

PNR solutions optimise the dust abatement process in the metallurgical industry

Let's find out how PNR Italia has developed a dust abatement system for the metallurgical industry and specifically that of Steel production.



INDUSTRY

metallurgical / steel production



APPLICATION OF PNR PRODUCTS

dust suppression



PROBLEM OF OUR CLIENT

coverage of an entire tank of supply waste



PNR SOLUTION

dust abatement system with E nozzles



SCENARIO FOR THE SECTOR

World crude steel production for the 64 countries reporting to the World Steel Association (Worldsteel) was 158.3 million tonnes (Mt) in November 2020, an increase of 6.6% compared to November 2019 ^[1].

In addition, in Italy, Steel production increased by 1.9% in 2018 compared to the previous year ^[2].

Part of this production is conducted with the help of the Electric Arc Furnace (Eaf). This steel production process produces waste powders which are difficult to manage because they are defined as hazardous waste and are therefore subjected to special treatment by means of a dust abatement plant.

PNR has been offering **nozzles** and specific solutions for the **metallurgical industry** and specifically for **dust abatement** for years.

For effective **dust abatement** it is necessary to know precisely the grain size of the products to be abated. The abatement of the dust generated during the production process can be done with various ranges of nozzles, depending on the type of attachment required, the type of spray and the flow rate.

THE PROBLEM OF OUR CLIENT

In this specific case we had a **waste transfer tank** of about 8 meters by 9 and deep 2. The tank had on the bottom a grid that guaranteed the deflection of the liquid used for dust abatement, and a system of pipes that ran on the two long sides and on the short one of the tank.

PNR then carried out a study of **tank coverage** so that through the correct positioning, type and sizing of specific nozzles the dust could be abated evenly over the entire surface of the tank.

Notes

1 November 2020 crude steel production - World Steel Association
2 "Bilanci d'Acciaio 2019". Ufficio Studi siderweb

PNR SOLUTION

The solution proposed by PNR is a **nozzle system for dust abatement** made of 5 nozzles per side of the tank for a total of 10 arranged on the two long opposite sides. Specifically, the nozzles identified are made of stainless steel of the **E series** with an angle of deflection of jet of 90°, a conventional orifice diameter of 4mm and a flow rate of 156lmp at 3 bar.

ADVANTAGES FOR OUR CLIENT

The solution proposed by PNR has allowed an optimal coverage of the surface of the tank of transfer waste, ensuring a uniform dust abatement on the affected area.

FOCUS ON THE PRODUCT

E-TYPE FULL CONE NOZZLE

E-type full cone nozzle works on the impact principle, by the deflection of a water stream that impacts onto a spiral profiled surface which provides the desired spray angle. Their special design makes them virtually clog-free and produces a wider spray coverage than other nozzles for a given flow and pressure.

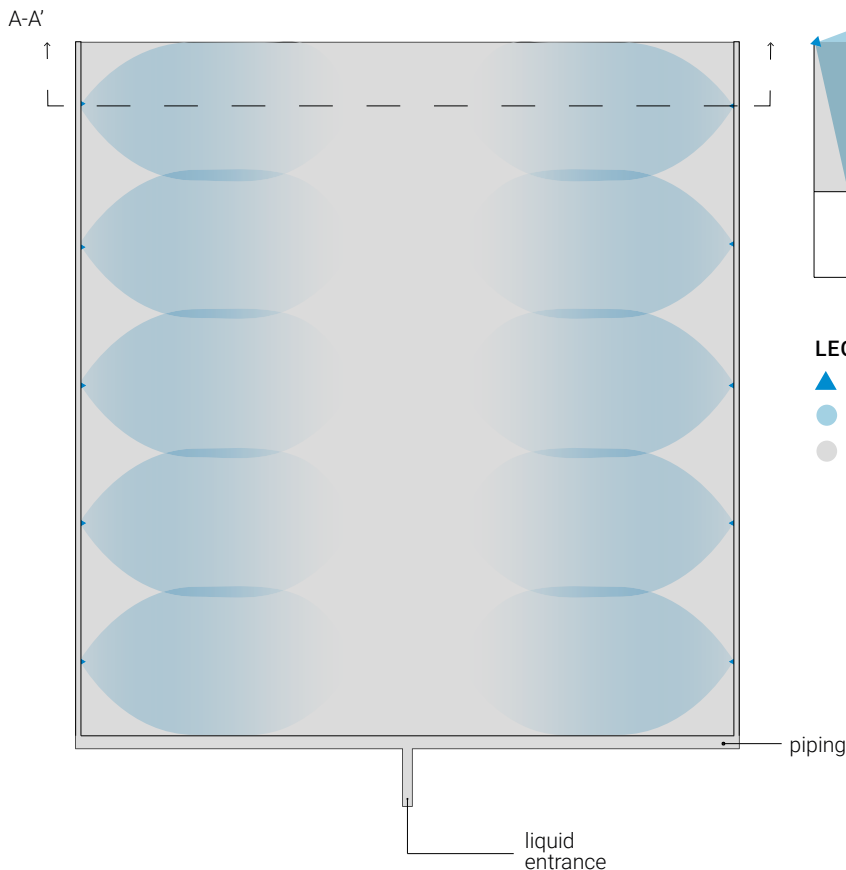


TECHNICAL SPECIFICATIONS

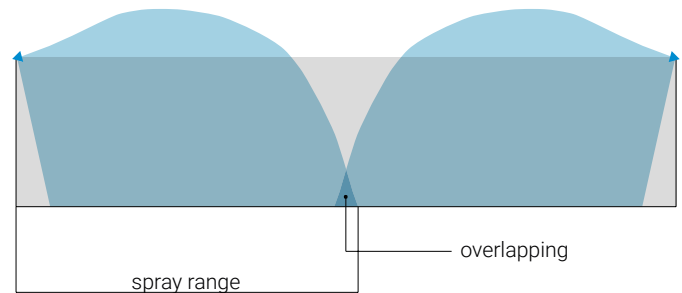
Nozzle type: E
CL: 90°

D: 4mm
LPM: 156lmp - 3 bar

PLAN
Waste transfer tank



A-A' SECTION
Waste transfer tank



LEGEND

- ▲ NOZZLE
- SPRAY
- TANK