

玻璃压延机

Glass calender

为了适应市场需要，本公司研制并生产出玻璃压延机，该设备经过多年技术创新与积累，精工制作，具备操作安全、调机换机速度快、工作稳定、维护方便等优点，保证玻璃高品质、连续、稳定生产。

In order to meet the needs of the market, our company has developed and produced a glass calender. After years of technological innovation and accumulation, this equipment has been meticulously manufactured, and has the advantages of safe operation, fast machine adjustment and replacement speed, stable operation, and convenient maintenance, ensuring high quality, continuous, and stable production of glass.

其主要特点：

Its main characteristics:

压延机部分

Calender section

1. 整机行走移动机构：采用人工推动，使压延机进入工位或退出检修。

优点：可操控性高，安全性高。

Whole machine walking and moving mechanism: manual pushing is used to make the calender enter the workstation or exit for maintenance.

Advantages: High controllability and safety.

2. 整机左右移动机构：采用手动操作蜗轮蜗杆顶升机使压延机整机机架和压延辊在进入工位时在水平方向调整与唇砖的位置，退出工位时向退火窑方向移动。

Left and right movement mechanism of the entire machine: The manual operation of the worm gear and worm jack is used to adjust the position of the calender frame and rolling roller in the horizontal direction when entering the station, and to move towards the direction of the annealing kiln when exiting the station.

3. 整机升降移动机构：电机减速机驱动蜗轮蜗杆升降机，使压延辊整体做升降运动，用来调整压延辊下辊上母线与唇砖的高度。进入工位时升起，退出工位时降下。

Whole machine lifting and moving mechanism: The motor reducer drives the worm gear and worm elevator, causing the entire rolling roller to perform lifting movement, used to adjust the height of the upper busbar and lip bricks on the lower roller of the rolling roller. Raise when entering the workstation and lower when exiting the workstation.

4. 压力机构：采用自施压结构，通过水冷蜗轮蜗杆升降机，配合斜铁机构用来调整压延玻璃的厚度。上辊压紧机构单侧压力 12 吨，手动操作，通过传感器显示实时数据。

Pressure mechanism: Adopting a self pressure structure, it is used to adjust the thickness of the rolled glass through a water-cooled worm gear elevator and an inclined iron mechanism. The pressure on one side of the upper roller clamping mechanism is 12 tons, manually operated, and real-time data is displayed through sensors.

优点：此压力机构稳定性高，操作简单，受外界环境影响小；避免操作平台各机构的误差，减少震动，有利于提高玻璃板面的平整度。

Advantages: This pressure mechanism has high stability, simple operation, and is less affected by external environment; Avoiding errors in various mechanisms of the operating platform, reducing vibration, and improving the flatness of the glass panel surface.

5 压延辊：表面镀硬铬，铬层硬度高，耐磨性高，耐热性好，表面光洁度高美观，辊子变形小。

Calendering roller: The surface is plated with hard chromium, with a high hardness of the chromium layer, high wear resistance, good heat resistance, high surface finish, and beautiful appearance. The roller deformation is small.

6. 辅辊：材质 2Cr13，表面镀硬铬，铬层厚度 0.03-0.05mm。

Auxiliary roller: material 2Cr13, surface plated with hard chromium, chromium layer thickness 0.03-0.05mm.

优点：辊体镀硬铬硬度高，耐磨性高，耐热性好，表面光洁度高美观，镀的过程辊子变形小。对比镀陶瓷辊，性价比高，且能避免陶瓷脱落，刮伤玻璃下表面而被迫换机事件。

Advantages: The hard chromium plating on the roller body has high hardness, high wear resistance, good heat resistance, high surface smoothness and aesthetics, and the deformation of the roller during the plating process is small. Compared to ceramic plated rollers, they have high cost-effectiveness and can avoid ceramic detachment, scratching the lower surface of the glass and forcing machine replacement events.

7. 压延辊驱动单元：上下辊子各采用独立斜齿轮减速变频电机驱动，通过万向联轴器连接作相向运动。

Rolling roller drive unit: The upper and lower rollers are driven by independent helical gear reduction variable frequency motors, and are connected through universal couplings for opposite movement.

优点: SEW 变频电机适合高温环境, 绝缘等级 F 级, 带强制冷却风扇; 万向联轴器具有较大的角度补偿能力, 承载力大, 传动效率高, 运载平稳, 噪音低, 拆卸维护方便。

Advantages: SEW variable frequency motors are suitable for high temperature environments, with insulation level of F and forced cooling fans; The universal coupling has a large angle compensation capacity, large bearing capacity, high transmission efficiency, stable transportation, low noise, and convenient disassembly and maintenance.

8. 辅辊驱动单元: 采用斜齿轮减速机驱动, 带动传动齿轮箱、万向联轴器, 分别驱动 3 支辅辊转动。

Auxiliary roller drive unit: It is driven by a helical gear reducer, which drives the transmission gearbox and universal coupling to drive the rotation of three auxiliary rollers.

优点: SEW 变频电机适合高温环境, 绝缘等级 F 级, 带强制冷却风扇; 万向联轴器具有较大的角度角度补偿能力, 承载力大, 传动效率高, 运载平稳, 噪音低, 拆卸维护方便; 传动齿轮箱 6 级精度, 传动平稳, 维护方便。

Advantages: SEW variable frequency motors are suitable for high temperature environments, with insulation level of F and forced cooling fans; The universal coupling has a large angle compensation capacity, a large bearing capacity, high transmission efficiency, stable transportation, low noise, and convenient disassembly and maintenance; The transmission gearbox has a 6-level accuracy, stable transmission, and convenient maintenance.

9. 压延辊上下辊水冷却单元: 法兰辊采用两进两出方式旋转接头, 内部配以冷却喷淋管。

Water cooling unit for the upper and lower rolls of the rolling roller: The flange roller adopts a two in and two out rotating joint, and is internally equipped with a cooling spray pipe.

优点: 喷淋管冷却方式可以调节辊子各区域的温度差, 从而改善因温度不均匀造成玻璃板面横向的一些缺陷, 提高板面质量。

Advantages: The spray pipe cooling method can adjust the temperature difference in various areas of the roller, thereby improving some transverse defects on the glass plate surface caused by uneven temperature and improving the quality of the plate surface.

10. 辅辊水冷单元: 采用旋转水接头进行冷却, 一端进水一端出水。

Auxiliary roller water cooling unit: uses a rotating water joint for cooling, with one end inlet and the other end outlet.

11. 风冷系统: 主辊和辅辊, 辅辊和辅辊之间设置 3 道风刀, 风刀共设置 12-15 个分区, 手动阀控制各分区风量。

Air cooling system: Three air knives are set between the main roller and auxiliary roller, and between the auxiliary roller and auxiliary roller. The air knives are divided into 12-15 zones, and the air volume of each zone is controlled by manual valves.

12. 辅辊轴承座: 耐高温调心滚子轴承, 轴承座采用水冷保证长期稳定运转。

Auxiliary roller bearing seat: High temperature resistant self-aligning roller bearing, the bearing seat is water-cooled to ensure long-term stable operation.

13. 压延辊轴承座: 法兰辊采用滚针组合轴承, 可调心。

Rolling roller bearing seat: The flange roller adopts a needle roller combination bearing with adjustable center.

优点: 滚针组合轴承无轴径磨损问题; 比滑动轴承节省功率消耗 10%-20%左右; 减少压延辊旋转产生的偏向及浮动; 轴承承载力大寿命长, 可重复使用, 正常使用保证 2 年; 润滑周期稳定, 避免频繁加油。

Advantages: The needle roller combination bearing has no problem of shaft diameter wear; Saving power consumption by about 10% -20% compared to sliding bearings; Reduce the deviation and floating caused by the rotation of the rolling roller; The bearing has a large bearing capacity and long service life, and can be reused, ensuring normal use for 2 years; Stable lubrication cycle, avoiding frequent refueling.

14. 唇砖托架: 为砖机分离的形式, 唇砖支架采用水冷却, 挡边砖可以伸缩移动。

Lip brick bracket: In the form of separating the brick machine, the lip brick bracket is cooled by water, and the edge brick can be retracted and moved.

15. 压延机底盘: 用优质矩形钢管制成, 其中 1 根为冷却水分配管; 另 2 根为冷却风分配管。压延机总进水口和总进风口提供快速接头, 接头的接口样式参见图纸。接口以外管件客户根据现场情况自备。

Calender chassis: made of high-quality rectangular steel pipes, including one for cooling water piping; The other two are cooling air distribution pipes. The main water inlet and main air inlet of the calendr are provided with quick connectors, and the interface style of the connectors is shown in the drawings. Pipe fittings outside the interface shall be prepared by the customer according to the on-site situation.

本机为外置动力, 压延辊、辅辊、升降电机均安装在动力站内。动力站的位置按面对窑炉分左置动力、右置动力, 订货时要根据窑炉、仪表控制室、检修区的位置来选择动力的方向。万向联轴器等传动部位均设置安全防护罩。本机所用冷却水管件、阀门、快速接头和金属软管均采用不锈钢材质。

This machine is equipped with external power, and the rolling roller, auxiliary roller, and lifting motor are all installed in the power station. The position of the power station is divided into left and right power stations facing the kiln. When ordering, the direction of power should be selected based on the location of the kiln, instrument control room, and maintenance area. Universal couplings and other transmission parts are equipped with safety protective covers. The cooling water pipes, valves, quick couplings, and metal hoses used in this machine are all made of stainless steel material.

过渡辊台部分

Transition roller table section

- 1. 整机行走移动机构:** 采用人工推动, 使进入工位或退出检修。

Whole machine walking and moving mechanism: It is manually pushed to enter the workstation or exit for maintenance.

- 2. 整机左右移动机构:** 采用手动操作蜗轮蜗杆顶升机使辊台整机进出工位时在水平方向调整与压延机辅辊的位置, 退出工位时向退火窑方向移动。

Left and right movement mechanism of the entire machine: Manual operation of the worm gear and worm jack is used to adjust the position of the auxiliary rollers of the calendr in the horizontal direction when the roller table enters and exits the station, and to move towards the direction of the annealing kiln when exiting the station.

3. 整机升降移动机构：手动操作蜗轮蜗杆升降机，使辊台整机做升降运动，用来调整过渡辊上母线与退火窑 1#辊上母线的高度。

Whole machine lifting and moving mechanism: Manually operate the worm gear and worm elevator to make the entire roller table perform lifting movement, used to adjust the height of the busbar on the transition roller and the busbar on the annealing kiln 1 # roller.

4. 过渡辊：材质为 2Cr13，表面镀硬铬。

Transition roller: Made of 2Cr13 material, with hard chromium plating on the surface.

5. 过渡辊传动单元：由斜齿轮减速机、齿形链轮、齿形链条驱动。

Transition roller transmission unit: driven by a helical gear reducer, toothed sprocket, and toothed chain.

6. 过渡辊冷却单元：采用旋转接头进行冷却，一端进水一端出水。不用水冷时可以拆掉旋转水套采用间接冷却方式。

Transition roller cooling unit: uses a rotating joint for cooling, with one end receiving water and the other end receiving water. When not using water cooling, the rotating water jacket can be removed for indirect cooling.

7. 过渡辊轴承座：耐高温调心滚子轴承，轴承座采用水冷保证长期稳定运转。

Transition roller bearing seat: High temperature resistant self-aligning roller bearing, the bearing seat is water-cooled to ensure long-term stable operation.

8. 过渡辊台底盘：用优质矩形钢管制成，整体制成一个分水器，对本机上的所有用冷却水的部位进行分水冷却。总进水口提供快速接头，接头的接口样式参见图纸。接口以外管件客户根据现场情况自备。

Transition roller table chassis: Made of high-quality rectangular steel pipes, it is integrated into a water separator to separate and cool all parts of the machine that use cooling water. The main water inlet is provided with a quick connector, and the interface style of the connector is shown in the drawing. Pipe fittings outside the interface shall be prepared by the customer according to the on-site situation.

过渡辊台的轴承采用高温润滑脂手工定期加油。链条采用人工定期加注润滑油。链传动部位均设置防护罩。本机所用冷却水管件、阀门、快速接头和金属软管均采用不锈钢材质。

The bearings of the transition roller table are manually and regularly lubricated with high-temperature lubricating grease. The chain is manually lubricated regularly.

Protective covers are installed on all chain transmission parts. The cooling water pipes, valves, quick couplings, and metal hoses used in this machine are all made of stainless steel material.

压延光伏玻璃产品参数

Parameters of rolled photovoltaic glass products

生产线 line	1#
产量 production	150-180 t/24h/台
玻璃原板宽度 Glass board width	2V·0 mm
玻璃净板宽度 Glass net board width	2350 mm
玻璃厚度范围 Glass thickness range	2.0-6.0mm
玻璃原板厚度差 Thickness difference of glass raw plate	≤0.2mm

