Gerhard Warning GmbH, 33619 Bielefeld, Germany

New ageing plant for concrete products with automatic packaging unit for multi-format blocks at Kaiserstein in Austria

The Leier Group of Companies is an internationally recognised corporation with a total staff of approximately 2,000 at 40 sites in Austria, Croatia, Hungary, Poland, Romania and Slovakia. Leier's business activities are well diversified but can be separated into two main sectors: construction materials and services. The construction materials' area concerns mainly concrete products – from large-scale precast components right up to paving blocks that Leier produces and markets in the above-named countries. A total of 15 concrete paving block and precast production facilities provide the potential for market-driven manufacturing in such a large sales area. Of paramount importance to Leier is not the quantity of concrete products manufactured but rather their quality, with a view to maintaining customer satisfaction on a long-term basis. In order to keep up with customer demand for antiqued concrete pavers – and increasingly for multi-format blocks -, a new ageing plant with a fully automated sorting and packaging unit was commissioned at the production facility of Kaiserstein, a member of the Leier Group of Companies. The plant was supplied by Gerhard Warning GmbH from Bielefeld, Germany.

■ Mark Küppers, CPI worldwide, Germany ■

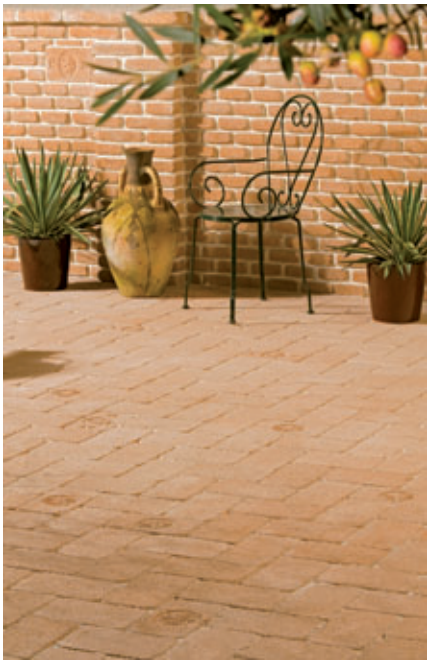
The Leier Group has 40 sites in six countries

The Leier Group is involved in an extremely broad range of business activities. In the service sector, Leier is engaged in various spheres that are independent of each other: going from property management to business hotels and the car dealerships of well-known manufacturers to their own machine and mould engineering company with a staff of more than 100.

In the sphere of construction materials, the Leier Group can offer a wide range of products as well, and, in the segments of civil engineering, gardening and landscaping, the company is practically an all-round supplier. Differing wall systems, such as hollow-core walls, all popular floor systems (element flooring, ribbed floors and precast prestressed concrete component floors), straight and winding precast stair units and a comprehensive garden construction programme, are manufactured in the 15 concrete production facilities. In addition, their construction materials' portfolio includes chimney systems and roofing tiles.

Situated to the north of Vienna, Kaiserstein Gesellschaft mbH has belonged to the Leier Group as a company since June 2008. At this site, Kaiserstein successfully produces high-quality concrete products, such as paving blocks in a variety of different colours, concrete blocks, formwork blocks, masonry blocks, fencing blocks with a coping, lawn edging elements and products for civil engineering, too. All products are marketed under the Kaiserstein brand, a name widely known for high-class products. Kaiserstein employs a staff of some 40 persons and has been able to carve out substantial sections of the market in Austria and the neighbouring countries. The company has been repeatedly chosen to supply

Antiqued concrete paving block with Kaiserstein logo



Kaiserstein produces high-quality concrete products in a variety of different colours

Accumulation bin for the ageing plant into which new concrete blocks are deposited

The blocks reach the ageing drum via a conveyor belt

concrete products for special projects. One current project of major importance, for which Kaiserstein gained the contract, is located in the heart of Vienna. Extensive paving work is being carried out in the world-famous Prater park, for which Kaiserstein is manufacturing the concrete paving blocks. This large-scale project is a real calling card for the company and gives Kaiserstein Gesellschaft mbH managing director, Mr. Martin Gruber MA, grounds for particular pride.

Antiqued concrete paving blocks on the advance

Antiqued concrete paving blocks are becoming increasingly popular in Austria. At Kaiserstein, antiqued products make up approximately 30% of turnover with a clear trend to growth. The concrete goods, all made from facing concrete, are manufactured on a block-making plant from Henke, now Masa Henke. The rack system for curing the fresh products was similarly installed by Henke. A Kimido colour dosing system makes individual colourations of the concrete goods possible.

With the aim of being able to accommodate the growing demand by means of a high-capacity system, Kaiserstein looked around on the market for suitable ageing machines for giving hardened paving blocks an antiqued finish. In the end, Mr. Martin Gruber decided for an ageing system from Gerhard Warning GmbH. One convincing

The ageing drum possesses a wear-resistant rubber lining

The movable conveyor belt behind the ageing drum

argument, amongst others, was the satisfaction voiced both at home and abroad by other concrete manufacturing operators who have been producing with this ageing system for longer periods of time. Another important criterion in purchasing this plant was the possibility of being able to stack multi-format blocks mechanically.

Ageing system with fully automated packaging unit

The entire new ageing and packaging system was erected in one hall. New concrete blocks are carefully tipped directly from a pallet with the aid of a forklift into a large feed hopper, which is located at the beginning of the ageing process. The ageing drum downstream is fed via a conveyor belt from this storage container. The blocks are then given their antiqued appearance with broken corners and edges as they pass through the drum. The degree of ageing can be determined by means of the plant's control unit; variable adjustments can be made to the torque delivered. Broken material falls down through wide slits in the drum into containers positioned directly underneath. Fine dust is removed to a very great extent from the production area by a ventilation system.

Once the concrete products have passed through the ageing drum, they continue onto another conveyor belt. This belt is movable and can transport the concrete blocks further on the next conveyor to the sorting and packaging unit or can take them out of the production line. In the latter case, the loose antiqued blocks can be immediately filled into receptacles (e.g. big bags). In a normal case, the antiqued blocks proceed directly to the sorting station.

Patented sorting technology

If the blocks are to be sorted by machine and stacked on pallets, they are transferred to the next conveyor belt, upon which they then travel to the patented sorting unit, the so-called "Organizer". By dint of the Organizer's special sorting technology, the blocks are all positioned fully automatically in a longitudinal direction. An employee stands at the end of the sorting system to visually check block quality. Defective products can be immediately rejected at this point without having to stop the plant. At the same time, this operator can check all sequences on a monitor and control the ageing drum as well.

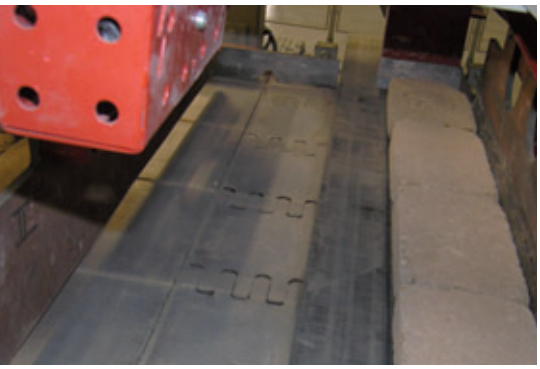
Now that the blocks have been sorted, they are transferred automatically to an intermediate storage belt, which conveys them to the packaging unit. Any remaining broken material falls from the Organizer's conveyor belt onto another lower belt that brings the broken pieces to the same container, in which the rejected blocks also end up. This means that the employee only has to place the defective blocks on the conveyor belt and does not have to carry them to a collection point.

The intermediate storage belt is a long conveyor belt upon which the blocks travel to the automatic packaging unit. As its name may suggest, this intermediate storage belt

Only one employee stationed at the end of the Organizer is needed to monitor and control the entire production process

Conveyor belt for carrying away residual broken pieces and rejected blocks

Intermediate storage belt



The fishbone system used for drawing the line of blocks apart can be seen in the middle of the picture

ensures that the packaging unit is fed continuously and uniformly.

Uniform rows even with multi-format blocks

Individual layers of blocks are set into rows in the packaging machine. To this end, they are thrust into the system in a line from the intermediate storage belt. Since a particular row length cannot be assigned a constant amount of multi-format blocks, the system measures the length of the line that has been inserted and halts the action once a predefined length has been reached. The line of blocks then proceeds to a so-called fishbone system, which is composed of several steel plates initially positioned close to each other. As the fishbone system moves apart horizontally, the block lines are drawn apart and block rows of equal length are formed. However, the blocks are no longer positioned side by side in these rows; spaces have been created. The row is then pushed by a power-assisted side shifting device onto a retractable packaging unit service sheet. The procedure is repeated until a complete layer of blocks has been made.

Once a block layer has been completed, a layer shifting device takes charge of it. This well engineered technique with retractable sheets makes it possible for the layer to be transferred gently to a wooden pallet, which will have been positioned directly under the packaging unit's opening by an elevating platform. With each layer of blocks that is placed upon the pallet, this elevating unit sinks down by the height of the same layer until the required package height has been reached. The individual layers can be stacked offset from one another as the pallet is displaced slightly in a horizontal direction after each new layer of blocks. The stability

Intermediate storage zone in the outside area

of the block packets is substantially enhanced in this way. The completed packages of blocks are transferred to a roller conveyor and a new wooden pallet is then brought automatically from pallet storage to the elevating unit. The system permits antiqued block products to be constantly packaged without interruption.

On their way on the roller conveyor, the completed block packets pass through a Cyklop foil station, at which point the packets can be wrapped in foil if need be. The packets are subsequently conveyed to the outdoor area and removed by forklift there. This forklift then transports the pallets to outside storage until further notice.

The entire ageing, sorting and packaging system can be operated by only two employees. Whilst one employee monitors the system, the other is involved in removing the finished, antiqued packages of blocks, filling the pallet storage stack and feeding the ageing plant with new concrete blocks.

Once a complete block layer has been formed, it is transferred to a pallet by means of a retractable sheet

Uniform multi-format packets – the fishbone system makes it possible

The individual layers are stacked offset for better stability

FURTHER INFORMATION

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