

nano



C¹

**precision controlled
industrial process chillers**

cooling capacity: 6000 - 482,000 BTU/hr (0.5 - 40 tons)

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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



improved productivity & reduced costs

Process chillers are used in a variety of industrial applications to improve processes, reduce operating costs and increase productivity. Utilization of process chillers is becoming increasingly prevalent due to more stringent environmental water quality standards.

n-psi realize the importance of chilled water in industry and have developed the C¹ line of precision controlled industrial process chillers to meet the increasing demand for high quality complete packaged solutions which meet various industrial applications.



design

Our experienced team of design engineers are always looking for new and unique technologies and products to bring you the highest level of performance and lowest overall operating cost.



research & development

Our R&D team endeavors to provide solutions that go beyond developing an existing product. They are continually researching new technologies which can provide unique advantages over competitive offerings.



manufacture

The reliable and energy saving nano C¹ industrial process chillers are manufactured in a state of the art facility to the highest standards of build quality to ensure reliability and high levels of performance.

C¹ - innovative, reliable & efficient

energy efficient & reliable compressor

The compressor is the most important part of any refrigeration system. Whether piston (NPC 005 to 050) or scroll (NPC 060 to 400), the compressors are chosen model by model to minimize power consumption, noise, vibration and moving parts while maximizing reliability and resistance to liquid refrigerant returns.

integral water pump

All models include an integral pump mounted within the chiller enclosure. Centrifugal pumps are used on models NPC 015 and larger. Models NPC 015 through NPC 180 also feature stainless steel internals. The pump pressure ranges from 65 to 77 psig depending on the model with higher pressure and dual/backup pump options available on request.

oversized in-tank evaporator

The oversized evaporator maximizes heat transfer and minimizes pressure drop for optimum efficiency. Mounted inside the water tank this innovative design reduces the chillers footprint and ensures steady water temperatures while further improving efficiency and significantly reducing ambient temperature impact.

thermally insulated water tank

The water tank is insulated for maximum efficiency, includes bleed and drain valves, a water level sensor (NPC 015 and larger), a water bypass and anti-freeze warning alarms for reliable and fail-safe operation. Choose from atmospheric or pressurized fill kits (NPC 015 and larger).

low maintenance condenser

Condenser coils are conveniently located on only one side of the chiller enclosure. This simplifies installation and minimizes floor space requirements. A removable and washable filter is provided on models NPC 030 and larger. Water-cooled condensers are available on request.

multiple circuits for improved operation

Models NPC 150 through NPC 230 have two compressors. Models NPC 280 and larger have four compressors and two refrigeration circuits. These models feature compressor rotation, a compressor unloading function and optional multi-step fan speed control for optimum operation in even the most difficult conditions.



quality components designed for industrial applications



advanced microprocessor control system & LED display

common industrial applications

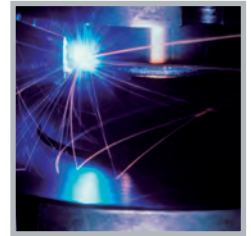
plastics

nano C¹ chillers are used extensively in the plastics industry for blow molding, injection molding, sheet and profile extrusion, PET and thermoforming. The reliable and cost-effective temperature control they provide improves cycle times reducing operating costs and increasing productivity.



lasers

The precise temperature control capabilities of the nano C¹ industrial process chillers are perfectly suited for the demands of laser welding, cutting, engraving, profiling, optics and medical applications.



chemical & pharmaceutical

The C¹ improves processes and reduces cycle times across a wide range of chemical and pharmaceutical applications, facilitating precise temperature control and expediting heat rejection.



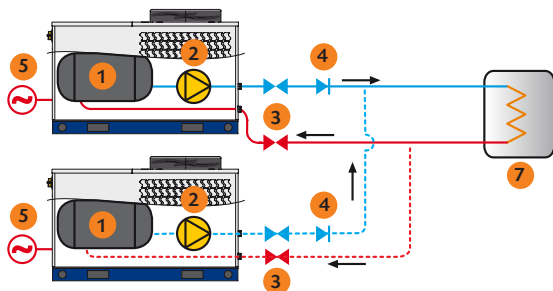
food & beverage

Whether the process involves mixing, baking, brewing, fermenting, carbonating, bottling or storing, the nano C¹ provides the cooling and temperature control needed to eliminate product spoilage and improve production.



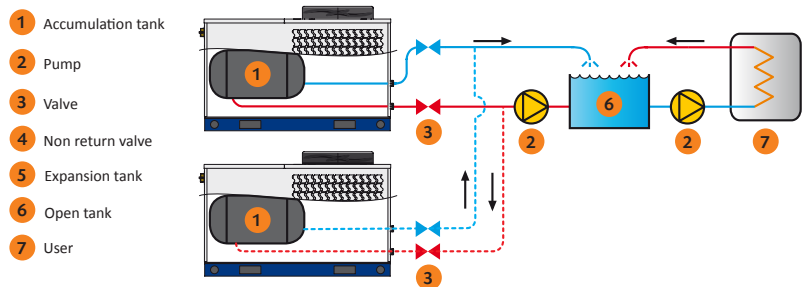
typical configurations

closed circuit installation



Expansion tanks are required for all closed circuit installations. When multiple chillers are installed in parallel, the expansion tanks must be automatic.

open circuit installation



Expansion tanks are not required for open circuit installations. Open circuits also typically use an external pump, so the internal pump may not be required.

nano C¹ industrial process chillers

The advanced nano C¹ industrial process chillers benefit from the experience of a design that has been perfected over 20 years and repeatedly proven by hundreds of thousands of units in operation around the world. Designed together with industrial users, these chillers have stood the test of time in virtually every industry and application.

The C¹ operates in a closed circuit, offering precise water temperature control and rapid response to changes in ambient and thermal load. This design also eliminates the waste, corrosion and bacterial growth associated with open circuit systems.

In addition, energy efficient and reliable compressors combined with a unique oversized in-tank evaporator provide the lowest operating costs available on the market today.

Experience:

- increased productivity
- decreased production time & cost
- decreased waste
- decreased maintenance and unplanned down time



Reliability is built in... and backed by a 1 year warranty.

advanced microprocessor controls



optional remote control

At n-psi we take our control systems seriously. All C¹ industrial process chillers feature easy to use advanced microprocessor controls. The water outlet temperature, operational icon indicators and up to 10 different programmable alarms are indicated on a bright digital LED display.

Need to monitor and control your chiller remotely? No problem. Alarms are stored in history and alarm indication can be transmitted to an external supervisor system via volt free general alarm contacts.

Better yet, take advantage of our remote control options to monitor and control your unit remotely at distances up to 500 feet.

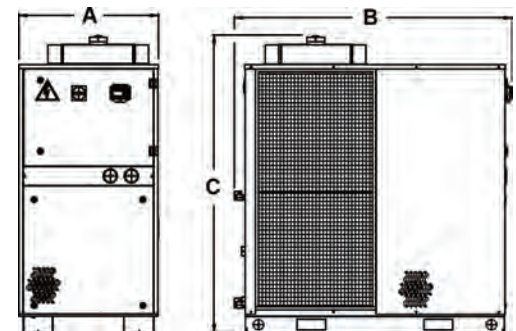
Not far enough? The microprocessor can also be linked to external supervisor systems either via MODBUS, through the internet or directly to a cellular phone.

nano C¹ sizing & specifications

model	water inlet & outlet	cooling capacity ⁽¹⁾		total installed power	full load amps	water pump	tank capacity	dimensions (inches)			approx. weight
	NPT	BTU/h	tons	kW	amps	hp	gal	A	B	C	lbs
NPC 005	½"	6,010	0.50	1.4	8.2	½	6.1	22.6	26.3	30.9	170
NPC 010	½"	11,900	0.99	3.0	14	½	6.1	22.6	26.3	30.9	184
NPC 015 UL	¾"	18,580	1.55	4.0	8.4	1	15.4	22.0	49.2	29.5	280
NPC 020 UL	¾"	24,460	2.04	4.8	9.9	1	15.4	22.0	49.2	29.5	291
NPC 030 UL	1"	36,850	3.07	7.2	14	1	29.0	26.0	50.4	52.8	441
NPC 040 UL	1"	52,990	4.42	9.4	19	1	28.7	26.0	50.4	52.8	485
NPC 060 UL	1 ½"	79,500	6.62	13	23	1 ¼	34.8	29.9	73.2	54.7	730
NPC 090 UL	1 ½"	118,200	9.85	18	31	1 ¼	63.9	29.9	73.2	54.7	851
NPC 120 UL	1 ½"	148,280	12.36	22	37	2 ½	63.9	29.9	73.2	54.7	893
NPC 130 UL	1 ½"	165,130	13.76	25	43	2 ½	62.9	29.9	73.2	54.7	917
NPC 150 UL	2"	190,650	15.89	28	48	2 ½	87.5	34.1	86.8	78.9	1219
NPC 180 UL	2"	216,960	18.08	33	58	2 ½	87.5	34.1	86.8	78.9	1433
NPC 210 UL	2"	252,810	21.07	38	64	3	86.9	34.1	86.8	78.9	1631
NPC 230 UL	2"	277,880	23.16	45	66	3	86.9	34.1	86.8	78.9	1669
NPC 280 UL	2 ½"	345,690	28.81	55	95	5 ½	126.6	49.4	126	84.3	2745
NPC 330 UL	2 ½"	397,240	33.10	64	94	5 ½	126.6	49.4	126	84.3	2833
NPC 400 UL	2 ½"	481,890	40.16	71	105	5 ½	126.6	49.4	126	84.3	2965

specifications		005	010	015	020	030	040	060	090	120	130	150	180	210	230	280	330	400
compressor(s)	quantity	-	1	1	1	1	1	1	1	1	1	2	2	2	2	4	4	4
	absorbed power ⁽²⁾	kW	0.86	1.61	2.13	2.52	4.33	6.05	8.88	11.86	14.72	17.87	22.42	23.34	25.62	32.40	38.55	51.61
	amps (each)	amps	5.2	11	6.0	7.5	10	15	19	25	29	35	20	25	29	28	20	20
fan(s)	quantity	-	1	1	1	1	1	1	1	2	2	2	2	3	3	2	2	2
	amps (each)	amps	0.30	0.68	0.66	0.66	1.80	1.80	2.10	2.10	2.10	2.10	2.10	2.10	2.10	3.75	3.75	3.75
water pump	power	hp	½	½	1	1	1	1 ¼	1 ¼	2 ½	2 ½	2 ½	2 ½	3	3	5 ½	5 ½	5 ½
	amps	amps	2.80	2.80	1.54	1.54	1.49	1.49	1.94	1.94	3.31	3.31	3.31	3.31	3.85	3.85	6.78	6.78
power supply	voltage / phases ⁽³⁾	V/Ph	230/1	230/1	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3	460/3
refrigerant	circuits	-	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2
	type	-	R134a	R404a	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C
inlet water temperature	minimum	°F	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
	maximum	°F	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
outlet water temperature	minimum	°F	32	32	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	maximum	°F	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
ambient temperature	minimum	°F	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
	maximum	°F	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115

correction factors ⁽⁴⁾							
water outlet temperature (°F)	30	35	40	45	50	55	60+
correction factor	0.68	0.79	0.91	1	1.10	1.19	1.27
ambient temperature (°F)	75	80	85	90	95	100	105
correction factor	1.14	1.11	1.18	1.04	1	0.96	0.92
evaporator ΔT (°F) ⁽⁵⁾	7.2	8	10	12	24	16	18
correction factor	0.99	0.99	1	1.01	1.01	1.02	1.03
condenser ΔT (°F) ⁽⁶⁾	10	12.5	15	17.5	20	22.5	25
correction factor	1	0.99	0.98	0.97	0.96	0.95	0.93
ethylene glycol (%)	0	10	20	30	40	45	50
correction factor	1	0.99	0.98	0.97	0.96	0.95	0.93



(1) assumes 45°F cooling water supply, 55°F cooling water return and 95°F, ambient temperature. for all other conditions refer to the correction factors

(2) total nominal absorbed power by (all) compressor(s) at rated inlet conditions using 115/1/60 or 460/3/60 power supply as applicable

(3) all models are 60 Hz. contact support@n-psi.com for 50Hz electrical options

(4) to be used as a rough guide only. All applications should be confirmed by n-psi. contact support@n-psi.com for sizing assistance

(5) assumes no change to condenser inlet water temperature

(6) assumes no change to evaporator outlet water temperature

- standard water temperature control is +/- 3.5°F. close temperature control of +/- 2°F is available for laser applications
- condenser pre-filter standard on NPC 060 to NPC 400UL. not available on other models

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