

A construction company solves its dust issues in a tunnel

A system made of a manifold and a fog cannon by PNR Italia solves the problem of dust in a railway tunnel



SCENARIO FOR THE SECTOR

Maintenance of Italian railway tunnels

Italy is the European country with the highest number of railway tunnels in Europe for a total of about 10% of the entire railway infrastructure.

The entities that manage the Italian railway network have to manage a network whose extension exceeds 16,000 km in which the tunnels longer than 100m are developed for 1518km. ¹

Since the 1990s, many decrees on the safety of railway tunnels have been issued by both the Italian government and the European Community.

A large part of the regulations that refer to safety in tunnels includes information on emergency exits/accesses, fire-fighting water in tunnels, fire resistance of structures, emergency telephone system and sound diffusion, areas of triage, helicopter rescue sites, and the availability of rescue equipment.

Due to the many rules to be adhered to, there is a large number of upgrading activities for existing tunnels.

¹ <https://www.rfi.it/it/rete/la-rete-oggi.html>

THE PROBLEM OF OUR CLIENT

The client who has turned to PNR Italia is a building company specialized, among other activities, in civil and industrial construction, naturalistic engineering works, railway, hydraulic and road tunnels, consolidations, special foundations, and earthmoving.

The company was carrying out extraordinary maintenance on a railway tunnel, and one of the activities on site was the removal of the old plaster from the walls and the vault using a tracked excavator equipped with a telescopic boom and a cold planer.

The customer's needs concerned the abatement of the dust produced by the planer in operation at two points of the working site.

- **Inside the tunnel** in correspondence with the planer for the protection of the health of the operators;

- **Outside the tunnel** near the entrance, due to the presence of some private houses affected by the dust.

INDUSTRY

Construction industry



APPLICATION

Dust suppression



PROBLEM

Suppressing dust inside and outside a tunnel



SOLUTION

Manifold with full cone nozzles and fog cannon



PNR ITALIA SOLUTION

PNR Italia's technical and commercial office has developed two solutions to meet the customer's dual needs.

Dust abatement inside the tunnel

While in operation, the cold planer that removes the plaster produces a large amount of dust, making all activities inside the tunnel very difficult.

To overcome this problem, **a fixed manifold equipped with 12 BJ nozzles was designed to be installed outside the casing that houses the planer**, which can work up to eight consecutive hours.

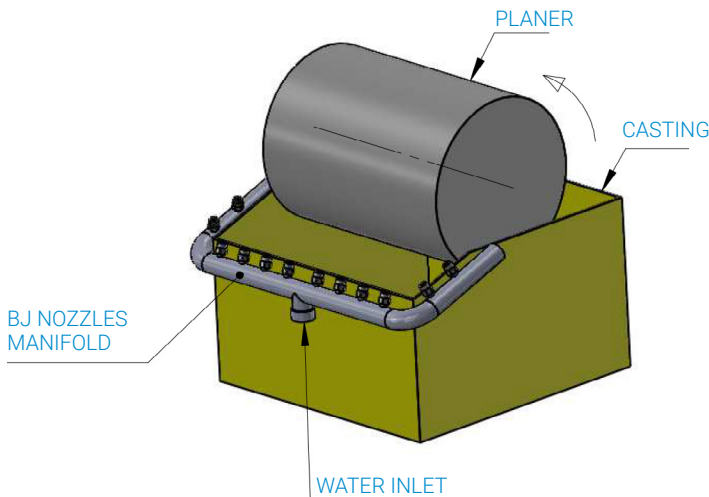
Dust abatement outside the tunnel

After leaving the tunnel, the dust generated by the planer caused discomfort in all the houses around.

A Sani-boost 40 fog cannon on wheels was installed to overcome this problem. With a throw distance of 20-25 meters, this cannon can be used with remote control and interchangeable nozzles to optimize the water flow.

ADVANTAGES FOR OUR CLIENT

With the solutions provided by PNR Italia, the customer successfully **broke down all the dust generated by the cold planer** while it was in operation without interrupting the activity at regular intervals to reduce the dust.



MANIFOLD WITH BJ NOZZLES
AXONOMETRY OF THE MANIFOLD

FOCUS ON THE PRODUCTS



BJ
FULL CONE NOZZLE

BJ full cone nozzle produces a uniform full cone-shaped spray with a round impact area. These nozzles have an X-vane safely secured inside their body up to 3/8" thread size. Thanks to their design, they can be easily disassembled and cleaned in case of clogging.



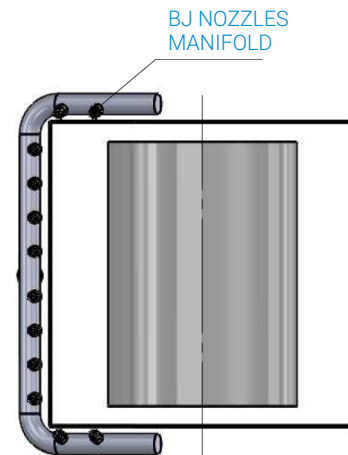
SANI-BOOST 40
FOG CANNON

The machines of the EASY line stand out for their simplicity of use, low energy and water consumption, and reduced dimensions that facilitate their handling wherever there is a need to reduce dust and odors.

OPERATING CONDITIONS

BJ NOZZLE AND MANIFOLD

@PW= 3 BAR	UNIT OF MEASURE	VALUE
SPRAY ANGLE	°	65°
NOZZLE FLOW RATE	LPM	4,15/nozzle
MANIFOLD FLOW RATE	LPM	49,8



MANIFOLD WITH BJ NOZZLES
MANIFOLD PLAN