



THE EVOLUTION OF THE SPECIES

A new horizontal paddle vacuum dryer builds on past success – Maximum ease of cleaning, maintenance, and internal inspection are the qualities that make the horizontal paddle vacuum dryer from Italtvacuum a good drying solution for multi-product applications. To create an even better system, the company asked its most demanding customers about their urgent production requirements – and took the resulting lessons to heart.



Through-wall installation of the Cosmodry System keeps the mounting frame and auxiliary equipment out of the cleanroom.

The Cosmodry System is a horizontal paddle vacuum dryer with a concentric agitator that is dismantable in sections for maximum ease of cleaning and inspection. Power, loading flexibility, drying speed, easy unloading, maximum product quality – these are all fundamental values for any dryer. But Italtvacuum has gone a step further: taking these requirements as a given, in designing the new system the company has concentrated on cleaning and inspection.

The Cosmodry System is tailored towards the drying of wet powders from filters or centrifuges. It is suitable for the production of active pharmaceutical ingredients (APIs), fine chemicals and intermediates. The horizontal cylindrical chamber is equipped with a concentric agitator mounted on heated shaft, which is dismantable in sections: this is the great added value of the system, setting it apart from conventional paddle vacuum dryers. The design of the agitator ensures continuous stirring of the full charge volume, yielding a homogeneous product, and reduces drying time by facilitating heat transfer. It

also limits mechanical and thermal stresses, thus allowing heat-sensitive products to be dried. A reduced gap between the agitator profile and the wall of the drying chamber, plus other special features of the agitator, minimizes product deposition and ensures easy and efficient unloading. A special operating program has been added to handle the unloading step. The system of Italtvacuum is safe for product and operators. It is designed and manufactured in compliance with strict safety standards, including Atex, and meets cGMP and FDA regulations.

Maximum Ease of Cleaning and Inspection

All parts in contact with the product are made from AISI 316L stainless steel as standard. Other weldable materials such as Alloy C-22 and AISI 904L are available on request. The walls of the drying chamber, the port lid and the agitator shaft are heated dielectrically via circulating liquid. Internal surfaces are mirror polished or electropolished to increase corrosion resistance, reduce friction, and simplify cleaning. The agitator shaft is equipped with a double mechanical seal to guarantee vac-

uum tightness and product purity. The seal can be pressurized by liquid or inert gas. Easy internal cleaning is guaranteed by a CIP system that washes all the parts in contact with the product.

The frontal position of the inspection port and the ease with which the agitator can be disassembled ensure unique accessibility for inspection and swab testing. Since no bulky equipment is required, lengthy machine stops for inspection are avoided. The exterior is easy to clean as well. Watertight external cladding over the entire machine (cGMP “particle

free” configuration) covers the insulation, the electric wiring, and the hydraulic and pneumatic piping. The system can be installed in a cleanroom such that the only visible part is the the drying chamber flanged to the wall, with the support frame hidden in the technical room behind. This makes external cleaning easy and prevents product accumulation. The Cosmodry System has great flexibility in loading. It is manufactured in volumes of 150 to 4,400l, and operates at capacities of 30 to 80 % of the chamber volume, depending on the product. *THS*

Complete Vacuum Drying Plant

ALL FROM A SINGLE SOURCE

Italtvacuum is the only manufacturer in the world that can design and build all the auxiliary units needed for a complete vacuum drying plant, in addition to the dryer itself. Available components include:

- Saurus 939 high-vacuum pump gives final vacuum below 0.01 mbar, for extremely low final moisture content
- Vacuum condensation group to reduce drying time and recover extracted solvents
- External safety filter for powder containment
- Heating and cooling components for temperature regulation
- PLC control panel with software certified to CFR 21 Part 11 for guaranteed reproducibility and communication with DCSs

PROCESS-Tip

- Visit Italtvacuum at Powtech: Hall 4, Stand 447
- To find more information search for „vacuum dryer“ on process-worldwide.com

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