D^5
twin tower desiccant
compressed air dryers
flow capacity: 200 - 9,000 scfm (340 - 15,300 Nm³/hr)
Clean and dry compressed air is essential in every efficient and profitable manufacturing and process operation worldwide. nano-purification solutions’ vast experience includes food, beverage, chemical, laboratory, medical and natural gas applications. n-psi understands your needs and has created the nano range of high-performance, energy-saving compressed air and gas purification products to provide clean and dry compressed air and gases at an affordable price with unrivaled reliability.

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Leading edge technology and more than 200 years of experience...nano-purification solutions, your world-class provider of state-of-the-art compressed air and gas solutions to industry.

Our commitment at n-psi is to work alongside our customers and provide unique solutions with the highest quality products to solve your specific challenges.

A wealth of experience and leading edge products are only part of the equation. n-psi realize that world-class customer service is the most important component to any successful business.

Experience. Customer. Service... n-psi

clean and dry

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design

Our extremely experienced team of design engineers at nano-purification solutions are world leading specialists in the design of novel industrial compressed air treatment products and compressed air dryers.

research & development

A core element of our capabilities - founded on cumulative decades of practical engineering expertise - our R&D team is continually looking for improved performance and reliability.

manufacture

Our twin tower desiccant air dryers are built here in North America at a state of the art manufacturing facility to the highest standards of quality which ensure equipment reliability and high levels of performance.
nano D⁵ twin tower air dryers

Ambient air contains high levels of moisture, dust, hydrocarbons and other contaminants. Under pressure these contaminants are concentrated to harmful proportions. When left untreated the results are corrosion, bacteria, mold growth and freezing within your compressed air lines. This contamination causes damage to downstream equipment, leading to increasing maintenance, downtime and product spoilage.

While compressed air filters will remove solid particulate, liquids and aerosols, they cannot remove the moisture that remains in the form of vapor. This vapor will continuously condense into liquid water throughout your compressed air system as the pressure and temperature of the compressed air changes.

The nano D⁵ twin tower desiccant air dryers are designed to remove water vapor, lowering the pressure dew point of your compressed air stream to -40°F or even -100°F. No liquid water or ice crystals will form even if the temperature of the compressed air falls to 40 degrees below zero!

Designed for the most demanding applications, the nano D⁵ twin tower desiccant air dryers are your solution for continuous and uninterrupted clean dry air.

**Reliability is built in...** and backed by our 5 year warranty on inlet and purge exhaust valves and 10 year heater warranty (¹)

**which dryer is right for you?**

In a twin tower desiccant air dryer, one tower is on-line drying the compressed air while the other is off-line regenerating, which means it is eliminating the water vapor it has collected so it can be used to dry again. The two towers switch back and forth so one is always drying while the other is regenerating.

All nano D⁵ twin tower desiccant dryers remove moisture from your compressed air in the same way and to the same exacting standards of performance and reliability. The difference is in how they regenerate and the amount of compressed air and/or power required to do so.

Which dryer to select for a given application is a function of several factors including: initial dryer investment, the cost of operating the dryer and air system capacity. Each of these needs to be considered to ensure the right dryer choice is made.

- **heatless** dryers use expanded dry “purge” air to regenerate the off-line bed. they require the lowest initial investment but require the most purge air (²)
- **externally heat reactivated** dryers use an electric heater to heat the dry purge air increasing the dryer’s efficiency. they require a higher initial investment although use less purge air than heatless dryers (²)
- **blower purge** dryers use an electric heater and a blower to provide heated ambient air for regeneration. They require the highest initial investment although can use little to no purge air (²)

We take pride in our ability to provide you the most cost effective solution for your compressed air treatment needs. Contact support@n-psi.com for help choosing the best D⁵ dryer for your application.

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(1) when purchased with recommended pre-filtration
(2) heatless dryers require 15% purge. externally heat reactivated dryers require 8% purge. blower purge dryers require 2% purge (averaged over 4-hour cycle) for dry air cooling, however dry air cooling can be turned off allowing zero air loss operation. values are approximate and are a percentage of the maximum rated inlet flow (3) results will vary with operating conditions. contact support@n-psi.com to determine which dryer is the most cost effective option for your application
D^5 heatless desiccant air dryers

The advanced D^5 NHL heatless desiccant dryer combines reliable field proven components and a cost effective design with 21st century PLC controls and a digital user interface. For clean dry air, there is no better, more dependable, easier to use twin tower dryer available on the market today.

flexible & functional

- field adjustable cycle timing and purge control lets you maximize performance at any operating conditions
- advanced PLC controls allow you to monitor the operation of the dryer through an easy to read digital display

unique features

- the purge adjustment valve with visual setting indication allows precision adjustments to the purge flow
- a blend of up to three different desiccants are used in specialty applications to ensure consistent dew point performance

high quality construction

- rugged field proven valves with stainless steel internals and Teflon® seats for long life and minimum maintenance
- primed and epoxy coated external surfaces for optimum corrosion protection

cost effective design

- efficient nano pre- and after filters combine with high quality desiccant for low pressure drop and consistent dew point performance

customized to meet your needs

- at nano we understand that every customer and every application is different. that is why we provide a wide range of available options to customize your dryer to your specific needs

advanced PLC controls

A powerful programmable logic controller monitors and controls each D^5 heatless desiccant air dryer. The system monitors multiple inputs, showing pertinent data on the digital display and controlling the fully automated drying and regeneration cycles.

ES Energy Saving Option - The optional “ES” dew point demand system uses a reliable precision hygrometer to continually monitor the outlet dew point and extend the cycle for maximum energy savings. Includes real time outlet dew point indication and high dew point alarm.
angle body piston valves
- two-way direct acting piston valves with stainless steel internals and Teflon® seats ensure reliable field proven performance
- used for inlet valves on the NHL 200 to 600 and purge exhaust valves for all models

high performance butterfly valves
- pneumatic actuators ensure precise proportional control and a bubble tight seal
- rugged stainless steel disk construction and Teflon® seats combined with a low pressure drop design
- used for inlet valves on the NHL 800 and larger

stainless steel check valves
- stainless steel spring return check valves provide worry-free operation and minimal maintenance
- lift style check valves used on the NHL 200 to 600 and wafer style check valves used on the NHL 800 and larger

precision purge control valve
- purge flow is field adjustable with this precision valve with visual setting indication
- allows the operator to easily adjust the purge flow to match the operating conditions for optimal energy savings

low noise exhaust mufflers
- these specially designed exhaust mufflers minimize the noise of depressurization and purge exhaust while also minimizing back pressure
- the high flow design reduces blockage extending service life

### options & upgrades

<table>
<thead>
<tr>
<th>option</th>
<th>description</th>
<th>changes</th>
<th>from</th>
<th>to</th>
<th>benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES</td>
<td>Energy Saving</td>
<td>regeneration cycle</td>
<td>timed operation</td>
<td>dew point dependent operation</td>
<td>significant purge &amp; energy savings</td>
</tr>
<tr>
<td>3V</td>
<td>3 Valve Bypass</td>
<td>ability to bypass unit</td>
<td>none</td>
<td>manual 3 valve block &amp; bypass</td>
<td>maintenance without stopping air flow</td>
</tr>
<tr>
<td>LDP</td>
<td>Low Dew point</td>
<td>outlet pressure dew point</td>
<td>-40°F (ISO 12500 Class 2)</td>
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<td>improves downstream air quality</td>
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<tr>
<td>N4</td>
<td>NEMA 4</td>
<td>electrical protection</td>
<td>NEMA 12</td>
<td>NEMA 4</td>
<td>greater protection against contamination</td>
</tr>
<tr>
<td>N4X</td>
<td>NEMA 4X</td>
<td>electrical protection</td>
<td>NEMA 12</td>
<td>NEMA 4X</td>
<td>as above, plus greater corrosion resistance</td>
</tr>
<tr>
<td>N7</td>
<td>NEMA 7</td>
<td>electrical protection</td>
<td>NEMA 12</td>
<td>NEMA 7</td>
<td>for explosion proof environments</td>
</tr>
<tr>
<td>S0HZ</td>
<td>50Hz Power</td>
<td>inlet power supply</td>
<td>120 VAC / 1 Ph / 60 Hz</td>
<td>220 VAC / 1 Ph / 50 Hz</td>
<td>allows 50Hz power supply</td>
</tr>
<tr>
<td>PC</td>
<td>Pneumatic Controls</td>
<td>inlet power supply</td>
<td>120 VAC / 1 Ph / 60 Hz</td>
<td>fully pneumatic</td>
<td>eliminates power supply</td>
</tr>
<tr>
<td>HP</td>
<td>High Pressure</td>
<td>allowable working pressure</td>
<td>50 to 150 psig</td>
<td>50 to 250 psig</td>
<td>allows higher inlet pressures</td>
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<tr>
<td>LA</td>
<td>Low Ambient</td>
<td>allowable working temp</td>
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*list is not all inclusive. contact support@n-psi.com for a complete list of available options*
D^5 externally heated & blower purge

The D^5 NEX externally heat reactivated dryers use heat to reduce the use of costly purge air. The NBP blower purge dryers take it a step further using a combination of heat and ambient air to further reduce (or even eliminate) purge air usage. For consistent performance and cost effective operation these dryers are your optimum choice.

**flexible & functional**

- advanced PLC controls allow you to monitor the operation of the dryer through an easy to use digital display
- multiple thermocouples control regeneration and provide constant temperature display

**unique features**

- secondary heater contactor provides protection against overheating in the event of a primary contactor failure
- visual alarm lights and step by step diagnostics simplify troubleshooting
- selectable “Dry Air Cooling” mode lets you choose between maximum performance and maximum energy savings depending on the needs of your application (NBP only)

**high quality construction**

- rugged field proven digitally controlled dual acting high performance butterfly valves and stainless steel spring return wafer check valves ensure long operating life and minimum maintenance
- insulated external electric heaters and high efficiency regenerative blowers for efficient regeneration in all operating conditions

**cost effective design**

- nano M01 coalescing pre-filters and NHT M1 high temperature after filters with high quality hygroscopic desiccant ensure low pressure drop and consistent dew point performance

**customized to meet your needs**

- at nano we understand that every customer and every application is different. that is why we provide a wide range of available options to customize your dryer to your specific needs

**advanced PLC controls**

A powerful S7-200 micro-programmable logic controller monitors and controls operation. The compact design, flexible configuration and powerful instruction set combine to make this the perfect solution for industrial air drying applications. The system monitors multiple inputs displaying pertinent data on the digital user interface and controls the fully automated drying and regeneration cycle.

**ES Energy Saving Option** - The optional “ES” dew point demand system uses a reliable precision hygrometer to continually monitor the outlet dew point and adjust the cycle for maximum energy savings. Includes real time outlet dew point indication and an adjustable high dew point alarm.
**standard features**

- **efficient regenerative blower**
  - field proven high efficiency blower combines reliable performance and a long operating life
  - regenerative design for lower noise levels than typical blowers

- **low watt density heater**
  - regeneration circuit is fully insulated for maximum efficiency
  - specifically designed for a long and dependable operating life in harsh industrial environments

- **stainless steel check valves**
  - metal on metal seats for reliable high temperature operation
  - dependable stainless steel spring return check valves provide worry-free operation and minimal maintenance

- **high performance butterfly valves**
  - pneumatic actuators ensure precise proportional control and a bubble tight seal
  - stainless steel and Teflon® seats in a reliable and low pressure drop design

- **precision purge control valve**
  - purge flow is field adjustable with this precision valve with visual setting indication (NEX only)
  - easily adjust the purge flow to match the operating conditions

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**options & upgrades**

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<td>Ti</td>
<td>Tower Insulation</td>
<td>thermal insulation</td>
<td>heater &amp; regen piping only</td>
<td>heater, towers &amp; heated piping</td>
<td>reduces ambient heat loss</td>
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<td>NEMA 7</td>
<td>for explosion proof environments</td>
</tr>
<tr>
<td>575V</td>
<td>575 Volt Power</td>
<td>inlet power supply</td>
<td>460 VAC / 3 Ph / 60 Hz</td>
<td>575 VAC / 3 Ph / 60 Hz</td>
<td>allows 575V power supply</td>
</tr>
<tr>
<td>50HZ</td>
<td>50Hz Power</td>
<td>inlet power supply</td>
<td>460 VAC / 3 Ph / 60 Hz</td>
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<th>Dryer Model</th>
<th>Inlet &amp; Outlet</th>
<th>Rated Flow</th>
<th>Dimensions (Inches)</th>
<th>Appx. Weight</th>
<th>Recommended Filtration</th>
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<td><strong>NHL Heate</strong></td>
<td>1&quot;</td>
<td>200 scfm</td>
<td>30 x 45 x 87</td>
<td>610 lbs</td>
<td>NF 0920 M01, NH 0300 M1</td>
</tr>
<tr>
<td><strong>NEX Externally Reactivated</strong></td>
<td>1&quot;</td>
<td>200 scfm</td>
<td>30 x 45 x 87</td>
<td>610 lbs</td>
<td>NF 0920 M01, NH 0300 M1</td>
</tr>
<tr>
<td><strong>NBP Blower Purge</strong></td>
<td>2&quot;</td>
<td>500 scfm</td>
<td>90 x 120 x 108</td>
<td>8300 lbs</td>
<td>NF 3500 M01, NF 3500 M1HT</td>
</tr>
</tbody>
</table>

### Specifications

- **Maximum Particle Size (ISO Class) (2)**: Class 2 (1 micron)
- **Maximum Water Content (ISO Class) (2)**: Class 2 (-40°F pdp)
- **Design Operating Pressure Range**: 50 to 150 psig
- **Recommended Operating Temp Range**: 40 to 100°F
- **Design Operating Temperature Range**: 35 to 120°F
- **Power Supply Requirements**: 120 VAC / 60 Hz

### Pressure Correction Factors

- **Inlet Air Pressure (psig)**: 60 to 80
- **Correction Factor**: 0.65 to 0.74

### Temperature & Dew Point Correction Factors

- **Inlet Air Temperature (°F)**: 70 to 120
- **Correction Factor**: 1.12 to 1.20

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*(1)* 2" and below are NPT threaded. 3" and above are flanged
*(2)* At an inlet condition of 100 psig and 100°F, for all other inlet conditions refer to the correction factors to the left
*(3)* Recommended for all applications
*(4)* Per ISO 8573.1:2001 (E)
*(5)* To be used as a rough guide only, all applications should be confirmed by n-psi. Contact support@n-psi.com