

## How to ensure fast and effective cleaning of milk drums

PNR Italia designed two solutions to wash milk drums inside and outside successfully and quickly



### SCENARIO FOR THE SECTOR

Washing and sanitizing food industry instruments and machinery

In the food industry, at every stage of product processing, it is necessary to avoid any contamination of any origin. Many regulations and certifications ensure the quality of the final product.

We can list few definitions to clarify some concepts about cleaning in the food sector:

**CLEANING:** removal of dirt particles from surfaces by mechanical, manual, or chemical methods;

**SANITIZATION:** treatment of a clean surface with a chemical or physical agent to destroy organisms that cause disease/deterioration. It reduces the total vegetative cell population to a safe level;

**DISINFECTION:** the destruction of all organisms of the vegetative state;

**STERILIZATION:** the destruction of all organisms, including spores.

### THE PROBLEM OF OUR CLIENT

The company that contacted us designs and manufactures machinery for the food industry on commission and was designing a washing tunnel for plastic milk drums.

Once emptied, the bins must be washed internally with water, then with a cleaning product, and finally rinsed with water.

The system designed by the customer included a chain that transported the drums upside down to each of the three washing stations. As the customer needed to wash 600 bins daily, exceeding 30 seconds per stop at each treatment station was impossible.

The drums need a high-impact cleaning for the inside to ensure sanitation before being reused; the outside of the bins must be cleaned with water only.

PNR Italia supported the customer in choosing the washing system for the three stations.

#### INDUSTRY

Food and beverage industry



#### APPLICATION

Washing of frozen milk drums



#### PROBLEM

Wash the inside and outside of bins in a short time



#### SOLUTION

Rotating arm system with nozzles and manifolds



## PNR ITALIA SOLUTION

PNR Italia's technical department developed two different solutions to carry out the external and internal washing of the drums in all the cleaning stations.

### INTERNAL CLEANING

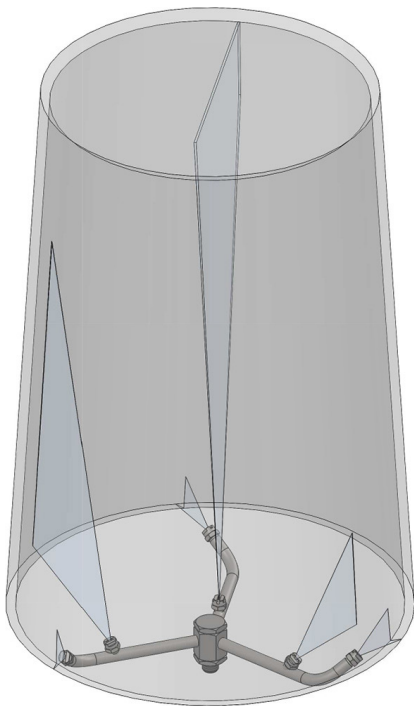
We designed a rotating arm with 6 flat jet high-pressure F-nozzles for the internal cleaning of the drums. The rotating component can clean the bin in all its parts, even those less accessible.

### EXTERNAL CLEANING

A total of three manifolds equipped with full-cone D-cone spray nozzles have been designed to clean the outside of the bins. The two lateral linear manifolds have 6 nozzles each. A circular collector placed above the bin ensures the cleaning of the bottom and is equipped with 4 spray nozzles.

### ADVANTAGES FOR OUR CLIENT

The solutions we designed allows the customer to clean up to 600 bins a day effectively and fast.



**INTERNAL CLEANING OF THE DRUM**  
ROTATING ARM WITH FLAT JET F NOZZLES

## FOCUS ON THE PRODUCT



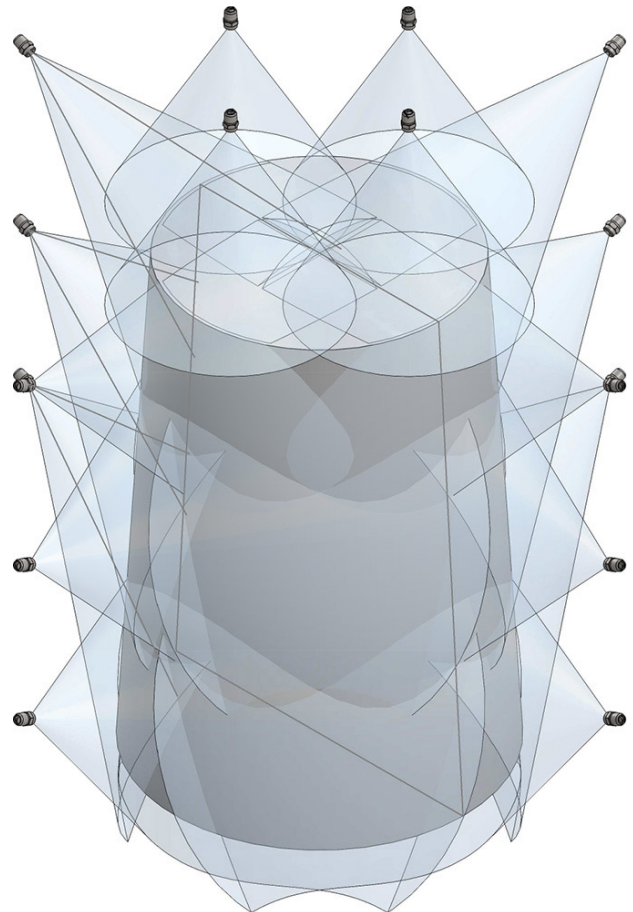
**F**  
FLAT FAN NOZZLE

F-flat jet nozzles are designed for high-pressure washing. Their accurate internal profile allows a uniform jet distribution and an effective and consistent washing action on the entire surface to be treated.



**D**  
FULL CONE NOZZLE

Full cone D nozzles with large pass-through X-vane offer a full range of spray angles, flow rates ranging from 1.18 to 1.420 liters per minute, and connections from 1/8" to 4".



**EXTERNAL CLEANING OF THE DRUM**  
SIDE AND UPPER MANIFOLDS  
EQUIPPED WITH FULL CONE D NOZZLES

**PNR Italia**

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