

SR Schindler, 93057 Regensburg, Germany

Stand-alone and fully automated finishing line in Saudi Arabia

SR Schindler is a member of the Topwerk Group, a world-wide leader for integrated solutions and convincing expertise in process engineering for the concrete industry. On October 2021 SR Schindler entered into a contract with Sail Alriyada Saudi Industrial Company, called Siefco, for the supply of a manual stand-alone shotblasting - curling line for pavers. Besides SR Schindler's well-known technical know-how, another particularly important point for Siefco's decision was Topwerk's Middle East branch office in Dubai, UAE. Here Topwerk provides regional service, spare parts on stock, and Aftersales for the complete group. A fast help "in case of" is guaranteed and ensures the consistently high productivity of SR Schindler machines.

In the project run, Siefco decided to enhance the order by adding automatic loading and unloading devices due to rising production demand. With this addition, Siefco is able to increase the cycle time, which means higher productivity and a decrease of the number of operators due to the now full automatization. This was possible as SR Schindler is quite flexible and delivers tailor-made solutions based on SR Schin-

dlers well-known standard machines. So, for this project, the layout was designed with the idea in mind that some - which are still strictly confidential - value-adding machines could be easily added to get a seamless integration with the existing line and, at the same time, the consistently high output.

For maximum output, the line was designed for a working width of 1,200 mm, so product layers up to 1,200 x 1,200 mm can be processed. The products are transported by stapled layers on wooden pallets to the de-stacking position. To be as flexible as possible, the line was designed to use three different types of wooden transport pallets.

The layer de-stacker is equipped with one traveling trolley driven by a servo motor and a rotating 4-sided clamp. The single layers are moved by a layer pusher that transports the layer onto the conveyor of the shot blasting machine. The emptied transport pallets get stored in a magazine, and the staple can be easily discharged by a forklift (Capacity 15 pallets).



Cuber infeed



Safety area cuber infeed



Empty pallet magazine

Shotblasting-curling Line

In the shotblaster, fine cement particles are removed from the surface of the concrete products, thus partially exposing stylistic aggregate, such as granite inclusions. Shotblasted surfaces are characterized by high visual and tactile quality and slip resistance.

In the shotblasting machine, steel or stainless steel balls with a diameter from 0.6mm to 0.8mm are hurled onto the product surfaces by special turbines. SR Schindler provides one of the strongest shot blasting turbines with enhanced power control in the market, therefore Siefco is able to produce the products their customer demands. The products that need to be shotblasted are placed on a perforated conveyor belt



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Shotblaster with layer pusher

during processing and are cleaned with the help of a blow-off station after the shotblasting process. The abrasive falls through the perforated belt, gets collected, cleaned, and fed back into the process. Any dust generated during processing is extracted by a filter device mounted on the machine.

At the output of the shotblast machine, the individual layers are assembled by means of a layer pusher into a continuous row and further processed in the following curling machine.

The curling process removes any excess cement from the product surface. The grain in the surface is polished by the electrically height-adjustable and frequency-controlled curling brushes rotating around the horizontal axis. Curling is particularly suitable for structured surfaces because the



Curling machine with operation panel

structure is retained, and the flexible bristles allow processing in deeper areas. Due to the unique and proven concept of SR Schindler's curling operation, the wear of the brushes is minimized while achieving an optimal outcome. Curling is an indispensable upstream process step for products that need to be coated because it removes the residual dust on the surface using high-pressure cleaning.

The curling machine is equipped with two processing tunnels, each with two brush rollers. The belt is extended for optionally later installation of a further tunnel with two additional brushes. The brushes, which are arranged at an angle of several degrees, rotate alternately in opposite directions, thus avoiding line marks on the products surface.



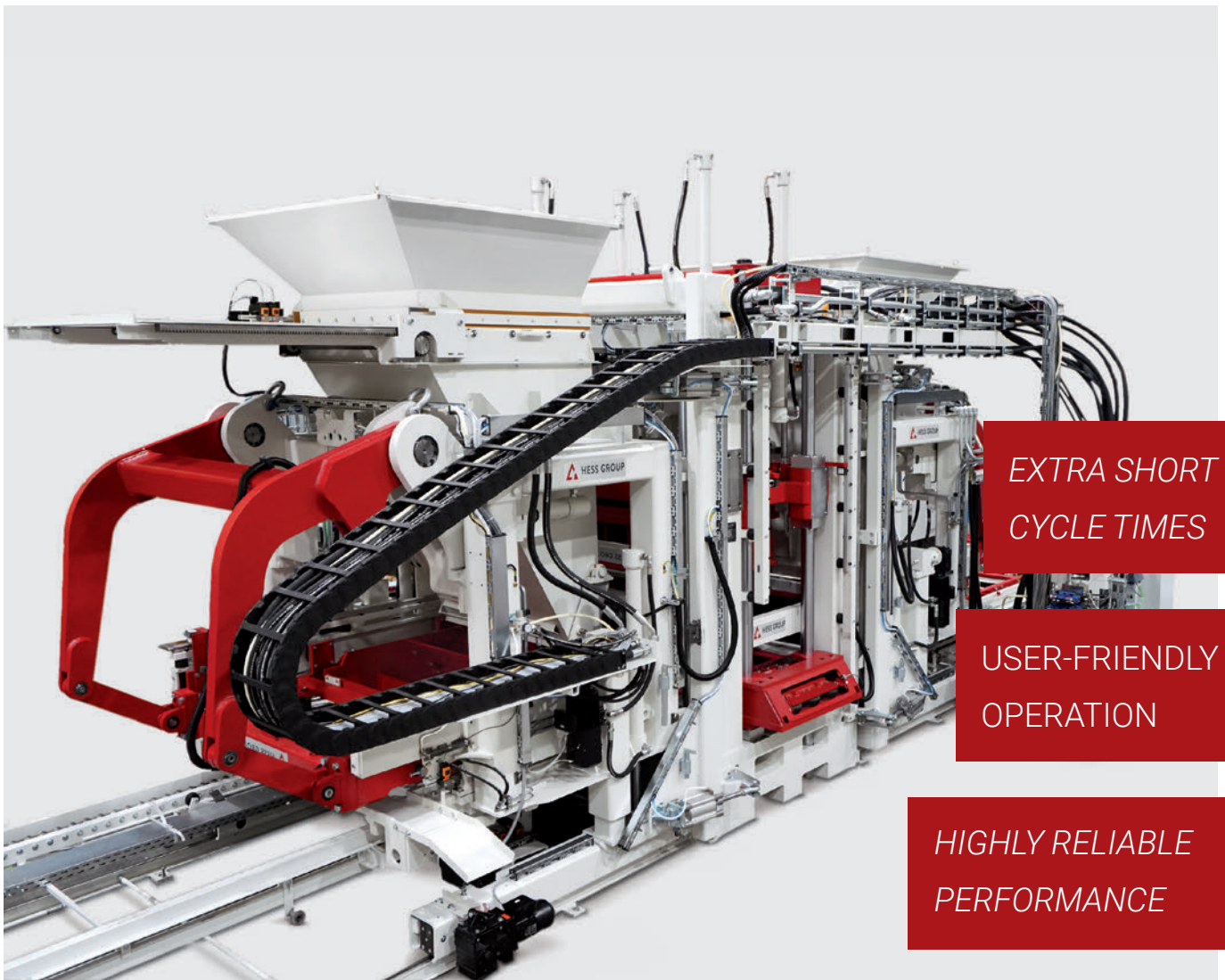
Layer pusher and retarder roller conveyor



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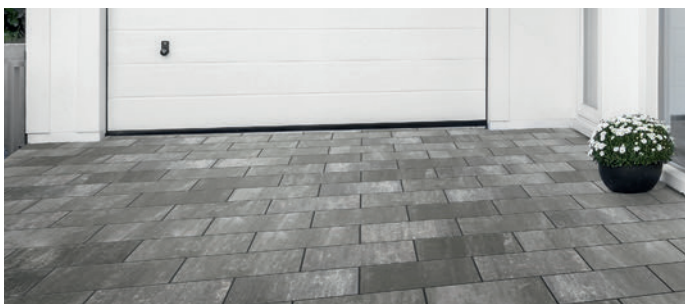
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On a subsequent accumulating roller chain conveyor, the endless row is opened, and quality control is carried out. Defective products are removed from the product stream by the operator and replaced by defect-free ones. A stopping system integrated into the accumulating roller chain conveyor separates the disintegrating continuous strand into layers, and a layer pusher transfers the individual layers to a belt conveyor. At the end of the conveyor, a second layer stacking device identically executed as the first one picks up layer by layer and deposits them on the waiting transport pallet. The loaded pallets run on a heavy-duty roller conveyor to the position outdoors, where they get picked up by a forklift.

A Siemens S7-1500 fail-safe control system controls the entire finishing line in several control cabinets. The complete line is executed according to the valid European CE norms and provides very high safety. For the plant operation, there are operator panels and one wireless tablet PC with a Wi-Fi connection. This lightweight wireless tablet can control the complete line or troubleshoot when something isn't working as desired. The line can be accessed online via a VPN router, and support can be provided. ■



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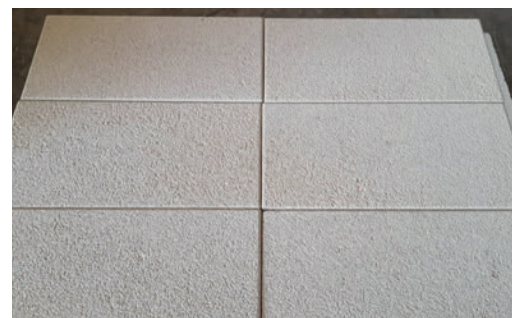
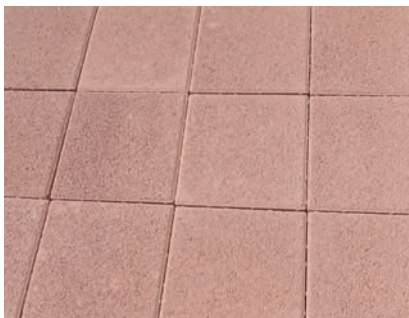


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Product examples