

Client: Pharma company

Plant: Segrate

CONTROL AND SUPERVISION SYSTEM CLEANING BINS PLANT



Figure 1: Cleaning Bins Plant – Front view (open)



Figure 2: Cleaning Bins Plant – Front view (closing)

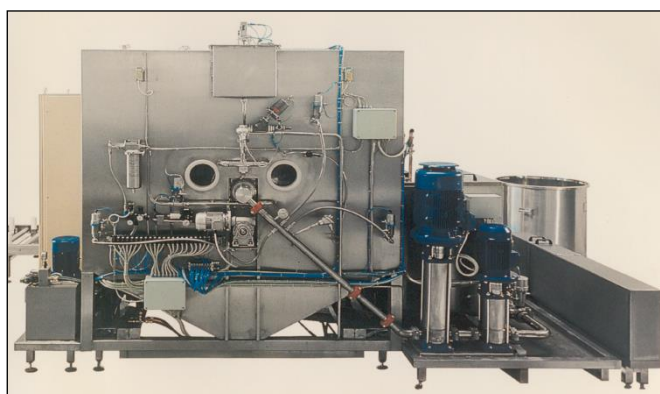


Figure 3: Cleaning Bins Plant – Back view



System architecture and configuration

PLC Simatic S5 Model 95U to control all the cleaning phases geared with :

- Communication serial with plant PLC

Operator panel OP15 geared with:

- Communication serial with plant PLC
- Sinec L2network to factory information systems

Functional specifications

The system, developed for a big pharma company based in the outskirt of Milan, is to be used at a high-pressure cleaning plant for bins to be cleaned from remains of creams, ointments, gels and unguents.

Running water is used for the cleaning of the bins welded on pallets with their lids, which are afterwards dried inside and outside.

Control System

The control system manages independently the cleaning and blowing cycles of bins and pallets.

Control functions are activated from the operator interface that sends general directives of the cleaning cycle's types and relative operative parameters.

The control system solves independently problems related to the selected cycle as they happen, and it sends to the operator interface info on the activated cycle and alarms.

The cycle begins with the activation done by the operator on the OP 15 and it ends when the pallet is hauled to the discharge roller at the end of the cleaning cycle.

The functions we set up:

- Machine set up
The machine been set up to execute the cleaning cycles
- Machine cleaning
Starts the machinery cleaning cycle

- Machine cleaning after emptying
Starts the machinery cleaning cycle and ends it emptying the tanks
- Bins/lids/pallets cleaning cycles
Starts the selected cleaning cycle

Supervision system

The main objective of the supervision system is to allow operators to manage the plant. It comprehends all the functions that the user needs to interact with the cleaning system.

The functions allow operators the following:

- Reception from the control system of information related to the operation status
- Guided operation for the definition and management of cleaning cycles
- Alarms or events warnings from the control system
- Monitoring of users' activity
- Acquisition and definition of process parameters
- Selection of the cleaning cycle
- Sending of the process macro orders to the control system
- Visualization and management of alarms and problems occurred during the process as they happen, screened by the control system

System configuration

The realized system allows the free configuration of the cleaning cycles, as all the phases can be combined accordingly to the specific cleaning needed.

The cleaning cycles phases are set up as:

- Pure steam fusion
- Tank filling with cleaning water
- Filling tank with rinsing water
- Pre-cleaning phase
- Cleaning with detergent
- Pre-rinsing with cleaning water
- Rinsing with rinsing water
- Dripping pause
- Tank emptying
- Cycles enabling
- Decontamination
- Blowing

System security

Access to pages is allowed only to authorized personnel, through input of a password. Certain pages and values can be changed/viewed only if the level of authorization is the required one.

System traceability

The system is structured in a way as to maintain the complete traceability of all the processes.

The printer installed on the machine prints:

- Main process parameters linked to the executed phase
- Process alarms
- Cycle parameters that have been changed

Plant and bins specifications

Bins specifications:

- Cylindrical bin Ø 900x1050 on a 800x1200 pallet
- Cylindrical bin Ø 710x915 on a 800x1200 pallet
- Cylindrical bin 800x1200x1050 on a 800x1200 pallet
- Rectangular bin 800x1200x0865 on a 800x1200 pallet
- Holders for lids and accessories

Machinery specification:

- Machinery with enclosure with automatic door to receive, docking and overturn of bins on pallets
 - Made up of a cleaning double walled cabin
 - Internal walls made of Aisi136L SP 2 m/m, external walls of Aisi 304 satin-finished
 - Exhaust piping made of stainless steel 316
 - Double walled tilted bottom to avoid standing water deposit and remains.
- Motorized roller table to load/unload bins
- Rotary poles with nozzles to deliver the necessary fluids (well/demi water, hot/cold)
- Blowing group to deliver clean vapor and dry sterile air
- Particular accessories for lids and accessories

Machinery dimensions:

- Cabin inside: m/m 2000x1350
- Cabin outside: m/m 2200x2000h
- Total fitting: m/m 4000x4850
- Total weight: Kg. 2600