

Penta Automazioni, 40062 Molinella (Bologna), Italy

Tailor-designed handling system for secondary treatment machines at Forbet in Poland

Forbet is an affirmed concrete elements producer in Poland, founded in 1985, supplying high quality concrete products like pavers, slabs, blocks, pillars and many others. The smart use of the company's know-how in changing technologies and trends during all these years, and the investments done in research and in new equipment helped Forbet to become an enterprise at a European level. Recently the company entrusted Italian manufacturer of machinery Penta Automazioni with the design, production and delivery of a unique handling system for concrete products as well as for natural stone tiles for their plant in Poland.

Started from a family business tradition, led by a management in the second generation and celebrating this year its 35th anniversary of activity, Forbet with its plant in Tarnobrzeg in southern Poland continues to achieve customers' satisfaction providing functional, durable and aesthetic concrete products.

In 2006 the company management entrusted Penta Automazioni to study and design plants and equipment to fulfil Forbet's business requirements. The collaboration started with the supply of handling devices needed to improve the production process; the next step was the supply of a tumbling plant for the aging of pavers, and most recently Penta was entrusted with another challenge: a new handling system which allows to feed secondary treatment machines with layers of pavers as well as with natural stone tiles with a size of 2,000 x 3,000 mm and a weight of 1,000 kg.

The plant proposed by Penta can feed two different treatment machines and stack the products on pallets after the actual treatment process has been finished. Penta's supply includes mainly two multi-axis grippers and basements/stations needed to follow all the different requests of the customer according to his products and production needs. The strength of this handling system is its flexibility: depending on the goal to be achieved and the products to be handled, the devices supplied can be used in different ways and perform multiple functions.

Four axis gripper

The first gripper, which is a four axis gripper, de-stacks one layer at a time from the pack, already placed by the forklift on



Four axes gripping head with mechanical jaws

a first platform, and then places it on the conveyor of "Treatment Machine 1". In accordance with the products to be handled, the gripper can also turn each layer upside-down before depositing it on the feeding conveyor of "Treatment Machine 1". This process is possible thanks to an innovatively designed gripping head consisting of two couples of mechanical jaws that are able to handle various products, from 50 mm high pavers to 200 mm high concrete blocks. These jaws, especially customized conceived, allow turning the layers of all products thicker than 80 mm during the feeding movement. For all other products an extra step is needed: once the gripper has de-stacked the layer from the pack, it places the layer on the second basement and then the gripper rotates its head by 180°. This additional step is needed in order to use the jaws of the gripper on the side where they protrude for re-picking the layer up and then placing it on the conveyor of "Treatment Machine 1", turning the layer upside-down during the feeding movement.

Five axis gripper

The second gripper, the five axis one, is very similar to the first because of the same tailor-designed gripping head with mechanical jaws which allows it to complete the same processes as the first one does, with some additional options.

When the customer wants to treat concrete products, the process is still the same as with the previous gripper: the five axis gripper picks up the layer from the conveyor of "Treatment Machine 1" and stacks it on one of the platforms, in this way building the pack, with or without turning the layers. Or it feeds "Treatment Machine 2" and, once the layer has been treated, the gripper stacks the layer on one of the platforms, building the pack. So, when handling concrete pavers or blocks, the two grippers function in the same way.

What makes this second gripper unique are mainly three features: First of all this gripper works on more pick-up and placing stations and this is the reason for the additional controlled axis that grants the gripper to cover a bigger working area. Beside this, Penta realizes a one side open frame; this allows the customer to bring products in the working area with an overhead crane. The last and most important difference is that the mechanical gripping head can be equipped with an additional gripping vacuum head.

If the customer wants to treat the surface of natural stone tiles, which are also thinner than the concrete products (40 mm), the gripper will be provided with a vacuum device installed in the mechanical head. This vacuum head is equipped with nine vacuum plates and allows handling tiles with a weight of up to 1 ton.





Open trestle

Provided that these tiles can be placed on the frame in both ways, in an inclined position or flat, the gripper can move towards the position of the inclined frame with tiles ready for treatment and de-stack one of them at a time feeding



Basements/stations

"Treatment Machine 2" turning it into a horizontal position before putting it down on the conveyor. After the treatment, the gripper picks up the tile from the same position and stacks it in an inclined position on a second frame.

System configuration adaptable to actual needs

Another element which makes this plant even more flexible is that each station/basement can be removed. This is necessary, because depending on the products treated one needs stations with inclined frames or stations with basements for building packs and for rotating layers. In this way the customer can change the configuration of the stations in the working area of the gripper according to his production needs.

This is the first time in almost 30 years that Penta manufactured this special handling system that is designed around these new concept grippers. The Italian company took advantage from its experience, technological knowledge and ability to innovate its range of products to realize this custom-made system, able to completely meet the customer's expectations and needs, increasing his production capacity and giving him the possibility to become even more competitive on the market.

From the beginning of its activity, Penta has demonstrated that one of its best distinguishing features is to design and build customer-oriented tailor-made solutions. The extreme adaptability, the constant improvement and the development of new technologies have made Penta a key partner for the concrete and natural stone industry. Penta can guarantee for its equipment a mix of high performance of the machines, great quality of material and reliability of the whole system.



Vacuum gripping head (for tiles)





Mechanical and vacuum heads gripping different products

Thanks to its ability to produce both, handling systems to be integrated in other existing lines or completely new installations, Penta can realize whatever the customer needs.

This customized handling solution, that will allow Polish manufacturer of concrete products and natural stone tiles Forbet to increase its productivity through a unique system designed exclusively for this company, has given the possibility to Penta to strengthen its presence in the growing Polish concrete industry market. ■

FURTHER INFORMATION



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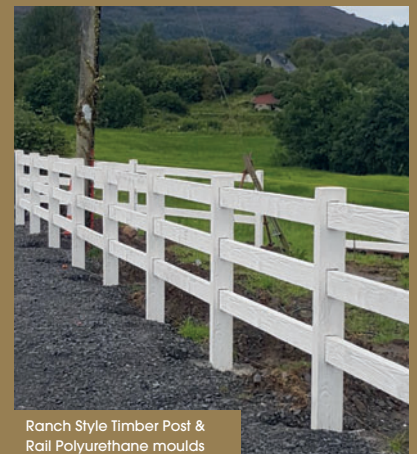
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