BRAND NEW

CosmoDry System

Horizontal
Paddle
Vacuum Dryer

italvacuum

CosmoDry System®

Horizontal Paddle Vacuum Dryer

The evolution of the species.

Maximum ease of cleaning, maintenance and internal inspection: a mix of qualities that make CosmoDry System® the ideal solution even for **multi-product** applications. CosmoDry System® is the innovative horizontal paddle vacuum dryer created by Italvacuum as the result of a deep analysis, conducted in cooperation with the most demanding customers, regarding the most urgent requirements of their production.

Power, loading flexibility, drying speed, ease of unloading, maximum product quality. These are all fundamental values. But Italvacuum went further, in order to facilitate cleaning and internal inspection. A quality that allows to maintain over time the machine's perfect efficiency and to optimize the production processes.

CosmoDry System® is based on an operating philosophy conceived for the drying of wet powders coming from filtration or centrifugation stages and it is suitable for the production of **Active Pharmaceutical Ingredients** (**API**), **Fine Chemicals** and **Intermediates**.

CosmoDry System® consists of a horizontal cylindrical chamber, equipped with a **concentric agitator, fitted with a heated shaft dismountable in sections**: this is the great added value of the CosmoDry System®, setting it apart from conventional paddle vacuum dryers.

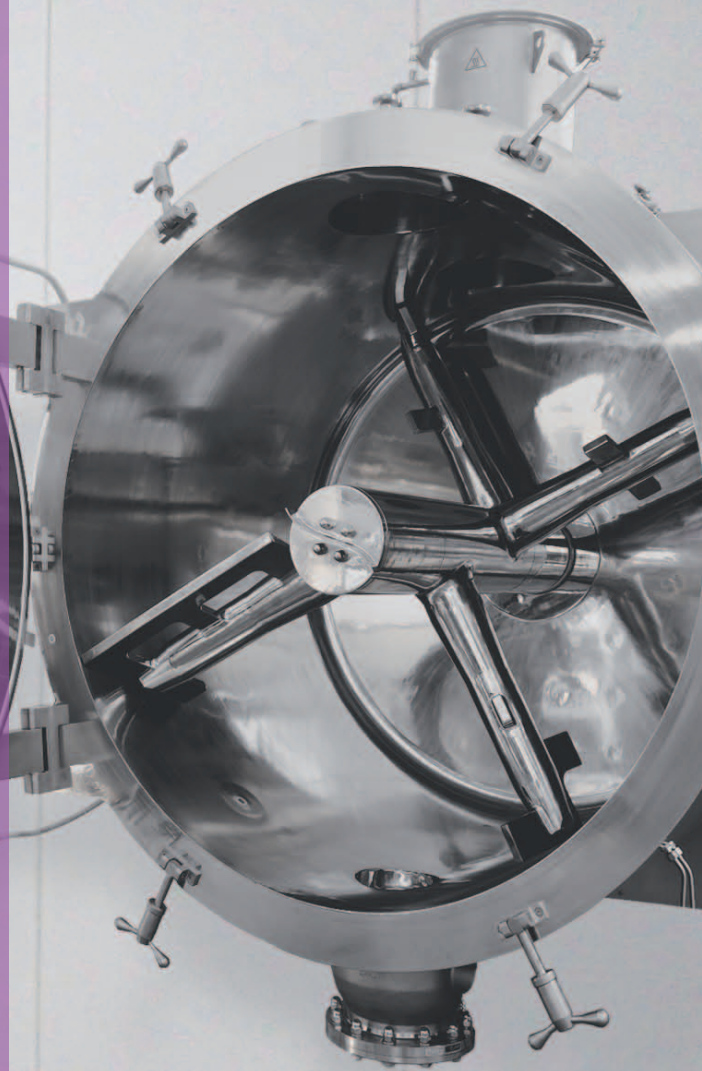
The peculiar configuration of the agitator enables continuous stirring of the product and facilitates its thermal exchange, reducing drying time. Moreover, it was designed to limit mechanical and thermal stresses, thus allowing the treatment of thermo-sensitive products. But that is not all. Its special features allow to reduce product deposition at a minimum, providing an easy and efficient unloading operation, for which a dedicated operative cycle has been introduced.

Finally a value that has always been a milestone for Italvacuum: safety. CosmoDry System® is **safe** for the product and the operators, because it is designed and manufactured in compliance with the increasingly strict safety standards and according to **cGMP** and **ATEX regulations**.

CosmoDry System®
front view

Strengths

1. **Absolute safety for operators, environment and product according to cGMP regulations**
2. **Homogeneity and uniformity of dried batch, thanks to complete stirring of the product**
3. **Easy product unloading thanks to:**
   a. Agitator configuration
   b. Reduced gap between agitator profile and drying chamber wall
   c. Specific unloading program managed through PLC
4. **Reduced drying time**
5. **Extremely high final vacuum values (below to 0,01 mbar) for extremely low final moisture content**
6. **Easy internal cleaning thanks to an efficient C.I.P. system that allows reaching the requested residual p.p.m. values with few rinsing cycles**
7. **Easy access for inspection and SWAB testing thanks to the possibility of disassembling the agitator in different sections**
8. **Easy external cleaning thanks to:**
   a. Watertight cladding of the entire machine
   b. Absence of support frames in the clean room
   c. Possibility of clean room installation with separation between clean room and technical room (Particle Free Configuration)
9. **FDA approval and validation**
10. **ATEX certification.**



Clean room installation

CosmoDry System®

Constructive details

For the parts that are in contact with the product CosmoDry System® is built in AISI 316L stainless steel, but other weldable materials are also available if requested by customer, for instance ALLOY C-22 and AISI 904L.

The walls of the drying chamber, the port lid and the agitator shaft are heated through diathermic liquid circulation. Internal surfaces are mirror polished or electropolished in order to optimize resistance to corrosion, reduce friction on the product and simplify cleaning operations.

The agitator shaft is equipped with a **double mechanical seal system**, conceived to guarantee perfect vacuum tightness and absolute purity of the dried batch, avoiding any risk of product contamination. The mechanical seal can be pressurized through liquid or inert gas.

Maximum ease of cleaning and inspection

Easy internal cleaning is guaranteed by an **efficient C.I.P. system**, that allows the washing of all the parts in contact with the product.

The frontal port lid and the **easy disassembling of the agitator in different parts** provide great accessibility for inspection and SWAB testing: no bulky equipment is required, thus preventing long machine stops. A feature that makes CosmoDry System® unique compared to all other traditional vacuum dryers.

The exterior of CosmoDry System® is easy to clean as well. The watertight external cladding of the entire machine (cGMP “particle free” configuration) covers the insulation, the electric wiring and the hydraulic and pneumatic piping. In addition no support frame occupies the sterile room, only the drying chamber flanged to the wall. This makes external cleaning extremely easy, preventing product accumulation. These features, together with the partitioning solution, allow **clean room installation**, guaranteeing pressurization and separation of sterile room from technical room.

Clean room installation

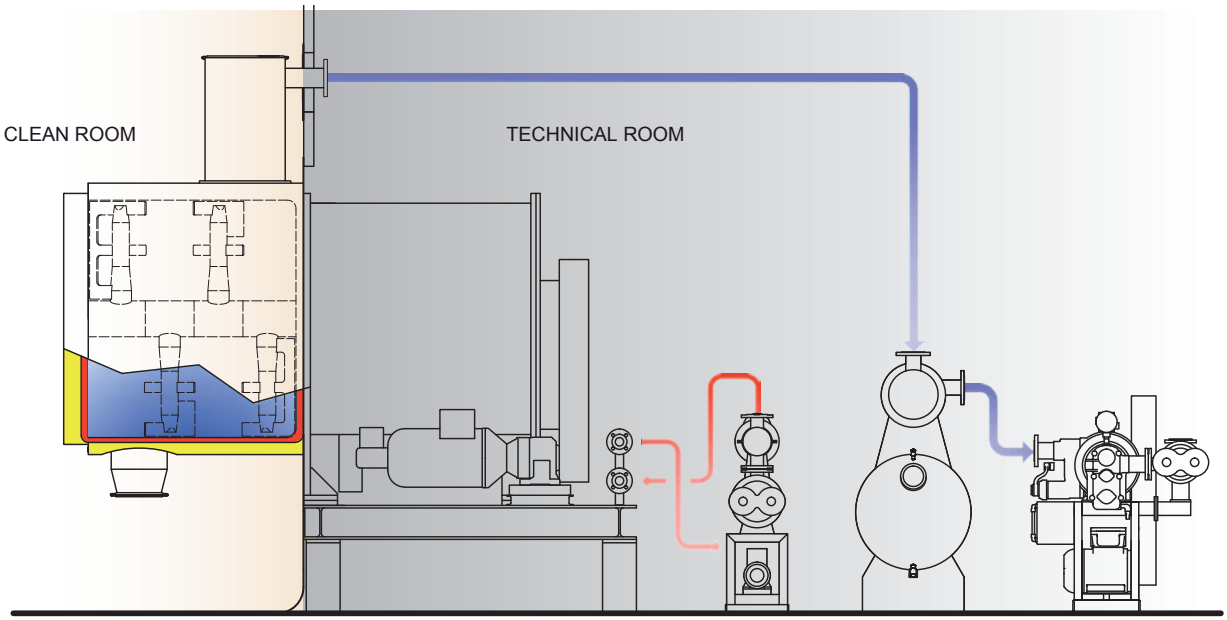
Clean room installation

SWAB TESTING

Turn-key systems

Italvacuum is the only manufacturer in the world that, in addition to the dryer itself, can design and build internally all the auxiliary units that complete the plant, properly sizing them to meet every process requirements, vacuum system included:

1. **High vacuum group** SAURUS 939
2. **Vacuum condensation group** for reduction of drying time and recovery of extracted solvents
3. **External safety filtering unit** for powders containment
4. **Heating and cooling group** for system thermoregulation
5. **Control panels with PLC** for complete plant management, provided with software that is certifiable according to CFR 21 – Part 11 regulations, and that guarantees reproducibility of the dried batches and communication with centralized supervision systems.



Operation panel

Control panel

CosmoDry System®

Services

From laboratory to industrial installation: the best way for an accurate choice of the industrial plant.

Italvacuum has a complete range of pilot installations that allow semi-industrial drying and laboratory tests on customer products. During the trials it is possible to collect and analyze product samples and vary the process parameters at any moment in order to define the ideal drying cycle process. In this way the customer is given the opportunity to make the technological choice that better fits its needs. The trial is completed and formalized by drafting a detailed report featuring diagrams showing the trend of the main parameters and conclusive observations regarding the tests that have been carried out.

Italvacuum customer service: efficiency guaranteed to last.

The start-up of the plant is just the beginning of Italvacuum's relationship with the customer, that is carefully assisted year after year, starting with an efficient preventive maintenance policy with planned interventions. The maintenance plans are individually planned, taking into account the specific processes.

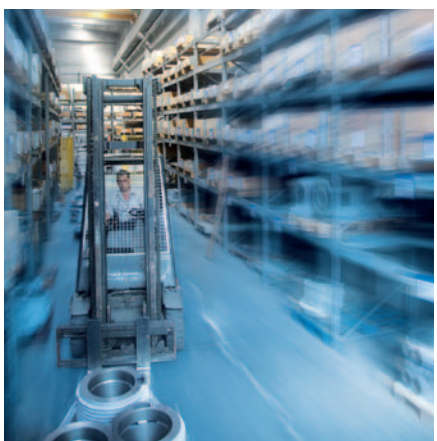
For the solution of any possible inconvenient, Italvacuum is able to provide technical assistance services both at customer's site and from its own plant through online diagnostics.

For an efficient management of the spare parts, Italvacuum has a computerized warehouse that allows immediate delivery of original parts, anywhere in the world.

Moreover, Italvacuum is able to overhaul its own used plants and to upgrade the ones that have already been provided to customers, with the most recent technological innovations, as well as to adapt the machines to the new ATEX regulations.

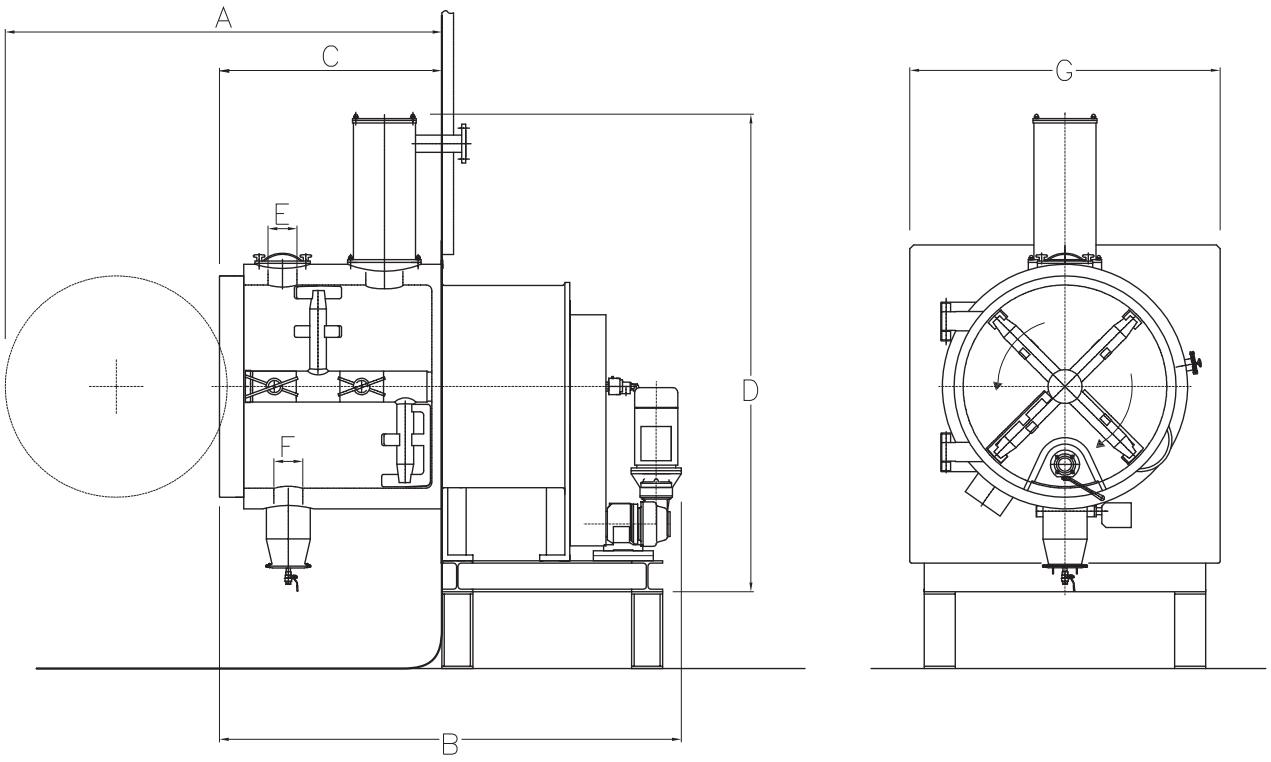
Integrated Quality.

Italvacuum has implemented a Quality Management System with **ISO 9001** certification that covers every single component from design to production, till sale of the final product, installation and technical assistance. In addition, acknowledging the importance of the welding process in the quality and reliability of the final product, Italvacuum has decided to certify its processes and its personnel in compliance with the standard **ISO 3834-2.**



Dimensions

CosmoDry System® presents a **great loading flexibility**. It is manufactured in volumes ranging from 150 to 4.400 liters. The loading capacity can vary from 30% to 80% of the chamber's volume, according to the processed product, meeting in this way the multiple needs of chemical and pharmaceutical industries.



CosmoDry System® models		IHD 300	IHD 800	IHD 1200	IHD 1800	IHD 2400	IHD 3200	IHD 4400
Total volume	liters	300	800	1200	1800	2400	3200	4400
A	mm	1700	2200	2500	2835	3000	3200	3500
B	mm	1950	2450	2985	3050	3300	3500	3600
C	mm	900	1200	1390	1500	1600	1700	1700
D	mm	2000	2500	2900	3000	3400	3600	4000
E	mm	125	150	200	200	200	250	250
F	mm	150	150	200	200	250	250	300
G	mm	1400	1600	1800	2050	2200	2350	2600

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Your Vacuum Drying Specialist

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