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Successful one-time trial production at ES Group's in South Korea

In South Korea, Teeyer Intelligent once again achieved a company milestone. Mid 2021, with the help of Teeyer Intelligent, the autoclaved aerated concrete production line of the South Korean ES Group achieved a one-time trial production success, which is the first turnkey project in South Korea making use of an AAC production line imported from China. Teeyer Intelligent has written a new chapter for the journey of globalization.

In recent years, Teeyer Intelligent has tackled many technical difficulties and kept exploring and innovating new technology. The Chinese AAC plant supplier customized the production line layout and design plan for customers with limited space. At the same time, they adopted the ultra-smooth horizontal cutting machine (cutting wires using high-frequency vibration) and the highly integrated vertical cutting machine (which includes a hand-hole milling device, a cake side-layer removing device, and a cutting car exchanging device), automatic steam distribution system (high speed without distributing cylinders), and more. The result is a compact, functional and technologically advanced production line. ES Group of South Korea gives full affirmation to the high quality, high efficiency and high standard turnkey project implementation ability of Teeyer Intelligent.

To complete installation and commissioning of this overseas project on time, Teeyer staff still traveled to the customer's production site despite the burdens of the pandemic and completed this one-time joint trial production project successfully. The professional spirit and responsible attitude of Teeyer's staff have been highly appreciated by ES Group.

Pouring mixer

Slurry tanks

In 1994, Teeyer Intelligent became a leader in the industry by supplying AAC production equipment to the domestic market, which brought an end to China's complete reliance on imports. Now, the company has once again broken new grounds by exporting an AAC production line that was developed for the domestic market to developed countries.

The success of this project indicates that Teeyer Intelligent has taken a solid step towards establishing itself in the worldwide market.

Technical introduction of the new plant

Pouring mixer

The pouring mixer is equipped with an engine that has 95 kw of power. It adopts cross-shaped mixing blades with a diameter of 450 mm and contains multiple spoilers along the circumference of the cylinder wall. The mixed slurry entering the pouring mixer is driven by the high-speed rotating cross blades, which rotate at high speed along the internal wall, and which have a strong impact with the spoiler. Due to the resulting waves and turbulences, powder floating on the liquid surface quickly dissolves into the slurry.

Tilting hoister (hydraulic lifting type)

The tilting hoister is composed of a moving crane, a lifting device, a mould griping device, a tilting device, a mould opening and closing device, and a hydraulic system. The mounting surface of the moving crane and the walking beam are machined to become one monolithic element after welding to ensure the accurate span of the moving crane, as well as accurate wheel installation position and size. The moving crane adopts a gear rack to move and achieves precise positioning through encoder control. The lifting device adopts hydraulic lifting and mechanical synchronization devices to ensure safe and reliable operation.

Mould gripping is done by direct gripping and hydraulic locking. The mould opening and closing operation is driven by a hydraulic motor and the locking arm moves up and down linearly. The hydraulic station is equipped with a hydraulic locking device to prevent a natural fall without pressure. An inspection platform is set on the crane and a 1.2 m high safety fence is installed surrounding the crane.

The track beam is holistically processed after welding. The bottom surface of the track installation is machined to guarantee the straightness of the track installation. The bottom and side surfaces of the rack installation are machined to ensure consistent space between the rack and the top surface of the track. The side mounting surface of the rack is machined to ensure that the track is parallel to the rack. The meshing position of the rack and gear remains constant during the crane moving.

Finished products hoister

The foot of the column is fastened with anchor bolts, which have a strong tensile and shear resistance, and provides good overall rigidity with minimum deformation. The foot of the column is buried under the floor surface, which results in a neat appearance. The top surface of the column and the mounting surface of the bottom of the rail beam are machined to ensure that the connecting surface is parallel and that there is no gap in the installation. The mounting surface of the rail beam is perpendicular to the center line of the column, which results in structurally sound load distribution.

Ultra-smooth horizontal cutting machine

The horizontal cutting machine uses an eccentric wheel to drive two cams to rotate, which drives the cutting wire to exercise swinging cutting, so that the cutting surface of the green cake is much smoother. In addition, the horizontal cutting machine provides in excess of 10 sets of fully-grooved steel wire guide posts with a pitch of 800 mm. The steel wire cuts horizontally at a large angle (the steel wire travels at a 45° angle to the green cake). The steel wire enters the bottom level in the mould position of the cake, realizing "hard in and soft out" and reducing horizontal cutting cracks. The wire groove of the guiding column of the horizontal cutting machine adopts a "V"-shaped structure. The wires of different diameters can be automatically aligned with the center line of the groove to ensure the distance between the wires is accurate. The depth of the wire groove is 2 mm to guarantee the steel wire will not jump out of the groove when the wire rebounds after cutting. Horizontal wires are tensioned by Φ40×75 cylinders. When the compressed air pressure is 0.4 MPa, the cylinder pulling force can reach 47 kg, which can effectively tighten cutting wires and reduce the floating of wires during cutting.

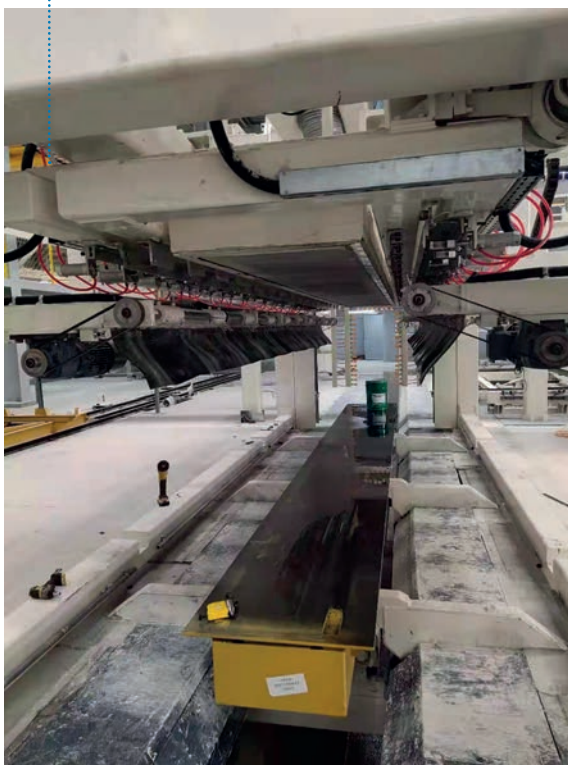
High-precision cutting machine

Hand-hole milling machine

The equipment adopts new vertical cutting technology. A specialized grooving device is provided, which can produce grooves on the side of the green material without affecting the movement of the AAC block.

The cutting machine track is made of fine-drawn square steel after surface quenching treatment, with high dimensional accuracy and good wear resistance. After the cutting machine track support beam is welded, the bottom surface of the track installation is machined as a whole to ensure that the top surface of the track is flat. The guide rail and the track beam are installed by the pressing plate method.

Hand-hole milling machine



Pre-assembly and adjustment are carried out inside the manufacturing shop, which can improve the accuracy of track installation and reduces the installation workload on site, which speeds up the installation process.

Hand-hole type blocks

Tilting table

The track joints are connected diagonally in horizontal direction to avoid pits caused by the thermal expansion and contraction gaps of the track joints, which may cause uneven moving and dimensional errors.

The cutting machine cart adopts frequency conversion to control the driving speed, and the transverse cutting swing and lifting devices adopt a frequency conversion motor, which can adjust the speed.

Tilting table

The hydraulic system of the tilting table adopts a variable plunger pump, which can adjust the oil output of the oil pump according to the flow demand, which not only ensures stable pressure, but also reduces energy consumption and oil temperature rise. The oil supply circuit is equipped with a proportional valve to ensure more accurate and stable flow control to enable smooth tilting. The frame adopts a 350 x 200 x 10 mm rectangular steel tube. Stress relief needs to be done after welding, and the whole frame is machined to ensure the overall dimensional accuracy. The top plate and frame have good rigidity and no deformation.

Separator system

Lifting and clamping of the separator are all driven by hydraulic devices. The lifting of the upper and lower breaking frames is combined with hydraulic synchronization and mechanical guidance to ensure the synchronization of the separating frame movement. For separating different thicknesses of AAC panels, the spacing of the clamping chucks is adjustable. The clamping chuck adopts double pressing technology and can return to its original position precisely after separating. The lateral error of each layer is less than 1 mm.

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Separator section

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