nano

Thermal Mass Cycling Refrigerated Dryer

FLOW CAPACITY: 30 to 635 scfm

Stay ahead of the demand with energy-efficient moisture management.

In industries where precise moisture control is paramount, the necessity of a cycling refrigerated dryer becomes evident. Unlike conventional dryers, cycling refrigerated dryers offer dynamic performance tailored to varying demand levels. By adjusting their cooling capacity to match real-time requirements, these dryers optimize energy usage, ensuring efficiency even during fluctuating operating conditions. This adaptability not only enhances equipment longevity by preventing over cooling but also minimizes energy consumption, translating to significant cost savings over time. Take power savings to the next level with nano’s new range of TMC Thermal Mass Cycling Refrigerated Dryers!

nano TMC Cycling Refrigerated Air Dryers

- **Clean, dry compressed air at ISO Class 5**
- **Saves energy by matching power to actual demand and conditions**
- **Lowest pressure drop**
- **Steady, reliable pressure dew point**
- **Rebate-friendly**

Thermal Energy Circuit

Provides a continuous flow of thermal energy to ensure a consistent dew point range while delivering energy & cost savings by cycling the refrigeration compressor. *With...*

TMC Thermal Mass Circuit

...Technology

Thermal Mass Cycling Technology

TMC dryers save money when they're running full load and save money when they're not. To find out how much you can save, ask nano for a simple power study!

Smart Investments, Big Savings

In most applications, the air flow varies significantly throughout the day reaching peak demand only for a very short time. Often times, demand can be close to zero overnight or during breaks. The TMC thermal mass cycling refrigerated dryer matches its power consumption to the air flow demand providing optimal energy savings. (example shown below)

*at $0.08 per kWh for a plant running 24/7/365, the TMC dryer saves the company nearly $500 in electrical costs annually. A similarly installed 500 scfm TMC dryer would save over $1,000 annually.

Dryer Used	Electrical Consumption	Actual Air Flow
Thermal mass	0.96 kW	150 scfm
Direct expansion	0.96 kW	150 scfm

Energy consumption according to Air flow variations during the day

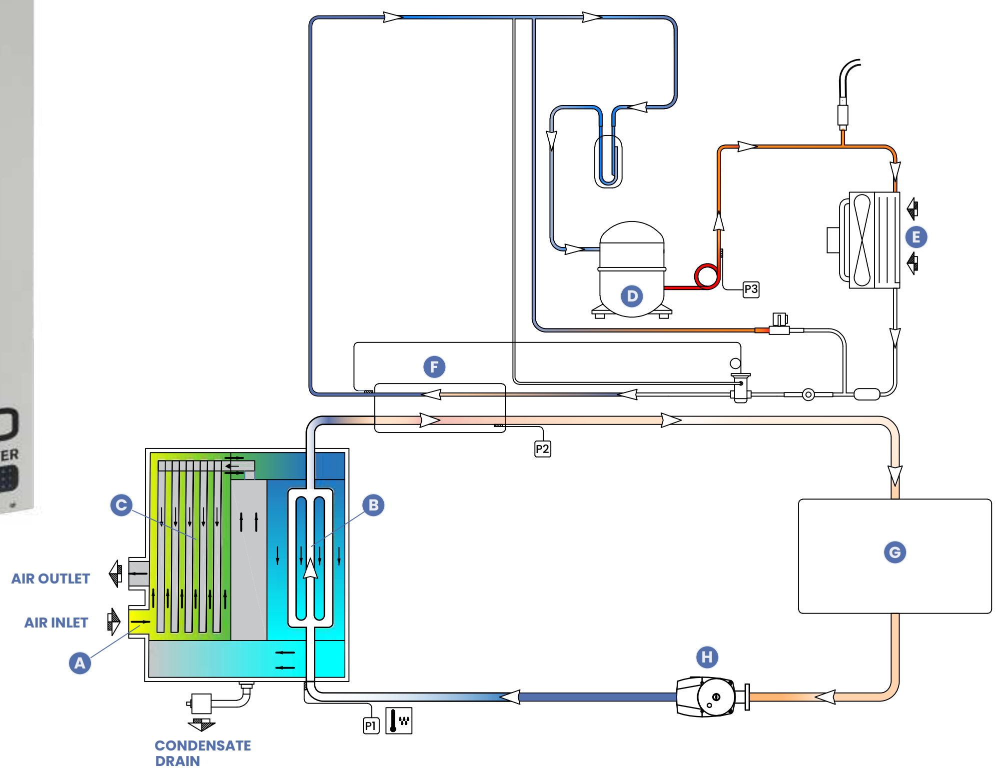
Working	Duration	Non-Cycling	Thermal Mass
100%	0.5 hours	0.48 kWh	0.48 kWh
75%	1.5 hours	1.44 kWh	1.08 kWh
50%	5.0 hours	4.80 kWh	2.40 kWh
25%	3.0 hours	2.88 kWh	0.72 kWh
0%	14.0 hours	13.44 kWh	0.00 kWh
Daily total	24.0 hours	23.04 kWh	4.68 kWh
Daily avg. power	-	0.96 kW	0.195 kW

How it works

Thermal Mass Refrigeration

Unlike direct expansion dryers which run continuously, when the TMC's glycol thermal mass reaches a set temperature, the compressor stops or cycles off but continues to provide clean and dry compressed air to your process. The glycol thermal mass stores the cold energy and keeps the dew point at the desired temperature. The temperature of the thermal mass begins to rise, the refrigerant compressor cycles on.

Dryer demand is a function of both required air flow and ambient conditions. Unless both of these variables are at their maximums at the same time, there are energy savings to be had. The TMC takes advantage of this savings opportunity by significantly reducing power consumption to match actual demand.



Air Drying

A Hot, moist compressed air enters the pre-cooler section of the heat exchanger where it is pre-cooled by the exiting dry air.

B Pre-cooled compressed air then enters the air to glycol evaporator where it reaches its coldest point and achieves its lowest dew point.

C Condensed moisture is being removed by an integrated moisture separator and zero air loss condensate drain prior to re-entering the air to air heat.

Refrigerant Circuit

D The refrigerant compressor pressurizes the refrigerant gas.

E An air cooled condenser removes the heat from the refrigerant and condenses it back to a liquid state.

F The refrigerant passes through a thermostatic expansion valve before entering the refrigerate to glycol heat exchanger cooling down the glycol circuit.

Glycol Circuit

G Chilled glycol is stored for use in the glycol tank. This cold glycol can be used for cooling and drying the compressed air even when the refrigerant circuit is off.

H A glycol circulation pump sends the chilled glycol to the air to glycol heat exchanger to dry the air.

Features

Thermal Energy Circuit

- Utilized by TMC unique glycol thermal mass saving energy and money which treats the compressed air according to actual air flow.
- The TMC intermediate thermal mass delivers a continuous flow of cold liquid to ensure a consistent compressed air outlet dew point.

Simple to Use Dixell™ Digital Microprocessor

- Features dew point temperature.

Microchannel Condenser

- These condensers have a number of advantages over traditional finned tube designs that significantly improve system performance by using 40-60% less refrigerant and having lower pressure drops.

Performance Validated Filtration

- Pre- and after-filter filter packages available to provide additional energy savings and improved air quality.

Energy Efficient and Reliable Rotary Piston Compressors

- Reliable and efficient piston compressor

Benefits

Consistent dew point & low pressure drop

Patented heat exchanger comprised of air to air exchanger and an air to glycol exchanger provide a consistent dew point performance while maintaining a low pressure drop.

Glycol Thermal Mass Circuit

The stored glycol allows for the fastest response times if demand increases suddenly and the lowest power consumption across the entire spectrum of operation.

Robust construction

Powder coated steel panels are corrosion resistant.

Total accessibility

Side panels can be removed to facilitate maintenance.

Environmentally friendly

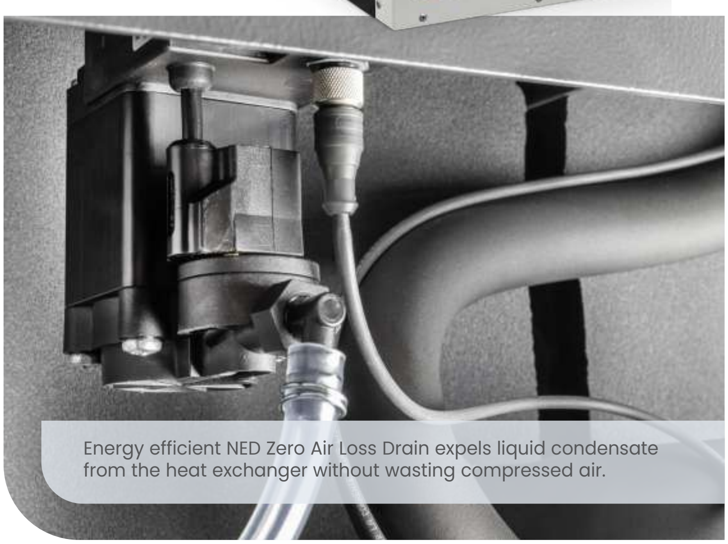
R513a & R410a utilized on all models.

Optimum energy efficiency

Lower electrical consumption from 0% to 100% duty cycle and low pressure drop.

Space saving design

Fully packaged into a simple compact design,
TMC will fit into the smallest spaces.



Energy efficient NED Zero Air Loss Drain expels liquid condensate from the heat exchanger without wasting compressed air.

Reliable liquid pump delivers cold glycol to intermediate circuit to ensure consistent dew point and energy savings.

Product Specifications

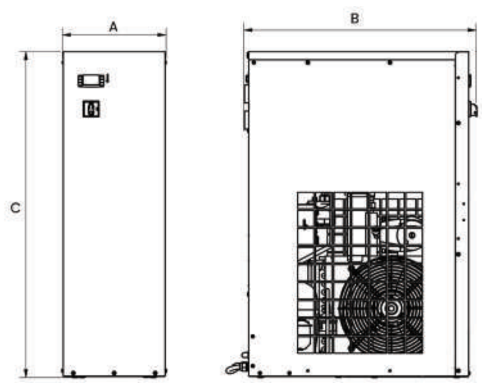
MODEL	INLET & OUTLET (1)	RATED FLOW (2)	ABSORBED POWER (3)	DIMENSIONS (INCHES)			APPROX. WEIGHT	POWER SUPPLY (V/Ph/60Hz) (4)		
	NPT (F)	SCFM	kW	A	B	C	LBS	115/1	230/1	460/3
TMC 0030 N		30	0.44	12.4	29.4	39.1	121	•		
TMC 0055 N		55	0.78	12.4	29.4	39.1	132	•		
TMC 0075 N	1	75	0.83	12.4	29.4	39.1	154	•		
TMC 0105 N	1	105	1.1	12.4	29.4	39.1	165	•		
TMC 0130 N	1	130	1.0	20	34	49.5	396	•		
TMC 0170 N	1	170	1.1	20	34	49.5	396	•		
TMC 0200 N	1	200	1.3	20	34	49.5	418		•	
TMC 0265 N	1	265	1.9	20	34	49.5	418		•	
TMC 0320 N	2	320	2.5	31.5	43	54.8	715			•
TMC 0400 N	2	400	3.0	31.5	43	54.8	715			•
TMC 0510 N	2	510	3.7	31.5	43	54.8	737			•
TMC 0635 N	2	635	4.7	31.5	43	54.8	737			•

SPECIFICATIONS	
Des gn operat ng pressure range (ps g)	0 to 210
Max mum nlet a r temperature (°F)	140
Max mum amb ent temperature (°F)	115

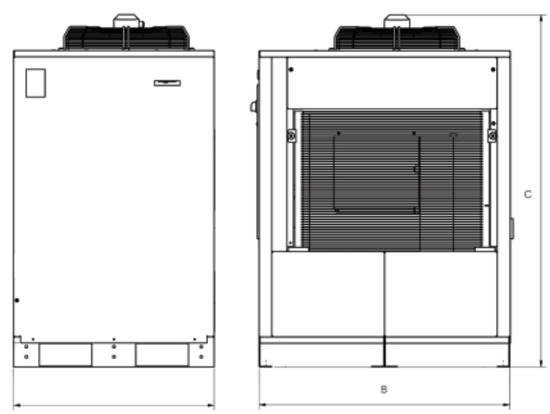
INLET TEMPERATURE CORRECTION FACTORS (5)								
Inlet a r temperature (°F)	77	86	95	100	113	122	131	140
Correct on factor	1.14	1.09	1.03	1.00	0.80	0.67	0.53	0.40

AMBIENT TEMPERATURE CORRECTION FACTORS (5)					
Amb ent temperature (°F)	77	86	95	100	113
Correct on factor	1.10	1.06	1.02	1.00	0.93

PRESSURE CORRECTION FACTORS (5)							
Operat ng pressure (ps g)	87	100	116	130	145	188	210
Correct on factor	0.97	1.00	1.03	1.06	1.07	1.12	1.20



TMC 0030 N to TMC 0265 N



TMC 0320 N to TMC 0635 N

(1) Rated   ow capac ty cond t ons for rat ng dryers are n accordance w th ISO7183 (Opt on A2). Compressed a r at dryer nlet 100 ps g and 100°F amb ent a r temperature 100°F operat ng on 60Hz power supply (230/1/60Hz power opt on).

(2) Nom nal absorbed power at rated operat ng cond t ons us ng 115/1/60 or 460/3/60 power supply (as appl cable). For absorbed power at other voltages or cond t ons, contact support@nano-pur   cat on.com.

(3) To be used as a rough gu de only. All appl cat ons should be con rmed by nano s z ng software. Contact support@nano-pur   cat on.com for s z ng ass stance.

Experience.
Customer.
Service.

nano-purification solutions
www.nano-purification.com

Headquarters

United States
Charlotte, North Carolina
Phone: +1 704 897 2182
E-mail: support@nano-purification.com

United States
Maryville, Tennessee
Phone: +1 704 897 2182
E-mail: support@nano-purification.com

Canada
St. Catharines, Ontario
Phone: +1 905 684 6266
E-mail: canadasupport@nano-purification.com

Singapore
Singapore
Phone: +65 6748 7988
E-mail: support.asia@nano-purification.com

United Kingdom
Gateshead, Tyne and Wear
Phone: +44 (0) 191 497 7700
E-mail: sales_uk@nano-purification.com

Germany
Erkelenz, Germany
Phone: +49 2431 9550 600
E-mail: sales_de@nano-purification.com