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Development of a perfectly optimised packing process – cost-effective automatization concept

The robot prepares the pallets to be loaded with sand lime bricks.

High efficiency of the packing area is of great importance for profit-making operation of a sand lime bricks plant. The experts of WKB Systems worked out a special automatization concept that was successfully implemented. It is based on the usage of innovative facilities to boost the packing process flow.

One of the modern tendencies in the production of building materials is the usage of specific industrial solutions to handle manufacturing flows fully automatically. The common challenges for the usage of new technologies are:

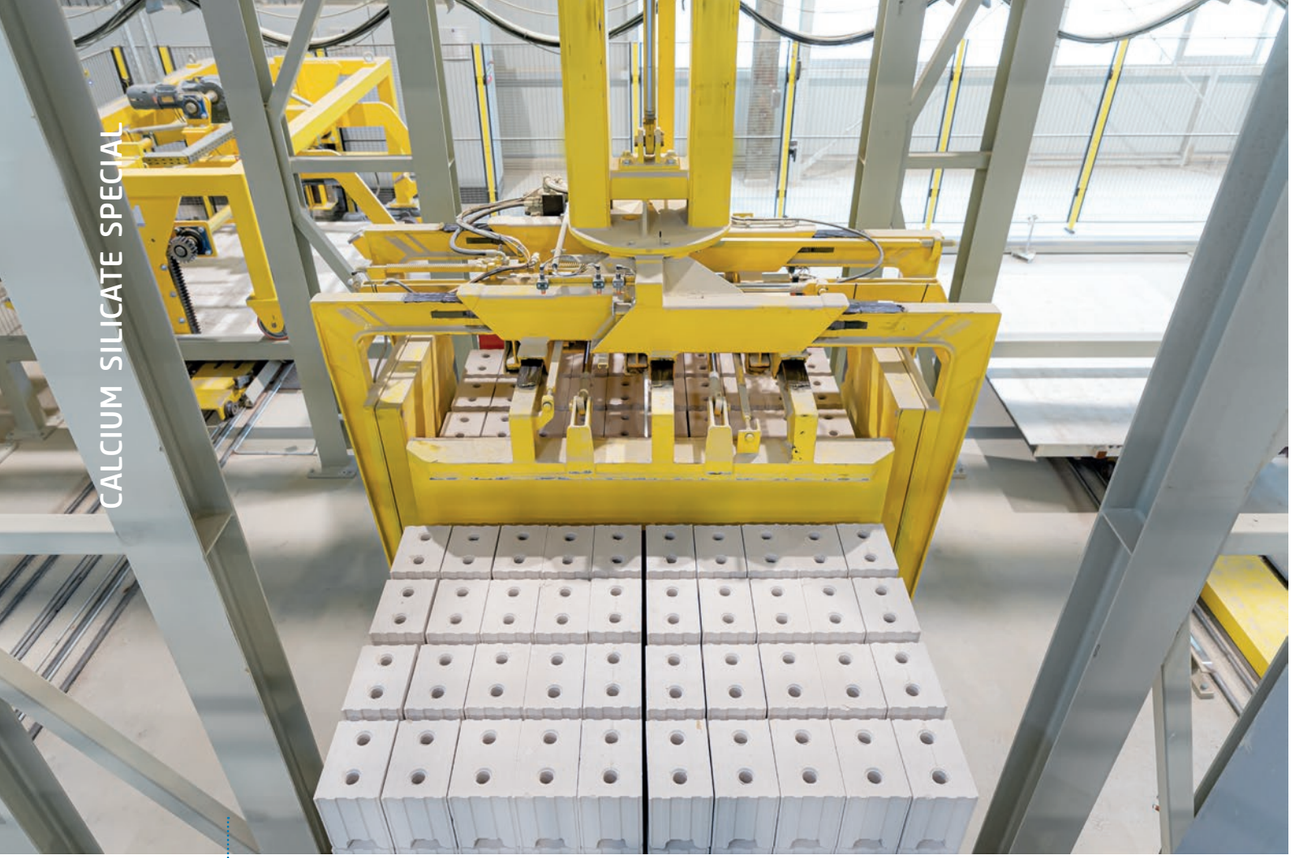
- to free workers from the hard labour
- to eliminate errors
- to ensure the ongoing production process
- to advance the product quality
- to increase the plant efficiency

The solution here is the usage of state-of-the-art machinery, such as robots, manipulators, gripping facilities, etc., to ensure a profitable fully automated manufacturing of building materials.

There is no doubt that processes in the packing area significantly affect the efficiency of the whole production line. So, it is of great importance to arrange them in a most advanced and optimised way in order to contribute to the operating success of the whole plant as it was the case in a sand lime bricks plant of a German large-scale manufacturer of sand lime bricks and autoclaved aerated concrete.

The automatization concept for the packing area of this sand lime bricks plant was worked out by the specialists of WKB Systems, who focused on the application of innovative facilities to improve the whole process flow.

Based on their long-term experience in the automatization and modernisation of sand lime bricks plants they come up to a decision to use two gripping facilities, one robot and a specially developed moving device for empty hardening trolleys taking into consideration a very compact ground area available.



The gripping facility pushes the bricks together.

The highly flexible robot with a special gripper.

The operating cycle starts with the feeding of three types of wooden pallets via roller conveyors to the robot with a special gripper. It picks up two interlaced pallets and places one of them on a chain conveyor. Then the robot turns the gripper with another pallet by 180° and places it also on the chain conveyor. Thanks to the robot's high flexibility it is possible to separate and precisely position wooden pallets of up to 25 kg each on the conveyer in an efficient way.

On the other side of the packing area the hardening trolleys loaded with sand lime bricks are forwarded to the portal gripping facility. It pushes the bricks together on the trolley to eliminate the spaces between them, takes and places them on two empty pallets prepared on the chain conveyor. So, one load of bricks on one trolley results in two packing units of height 800 - 1,300 mm and weight 2,200 kg.

After being strapped and stretched the brick packets are joined to one load and picked up with another portal gripping facility. It brings the load to an empty trolley to put it down. The whole cycle takes 40 seconds per packing unit.

At the same time in the background, a specially developed moving device places an unloaded hardening trolley on a separate rail for empty trolleys to be loaded later with two brick packets. So, a kind of a hardening trolleys circulation takes place.

The portal gripping facility.

The package of sand lime bricks on its way to the trolley.

The moving device for empty trolleys.

The successful realisation of this automatization concept from WKB Systems in practice ensures a reliable as well as economically advantageous packing of sand lime bricks in a fully automated way.

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