

A modular cleaning system for the production of tiles

A PNR Italia solution ensures thorough cleaning of the interior of a ceramic tiles glazing machine



SCENARIO FOR THE SECTOR

The industrial production process of ceramic tiles

We can identify two different types of industrial production processes for ceramic tiles:

- **SINGLE-FIRED:** the raw material is produced with a wet process and subsequently spray-dried. There is only one cooking phase, following drying and glazing.
- **DOUBLE-FIRED:** the process, in this case, is dry. There are two firing phases: In the first, the sintering of the support takes place. In the second, the firing of the glaze.

Production cycle of ceramic tiles



1 | PREPARATION OF RAW MATERIALS

In this first phase, the dough is prepared, which must have an appropriate particle size distribution and grain shape;



2 | PRESSING

The powders are channeled into the molds that give the final shape to the product;



3 | DRYING

The raw tile enters the dryer, where hot air up to 200 °C is blown to extract all the residual moisture;



4 | GLAZING AND DECORATION

The dried tile is glazed with spray guns and then decorated with digital printing. Second glazing is also applied on the two faces of the tile;



5 | COOKING

The tiles are fired, gradually passing from 20 °C up to 1200 °C and then cooled to 70 °C;



6 | QUALITY INSPECTION

All tiles are subjected to quality controls, both aesthetic and functional.

INDUSTRY

Building materials



APPLICATION

Washing



PROBLEM

Design a flexible system



SOLUTION

Collector system and flat jet nozzles



THE PROBLEM OF OUR CLIENT

The customer who contacted us is a manufacturer of machines and systems for the ceramic industry.

The problem he submitted to us concerns the design of a system for the internal washing of the glazing machine, for the "waterfall" application of glazes on the tiles.

The machine consists of a minimum of 3 to 5 modules: an input module, from one to three glazing modules, and an output module.

The central modules for glazing are equipped with lances for glazing the tiles. An electronic management system synchronizes the movement of the spray lances with the crossing motion of the pieces to be glazed, avoiding overlapping the different passages.

The customer's request was to **design an automatic system for the internal cleaning of the glazing machine.** It is essential to promptly remove the glaze from the machine to compromise the quality of the subsequent glazing cycle. The priority areas to wash are the bottom of the tank, sides, belts, and the nozzles of the lances that spray the enamel.

PNR ITALIA SOLUTION

The technical office of PNR Italia has developed a **modular and effective system for the internal cleaning of the enameling machine.**

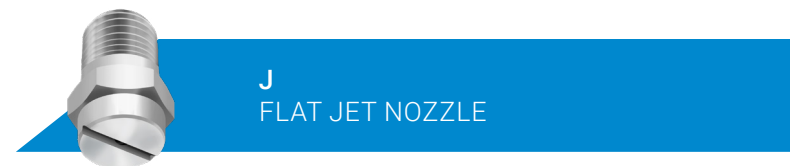
The solution, which uses only water without detergents, involves the installation of 4 manifolds for each central module, 2 on each side, at the top and bottom.

Each manifold is equipped with J flat jet nozzles. Depending on the position of the pipe, the number and positioning of the nozzles may vary.

ADVANTAGES FOR OUR CLIENT

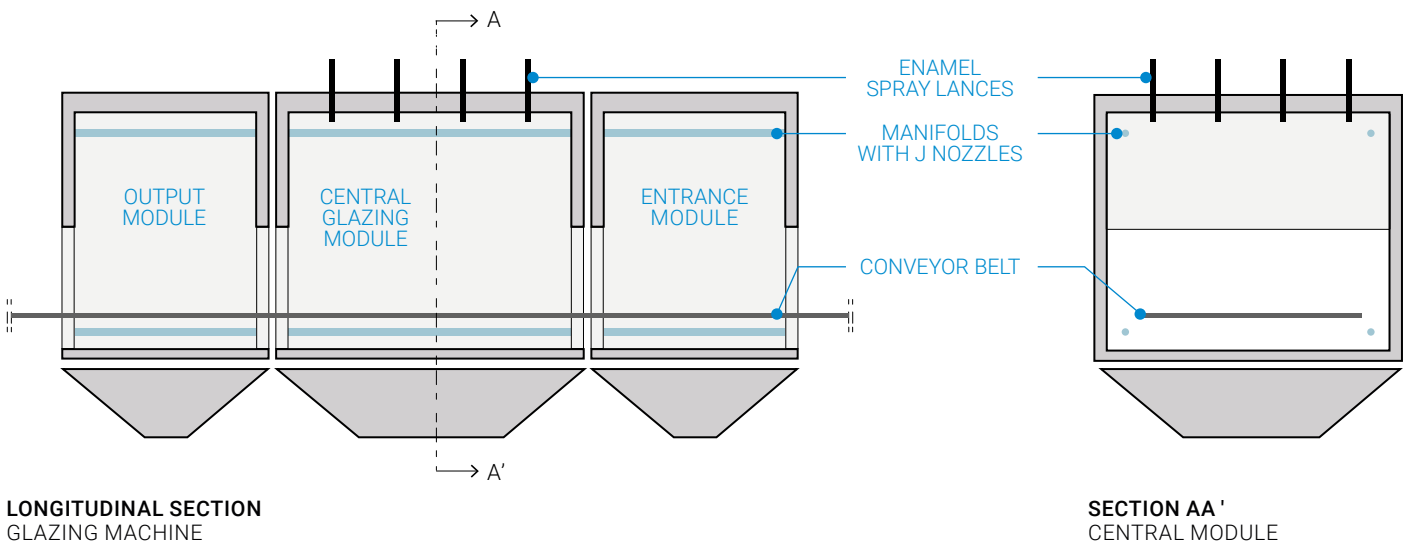
The system developed by PNR Italia guarantees the highest level of flexibility and high performance, ensuring the complete cleaning of the machine.

FOCUS ON THE PRODUCT



J
FLAT JET NOZZLE

Standard J flat jet nozzles are available in a wide range of flow rates, spray angles, thread sizes, and materials. They produce a finely atomized spray and correct impact strength in various industrial applications.



PNR Italia

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