

Dehumidifying Dryers HR Series



English

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 **PIOVAN**

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HR Series Dehumidifying Dryers for optimised consumption

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The HR dryers are equipped with two side channel blowers, one dedicated to the process and rotor cooling phases, the other to the regeneration phase. The drying process is independent from the ambient conditions, with consistent Dew Point, with values ranging from -25°C to -50°C.



Adding value features

Piovan HR dryers ensure a series of important benefits:

- > **No expense** for the consumption or connection of cooling water or compressed air. The unit simply requires electricity for functioning.
- > **Reduction down to 30% of the electric energy usage**, thanks to the honeycomb rotor solution and the complete recovery of the regeneration air.
- > **Constant Dew Point**, with no fluctuation, with adjustable values for process optimisation.
- > **Guaranteed absence of dust and of material contamination**. In their standard version, the HR dryers are ideal for application in the medical field and in the optical sector.
- > **Complete access** to all the unit's components by simply removing the side panels for maintenance operations.

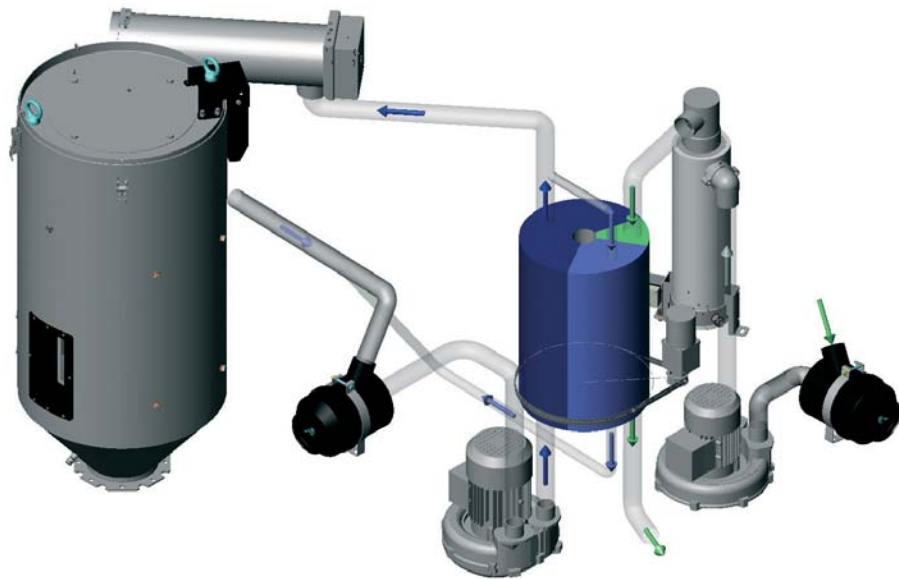
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The new Piovan rotor technology

The **rotor solution** adopted by the new Piovan Dryers HR Series allows the operator to effectively intervene on the process parameters, and to have at his disposal a flexible drying system which can be adjusted to the real production conditions. The rotor carries out an optimal moisture-molecular sieve exchange, with **performances of 35%** higher than the desiccant tower dryers with the same floor dimensions.

Both the continuous functioning cycle and the rotor's design ensure **no deterioration of the molecular sieves** and **higher duration of the absorption material**.



The functioning mode of the molecular sieve rotor is divided into three phases:

1. the humid air goes through the rotor, releasing the presence of moisture;
2. subsequently, the hot air for regeneration goes through the sector full of moisture;
3. the process air cools down the regenerated sector, before passing to phase 1 again.

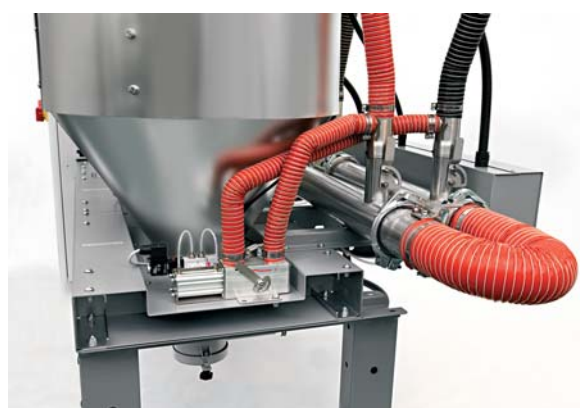


Mono- and multi-hopper solutions

The HR dryers can be combined with drying hoppers with a capacity from **100 to 600 dm³**. In typical configurations, the drying hopper is installed on the processing machine or beside it, or placed on a trolley. Both single-hopper and PTU multi-hopper versions are available; they are particularly compact and equipped with devices for advanced functioning which result into optimised energy consumption.



In the **PTU multi-hopper configuration**, the dryer can be connected with 8 drying hoppers maximum, all of which are equipped with a dedicated electronic control. Moreover every single drying hopper is supplied with an independent heating chamber for drying different materials at different temperatures. The PTU system can also include an **integrated vacuum unit**, for loading the material into the drying hoppers of the trolley.



In the multi-hopper version, the dryer includes the **Drying Control function**. According to the data set by the operator, the electronic system continuously checks the loading times of the drying hopper and the drying times, and signals any anomaly. In this way, it ensures optimal treatment of the material being processed.

Piován **drying hoppers** are built in stainless steel and ensure optimal drying airflow, homogenous heating of the granules, with no material stagnation. They have an integrated insulation layer of 60 mm which prevents heat losses and avoids energy wastage.

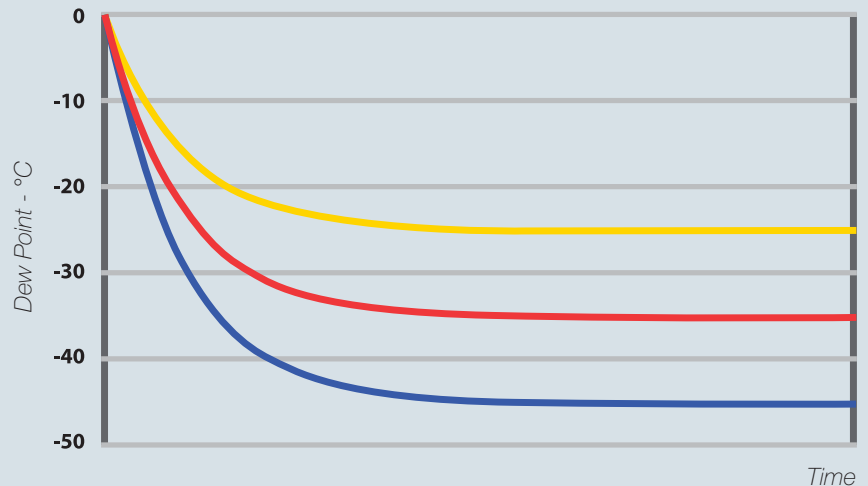
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Multiple functions for consumption optimisation

The Piovan HR dryers keep the **process values** and the **Dew Point** at an optimal level, by using only the energy really necessary. The advantages of the solution with molecular sieve rotor and the *Intelligent Energy Supervisor* and *Intelligent Material Drying* devices ensure intelligent and careful usage of energy in an automatic manner.

Moreover, the Piovan HR dryers are equipped with the **Dew Point Management function**, which allows for optimising the energy required for the regeneration, according to the set Dew Point values. They also ensure the correct drying treatment of any type of material, with no risk of thermal degradation.



- > **Total recovery of the energy of the regeneration air.** Considerable savings on the consumptions are achieved thanks to the continuous functioning of the rotor and by exploiting the high temperature of the outgoing air.
- > **IES System**, which allows adjusting the dryer's functioning according to the real requirement of the processing machine:
 - > *Regeneration cycle control*, based on the set Dew Point value. That is to say, the rotor is heated only as much as necessary.
 - > *Cooling water flow control*: process air cooling is activated only if necessary (Plus function).
- > **IMD System**, which optimises material drying process:
 - > *Automatic reduction of the process temperature*: it prevents the material from overheating in the case of prolonged stop (activation from the processing machine).
 - > *Material consumption management*, which allows automatic reduction of the set point based on the material consumption (activation from the hopper loader).
 - > *Cooling stop*: automatic shut down of the dryer after an interval of time set by the operator. The material in the drying hopper is cooled down thus avoiding thermal degradation.
 - > *Process airflow management*: it allows for the automatic reduction of the airflow in the drying hopper, avoiding the thermal degradation of the granules and at the same time significantly reducing the energy required to keep the process temperature (Plus function) .

Simple and enhanced operator interface

In line with the electronic solutions adopted in other Piovan auxiliaries, the HR dyers are equipped with a **microprocessor system** which keeps the set temperature with high precision. From the control keypad, it is possible to display and set the parameters and the working modes and see warning messages. The use of the serial port allows the connection with other control and supervisory systems.



Once the process temperature has been selected, the microprocessor automatically sets the safety temperature within the whole range of functioning temperatures, thus ensuring the maximum operational safety.

Standard features



- > Molecular sieve rotor
- > High pressure side channel blowers
- > Filtration system for the blowers
- > Stainless steel heating chambers
- > Microprocessor control with display
- > Temperature-controlled regeneration
- > Electronic control of the process temperature with self-tuning PID algorithm
- > Solid state relays (SSR) for the process heaters control
- > Process air temperature safety control
- > Automatic set of the process air safety temperature
- > Warnings for the correct operation of the coolers

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