

A biorefining starch producer optimizes cleaning processes

A system designed by PNR Italia revolutionizes cleaning processes and optimizes water and energy consumption of a biorefinery



SCENARIO FOR THE SECTOR

Biorefining plants

Biorefineries are industrial plants capable of **converting raw materials into bioproducts or biochemical substances** for the polymer, cosmetics, pharmaceutical industries, biofuels, food, feed, and other materials.

The biomass to be converted can be of various kinds: waste, wood, sugar, straw, corn, and even algae.

These raw materials are regenerable, which means that they can be reintegrated by nature relatively quickly, making biorefineries an example of the renewable energy industry.

The transformed biomasses can be sugar, starch, wood, oils and fats of various kinds, and waste. All these biomasses can be processed through:



PHYSICAL-MECHANICAL PROCESSES

filtration, distillation, extraction, fragmentation, crystallization;



CHEMICAL PROCESSES

pulping, oxidation, esterification, hydrogenation, hydrolysis, isomerization and polymerization;



THERMOCHEMICAL PROCESSES

incineration, gasification, thermolysis, pyrolysis;



BIOTECHNOLOGICAL PROCESSES

fermentation, composting.

From these processes, we obtain bio-materials based on wood, paper, fibers, polymers, biofuels, chemicals, pharmaceuticals, lubricants, surfactants, energy, and heat.

INDUSTRY
Biorefineries



APPLICATION OF PNR ITALIA PRODUCTS
Washing



PROBLEM
Optimize the cleaning process of a grill



PNR ITALIA SOLUTION
Manifold and full cone nozzle system



THE PROBLEM OF OUR CLIENT

The customer who contacted PNR Italia is **one of the most important manufacturing companies in wheat biorefining in Northern Europe**. Through the biorefining of wheat, they obtain starch, gluten, animal feed, and glucose syrup. They work for the paper, food, and livestock industry.

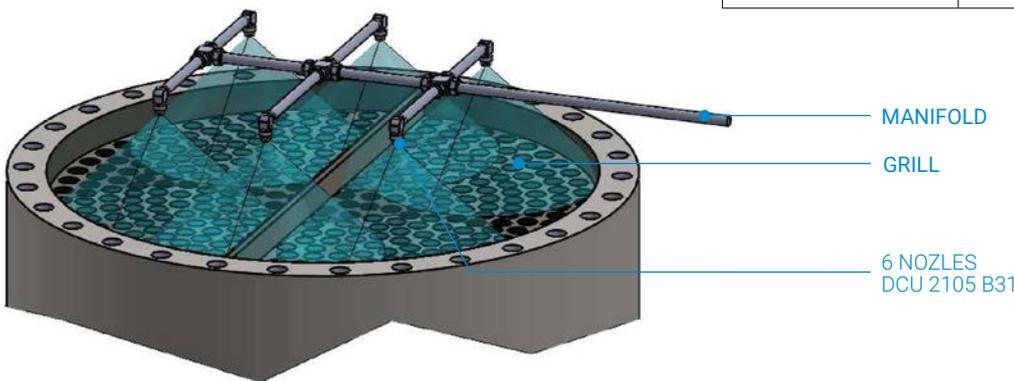
The need was to **effectively clean the grid of a condenser inside the biorefining plant**.

Before PNR Italia's intervention, the grill was cleaned only by a nozzle placed centrally above the condenser.

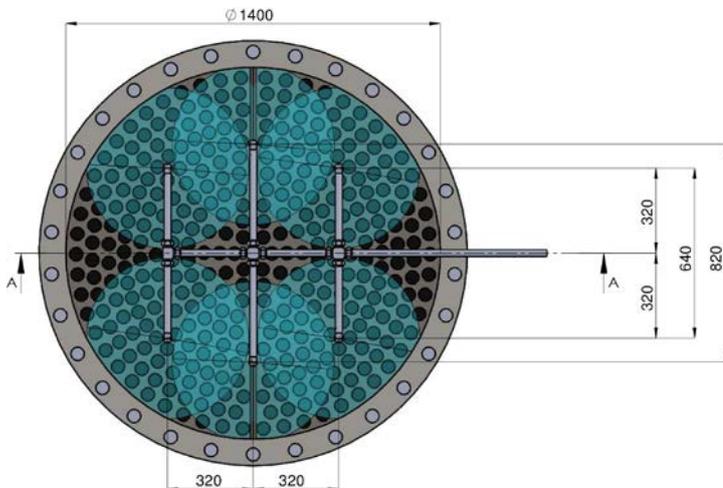
PNR ITALIA SOLUTION

PNR Italia's technical office developed a system of manifolds and nozzles whose spray could uniformly cover the grid to ensure a much higher level of cleanliness than the previous single nozzle system.

A three-arm manifold is suspended at 30cm from the grid with a total of 6 full cone D nozzles that spray 2% water and soda at 80 °C.



CONDENSER
ISOMETRIC VIEW



CONDENSER
PLANT

ADVANTAGES FOR OUR CLIENT

The solution guarantees excellent coverage of the grid. Before the intervention, the flow rate was 2.5m³/h with a single nozzle. **After the intervention, the total flow rate of six nozzles is 4m³/h.**

FOCUS ON THE PRODUCT

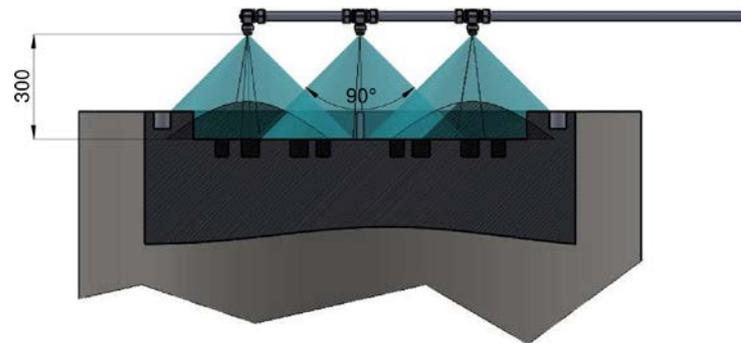


DCU 2105 B31
FULL CONE NOZZLE

D full cone nozzles are widely used in industry. They provide uniform spray coverage and are available in various thread sizes, spray angles, and flow rates to meet environmental requirements.

PERFORMANCES SYSTEM

@PW= 3,5 BAR	BEFORE PNR ITALIA	POST PNR ITALIA
FLOW RATE	2,5 m ³ / h	4 m ³ / h



CONDENSER
SECTION

PNR Italia

Via Gandini 2, 27058 Voghera (PV), Italy
Call or write us for customized solutions!

+39 0383 344 611 info@pnr.it