

Penta Automazioni Industriali SRL, 40062 Molinella (Bologna), Italy

# Splitting line for blocks and kerbs to be installed in the factory of a manufacturer in central Spain, Prensagra Prefabricados

**Prensagra Prefabricados, based in Numancia de la Sagra, Toledo, manufactures, sells and distributes concrete products since 1998. In the past, the founding members were engaged in the production and selling of ceramic bricks, but seeing that the concrete industry could have a better development, founded Prensagra in 1998. Since then, the company has always grown, thanks also to the second generation, which followed the footsteps of its parents. Production is now carried out on modern production lines and with the best carefully selected raw materials. Prensagra also follows a policy of environmental protection through specific actions that have positive effects on the environment. Their knowledge and experience is increasingly sensitive to the realization of exclusive products with high technical performance and lower maintenance actions.**

Among the products that will be always appreciated and are very popular in Spanish market, split blocks are one of the most highly valued. That's why Prensagra, in order to fulfill customers' requirements, at the end of last year, decided to invest in a new automatic splitting line. The Spanish company decided to rely on the know-how, experience and high flexibility of Penta Automazioni Industriali, met during a Bauma exhibition in the past years.

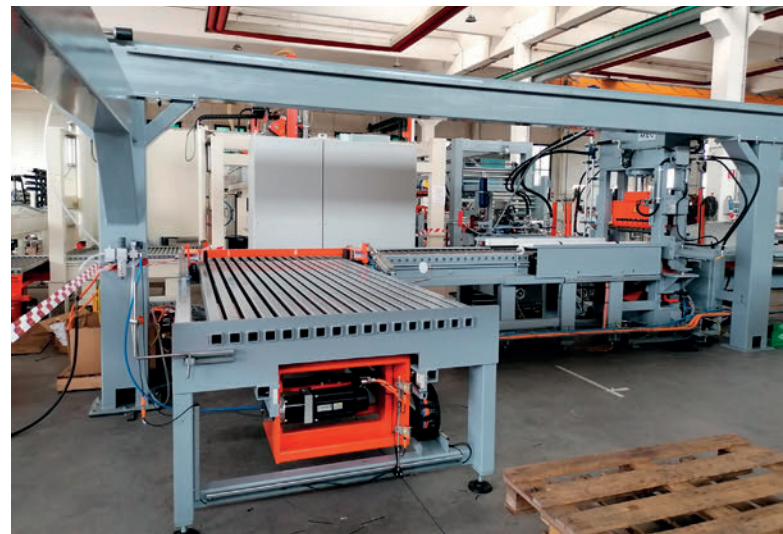
The solution studied by Penta mainly consists of a mutual 4 axis gripper, controlled by Brushless motor giving precision and reliability in movements, that carries out both the in-feed of the products to split and re-build the pack of split products. This plant has been designed to work with both blocks and kerbs of different size and shape. So, according to the product we are handling, the plant works differently and relies on specific devices. For this reason, the customized layout perfectly meets the customer needs and its flexibility was the added value Prensagra was looking for.

This is a compact, simple and efficient installation made up of three main working areas.

## In-Feed

The mutual multi-axis gripper works on several stations located underneath its trestle. At the in-feed area of the plant, the roller-line feeding packs of products to split is installed. The gripper, equipped with four controlled axis, de-stacks each single layer and puts it on the first walking beam.

This device transfers each row to the center of the roller-line feeding the splitter. The walking beam, extremely precise thanks to the Brushless motor controlling the translation, is adjustable and programmable according to the products that we are handling. If we are handling blocks, these ones will be directly transferred to the center of the roller-line feeding the splitter. On the contrary, if we are handling kerbs, these ones will be moved to a rotating device first conceived to turn them in order to let them enter lying inside the splitter.

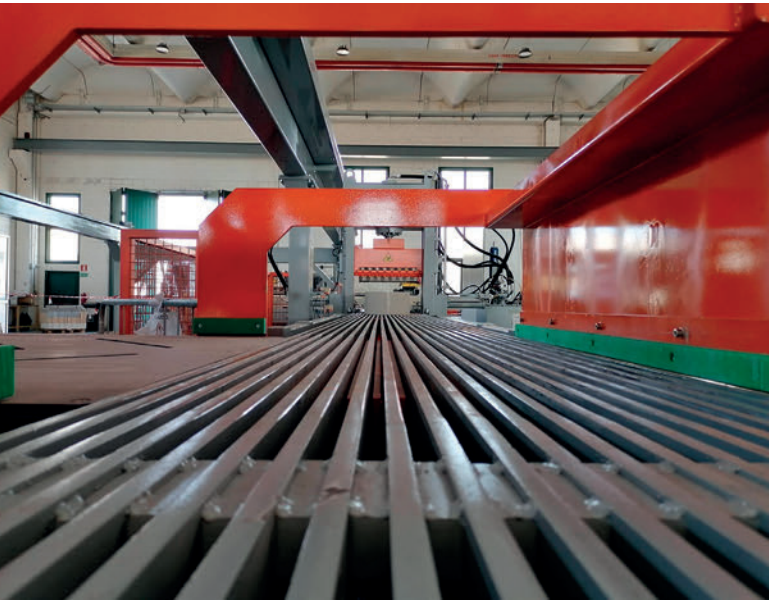


## Treatment Line

The first roller-line leads blocks or kerbs ahead until they reach the third conveyor, just before the splitter. On this last roller-line are installed two programmable pushing bars that work alternately. One is located at the same level as the first and second roller-line and serves to close the space between the two conveyors and so act as a passage. The pusher bar allows the set length of product row to continue on this second roller-line and, once the row is completely moved to the second conveyor, the bar pushes the products under the cutting blades. As soon as the first pusher bar moves the row under the splitter, the second pusher bar will be in the position between the conveyors to restart the cycle without losing any time. The pusher bars are equipped with brushless servomotors and are programmable so that they can be adjusted according to the different width of the products to be split.

The splitting machine let enter materials with maximum width 600mm and maximum height 300mm. It is equipped with hydraulic control unit and pressure accumulator. It mainly works with superior and inferior blades, but it's provided with lateral blades too. Once the blades have cut the products, all the waste is collected on the waste belts placed under the splitter.





Once the products have been split, a walking beam picks the row of products up and transfers them in a position where a second walking beam operates. This walking beam removes the split products from the working area of the splitter, granting to always have the splitting area free for further splitting operations. It then transfers the pre-set number of products composing the row (according to the products each row of the final layer will be made up with different number of products) and transfers them in an intermediate position. Here a second walking beam will pick the row up for transferring it to the area of the plant where the layer is built.

It was necessary to divide the out-feed between the two devices in order not to waste any time and to keep up with the splitter. The out-feed indeed is quite long, therefore Penta decided to let two walking beams working there to achieve as much output as possible.

### Out-Feed

The second walking beam transfers the row further to the layer composing area of the plant. Here a pusher operates, that moves the row on the stain steel bench, under the working area of the gripper.

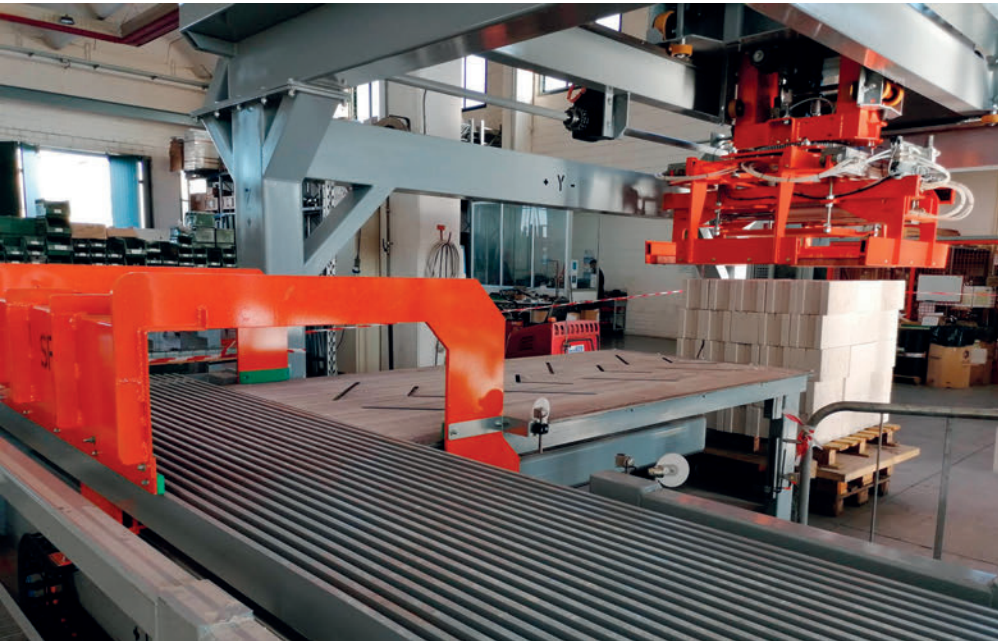
According to the products we are handling the layer can be composed by different number of rows. Therefore, the pusher will re-creates the layer for the sales pack depending on the customer's need. Once the layer is complete, the mutual gripper picks it up and put it on the pallet.

The same gripper handles the empty pallets too. As soon as one pack at the in-feed area is completely de-stacked, the gripper picks the empty pallet up and places it on the out-feed roller-line where the pack of split products will be built. Moreover Penta sets a position under the trestle of the gripper, where the extra pallets can be stored. This allows the in-feed and out-feed area to be asynchronous and so avoiding any deadlock situation.

The gripper deposits layers until reaching the pre-set height of the pack. At this moment the pack moves ahead on the line and will be horizontally strapped until attaining the station where it will be taken out by the forklift.



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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. This plant is an example too. Each device (manipulator, benches, rotating device, conveyors) is designed to manage specific product types and satisfy specific requirements for building of the final pack.

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 and these were the main reasons why Prensagra decided to rely on Penta.

Thanks to its ability to produce handling systems to be integrated in existing lines or in completely new installations and treatment machines as well, Penta can meet whatever customer need.

This is the first time that Penta and Prensagra work together to achieve a common goal. We are confident that this facility will be the first in a larger project to expand and improve customer production, always supported by Penta's technical expertise. The customer can rely on dedicated solution study, high machine performance, material quality and dedicated and competent technical assistance. ■



Stonewaves Modern Paving

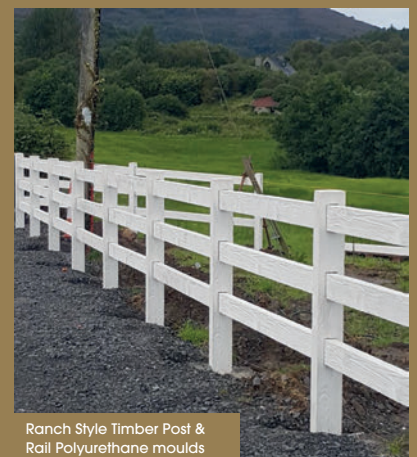
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**FURTHER INFORMATION**



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