

TWINVALVE

HIGH CONTAINMENT VALVE



TWINVALVE DESIGN

TWINVALVE IS A SIMPLE AND RELIABLE SOLUTION TO HANDLE IN HIGH CONTAINMENT POWDERS, GRANULES, TABLETS AND CAPSULES. IT CAN BE USED AS STANDARD BUTTERFLY VALVE ON BINS AND CAN BE EASILY RETROFITTED ON EXISTING POWDER HANDLING PLANTS ALLOWING CONTAINMENT DURING POWDER TRANSFER AND HIGH FLEXIBILITY.



VALVE DESIGN

The TwinValve system is composed of two independent sanitary butterfly valves: one positioned on the loading/discharge port of the mobile container/bin and the other one positioned on the loading/receiving station. The valve on the container is a standard sanitary butterfly valve, while the other one is a standard sanitary butterfly valve fully integrated in a cylindrical mini hopper with a specific design.

When a container is positioned on a docking station, the two valves remain separate creating a small volume chamber hermetically sealed at the two ends by the valves themselves. This chamber can be washed and cleaned by compressed air and/or other fluids before starting the product discharge from the container, to avoid product contamination and also after the discharging phase, before removing the container from the docking station, to avoid environmental contamination.

PASSIVE VALVE

VACUUM SENSOR

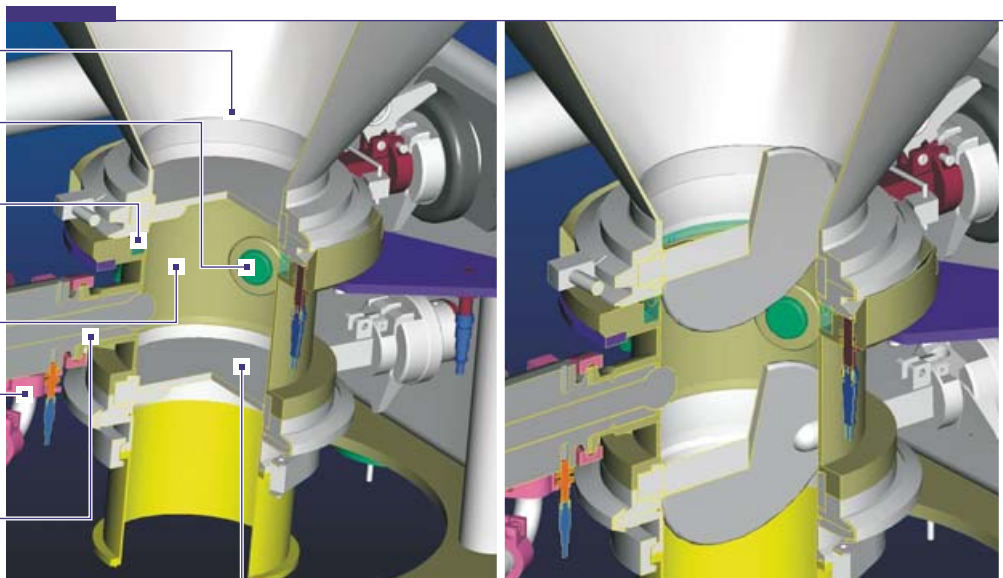
V-RING FOR VACUUM BARRIER

INTERMEDIATE CHAMBER WITH NEGATIVE PRESSURE

ASPIRATION LINE

CLEANING SPRAY HEAD (PATENTED)

ACTIVE VALVE





TWINVALVE IS A PATENTED SOLUTION BASED ON THE COMBINATION OF TWO STANDARD SANITARY BUTTERFLY VALVES WITH A CLEANING SPRAY HEAD.

CLEANING SPRAY HEAD

The patented cleaning spray head assembled inside the active TwinValve is telescopic: it is extracted only during the cleaning phases, while during the standard product transfer operations it remains on its site. In this way it doesn't create any obstacle to product flow and its spraying holes remain closed and protected from any possible dust contamination or clogging. During the cleaning phase, a suitable self-cleaning step is foreseen, to ensure that the telescopic head site is cleaned as well.

VACUUM ASPIRATION

During the cleaning phase the intermediate chamber is kept on negative pressure conditions, avoiding any possible contamination of the environment and/or product.

1. Cleaning spray head in extracted position, vacuum closed



2. Cleaning spray head in extracted position, vacuum open



3. Cleaning spray head on its site, vacuum closed



TWINVALVE CLEANING CYCLES



DIFFERENT CLEANING OPERATIONS CAN BE PERFORMED BY THE TWINVALVE:

- COMPRESSED AIR CLEANING
- COMPRESSED AIR + WATER/SOLVENT CLEANING AND DRYING
- COMPRESSED AIR + WATER/SOLVENT CLEANING AND DRYING + STEAM DRYING

CLEANING BY COMPRESSED AIR

After product discharge the two valves are closed to create the intermediate chamber. The vacuum is applied in between the two valves and the dry compressed air is blown through the orbital head and is extracted through the vacuum exit, together with any dust residual.



VACUUM BETWEEN THE TWO LIPS OF THE SEAL (V-RING) TO CREATE A VACUUM BARRIER AND TIGHT CONNECTION.

CLEANING BY WATER/SOLVENT

The first step of this cycle is the same of the cleaning process by compressed air. After this phase water/solvent is sprayed through the cleaning head and extracted through the vacuum exit, together with any dust residual. A drying phase by compressed air or steam is performed at the end of the cycle.



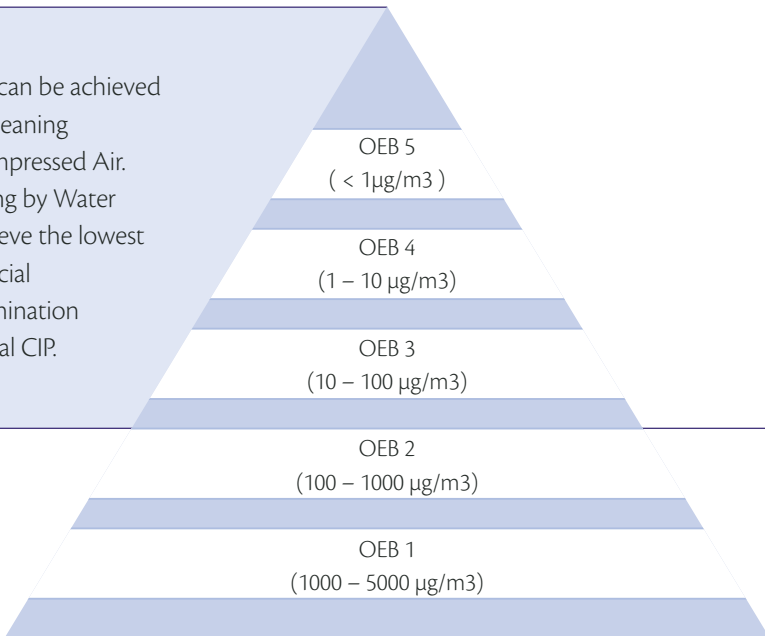
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4 5



OEB 5 can be achieved with Cleaning by Compressed Air. Cleaning by Water to achieve the lowest superficial contamination and final CIP.



A



B



C



D

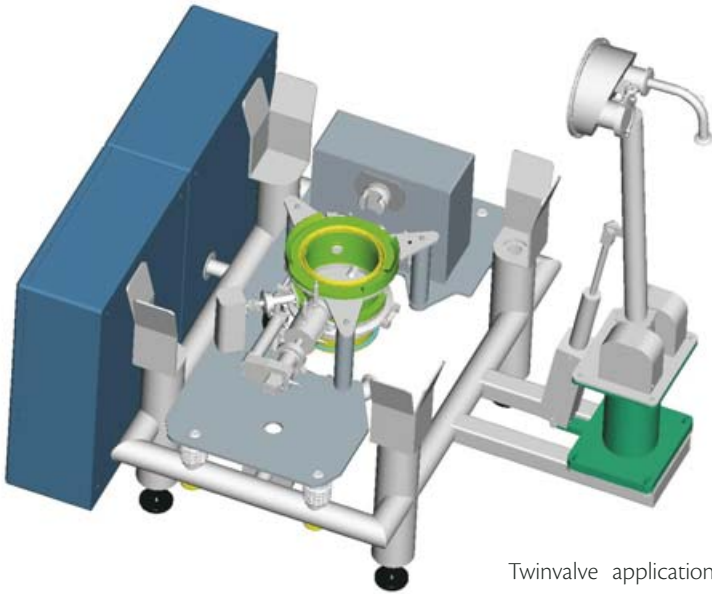


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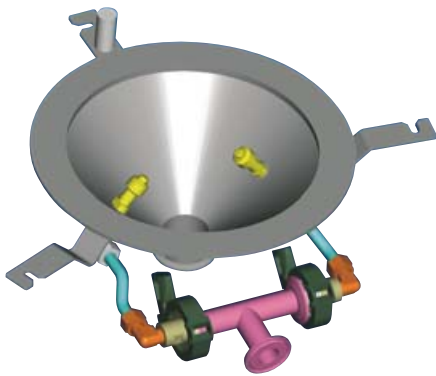
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TWINVALVE INSTALLATION AND OPTIONS

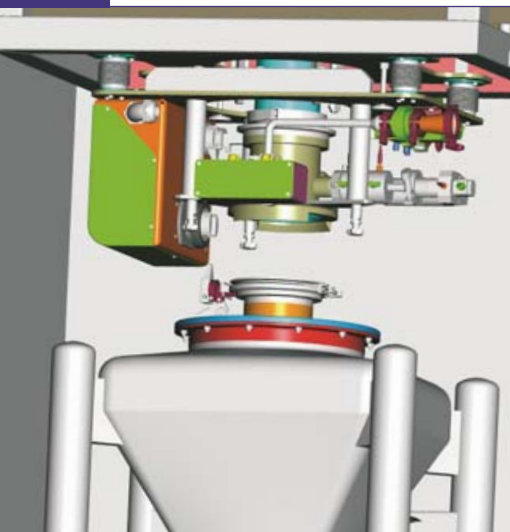


Twinvalve application on a BIN docking station, to empty BINs with passive TwinValve.

After the TwinValve cleaning cycle, a suitable cleaning lid can be supplied for the washing of the complete product feeding line.



Dispensing application for BIN loading: the Twinvalve is upside-down to load a BIN fitted with passive TwinValve.





CONTROL PANEL

The control panel with Human Machine Interface (HMI) allows different functions:

- Check of valves position
- Set of washing parameters
- Check that chamber pressure is always below the atmospheric pressure during the cleaning cycle
- Indication of cycle status
- Alarms acknowledgement



OPTIONAL FEATURES

- PASSIVE TWINVALVE DESIGNED WITH SHAFT FOR AUTOMATIC OPENING/CLOSING OPERATIONS
- SUITABLE ACTUATORS INSTALLED ON THE BIN LOADING/UNLOADING DISCHARGE STATIONS FOR AUTOMATIC OPENING/CLOSING OF BOTH PASSIVE AND ACTIVE TWINVALVE
- ACTIVE TWINVALVE WITH "V" GASKET AND ALIGNMENT SYSTEM FOR AUTOMATIC PASSIVE-ACTIVE VALVE CONNECTION
- CENTRALISED ASPIRATION GROUP
- CONTROL PANEL WITH ADDITIONAL PLC MODULES AND SOFTWARE PACK FOR TWINVALVE FULLY AUTOMATIC CYCLE CONTROL
- FINAL CIP OF THE ACTIVE TWINVALVE (WASHING BY WATER AND DRYING BY AIR)
- AUTOMATIC CLOSING COVER OF THE ACTIVE TWINVALVE
- VALIDATION DOCUMENTS

Active and passive TwinValve diameter	DN100	DN150	DN200	DN250
Power supply	400 V @ 50 Hz - 3 phase AC (±10%)			

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IMA S.p.A. reserves the right to make any changes to the described machine characteristics.

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