

# Versatile Vacuum Pumps for Every Need

The key to success lies in designing and developing perfect solutions

Pumping solutions for critical industries such as chemical and pharmaceutical have to be delivered as per the requirements of each user. Italtvacuum, with its extensive range of products, helps every customer with the right solution.

Vacuum pumps hold immense importance in the fields of chemical and pharmaceutical production as they are deployed in critical processes. As a result, they have to be manufactured taking into account the needs of users. Italtvacuum, a leading European manufacturer of vacuum pumps and vacuum dryers, has been serving the industry since 1939 in meeting specific requirements. It manufactures the following products that comply with most of the European regulations such as CE, ATEX, PED, etc., and also with FDA and cGMP norms:

- Saurus939 piston vacuum pump
- CRIOX System, rotary vacuum dryer/pulverizer
- Planex System, a brand new paddle vacuum dryer
- MULTISPRAY cabinet dryer, tray vacuum dryer

## Saurus939 piston vacuum pump

This pump features simple design and innovative technical solutions such as the new LubriZero lubrication system. As this system allows for almost zero consumption of non-

Source: Italtvacuum



Saurus939-Italtvacuum workshop

reusable oil, it is particularly suitable for various chemical and pharmaceutical processes, such as drying, distillation, reaction and crystallization. Also, it facilitates easy round-the-clock operation.

Designed for use with most of the commonly encountered solvents and even the most aggressive, such as hydrochloric acid, acetic acid, chlorobenzene and dimethylformamide – Saurus939 guarantees both process and operator safety. Moreover, the pump is capable of delivering high performance with nominal output of 80 to 3,800 m<sup>3</sup>/h and vacuum levels from 7 to 0.033 mbar. Thanks to its low-consumption motor and other features such as low oil consumption and low maintenance cost, the pump is an economically viable investment for any plant.

Its features such as high corrosion resistance and outstanding ability to take dust, condensate and distillation by-products in its stride – which guarantee that vacuum

level and output remain constant over time – make Saurus939 ideal for the most demanding applications.

This pump also ensures a complete separation of the process and mechanical side, thus avoiding any possibility of contamination by lubricating oil. As a result, it ultimately ensures purity of the treated product.

## CRIOX System

The CRIOX System consists of a rotary vacuum dryer capable of extracting water and solvents from wet powders coming out from filtering or centrifuge process. The central body of the system is made of a double cone chamber, characterized by smooth surfaces without edges and sharp corners. During the rotation, this structure helps the total and continuous revolution of the mass to be dried and enables homogenous and delicate mixing.

The double cone shape of the rotary chamber would not be effective in itself if it would not contain inside the two powerful

electric lump breaker units, which constitute a peculiar characteristic of the CRIOX System. This arrangement increases the product surface exposed to the evaporation and enhances the agitation efficacy of the system.

The lump-breaker units break down the eventual pre-existing agglomerates in the wet powders, thus preventing the forming of lumps. They also allow for grinding and powdering during the last drying phase, limiting the use of the mill. This helps having bulk products ready for bagging or powders with checked final particle size distribution, where the next operation is often limited to a sifting phase.

Biting in the core of the product being dried, the lump breakers considerably reduce the drying time and ensure very low final moisture content. Additionally, they can be operated on temperature that on an average is much lower than in any other dryer. This ensures purity of thermo-sensitive products, as it avoids chemical degradation.

Advantages of lump-breakers operated by electrical motors include:

- Rotation speed control
- Programmable working cycles
- Constant torque at different speeds
- Power absorption control
- Cooling by ventilation

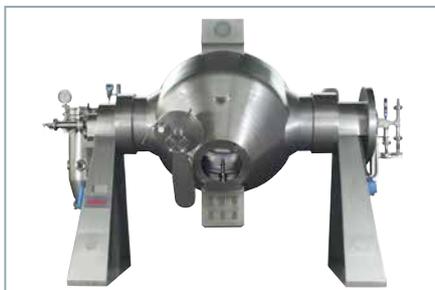
The lack of pneumatic circuits prevents lump-breakers from pressurized air inside the chamber and the surrounding area.

Moreover, electrical lump-breakers ensure reliability and the low-maintenance requirements make these cost-effective.

### PLANEX System

This new machine has been designed to overcome the peculiar limits of traditional paddle systems with concentric agitators. The PLANEX System consists of a fixed cylindrical chamber with an eccentric agitator fitted inside with two independent movements. One of the movements is around its own axis while it also rotates tangentially to the cylindrical chamber. The double combined rotation allows an optimal mixing of the product, covering the entire volume of the vessel. In this way, solvent release is facilitated and drying times are significantly reduced as compared to conventional systems.

The peculiar configuration of the agitator, characterized by a diameter much smaller than the drying chamber, not only allows



**Front view of the CRIOX System**



**Planex System clean room installation**



**CRIOX System clean room installation**



**MULTISPRAY cabinet dryer clean room installation**

Source: Italvacuum

the continuous revolution of the product but also limits the mechanical and thermal stress. This prevents local overheating due to friction and also enables to treat even more delicate and thermo-sensitive products, as it preserves their purity, avoiding degradation of the dried batch.

It must be remarked that the mechanical and thermal stress on the product is significantly lower than the one observed in traditional paddle dryers. It further results in consequent reduction of the electricity consumption.

### MULTISPRAY cabinet dryer

Italvacuum tray dryers are composed of a heated drying cabinet chamber and a series of shelves heated through circulation of fluid. MULTISPRAY tray cabinet vacuum dryers allow for clean room installation to be separated from the machine room, which ensures controlled ambience. The cGMP complied Italvacuum tray vacuum dryers, which are in demand all over the world include:

- Static dryer with fixed shelves
- Static dryer with extractable shelves, in which the plates-unit is extracted with the help of an external hydraulic trolley, made of inox, allowing the operation with maximum safety without heavy lifting effort on the part of the operator.

Both the models are equipped with the new patented C.I.P. MULTISPRAY fast washing system, which is a specific technology designed and developed by Italvacuum. This washing unit consists of MULTISPRAY C.I.P diffuser placed inside the dryer and mobile pneumatic washing unit.

This innovation enables the carrying out of washing and cleaning operations of the drying chamber and of the inner shelves, preventing the operator from coming into direct contact with possible residuals of product and/or solvent that could remain inside the dryer.

### Conclusion

Designing and delivering the right product is not the only approach to satisfy customers. One has to continuously work along with them to achieve the same from the time they first express interest in a particular technology offered by a company, providing them with opportunities to conduct pilot drying trials and involving them in system design and production.

After-sales service plays an equally important role. The company offers various after-sales services such as scheduled preventive maintenance, technical assistance, service parts, system upgrading and overhaul. ●