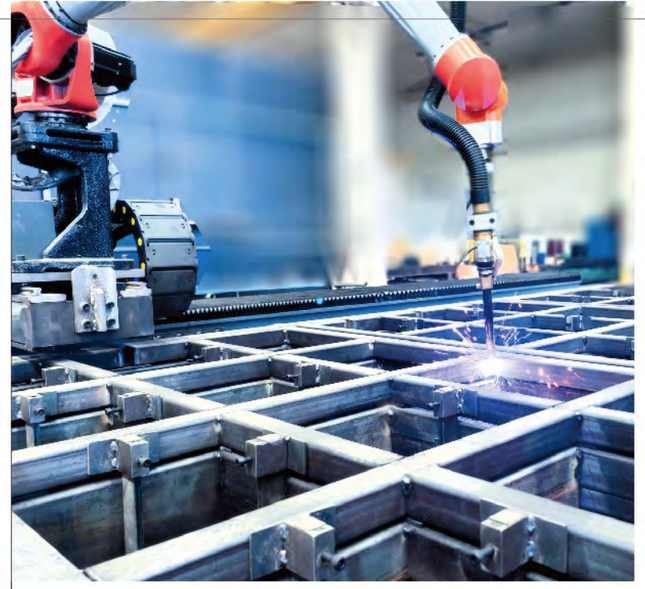


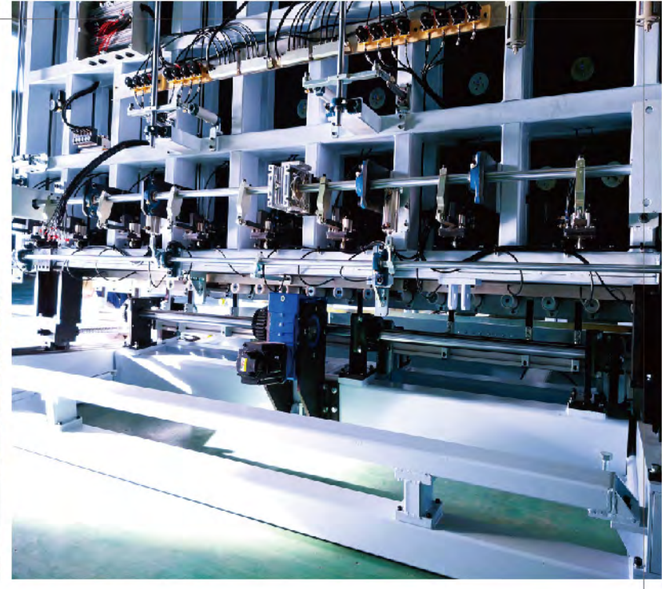


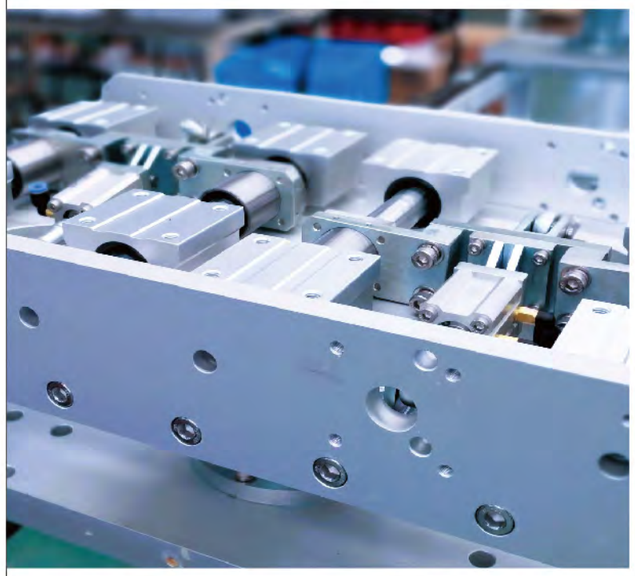
PRESS BOX WONDERS

高精度板压结构









Precision
Stability



TE-NGA SERIES
AIR-FLOATING IG LINE
自动气浮式充气生产线

TE-NGA系列自动气浮式充气生产线

TE-NGA系列生产线除具备普通TE系列生产线的各项技术特点外,增加了在线充气功能,采用总线控制、伺服压合、智能分区、流量监控等先进技术与国际通用的底部气幕式充气方式相结合,并可选配在线氩气检测系统,使充气作业实现了高速度、高浓度、低消耗。用户可根据使用工况和玻璃特点选择传统高效的背轮传输或无接触的导梁式传输。可定制高度从1500mm-3300mm的多种规格。

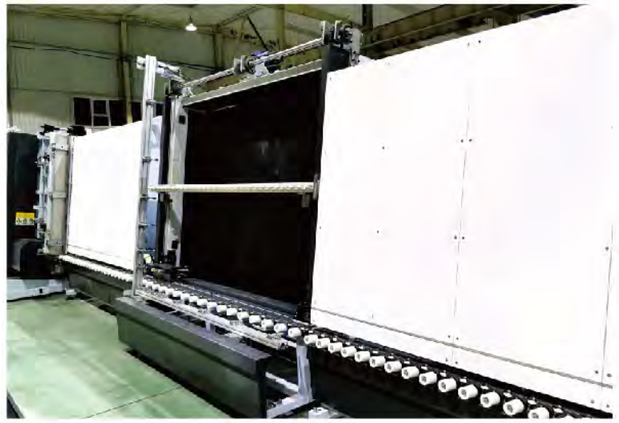
TE-NGA Gas Filling lG Line with Air-floating Conveying System

TE-NGA is an advance series that equipped with all the features of the standard TE series and the NGP gas filling, series, besides, air-floating function is introduced into the conveyors between washing machine and press box. Contactless and unobstructed glass inspecting improves productivity significantly. Available sizes:1500mmx-2200mm and 2000mmx2680mm.









型号	Model	1500/ 2000/2500/ 2800mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	250mm x 400mm
电 源	Electrical power	3P、380V、50Hz
中空玻璃厚度	I.G.U thickness	15mm-80mm
传送速度	Conveying speed	0-40m/min

(customized size available 特殊规格可定制)





TE-LNP SERIES
IN & OUT SIDE ASSEMBLE IG LINE
内外合片中空线

检查段采用双层结构搭配LED灯，检查清洗效果同时完成铝框装配工序。

Inspection section: Frame structure with built in LED, spacer frame mounted while inspection.









型号	Model	TE-LNP SERIES
最大玻璃规格	Max.glass size	3000mm x 6000mm
最小玻璃规格	Min.glass size	250mm x 400mm
电 源	Electrical power	3P、380V、50Hz
中空玻璃厚度	I.G.U thickness	15mm-80mm
传送速度	Conveying speed	0-40m/min

(customized size available 特殊规格可定制)

合片段可自动将两片或多片玻璃连同隔条复合在一起，可根据客户定制加长至8米或四玻三腔。

Assembly section: Assemble 2 or more pieces of glasses into I.G. unit. This section can be customized for mega piece up to 8000mm length or quad-panel unit.

特点

·用户可根据需求场景，灵活选择内合片或外合片方式加工
·可定制多种加工高度：2500mm，2800mm，3000mm，3300mm
·可定制多种加工长度：5000mm~12000mm
·可根据用户现场和生产需要组合多种功能
·单片玻璃清洗厚度可达50mm，成品中空单片重量可达2吨

Features

·Ideal gas filling glass length with multi press option
·Glass height: 2500mm, 2800mm, 3000mm,3300mm
·Glass length: from 5000mm to 12000mm
·Configuration can be adjusted based on production need
·Single glass thickness up to 50mm, max.loading IGU up to 2000kg







TFS SERIES
FLEXIBLE SPACER ROBOT
全自动暖边上框机

TFS全自动暖边上框机

是专门应用以SUPERSPACER为代表的柔性暖边条的机器。有分别针对T型隔条的TFS-T和矩形隔条的TFS-H两种机型，前者可在T型条上涂布丁基，适用于硅酮、聚硫等多种类别的二次密封材料，后者需配合热熔胶或反应性热熔胶使用。可与生产线其他部分自由组合，也可嵌入用户已有的中空生产线。高速精准的自动上条，解决了传统中空玻璃，特别是大板面中空玻璃人工上框的瓶颈。除了常规矩形还可以选配部分非矩形图形加工。

Flexible Spacer Robot

Special designed automatic machine for Flexible Warm Edge Spacer represents by Super Spacer. There are 2 modes that applies for T spacer or general Super Spacer. T type spacer works with butyl and suitable for silicone or polysulfide sealant.
Ultiliting advanced EtherMAC and control system makes it possible to synchronize with I.G. production freely. Comparing with tradition spacer framing, productivity increased and labor drop 40%. Spacer shape pattern is available.

型号	Model	1500/2000/2500/2800/3000/3300mm
玻璃厚度	Glass thickness	4mm-12mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	300mm x 500mm
胶条宽度	Spacer width	9mm-20mm

(customized size available 特殊规格可定制)



TCC自动暖边角部封边机

是专门针对超级间隔条转角处自动贴覆胶带的设备。

Corner Closing Applicator

Automatically seals final corner of Flexible Spacer with self adhesive aluminum band.

特点

- EtherMAC总线传输和控制系统配以多轴伺服驱动
- 高速精准布条特别适合多腔体和超大尺寸上框
- 可独立使用也可并入已有生产线
- 选配部分非矩形图形加工，多种图库供选(TFS-T)

Features

- EtherMAC system and multi-axis precision servo drive
- Sealed spacer storge:easy to replace and maintain
- Work with or without I.G. Line
- Shapes pattern available option











TPT SERIES
TPT THERMOPLASTIC SPACER APPLICATOR
热塑暖边自动涂敷机

TPT 热塑暖边自动涂敷机

作为中空玻璃柔性暖边的代表之一，热塑密封间隔胶TPSS具有气密水密，干燥吸附，一次成型等功能特性，一举替代了丁基胶，分子筛，间隔条三种材料，也省却了丁基涂布，分子筛灌装，铝框折弯和人工上框，这些工序都可由特能的TPT一次完成。

TPT Thermoplastic Spacer Applicator

Automatic equipment specialized for thermoplastic warm edge spacer. It eliminates traditional spacer bending, desiccant filling, butyl coating and other processes, with high precision control and positioning capabilities. It can be integrated with existing IG line or as an individual auxiliary with others. The dual supply system ensures the production without interruption.

特点

·无级调整宽度: 中空玻璃单元间隔条的调整宽度从5mm到20mm
·无间断生产: 双供胶系统可实现完全无间断工作, 胶桶可在生产进行中更换
·接口设计: 反复验证的斜面连接技术, 可根据指定调整接口位置进行密封
·多用途应用: 根据实际需求可预留灌注口，完成浇注隔音玻璃和防火玻璃



拍角机

是专门针对热塑性暖边接口处密封的设备。

Corner Punching equipment

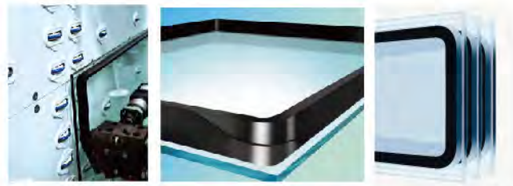
It is specially designed for Thermoplastic spacer interfaces.

Features

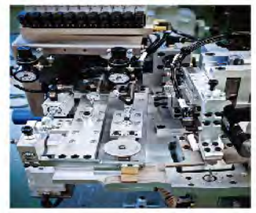
·Stepless width adjustment: spacer width 5mm to 20mm
·Uninterrupted production: dual supply systems, change drum while operation
·Bevel joint design: can adjust the joint position for perfect sealing
·Multi-purpose application: can work for soundproof glass and fireproof glass

型 号	Model	1500/ 2000/2500/ 2800/3000/3300mm
玻璃厚度	Glass thickness	4mm-12mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	300mm x 500mm
胶条宽度	Spacer width	5mm-20mm

(customized size available 特殊规格可定制)



Thermoplastic Spacer





TWM-F/HWM SERIES
AUTOMATIC HORIZONTAL SEAMING MACHINE/ HORIZONTAL WASHING MACHINE
卧式四边磨/卧式清洗机

TWM-F系列卧式四边磨/卧式清洗机

采用多梁四磨头结构和多轴控制技术及硬件，使磨边速度和磨削效果达到最佳匹配，配合紧凑型结构和高效风干系统的卧式清洗机，连线使用后真正让玻璃的切，磨，洗，钢达到无缝连接。

TWM-F Automatic Horizontal Seaming Machine/Horizontal Washing Machine

Full automatic seaming(arising) solution, assuring high operating speed with high efficiency. A must have for those running various glass size and thickness for construction purposed tempering or IG unit.



型 号	Model	1800/ 2500/3000/3300mm
玻璃厚度	Glass thickness	4mm-12mm(4-25mm for HWM)
最大玻璃规格	Max.glass size	2500mm x 3300mm
最小玻璃规格	Min.glass size	300mm x 400mm
电 源	Electrical power	3P、380V、50Hz

(customized size available 特殊规格可定制)

特点

TWM

- 自动检测玻璃大小，玻璃磨削无需人工调整
- 采用EtherCAT总线控制方式多轴精密伺服驱动
- 特殊设计的传输和磨削方式，保证Low-E膜面不会划伤
- 多头式设计极大地提高生产节拍
- 自我诊断和远程监控功能，方便维护和升级
- 选配：除膜功能，安全角功能，磨底边功能

HWM

- 毛刷高度可调节，适用加工各种膜层玻璃
- 选配：风机变频配置

Features

TWM

- Detect glass size, glass thickness automatically
- EtherCAT control system, with servo motors to achieve high accuracy
- Worry free on Low-E damage
- Four head type optimize productivity
- Easy to maintain and upgrade with self-diagnosis and remote system
- Option: edge deleting, corner cutting, bottom grinding

HWM

- Brush height adjustable, suitable for all kinds of coating glass
- Option: Blower inverter





TVM SERIES
AUTOMATIC VERTICAL SEAMING MACHINE
立式磨边机

TVM 立式磨边机

立式磨边机是一种高效的全自动玻璃加工设备，专为矩形单片玻璃的倒棱设计，适用于建筑门窗、幕墙玻璃、LOW-E玻璃、夹胶玻璃等产品的规模化加工。其核心特点是垂直布局结构，结合伺服控制与智能检测技术，实现高精度连续加工。立式磨边机通过总线控制可联动上下片台、清洗机及中空线，显著提升加工效率，降低人工成本。

Automatic Vertical Seaming Machine

Automatic Vertical Seaming Machine is designed to help your production line work smarter. Tailored for seaming rectangular single-pane glass, it handles high-volume processing of architectural windows, curtain wall panels, Low-E glass, and laminated glass with exceptional efficiency and consistency.

Its space-saving vertical layout combines intelligent glass size detection with advanced servo control to ensure continuous, high-precision operation. Seamlessly integrating with glass loading/unloading tables, washing machines, and IG lines through a centralized BUS system, this machine helps improve production efficiency and lower labor costs.

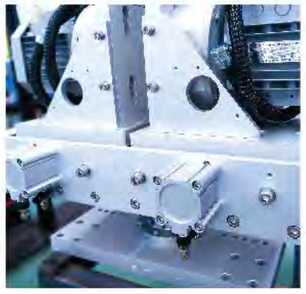
型号	Model	1500/2000/2500/2800/3000/3300mm
玻璃厚度	Glass thickness	4mm-12mm
最大玻璃规格	Max.glass size	2500mm×3300mm
最小玻璃规格	Min.glass size	300mm×400mm
电源	Electrical power	3P、380V、50Hz

(customized size available 特殊规格可定制)





Effortless changeovers



特点

- 自动检测玻璃大小，玻璃磨削无需人工调整
- 采用总线控制系统，多轴精密伺服驱动
- 特殊设计的传输和磨削方式，保证LOW-E膜面不会划伤
- 可直接接驳中空线使用，极大地提高生产效率
- 自我诊断和远程监控功能，方便用户维护和升级

Features

- No manual setup – Automatically detects glass size for effortless changeovers
- Smooth, accurate edge processing – Driven by high-precision X&Y axis servo control
- Low-E safe technology – Prevents scratches on sensitive coated surfaces
- Built for integration – Connects directly with IG lines and other upstream/downstream equipment
- Easy maintenance – Self-diagnosis and remote monitoring features keep your line running smoothly



THR SERIES
HOT MELT ROBOT
热熔胶自动打胶机

THR 热熔胶自动打胶机

此设备是专门应用于热熔胶（HOT MELT）或反应性热熔胶（REACTIVE HOT MELT）的自动打胶机。由于反应性热熔胶的特性决定，整个胶路采用高温高压密封方式，供胶系统稳定可靠。打胶速度和出胶量较普通双组份打胶机大幅提高，这也是高速生产线的关键所在。

Hot Melt Robot

THR/1 special designed for Hot Melt or Reactive Hot Melt sealant. Due to the nature of reactive hot melt, high temperature and high pressure sealing system is applied.High performance heating system ensures stable and reliable sealing process. In addition, sealing speed and the sealant supply quantity has sharply increased comparing to ordinary a two-component, which makes it a key to high-speed production line.

特点

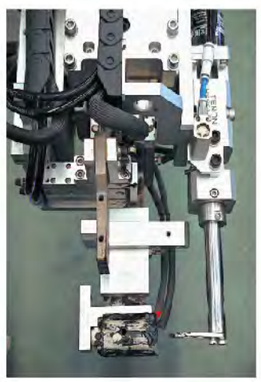
- 高性能供胶和加热系统
- 打胶完成后的玻璃无需固化可直接进入下道流程
- 根据玻璃和隔条尺寸自动调节喷头位置和出胶量
- 自我诊断和报警功能

Features

- High performance heating system
- Timing saving, no curing necessary
- Automatic sealing adjustment according to spacer size and volume
- Self-diagnosis and alarm function







型 号	Model	1500/ 2000/2500/ 2800/3000/3300mm
中空玻璃厚度	I.G.U thickness	15mm-60mm
最大玻璃规格	Max glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	350mm x 500mm
电 源	Electrical power	3P、380V、50Hz

(customized size available 特殊规格可定制)

TSR SERIES
AUTOMATIC SEALING ROBOT
双组份自动打胶机

TSR系列双组份自动打胶机

适用于硅酮或聚硫性质的中空密封胶，也可选配双套供胶系统。标准规格包括2000×2800mm和2500×4000mm，其中2500mm系列可选配三玻、大小片和异形功能，其他规格可定制。

Automatic Sealing Robot

Automatic Sealing Robot performs the final sealing of both double and triple glazed units with dual-component or single component sealant.
The practical and precise sealing head uniformly distributes the sealant around the whole border of the double glazed unit. A corner control equipment automatically engages when the robot processes a corner for neat corner dressing.



特点

- 与TENON生产线对接，可自动调整胶深及厚度
- 自我诊断和报警功能
- 可加工三玻两腔中空玻璃大小片涂胶功能选配
- 自我诊断和报警功能

Features

- Perfect finishing corner/edge
- Self-diagnosis and alarm function
- Triple IG unit option
- Step IG unit option

型号	Model	1500/ 2000/2500/ 2800/3000/3300mm
中空玻璃厚度	I.G.U thickness	12mm-60mm
最大玻璃规格	Max.glass size	2500mm x3500mm
最小玻璃规格	Min.glass size	350mm x 500mm
电 源	Electrical power	3P、380V、50Hz

(customized size available 特殊规格可定制)








TE-VWM SERIES
VERTICAL WASHING MACHINE
立式清洗机

TE-VWM系列立式清洗机

VWM系列立式清洗机可接驳TE系列生产线也可单独使用。由上下片台和清洗主机组成，用户可根据需要定制厚度自动调节、软硬毛刷、循环水过滤系统、风机变频等选配项目。最大清洗厚度可选配至50mm。

TE-VWM Series Washing Machine

TE-VWM series washing machine is part of the TE series IG line also can be used alone.
It comprises of input & output conveyor and washer. Washer structure built with high quality stainless steel.Customized options: glass thickness automatic adjustment (Max thickness up to 50mm),water filtration system, blower with inverter.







Unlimited Layout



型 号	Model	1500/ 2000/2500/ 2800/3000/3300mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
玻璃加工厚度	Glass thickness	4mm-12mm (选配至50) (up to 50mm option)
电 源	Electrical power	3P、380V、50Hz
清洗速度	Washing speed	0-10m/min

(customized size available 特殊规格可定制)

TE-VWC SERIES
CURVED GLASS VERTICAL WASHING MACHINE
立式弯弧清洗机

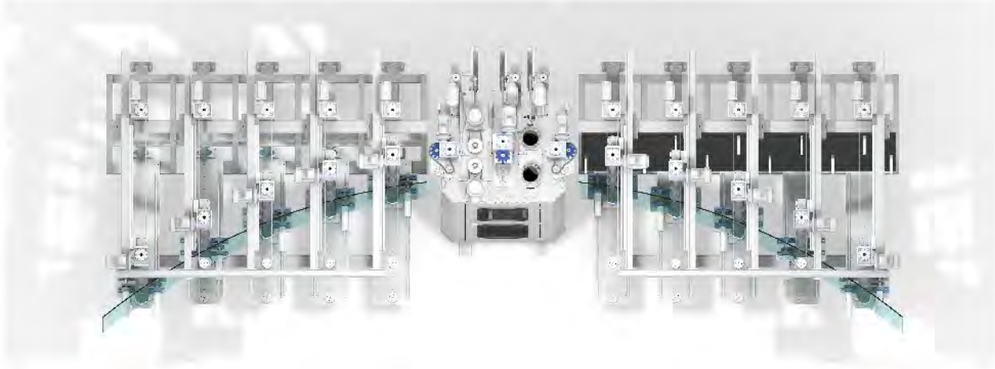


TE-VWC系列立式弯弧清洗机

VWC系列弯弧清洗机适用于弧形建筑玻璃的清洗，根据玻璃弧长和拱高可在一定范围内调整。用户可定制不同弧面、高度和弯曲半径的特制产品。

TW-VWC Series Curved Glass Vertical Washing Machine

The VWC series is designed to wash architectural curved glass, it can be adjusted within certain scale as per the glass arc length & arch rise. Customization is available per different arch, height & bending radius requirement.



型 号	Model	2000/2500/3000mm
最大玻璃规格	Max glass size	2500mm x 3000mm(弦长Chord length)
玻璃加工厚度	Glass thickness	4mm-12mm
电 源	Electrical power	3P、380V、50Hz
清洗速度	Washing speed	0-5m/min
加工半径	Radius	750mm-5000mm

(customized size available 特殊规格可定制)

TSB
AUTOMATIC SPACER BENDING MACHINE
铝条自动折弯机

TSB 铝条自动折弯机

精密数控系统可使机器连续准确高效的完成供料、对接、折弯、锯切等一系列动作，内置图库满足多种图形尺寸的加工，并可通过数据导入实现智能化管理加工种类和数量。除了传统铝条还可定制塑料条、加热型塑料条和不锈钢条等钢性暖边条。

Automatic Spacer Bending Machine

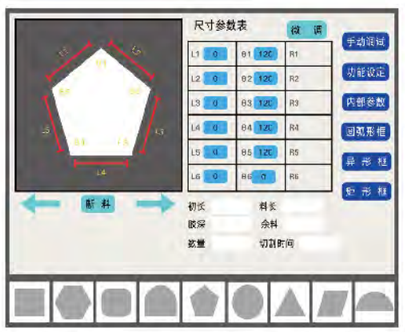
Automatic Spacer Bending Machine, highly versatile, is equipped with a head which bends not only aluminium but also stainless steel and plastics(option). The automatic feeding system delivers up to 6m long bars directly from storage. Bending is performed with high-quality accuracy, ensuring a continuous connection of the spacers and controlling the right length of frame. The machine can bend straight and free shapes up to 2000 x 2000 mm (For bigger sizes, the machine will bend in 2 steps automatically).

特点

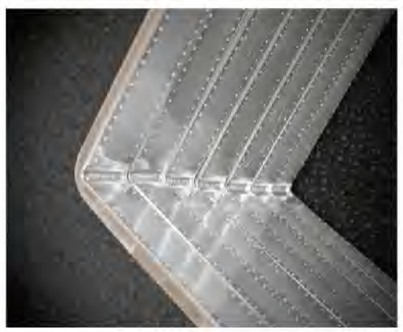
·上料速度可达40m/min
·具备自动上料和余料续接功能
·自动连续折弯，智能调节折弯速度的功能
·铝条喷码/激光打码功能可选配
·暖边系列加热功能可选配

Features

·Feeding speed: 40m/min
·Automatic loading and connecting
·Continuous bending; bending speed adjustable
·User friendly touch screen and PLC program
·Printer option
·Heating system option
·8 racks or 12 racks option









型 号	Model	TSB
铝条厚度	Spacer thickness	5.5mm-26.5mm
最大铝框	Max. size	2000mm x 2000mm
最小铝框	Min. size	250mm x 300mm
铝条壁厚	Wall thickness	⩾0.32mm
电 源	Electrical power	3P、380V、50Hz

TDF
AUTOMATIC DESICCANT FILLER
自动分子筛灌装机

TDF自动分子筛灌装机

采用PLC和触摸屏控制，打孔、灌装、封胶一次完成。有单头式和双头式两种可选。

Automatic Desiccant Filler

Desiccant filler fills both sides of the spacer frame simultaneously. This operation, like the subsequent automatic closure of the holes to pour in the desiccant, is performed electronically. A continuous height adjustment for the filling head is to suit all frame size. And the volume desiccant shall be controlled by touch screen.

Drilling, filling, and closing (with sealant) of two sides of frame with automatic adjustment to suit the profile width of the spacer frames. Drilling holes in the back of the profile allows profiles of different shapes and of different materials to be processed with continuous height adjustment of the filling head according to the frame size.

特点

·钻孔、灌装和封胶三个工序一次自动完成
·背打孔设计，可适应更大分子筛直径
·密封罐自动吸料（大桶自动吸料可选）
·分子筛损耗低，易于调节
·双头设计，每个头可独立工作，效率提高一倍节省人工（双头式）

Features

·Drilling, filling, butyl sealing in one go
·Automatic feeding desiccant through back side of spacer
·Low consumption, easy to adjust and change material barrel
·Two working units double yield (two head type)



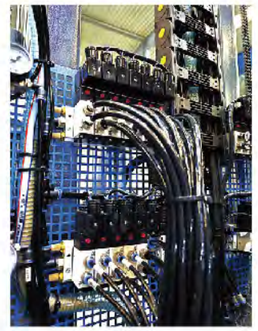
TDF -A

型 号	Model	TDF-A TDF-B
铝条厚度	Spacer thickness	5.5mm-26.5mm
分子筛规格	Desiccant size	0.5mm-0.8mm
最大铝框	Max. size	2000mm x 2000mm
最小铝框	Min. size	250mm x 300mm
电 源	Electrical power	3P、380V、50Hz



TDF -B





TED SERIES
AUTOMATIC EDGE DELETING MACHINE
自动除膜机

TED自动除膜机

可独立使用也可接驳TE系列中空生产线，可任意选择上下片方向和单边除膜宽度。除了普通矩形外，内置图库可以让用户选择多种异形和点式幕墙玻璃的除膜作业。可定制特殊规格，加工长度至5000mm。

Automatic Edge Deleting Machine

This process prepares the glass for the adhesion of glass sealant in the primary and secondary sealing stages. Machine automatically controls the correct face of the sheet and then removes the film along the perimeter edge. It removes Low-E file along the perimeter edge.

Any dust or particle debris is immediately evacuated and removed from the cycle via two high powered extraction ducts. Machine comes with variable conveyor length options.

特点

·自动识别玻璃尺寸，无需人工输入
·精准的LOW-E玻璃传送方式，不损害膜层
·多轴伺服控制系统和磨头锁紧装置确保了除膜的精度
·玻璃运行自由转换操作方向，方便用户下道工序的加工
·采用环保式吸尘装置，减少噪音和污染
·控制系统具有自我诊断功能，可掌握各种作业信息

Features

·Automatic detection of glass size
·Precise transfer Low-E glass using patented conveyor method
·Servo motor system and head locking device to ensure perfect edging result
·Free working direction/can be connected to the lG Line
·Special dust collection device to reduce pollution and noise
·Self-diagnosis and alarm function

型 号	Model	1500/ 2000/2500/ 2800/3000/3300mm
玻璃厚度	Glass thickness	4mm-12mm (30mm选配) (30mm option)
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	350mm x 500mm
电 源	Electrical power	3P、380V、50Hz

(customized size available 特殊规格可定制)









EK-2000
BUTYL EXTRUDER
丁基胶涂布机

EK-2000丁基胶涂布机

工作速度可达48m/min，一次装胶量可达14L。





Butyl Extruder

Butyl extruder can process frames from 6 to 27mm width. The feeding nozzles can be positioned to deliver uniform sealing. Pneumatic operation of the butyl process is controlled by a PLC that electronically regulates the temperature of the butyl heaters. A timer enables the pre-heating of butyl ahead of the start of operation. The height adjustment is available according to the frame size. And the nozzle width shall be controlled by pneumatic and hydraulic parallel method. Conveyor speed can be adjusted with 5 conveyor speed. Possible to control the length of butyl application and monitoring current production quantity on the touch screen.

特点

·胶嘴距离和工作速度可调节
·精准的出胶量
·最大装胶量14L
·控制系统具有自我诊断功能，可掌握各种作业信息

Features

·Nozzles width and working speed adjustable
·Accurate butyl volume control
·Efficient butyl volume 14L
·Self-diagnosis and alarm function
·Changeable working height option

TBE-3000
BUTYL EXTRUDER
丁基胶涂布机

TBE-3000 丁基胶涂布机

作为EK-2000的升级产品，对不同品牌的丁基胶和多种工况要求有更广泛的适应性。

TBE-3000 Butyl Extruder

It is an upgrade of EK-2000, wider range of butyl is accepted.



型 号	Model	EK-2000,TBE-3000
铝条宽度	Spacer width	6mm - 27mm
加热温度	Heating temp	100~140°C
电 源	Electrical power	3P、380V、50Hz





Fast & Stable

AUTOMATIC LOADER/AUTOMATIC UNLOADER

自动上/下片机械手

TAL-自动上片机械手/TAD-自动下片机械手

可无缝连接或嵌入用户原有生产线也可与生产线其他部分自由组合。大幅提高中空玻璃生产的自动化程度,在节约人力资源的同时提高生产安全性。高度规格从1500-3300mm,并列多组使用时可同步工作吸附超长玻璃也可独立运行提高上下片效率。

TAL - Automatic Loader /TAD - Automatic Unloader

It can be integrated with existing IG line or as an individual auxiliary with others. Automation progress of insulating glass production, lower labor cost and improve safety. Height ranges 1500-3300mm, work dependently or multi-group can improve the efficiency.



型 号	Model	1500/ 2000/2500/ 2800/3000/3300mm
最大承重	Max. loading	600KG
最大玻璃规格	Max.glass size	2500mm x 3300mm
最小玻璃规格	Min.glass size	250mm x400mm
电 源	Electrical power	3P、380V、50Hz

(customized size available 特殊规格可定制)

TGS QUALITY SCANNER

自动扫描检测台

TGS-自动扫描检测台

·快速识别,缺陷监测,可标识气泡、划痕、脱膜、污渍等缺陷指标

·操作屏幕提供检测结果的坐标位置,可追溯历史检测结果

·可并入TENON系列中空生产线在线检测,也可单机独立使用

TGS-Quality Scanner

·Fast identification, can identify bubbles, scratches, film damage, stains, and other defects

·The operation screen provides the detection results, and the historical detection results

·It can be integrated TENON insulating glass production line or it can used stand alone





型 号	Model	1500/2000/2500/2800/3000/3300mm
最大玻璃规格	Max.glass size	2500mm×3500mm
最小玻璃规格	Min.glass size	250mm×400mm
玻璃厚度	Glass thickness	4mm-12mm (选配至50) (up to 50mm option)
电源	Electrical power	3P、380V、50Hz

(customized size available 特殊规格可定制)

CORK PAD APPLICATOR

软木垫贴覆机

TCA-软木垫贴覆机

可嵌入用户原有生产线也可与生产线其他部分自由组合。通过高精度识别技术自动识别玻璃尺寸全自动精准完成软木垫贴覆工作。

Cork Pad Applicator

Can be integrated with existing IG line, cork pads applied automatically with high accuracy.

型 号	Model	1500/ 2000/2500/ 2800/3000/3300mm
玻璃厚度	Glass thickness	4mm-75mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	300mm x 500mm
电 源	Electrical power	3P、380V、50Hz







LOW-E TURNING TABLE

翻面旋转台

TRC-翻面旋转台

可嵌入用户原有生产线也可与生产线其他部分自由组合。适用于加工Low-E玻璃、镀膜玻璃等需区分正反面的单片或中空玻璃。采用气浮输送，避免人工操作将玻璃膜面划伤。旋转采用伺服驱动，并入中空线后可定制旋转角度，实现非直线型中空线，最大限度节省占地空间、方便中空线布局摆放。

TRC-Low-E Turning Table

Low-e turning table can be integrated with existing IG line. It is suitable to processing Low-e glass, coated glass or any glass that needs to distinguish the side and insulating glass. Air floating conveyor is adopted to avoid manual operation to scratch glass surface. The rotation is driven by servos, rotation angle can be customized, which can greatly save the space and convenient to set the layout.



型 号	Model	1500/ 2000/2500/ 2800/3000/3300mm
最大玻璃规格	Max.glass size	2500mm x 3500mm
最小玻璃规格	Min.glass size	250mm x 400mm
玻璃厚度	Glass thickness	4mm-12mm（选配至50）（up to 50mm option）
电 源	Electrical power	3P、380V、50Hz



INDUSTRY 4.0 SOLUTION

工业4.0解决方案

工业 4.0 允许智能制造和智能工厂的创建。它旨在提高生产力、效率和灵活性，同时在制造和供应链运营中实现更智能的决策和定制。工业 4.0 专注于开发先进的软件和硬件平台，使用户能够实时监控和优化其制造过程。

Industry 4.0 allows for smart manufacturing and the creation of intelligent factories. It aims to enhance productivity, efficiency, and flexibility while enabling more intelligent decision-making and customization in manufacturing and supply chain operations.

As new trend of automation and data exchange in manufacturing technologies, it creates a connected ecosystem for manufacturing, integrating machineries, and networking.

On the production line, each machine, robot, component, and the final product itself has a digital source, connected through data that is shared on cloud. This allows for real time monitoring, control, and optimization. With increasing demand from global and regional markets, embrace this transformation to expand quality market and stay competitive.





SMART SORTING SYSTEM

理片笼

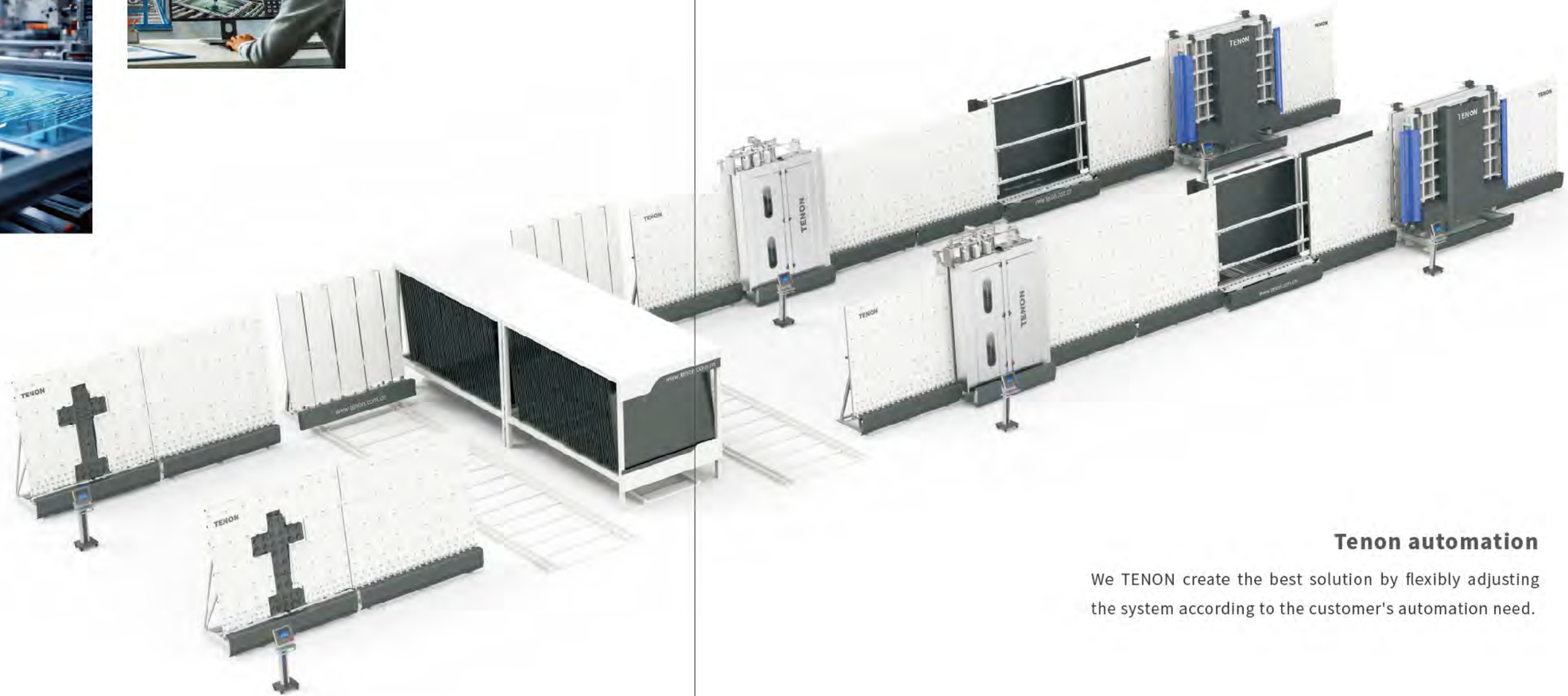
理片笼

理片笼主要用于对玻璃进行自动化整理与堆叠。整个操作过程通过传感器和控制系统进行实时监测和调整，确保操作的准确性和稳定性。



Smart Sorting System

This system is designed for automated glass sorting and stacking. Sensors and control systems continuously monitor and adjust operations in real time to maintain high levels of accuracy and stability throughout the process.



Tenon automation

We TENON create the best solution by flexibly adjusting the system according to the customer's automation need.

AUXILIARY MACHINES
辅助设备



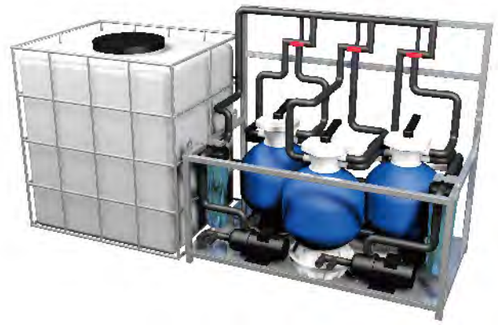
TSE / TST 双组分打胶机/涂胶台
Silicone Pump / Sealing Table



TVL 吸盘吊具
Vacuum Handling Equipment



HMD 手动热熔胶打胶机
Hotmelt Dispenser



TWF 水过滤
Sand Filter



TFC 铝框输送机
Spacer Conveyor



EDT 手动除膜台
Manual Edge Deletion

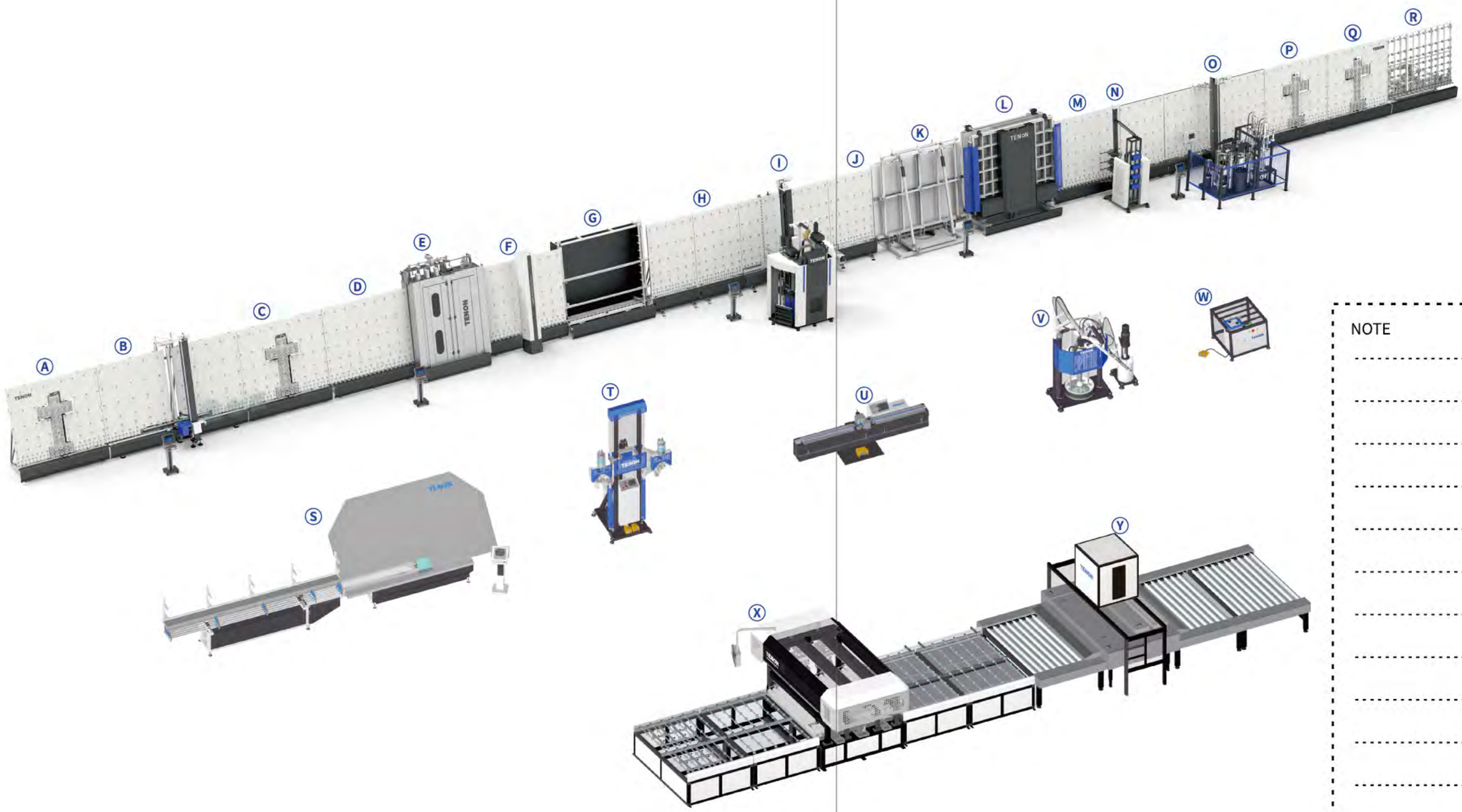


GFM 手动充气
Manual Gas Filler



TLP 升降机
Lifter

FULL LAYOUT
中空玻璃生产线流程图



NOTE

TENON