nano

PURIFICATION SOLUTIONS

D-Series^5

twin tower desiccant compressed air dryers

flow capacity: 200 - 9,000 scfm (340 - 15,300 Nm^3/hr)

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Leading edge technology and more than 100 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

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.

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 D-Series[5] 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 D-Series[5] twin tower desiccant air dryers are designed to remove water vapor, lowering the pressure dewpoint 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 D-Series[5] 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)]

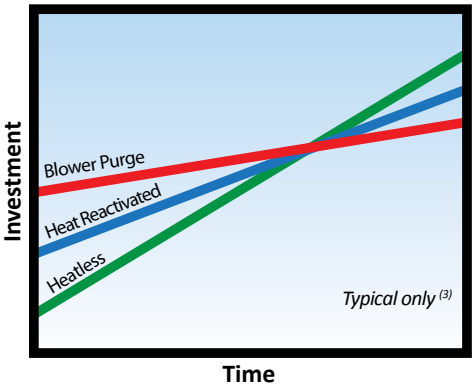
which dryer is right for you?

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 D-Series[5] 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 D-Series[5] dryer for your application.

(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-Series[5] heatless desiccant air dryers

The advanced D-Series[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 dewpoint 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 dewpoint performance.

customized to meet your needs

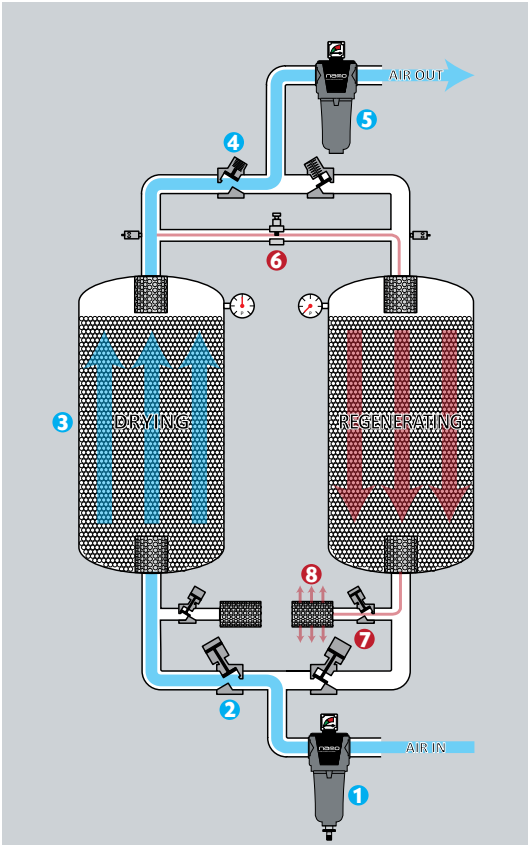
- At nano we understand that every customer and every application is different. That is why we provide a wide range of available options to customize your dryer to your specific needs.

advanced PLC controls

A powerful programmable logic controller monitors and controls each D-Series[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" dewpoint demand system uses a reliable precision hygrometer to continually monitor the outlet dewpoint and extend the cycle for maximum energy savings. Includes real time outlet dewpoint indication and high dewpoint alarm.

standard features



1. nano F-Series[1] M01 coalescing pre-filter
2. inlet switching valve
3. high quality hygroscopic desiccant
4. spring loaded outlet check valve
5. nano F-Series[1] M1 particulate after filter
6. adjustable bi-directional purge valve
7. angle body piston exhaust valve
8. low noise purge exhaust silencer

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.

spring return check valves

- Reliable spring return operation for worry-free operation with minimum 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

option	description	changes	from	to	benefit
ES	**Energy Saving**	regeneration cycle	timed operation	dew point dependent operation	significant purge & energy savings
3V	**3 Valve Bypass**	ability to bypass unit	none	manual 3 valve block & bypass	maintenance without stopping air flow
LDP	**Low Dewpoint**	outlet pressure dew point	-40°F (ISO 12500 Class 2)	-100°F (ISO 12500 Class 1)	improves downstream air quality
N4	**NEMA 4**	electrical protection	NEMA 12	NEMA 4	improves protection against contamination
N4X	**NEMA 4X**			NEMA 4X	as above, plus improved corrosion resistance
N7	**NEMA 7**			NEMA 7	for explosion proof environments
50HZ	**50Hz Power**	inlet power supply	120 VAC / 1 Ph / 60 Hz	220 VAC / 1 Ph / 50 Hz	allows 50Hz power supply
PC	**Pneumatic Controls**			fully pneumatic	eliminates power supply
HP	**High Pressure**	allowable working pressure	50 to 150 psig	50 to 250 psig	allows higher inlet pressures
LA	**Low Ambient**	allowable working temperature	34 to 120°F	-15°F to 120°F	allows lower ambient temperatures

List is not all inclusive. Contact support@n-psi.com for a complete list of available options.

D-Series[5] externally heated & blower purge

The D-Series[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 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 dewpoint performance.

customized to meet your needs

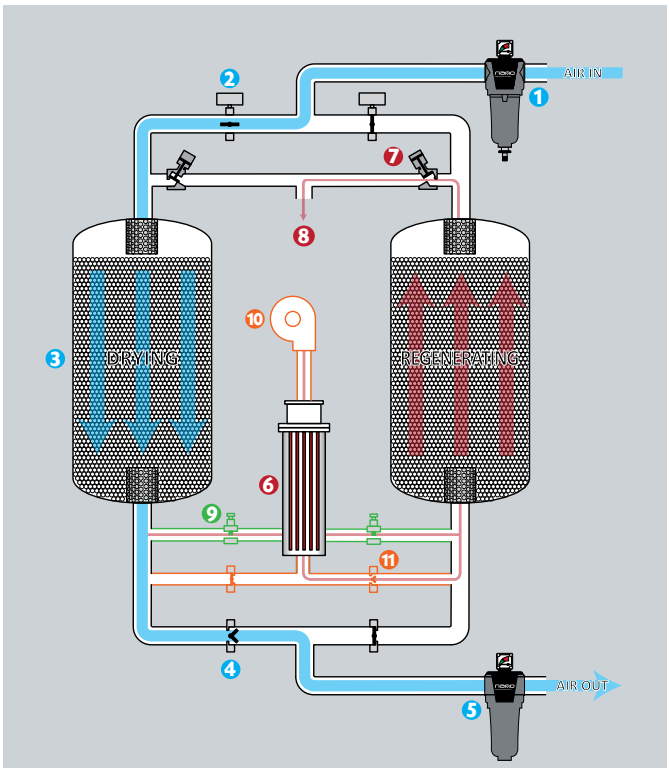
- At nano we understand that every customer and every application is different. That is why we provide a wide range of available options to customize your dryer to your specific needs.

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" dewpoint demand system uses a reliable precision hygrometer to continually monitor the outlet dewpoint and adjust the cycle for maximum energy savings. Includes real time outlet dewpoint indication and an adjustable high dewpoint alarm.

standard features



1. nano F-Series[1] M01 coalescing pre-filter
2. pneumatically actuated butterfly inlet valve
3. high quality hygroscopic desiccant
4. spring loaded outlet check valve.
5. nano F-Series[3] NHT M1 high temp particulate after filter
6. low watt density electric heater
7. angle body two-way piston exhaust valve
8. purge exhaust port
9. bi-directional purge adjustment valve (NEX only)
10. high efficiency regenerative blower (NBP only)
11. purge check valve (NBP only)

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.

spring return check valves

- Metal on metal seats for reliable high temperature operation.
- Dependable spring return operation provides worry-free operation with minimum 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.

options & upgrades

option	description	changes	from	to	benefit
ES	Energy Saving	regeneration cycle	timed operation	dew point dependent operation	significant purge & energy savings
3V	3 Valve Bypass	ability to bypass unit	none	manual 3 valve block & bypass	maintenance without stopping air flow
LDP	Low Dewpoint	outlet pressure dew point	-40°F (ISO 12500 Class 2)	-100°F (ISO 12500 Class 1)	improves downstream air quality
TI	Tower Insulation	thermal insulation	heater & regen piping only	heater, towers & all heated piping	reduces ambient heat loss
N4	NEMA 4	electrical protection	NEMA 12	NEMA 4	improves protection against contamination
N4X	NEMA 4X			NEMA 4X	as above, plus improved corrosion resistance
N7	NEMA 7			NEMA 7	for explosion proof environments
575V	575 Volt Power	inlet power supply	460 VAC / 3 Ph / 60 Hz	575 VAC / 3 Ph / 60 Hz	allows 575V power supply
50HZ	50Hz Power			400 VAC / 3 Ph / 50 Hz	allows 50Hz power supply
HP	High Pressure	allowable working pressure	50 to 150 psig	50 to 250 psig	allows higher inlet pressures
LA	Low Ambient	allowable working temperature	34 to 120°F	-15°F to 120°F	allows lower ambient temperatures

List is not all inclusive. Contact support@n-psi.com for a complete list of available options.

sizing & specifications

Model [1]	Maximum Rated Flow (scfm) [2]		Inlet & Outlet Connections	Dimensions inches (cm)			Approximate Weight	Recommended Filtration		Model with Energy Saving Option
	Inlet	Outlet		Width	Depth	Height	lbs (kg)	Pre Filter	After Filter	
Heatless										
NHL 200	200	170	1" NPT	33 (84)	24 (61)	84 (213)	650 (295)	NF0290M01	NF0290M1	NHL 200 ES
NHL 250	250	213	1 1/2" NPT	39 (99)	24 (61)	87 (221)	810 (367)	NF0290M01	NF0290M1	NHL 250 ES
NHL 300	300	255	1 1/2" NPT	39 (99)	24 (61)	87 (221)	810 (367)	NF0325M01	NF0325M1	NHL 300 ES
NHL 400	400	340	2" NPT	45 (114)	26 (66)	85 (216)	1020 (463)	NF0450M01	NF0450M1	NHL 400 ES
NHL 500	500	425	2" NPT	45 (114)	26 (66)	85 (216)	1210 (549)	NF0700M01	NF0700M1	NHL 500 ES
NHL 600	600	510	2" NPT	45 (114)	26 (66)	85 (216)	1230 (558)	NF0700M01	NF0700M1	NHL 600 ES
NHL 800	800	680	3" Flanged	66 (168)	40 (102)	93 (236)	2800 (1270)	NF1000M01	NF1000M1	NHL 800 ES
NHL 1000	1000	850	3" Flanged	66 (168)	40 (102)	93 (236)	3250 (1474)	NF1000M01	NF1000M1	NHL 1000 ES
NHL 1250	1250	1063	3" Flanged	70 (178)	40 (102)	93 (236)	4400 (1996)	NF1250M01	NF1250M1	NHL 1250 ES
NHL 1500	1500	1275	3" Flanged	70 (178)	40 (102)	93 (236)	4700 (2132)	NF1500M01	NF1500M1	NHL 1500 ES
NHL 2000	2000	1700	4" Flanged	76 (193)	40 (102)	97 (246)	4900 (2223)	consult factory		NHL 2000 ES
NHL 2500	2500	2125	4" Flanged	93 (236)	50 (127)	109 (277)	5600 (2540)			NHL 2500 ES
NHL 3000	3000	2550	4" Flanged	93 (236)	50 (127)	109 (277)	8100 (3674)			NHL 3000 ES
Externally Heat Reactivated										
NEX 200	200	184	1" NPT	30 (76)	45 (114)	87 (221)	610 (277)	NF0290M01	NHT0300M1	NEX 200 ES
NEX 250	250	230	1 1/2" NPT	35 (89)	50 (127)	87 (221)	810 (367)	NF0290M01	NHT0300M1	NEX 250 ES
NEX 300	300	276	1 1/2" NPT	40 (102)	50 (127)	88 (224)	1100 (499)	NF0325M01	NHT0300M1	NEX 300 ES
NEX 400	400	368	2" NPT	45 (114)	45 (114)	90 (229)	1250 (567)	NF0450M01	NHT0450M1	NEX 400 ES
NEX 500	500	460	2" NPT	45 (114)	45 (114)	90 (229)	1600 (726)	NF0700M01	NHT0650M1	NEX 500 ES
NEX 600	600	552	2" NPT	45 (114)	45 (114)	90 (229)	1900 (862)	NF0700M01	NHT0650M1	NEX 600 ES
NEX 800	800	736	3" Flanged	55 (140)	50 (127)	95 (241)	2500 (1134)	NF0850M01	NHT1000M1	NEX 800 ES
NEX 900	900	828	3" Flanged	55 (140)	50 (127)	95 (241)	2800 (1270)	NF1000M01	NHT1000M1	NEX 900 ES
NEX 1000	1000	920	3" Flanged	65 (165)	60 (152)	95 (241)	3200 (1451)	NF1000M01	NHT1000M1	NEX 1000 ES
NEX 1250	1250	1150	3" Flanged	65 (165)	60 (152)	95 (241)	3500 (1588)	NF1250M01	NHT1250M1	NEX 1250 ES
NEX 1500	1500	1380	3" Flanged	98 (249)	70 (178)	106 (269)	4200 (1905)	NF1500M01	NHT1600M1	NEX 1500 ES
NEX 2000	2000	1840	4" Flanged	110 (279)	80 (203)	106 (269)	4800 (2177)	consult factory		NEX 2000 ES
NEX 2500	2500	2300	4" Flanged	110 (279)	80 (203)	106 (269)	6200 (2812)			NEX 2500 ES
NEX 3000	3000	2760	4" Flanged	120 (305)	85 (216)	108 (274)	7600 (3447)			NEX 3000 ES
NEX 3500	3500	3220	6" Flanged	120 (305)	89 (226)	108 (274)	8300 (3765)			NEX 3500 ES
Blower Purge										
NBP 500	500	490	2" NPT	90 (229)	42 (107)	90 (229)	2890 (1311)	NF0700M01	NHT0650M1	NBP 500 ES
NBP 650	650	637	2" NPT	90 (229)	42 (107)	90 (229)	3500 (1588)	NF0700M01	NHT0650M1	NBP 650 ES
NBP 800	800	784	3" Flanged	95 (241)	55 (140)	105 (267)	4500 (2041)	NF1000M01	NHT1000M1	NBP 800 ES
NBP 1000	1000	980	3" Flanged	95 (241)	55 (140)	105 (267)	5600 (2540)	NF1000M01	NHT1000M1	NBP 1000 ES
NBP 1250	1250	1225	3" Flanged	110 (279)	70 (178)	109 (277)	6400 (2903)	NF1250M01	NHT1250M1	NBP 1250 ES
NBP 1500	1500	1470	3" Flanged	110 (279)	70 (178)	109 (277)	8200 (3719)	NF1500M01	NHT1600M1	NBP 1500 ES
NBP 2000	2000	1960	4" Flanged	140 (356)	75 (191)	110 (279)	9800 (4445)	consult factory		NBP 2000 ES
NBP 2500	2500	2450	4" Flanged	140 (356)	75 (191)	110 (279)	12500 (5670)			NBP 2500 ES
NBP 3000	3000	2940	4" Flanged	140 (356)	89 (226)	120 (305)	15000 (6804)			NBP 3000 ES
NBP 4000	4000	3920	6" Flanged	160 (406)	94 (237)	122 (310)	21000 (9525)			NBP 4000 ES
NBP 5000	5000	4900	6" Flanged	180 (457)	94 (237)	140 (356)	27000 (12247)			NBP 5000 ES
NBP 6000	6000	5880	6" Flanged	consult factory						NBP 6000 ES
NBP 7500	7500	7350	8" Flanged							NBP 7000 ES
NBP 9000	9000	8820	8" Flanged							NBP 9000 ES

(1) Can't find the model you need? Contact support@n-psi.com for larger or smaller models or for additional options.
(2) At 100 psig inlet pressure and 100°F inlet temperature. For all other pressures and temperatures refer to the correction factors below.

correction factors	To calculate the maximum rated flow for any model at operating conditions other than those above: Rated Flow (from table above) x K1 x K2 = Rated Flow at new conditions [1]														
Inlet air pressure (psig)	50	60	70	80	90	100	110	120	130	140	150	175 [2]	200 [2]	225 [2]	250 [2]
K1	0.56	0.65	0.74	0.83	0.91	1.00	1.04	1.08	1.12	1.16	1.20	1.29	1.37	1.45	1.52

Inlet air temperature (°F)	70	80	90	100	105	110	115	120
K2	1.12	1.10	1.06	1	0.93	0.86	0.80	0.75

(1) To be used as a rough guide only. All applications should be confirmed by n-psi. Contact support@n-psi.com for sizing assistance.
(2) Operating pressures above 150 psig require the High Pressure option - available on request.

nano-purification solutions
11330 Vanstory Drive
Huntersville, NC 28078
USA

Tel: (704) 897-2182
Fax: (704) 897-2183
Email: support@n-psi.com
web: www.n-psi.com

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