

NOVABLAST

DEHUMIDIFIERS



NOVABLAST BV.
NIJVERHEIDSSTRAAT 25N
3861 RJ NIJKERK
THE NETHERLANDS



INFO@NOVABLAST.COM
WWW.NOVABLAST.COM
+31 85 444 48 90

DEHUMIDIFIER NBX 8.000

Technical specification

Ventilator process air 8000 m³/h, 1500Pa/5.5 kW
(900Pa available)
Ventilator regeneration air 2350 m³/h, / 700Pa, 1.5 kW
Rotor ProDry PPS1050x200mm
Capacity 64 kg/h (for 20 grC and 80%RH)
Heater 3x30kW
Supply 3x400Vca, 50Hz, 97 kW

- Metallic frame designed to be lift by crane or forklift
- G4 process and re-generation filter
- Automatic valve with Belimo servo-drive on re-generation air inlet
- Rotor movement detection and alarm
- Remote control option (start-stop)
- Alarm re-generation and process filters dirty
- Electric box with S7 1200 Siemens and display KTP 400 color touchscreen
- Process air flow adjustable in 4 steps
- Automatic temperature control on re-generation air.
- Phase error detection, main contactor take out the heater on errors.
- Separate general switch

- Metallic frame designed to be lift by crane or forklift
- G4 process and re-generation filter
- Automatic valve with Belimo servodrive on re-generation air inlet
- Rotor movement detection and alarm
- Remote control option (start-stop)
- Alarm re-generation and process filters dirty
- Electric box with S7 1200 Siemens and display KTP 400 color touchscreen
- Process air flow adjustable in 4 steps
- Automatic temperature control on re-generation air.
- Phase error detection, main contactor take out the heater on errors.
- Separate general switch

DEHUMIDIFIER NBX 11.000

Technical specification

Ventilator process air 11000 m³/h, 1100Pa/7.5 kW
(900Pa available)
Ventilator regeneration air 3667 m³/h, / 700Pa, 1.5 kW
Rotor ProDry PPS1370x200mm
Capacity 88 kg/h (for 20 grC and 80%RH)
Heater 3x42kW
Supply 3x400Vca, 50Hz, 135 kW

- Metallic frame designed to be lift by crane or forklift
- G4 process and re-generation filter
- Automatic valve with Belimo servodrive on re-generation air inlet
- Rotor movement detection and alarm
- Remote control option (start-stop)
- Alarm re-generation and process filters dirty
- Electric box with S7 1200 Siemens and display KTP 400 color touchscreen
- Process air flow adjustable in 4 steps
- Automatic temperature control on re-generation air.
- Phase error detection, main contactor take out the heater on errors.
- Separate general switch

DEHUMIDIFIER NBX 15.000

Technical specification

Ventilator process air 8000 m³/h, 1500Pa/5.5 kW
(900Pa available)
Ventilator regeneration air 2350 m³/h, / 700Pa, 1.5 kW
Rotor ProDry PPS1050x200mm
Capacity 64 kg/h (for 20 grC and 80%RH)
Heater 3x30kW
Supply 3x400Vca, 50Hz, 97 kW

NOVABLAST DESICCANT WHEEL-TYPE DEHUMIDIFIERS: WORKING PRINCIPLE, ADVANTAGES, AND APPLICATIONS

Novablast Desiccant wheel dehumidifiers operate on the principle of adsorption, using materials like silica gel to remove moisture from the air. Unlike refrigeration-based systems, which rely on cooling coils to condense moisture, desiccant dehumidifiers excel in low-temperature environments and achieve extremely low humidity levels. Desiccant wheel dehumidifiers are unmatched in low-temperature and ultra-dry applications, offering precise humidity control without condensation. While energy-intensive, advancements in heat recovery and desiccant materials continue to enhance their efficiency. For industries requiring stringent moisture management, they are often the optimal choice over refrigeration-based systems.

Our selection of refrigeration-based equipment is designed for use in medium to extremely hot climates with high relative humidity and is detailed in a specific brochure available upon request.

1. CORE COMPONENTS AND WORKING PRINCIPLE

·Desiccant Wheel (Rotor):

The heart of the system, the wheel is a honeycomb-structured rotor coated with a desiccant material (e.g., silica gel). The wheel rotates continuously, dividing into two sections:

-Process Air Section (60–75%): Humid air passes through this zone, where the desiccant adsorbs moisture.

-Regeneration Section (25–40%): Saturated desiccant is heated to release moisture into a separate air stream

·Airflow System:

-Process Air: Ambient air is drawn in, dried by the desiccant, and discharged as dry air.

-Regeneration Air: A secondary airflow is heated (up to 140°C) to regenerate the desiccant by stripping absorbed moisture, which is then exhausted externally.

Heat Recovery:

Some models include a purge sector to preheat regeneration air using residual heat from the process airflow, improving energy efficiency.

2. REGENERATION PROCESS

·Heating Phase:

Regeneration air is heated (typically via electric or gas heaters) to break the molecular bond between the desiccant and moisture. This releases water vapor, which is expelled with the exhaust air.

·Continuous Cycle:

The wheel rotates slowly (8–12 revolutions per hour), alternating between adsorption and regeneration zones for nonstop dehumidification

3. KEY ADVANTAGES OVER REFRIGERATION-BASED SYSTEMS

·Low-Temperature Efficiency:

Desiccant dehumidifiers perform effectively in cold environments (even below freezing), whereas refrigeration systems struggle due to ice formation on coils.

·Ultra-Low Humidity Control:

Capable of achieving humidity levels as low as 1% RH, making them ideal for industries like pharmaceuticals, lithium battery production, and food storage.

·No Condensation:

Moisture is adsorbed rather than condensed, eliminating the need for drainage systems.

·Flexible Temperature Management:

Heat generated during regeneration can be repurposed for space heating or redirected via external condensers.

4. ENERGY CONSIDERATIONS

·Higher Energy Use:

Regeneration requires significant energy (1–3 kW per kg of water removed vs. 0.5–1.5 kW for refrigeration systems).

·Efficiency Improvements:

Heat recovery systems and hybrid designs (e.g., dual-wheel configurations) reduce energy consumption by recycling waste heat.

COMPARISON WITH REFRIGERATION SYSTEMS

Feature	Desiccant Dehumidifiers	Refrigeration Dehumidifiers
Operating Temperature	Effective below 20°C	Best above 20°C
Humidity Range	1–50% RH	45–50% RH or higher
Energy Efficiency	Lower in standard models	Higher in warm environments
Condensation Risk	None	Requires drainage

