

Horizontal paddle vacuum dryer with dismantable agitator

Chamber cleaning made easy

Maximum ease of cleaning, maintenance and internal inspection – it is this mix of qualities that makes the Cosmodry system an ideal solution even for multi-product applications. The horizontal paddle vacuum dryer with concentric agitator is fitted with a shaft which is dismantable into different sections.

The Cosmodry system is based on an operating philosophy which was conceived for drying wet powders from filtration or centrifugation stages and is suitable for the production of active pharmaceutical ingredients (API), fine chemicals and intermediates. The system consists of a horizontal cylindrical chamber equipped with a concentric agitator and heated shaft, which is dismantable into different sections.

The special configuration of the agitator enables continuous stirring of the product and facilitates heat exchange, thus reducing drying time. Moreover, it was designed to limit mechanical and thermal stresses, so that even thermo-sensitive products can be treated. And that's not all: its special features reduce product deposition to a minimum and a dedicated operating cycle has been introduced to permit easy and efficient unloading. Finally, the drying system was developed and manufactured in compliance with increasingly strict safety standards as well as cGMP and Atex regulations.

All parts of the Cosmodry system in contact with the product are made from AISI 316L stainless steel, although other weldable materials are also available if requested by the customer, for instance C-22 alloy or AISI 904L. The walls of the drying chamber, the port lid and the agitator shaft are heated by diathermic liquid circulation. The internal surfaces are mirror polished or electropolished for optimal resistance to corrosion and to reduce friction on the product and simplify cleaning.

The agitator shaft is equipped with a double mechanical seal system to guarantee perfect vacuum tightness and absolute purity of the dried batch, while avoiding any risk of product contamination. The mechanical seal can

be pressurised with liquid or inert gas. The Cosmodry system offers high loading flexibility. It is manufactured with volumes ranging from 150 to 4400 l. The loading capacity can

vary from 30 to 80% of the chamber volume, depending on the processed product, hence meeting the multiple needs of the chemical and pharmaceutical industries.



Internal and external cleaning of the Cosmodry system is very easy. There is no support frame occupying the sterile room, only the drying chamber flanged to the wall.



The agitator can be dismantled into different sections. Its special configuration facilitates heat exchange, thus reducing drying time.

accessibility for inspection and swab testing: no bulky equipment is required and long machine stoppages are avoided.

The exterior of the Cosmodry system is equally simple to clean. The watertight external cladding of the entire machine (cGMP particle-free configuration) covers the insulation, electric wiring and hydraulic and pneumatic piping. In addition, there is no support frame occupying the sterile room, only the drying chamber flanged to the wall. This makes external cleaning extremely efficient, preventing product accumulation. These features, together with the partitioning solution, allow cleanroom installation, guaranteeing pressurisation and the separation of the sterile area from the machine area.

- Vacuum condensation group for reducing drying time and recovering extracted solvents
- Saurus 939 high vacuum group
- External safety filtration unit for powder containment
- Heating and cooling group
- Control panels with PLC for complete plant management, including software that is certifiable according to CFR 21 – Part 11 regulations and guarantees the reproducibility of the batches as well as communication with centralised supervision systems

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Maximum ease of cleaning

Easy internal cleaning is guaranteed by an efficient CIP system that washes all parts in contact with the product. The front port lid and the straightforward dismantling of the agitator into different sections result in optimal

Turn-key systems

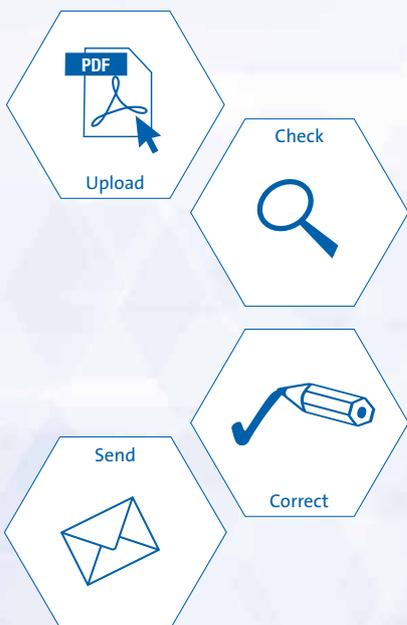
In addition to the dryer itself, Italtvacuum can design and build all necessary auxiliary units for the plant in-house, sizing them appropriately to meet any process requirements, including the vacuum system:

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