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HNG NITROGEN GENERATOR

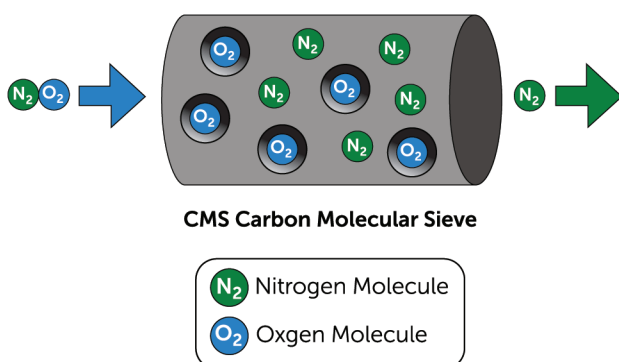
> HNG SERIES

(Capacity 0,2Nm³/h – 2500Nm³/h; Purity 95 % - 99,999 %)

> HOW IT WORKS ?

Pressure Swing Adsorption (PSA) type Nitrogen Generation system is used to separate and enrich Nitrogen from Oxygen employs CMS (Carbon Molecular Sieve) for adsorbent. Carbon Molecular Sieve (CMS) adsorbs Oxygen and Water Vapor molecules under certain pressure - while allowing Nitrogen to pass through.

The nitrogen molecules (4.3 Angstrom in size) passes through the column, but the oxygen molecules (3.9 Angstrom in size) are adsorbed on the carbon molecular sieve (4 Angstrom opening).



> THE CYCLE IS COMPOSED OF FOLLOWING STEPS

PSA PROCESS

A. Pressurization Step:

Process to increase adsorption pressure in adsorption tower under selected operation condition.

B. Adsorption Step:

Nitrogen gas is generated under constant pressure.

C. Blow Down Step:

Restoring in the adsorption tower.

D. Purge Step:

Stage to restore the adsorption tower completely.

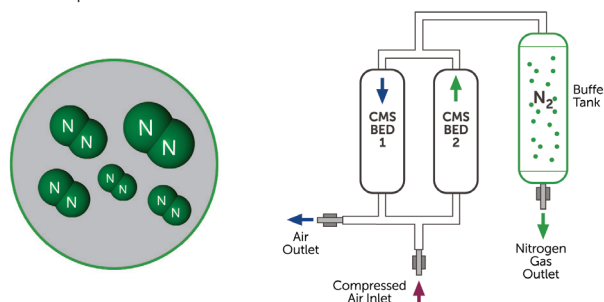
E. Pressure Equalization Step:

Stage in where loss can be reduced by using a part of energy to be lost.



> THE NITROGEN GENERATOR IS A TWO-BED ADSORBER SYSTEM

The Nitrogen Generator consists of two adsorber vessels filled with CMS, a valve assembly, air filters, main pressure regulator, and a product receiver tank. Clean and dry air is directed to one of the adsorber beds where oxygen and water vapor is adsorbed faster than nitrogen in the pore structure of the CMS, thus increasing the nitrogen purity of the product gas stream to the desired level (95 – 99.999 % as required by customer). This product flows out of the top of the adsorber bed, through the valve, and into the product receiver at a pressures lightly below the feed air pressure.



> APPLICATIONS

METAL INDUSTRY

- Annealing of ferrous and non-ferrous metal (Inert circumstance)
- Metallurgical heat treatment (Carbonizing)
- Soldering / Brazing
- Plasma sheet metal cutters
- Inert gas in welding process
- Sintering of metal powder



CHEMICAL INDUSTRY

- Transportation of raw material in storage tank
- Container ventilation and prevention of explosion in reaction tank
- Sealing of nitrogen in storage tank
- Cleaning tank and container
- Pressure testing of pipe



PRODUCTION PROCESS AND STORAGE OF FOOD

- Storage of low oxygen CA or super low oxygen
- Charge of nitrogen gas in packing and transportation of coffee, snack or dry nut



PURGE

- Diluting or transposing gas or vapor to eliminate dangerous gas and oxidized substance



PLASTIC

- Ejecting high pressure gas (Sustaining vacuum, shortening cooling time in Ejection)
- Suppressing gas generation in ejection



CHARGE NITROGEN GAS IN TIRE

- Reducing noise reduction, improving fuel efficiency, reducing tire unbalance and improving driving comfort



> FEATURES

Hertz Provides Necessary Nitrogen Buffer Tank As Standard!

- Simple structure, compact design, full automated operation
- **7/24** Nitrogen production in your own place
- **Touch Screen PLC** for controlling the complete system
- PLC Screen for Monitoring and visualization the progress
- Rapid start-up
- Safety system
- Due to well design of silencer, low noise levels during depressurization and purge
- Durable piston valves for **long-life** operation
- On demand production, **low cost**
- High performance. Design the purity and capacity of nitrogen gas meeting to customer's requirements. **(Nitrogen Purity 95 %~99.999 % is available)**
- Minimum maintenance cost replace filter element periodically only and get normal service for the compressor

STANDARD

- Activated Carbon Tower
- Compressed air filters (P grade) after carbon tower and after buffer tank
- Nitrogen generator/ Silencer
- Basic logo or crouzet mini PLC for modular type
- Siemens HMI color touch screen PLC for twin towers
- Buffer Tank

OPTIONAL

- Oxygen Analyzer
- Flow Meter
- Dew Point Sensor
- Nitrogen purity can be seen on screen

SPECIFICATIONS

MODEL	Free Nitrogen Delivery @ following purity level (Nm³/h)									
	95%	97%	98%	99%	99,5%	99,90%	99,95%	99,99%	99,999%	
HNG-10	2,7	2,2	1,9	1,5	1	0,8	0,7	0,5	0,2	Modular
HNG-20	4,40	3,5	3,1	2,4	2	1,3	1,1	0,8	0,4	
HNG-35	8,10	6,5	5,6	4,4	3,5	2,3	2,0	1,4	0,7	
HNG-60	13,5	10,8	9,4	7,3	6	3,8	3,4	2,4	1,2	
HNG-95	23,3	18,6	16,2	12,6	10,4	6,6	5,9	4,1	2,0	Twin Tower
HNG-120	31,0	24,8	21,6	16,8	13,9	8,8	7,8	5,5	2,7	
HNG-150	38,0	30,4	26,4	20,6	17,0	10,8	9,6	6,7	3,3	
HNG-250	60,5	48,3	42,1	32,7	27,1	17,2	15,2	10,6	5,3	
HNG-330	80,0	63,9	55,7	43,3	35,8	22,8	20,1	14,1	7,0	
HNG-450	108,2	86,4	75,2	58,5	48,4	30,8	27,2	19,0	9,5	
HNG-510	123,9	99,0	86,2	67,1	55,5	35,3	31,2	21,8	10,9	
HNG-570	137,6	109,9	95,7	74,5	61,6	39,2	34,6	24,2	12,1	
HNG-730	180,1	143,9	125,3	97,5	80,6	51,3	45,3	31,6	15,8	
HNG-910	220,3	176,0	153,2	119,2	98,6	62,7	55,5	38,7	19,3	
HNG-1110	267,8	214,0	186,3	145,0	119,9	76,2	67,4	47,0	23,5	
HNG-1230	295,4	236,0	205,5	159,9	132,3	84,1	74,4	51,9	25,9	
HNG-1370	327,4	261,5	227,7	177,2	146,6	93,2	82,4	57,5	28,7	
HNG-1820	442,6	353,6	307,9	239,6	198,2	126,0	111,4	77,8	38,8	
HNG-2050	516,2	412,4	359,0	279,4	231,1	146,9	130,0	90,7	45,3	
HNG-2550	618,8	494,4	430,4	334,9	277,1	176,1	155,8	108,7	54,3	
HNG-2950	763,2	609,8	530,9	413,1	341,8	217,2	192,1	134,1	67,0	
HNG-3540	894,5	714,6	622,1	484,1	400,5	254,6	225,1	157,1	78,5	
HNG-4160	1.031,4	824,1	717,4	558,3	461,9	293,6	259,6	181,2	90,5	
HNG-5560	1.241,7	992,0	863,6	672,1	556,0	353,4	312,5	218,1	109,0	
HNG-9170	2.048,0	1.636,1	1.424,3	1.108,4	917,0	582,9	515,5	359,7	179,7	
HNG-11200	2.501,2	1.998,3	1.740,0	1.353,8	1.120,0	712,0	629,6	439,4	219,4	

Reference Conditions

Inlet Compressed Air Pressure	Outlet Nitrogen Pressure	Ambient Temperature	Inlet air dewpoint	
			3 °C (under 99.5 % purity)	-40 °C (above 99.5 % purity)
7,5 Bar (g)	6 Bar (g)	25 °C	Refrigerant air dryer and activated carbon filter is required	Desiccant air dryer and activated carbon filter is required

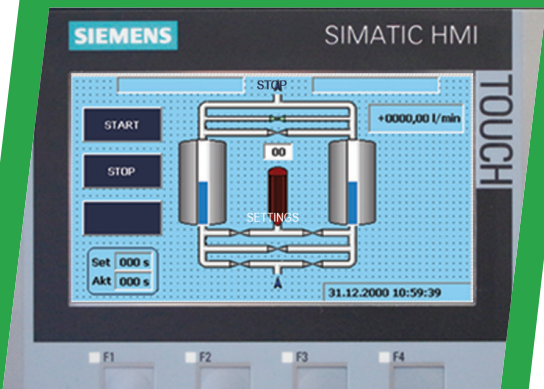
Dew Point Sensor



Air Filter



Touch Screen PLC



Long Life Piston Valve

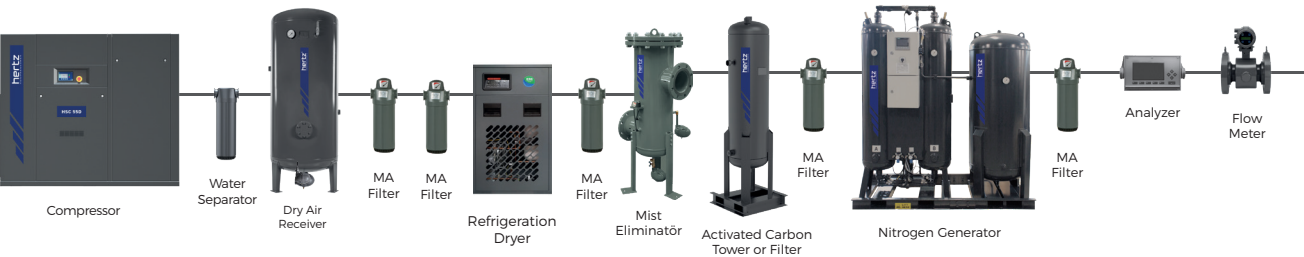


SPECIFICATIONS

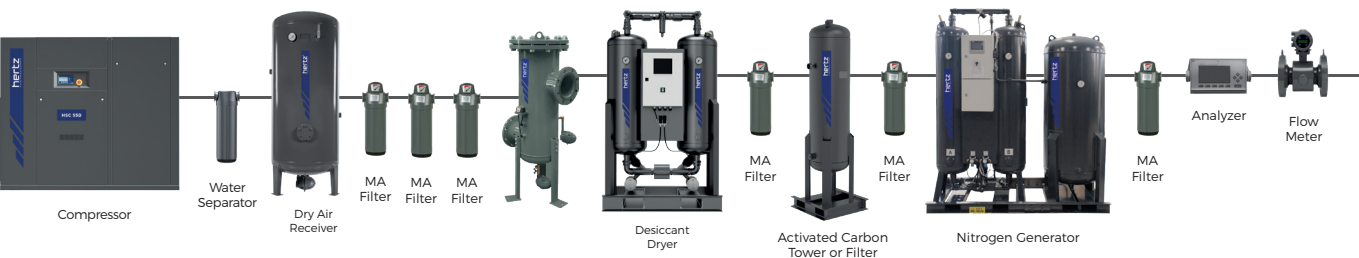
MODEL	Buffer Tank	Connections		Dimensions mm			Weight kg
		Air Inlet	Nitrogen Outlet	Length	Width	Height	
HNG 10	26 L	1/2"	1/2"	670	500	1130	40
HNG 20	35 L	1/2"	1/2"	1043	596	1284	67
HNG 35	52 L	1/2"	1/2"	1082	689	1278	86
HNG 60	70 L	1/2"	1/2"	1100	890	1433	124
HNG 95	97 L	1/2"	1/2"	1659	760	1485	184
HNG 120	126 L	1/2"	1/2"	1634	890	1442	228
HNG 150	151 L	1/2"	1/2"	1634	890	1639	313
HNG 250	280 L	3/4"	1/2"	1760	892	1975	491
HNG 330	408 L	1"	1/2"	1901	950	2025	692
HNG 450	464 L	1"	1/2"	2218	1010	2134	677
HNG 510	515 L	1"	3/4"	2208	1010	2028	912
HNG 570	573 L	1"	3/4"	2208	1010	2226	951
HNG 730	712 L	1"	3/4"	2685	1110	2084	1091
HNG 910	1,042 m³	1 1/2"	1"	2727	1220	2485	1395
HNG 1110	1,29 m³	1 1/2"	1"	2896	1322	2521	1704
HNG 1230	1,402 m³	2"	1"	2898	1322	2724	2031
HNG 1370	1,498 m³	2"	1 1/4"	2895	1355	2941	2096
HNG 1820	2,019 m³	2"	1 1/2"	3599	1793	2634	2686
HNG 2050	2,336 m³	DN80	1 1/2"	3390	1964	3124	3009
HNG 2550	2,336 m³	DN80	2"	3666	2139	3194	3040
HNG 2950	2,336 m³	DN80	2"	4074	2245	2787	3065
HNG 3540	2,336 m³	DN80	2"	4024	2375	3054	3214
HNG 4160	2,336 m³	DN80	2"	4020	2376	3361	3466
HNG 5560	2,336 m³	DN100	2 1/2"	4125	2425	3890	4144
HNG 9170	2,336 m³	DN150	DN80	4502	2986	4364	5298
HNG 11200	2,336 m³	DN150	DN100	3081	4672	4728	5846

Note: Hertz supplies buffer tank volumes for 99,5 % and higher Nitrogen purities. For purities lower than 99,5 %, it may be necessary to use additional tank. "Hertz reserves the right to change the design and /or dimensions and /or weight of his products at any time without any notice or liability."

AIR LINE DESIGN (Under 99.5% purity)



AIR LINE DESIGN (Above 99.5% purity)



CORRECTION FACTOR

CMS Temperature (°C)	Correction Factor (Kt)	Inlet Pressure (Barg)	Correction Factor (Kp)
5	0.85	6	0.82
10	1	6.5	0.88
15	1	7	0.94
20	1	7.5	1
25	1	8	1.05
30	0.91	8.5	1.1
35	0.82	9	1.14
40	0.74	9.5	1.2
45	0.6	10	1.21

EXAMPLE:

If nitrogen requirement of the plant is 20 Nm³/h at 99,5 % purity while air pressure is 7 barg and ambient temperature is 40 °C,

Calculation of HNG model as follows: For 40 °C ambient, Kt = 0,74
For 7 barg inlet, Kp = 0,94

HNG Model Flow = (Required N2 Flow) / (Kt x Kp) = (20Nm³/h) / (0,74 x 0,94) = 28,7 Nm³/h

Therefore the correct N2 Generator will be **HNG-330**



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