Simtar

PSA Nitrogen Generators

www.simtarmakina.com

Generating nitrogen in your workshop on demand, you can eliminate negative results caused by clasical nitrogen supplies and generate nitrogen with much lower costs.

With High Pressure Cylinder;

- Cost for regular gas filling
- Additinal costs, i.e. tank rent, delivery
- Time and work loss caused by running out of gas and delivery
- Unpredictable gas price increases
- Acccording to nitrogen gas pressure applied, returning of some nitrogen upto %15 in the cylinder and not being used
- Safety problems caused by high pressure cylinders
- Narrow interval of nitrogen purity selection

With Cryogenic Tank;

- Cost for regular liquid nitrogen filling
- Additinal costs, i.e. tank rent, delivery
- Time and work loss caused by running out of nitrogen and delivery
- Nitrogen loss caused by evaporation
- Safety problems because of very low temperatures, -196oC.
- Nitrogen supply on on very limited purity values
- Yearly contract obligation

With Nitrogen Generator;

- Companies can generate nitrogen gas inside their own workshop as much or as little as needed at right purity, pressure and flowrate demanded. Thus, troubles like regular gas filling, tank rental and transportation problems are eliminated.
- No more time and work losses caused by running out of gas or liquid nitrogen or their transportation.
- All nitrogen gas generated by nitrogen generator which requires only dried and filtered pressurized air and electrical connection are used. There is no loss of gas remained unused in the cylinder. The nitrogen gas generated is kept in the storage tank for next use.
- Nitrogen generators do work with 6 to 10 bar pressurized air. Generating gas with nitrogen generators of which all safety precaution are taken is easier and safer compared to traditional gas supply methods. Only requirements are dried and filtered pressurized air and electrical connection. No need for operator or regular check.
- It is possible to make nitrogen at desired purity within the range of %95-%99.999 with nitrogen generators. This way, companies can generate nitrogen gas at required purity only, keep low their investment and operating costs.

Simtar nitrogen generators, offers durable, stable, reliable and economical solutions to your all kind of nitrogen gas need.

Simtar offers a nitrogen generator that can fit any application which require low or high capacity, purity with its broad range of models.

Advantages;

Excellent PSA Technology : Simtar nitrogen generators are manufactured according to PSA technology.

Stable Flow Rate and Purity : Capacity and purity values are always above the set value, no decrease on these values is observed in time.

Lower Air Consumption : Simtar nitrogen generators designed to entirely increase the performance of CMS, keep the air consumption lower than other systems.

Energy Save: In Simtar nitrogen generators, if there is no nitrogen use, system moves to “stand-by” mode and saves energy. Optional.

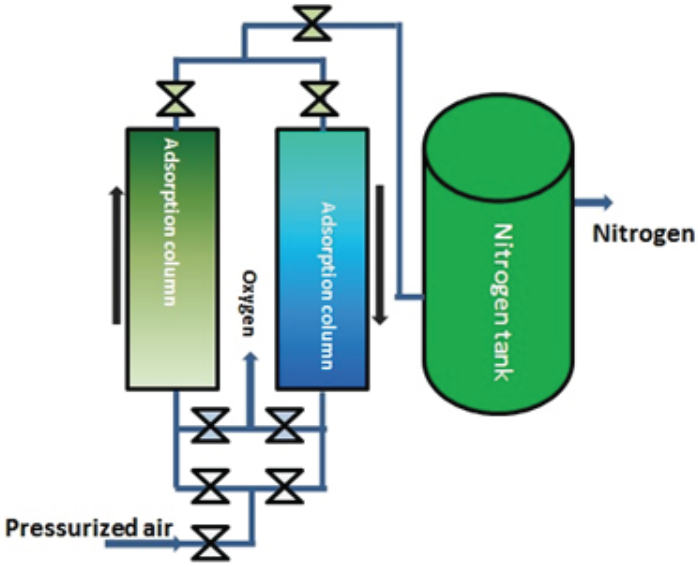
Easy Run : Generating nitrogen starts in minutes after dried, filtered and pressurized air and electrical connections are supplied.

Broad Range of Application Models: In Simtar nitrogen generators, there are different number of models. Thus, whatever is your nitrogen capacity or purity, there is one generator fit for your application.

Generator or System Manufacturing Based on Project: Simtar nitrogen generators/generator systems can be manufactured specially designed based on uniqe projects on your requirements. Nitrogen gas with lower air consumption, lower dew point, use outdoor, kontainer type, fully automatic complete system, ex-proof, corrosion-proof, time set running systems, etc.

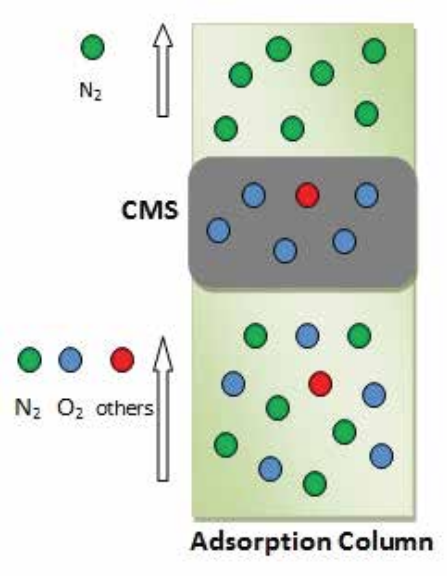
Let us know your expectations from nitrogen generator system, we design and manufacture it for you...

PSA Working Principle?



Dried and filtered pressurized air enters nitrogen generator system. In this system working according to PSA (Pressure Swing Adsorption) principle, there are two adsorption columns. In these olumns, there are high durable and quality CMS granules (carbon molecular sieve)supported with special bedding system. Pressurized air entering the lower inlet of the column, moves towards upside of the column.

The mesh size on CMS garanules, is larger than oxygen molecule size (O2 : 0.28 nm) and smaller than nitrogen molecule size (N2 : 0.32 nm). Accordingly, oxygen molecules, moving alongwith adsorption column, are adsorped inside the CMS mesh, and larger nitrogen molecules moves are allowed to leave the system.



While adsorption column filled with CMS saturated with oxygen, starts releasing pressure and oxygen (regeneration), adsorption column filled with CMS released pressure and oxygen, starts seperating oxygen and nitrogen molecules from each other (adsorption) and generates nitrogen.

Adsorption columns working in this way, adsorption for a while and then regeneration for the same while, provides continual nitrogen generation.

Adsorption and regeneration processes duration changing according to application, is automatically controlled by solenoid valves with long lifetime cycle.

PSA nitrogen generators can generate nitrogen gas 7/24 without any break or interruption running tandem mentioned above.

Simtar Nitrogen Generators

Simtar nitrogen generators, are developed following long term R&D studies and trials. As a result of many different design applications, system efficiency, quality and working time are improved. Simtar targets all kind of nitrogen users, with its different models designed as special to each application.

Adsorption Columns With Special Bedding

In Simtar nitrogen generators, adsorption columns are designed with worldwide accepted spring type bedding system. This bedding design helps equalizing pressurized air distribution at all sides in the columns, preventing dust formation, minimizing collosion and crashing and avoid any possible damages to CMS.

Minimum Number of Valve System Use

In Simtar nitrogen generators, valve system number used (5 pieces of valve system) is lower compared to competitives (8 to 10 pieces of valve systems). So valve maintenance cost is lower than others.

CMS with High Quality and Efficiency

In every model of Simtar nitrogen generators, Germany or Japan originated CMS with high quality and efficiency are used.
CMS with high bulk density, high crasing strength, low air/nitrogen ratio andbroad purity range help manufacturing nitrogen generators consuming less air, highly efficient and having long lifetime.

CMS Granules

Simtar Nitrogen Generator Control System

Automatic control with electronic card or PLC
(Changes according to model&demand)
Manuel or touch screen control unit
(Changes according to demand)
Nitrogen purity analyser
Digital air flow rate control (Optional)
Nitrogen dew point analyser (Optional)

Dew Point Analayser

Vortex Flowmeter

Purity Analayser

Touch Screen Control Unit Standard and Optional Properties :	
Standard Properties	**Optional Properties**
Nitrogen generator working time on screen	Purity value on screen
Date, time, manufacturer on screen	Dew point value on screen
Filter change time warning	Inlet air flow rate on screen
Inlet air pressure on screen	Outlet nitrogen flow rate on screen
Nitrogen outlet on screen	Inlet air temperature on screen
Error report composing	Outlet nitrogen temperature on screen
Audible and visual error warning	Audible and visual error warning with detailed explanation
	Data collection (SD card, RS232, LAN)

In Simtar nitrogen generators, CMS filling, is performed with the help of pressurized air to keep the performance stable and high all the time.

The classical method CMS filling systems

Figure a.

Before contacting pressurized air

Figure b.

After contacting pressurized air

The systems on which CMS filling is performed with classical methods have such a view in Figure a.

In this filling method that contains large void volume, in order to reach desired nitrogen purity or capacity, much more CMS, adsorption columns with larger volume and as a result, much more pressurized air should be used.

A while after the system contact pressurized air, CMS configuration is finalized inside the system and looks like in Figure b. As it can be seen in Figure b., a space is composed on top of the system after CMS settlement is finished.

Disadvantages caused from this space volume;

- CMS begins to strike with column wall and each other. Accordingly, they get craked in time.
- These craks cause CMS adsorption performance reduction. As a result of this, the purity and/or the capacity of nitrogen gas generated start to decrease.
- These craks also result in enlarging of space volume on top of CMS bedding, and reduction in CMS adsorption perfomance.
- Dust (CMS in powder form) amount increase more with crashing/collision and craking.
- When all CMS granules are in powder form, there is no adsorption.

The CMS filling system with the help of pressurized air

Figure a.

Before contacting pressurized air

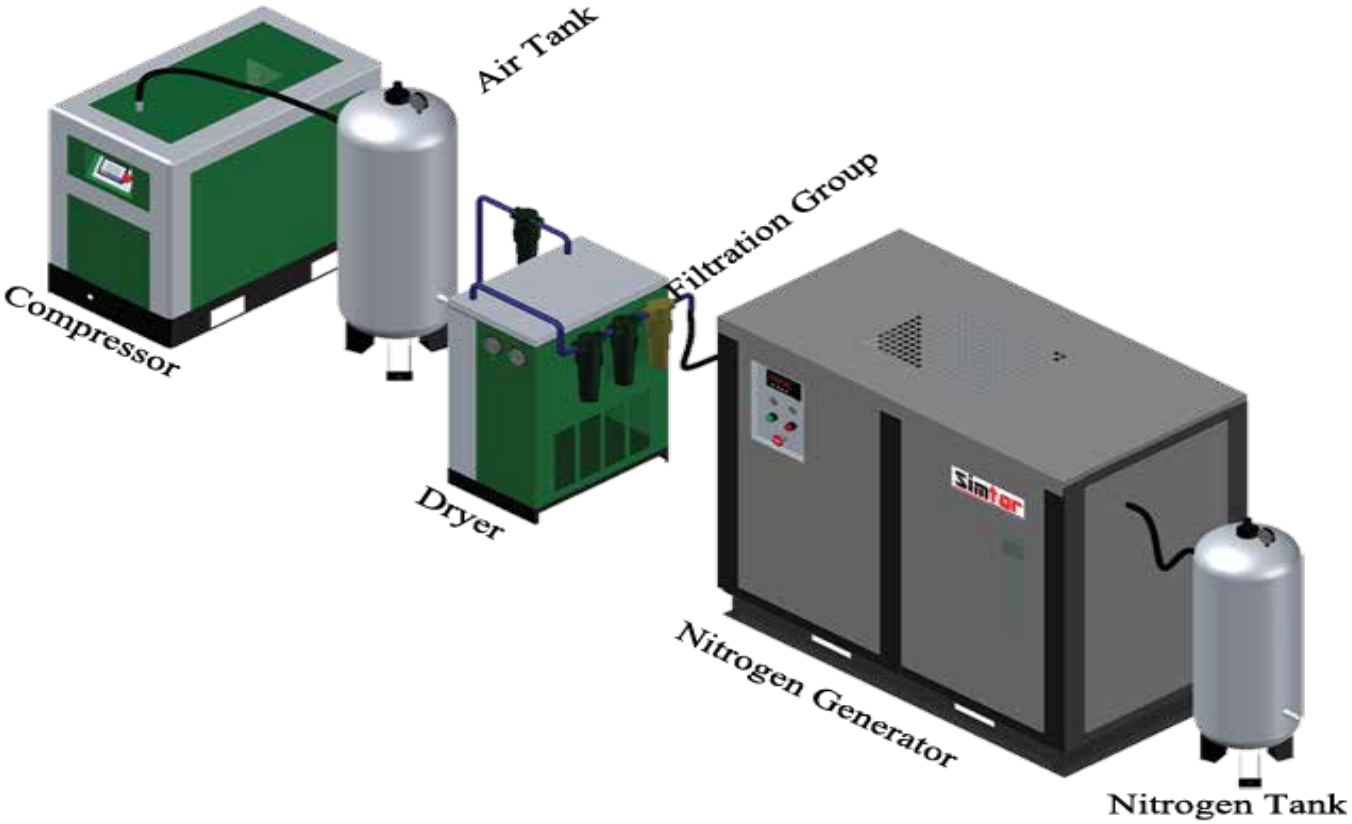
Figure b.

After contacting pressurized air

CMS filling method performed with pressurized air offers advatages mentioned below;

- In order to achieve desired nitrogen purity and capacity, less amount of CMS and smaller volume of adsorption columns are required compared to classical methods.
- Since there is no space volume like in classical methods, crashing to column wall and craking are much more minimized.
- Thus, CMS adsorption performance is always stable and high.
- The nitrogen gas purity and capacity is stable in the system, because CMS adsorption perfomance does not decrease in time.
- CMS performs adsorption much longer with high perfomance.
- Dust formation is much less because of no crashing and carking.

Classical PSA Nitrogen Generator System Installation

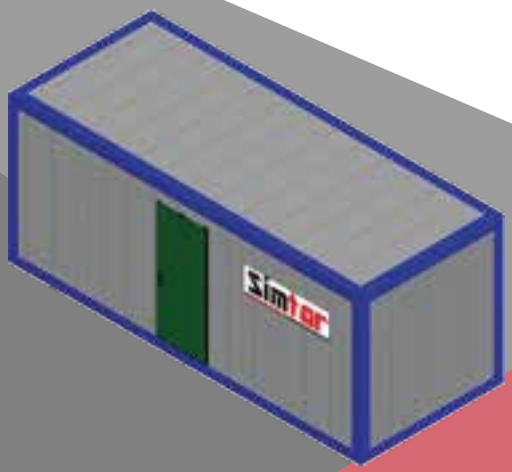


PSA Nitrogen Generator Different Type of Installations

Simtar offers different type of nitrogen generator system installations based on project.

- Complete nitrogen generator systems
- Exproof nitrogen generator systems
- Corrosion proof nitrogen generator systems
- Nitrogen generator systems with very low dew point (up to -80°C)
- Skid mounted nitrogen generator systems
- Container type nitrogen generator systems

Nitrogen Generator



Container Type Nitrogen Generator System

Skid Mounted Nitrogen Generator System

SNE Model Nitrogen Generator Performance Table

SNE model nitrogen generators are designed for 7/24 continuous applications.
All equipments used in generator are good quality products in their own field.
Includes minimum two adsorption columns.
Please contact for higher capacity nitrogen gas needs.

Model	%95	%97	%99	%99.9	%99.99	%99.999
	m^3/h					
SNE-10	9,1	7,6	5,3	2,9	1,8	1,1
SNE-20	20,0	16,5	11,8	6,5	4,0	2,5
SNE-30	26,6	21,9	15,7	8,6	5,3	3,3
SNE-40	35,3	29,2	20,9	11,5	7,0	4,4
SNE-50	44,1	36,4	26,0	14,2	8,9	5,3
SNE-60	53,1	43,8	31,3	17,0	10,7	6,4
SNE-70	65,6	54,3	38,7	21	13,1	8,1
SNE-80	87,4	72,0	51,6	28,4	17,4	10,2
SNE-90	109,5	90,3	64,6	35,3	21,7	12,9
SNE-100	130,4	107,6	77,0	42,4	25,8	15,9
SNE-110	149,7	124,4	89,0	49,0	30,0	18,7
SNE-120	172,7	142,2	101,9	56,1	34,1	21,4
SNE-130	211,8	175,1	125,4	68,4	42,7	25,4
SNE-140	270,0	223,8	160,1	87,2	54,7	32,3
SNE-150	323,1	266,4	190,5	103,8	65,1	38,8
SNE-160	373,6	308,0	220,4	120,1	75,3	44,7
SNE-170	424,0	350,0	250,0	136,0	85,0	51,0
SNE-180	508,0	420,0	300,0	163,0	102,0	61,0
SNE-190	593,0	490,0	350,0	191,0	119,0	70,0
SNE-200	678,0	560,0	400,0	218,0	136,0	82,0

For higher capacities, please contact us.

Reference standards : 20°C ve 1 atm.

We keep the right of changing parameters given above because of ongoing R&D studies.

Model	%95	%97	%99	%99.9	%99.99	%99.999
SNE-10	5,3	4,4	3,1	1,7	1,0	0,6
SNE-20	11,7	9,7	6,9	3,8	2,3	1,4
SNE-30	15,6	12,8	9,2	5,0	3,1	1,9
SNE-40	20,7	17,2	12,3	6,7	4,1	2,6
SNE-50	25,9	21,4	15,3	8,3	5,2	3,1
SNE-60	31,2	25,7	18,4	10,0	6,3	3,8
SNE-70	38,6	31,9	22,7	12,3	7,7	4,7
SNE-80	51,4	42,3	30,3	16,7	10,2	6,0
SNE-90	64,4	53,1	38,0	20,7	12,7	7,6
SNE-100	76,7	63,3	45,3	24,9	15,1	9,3
SNE-110	88,1	73,2	52,4	28,8	17,6	11,0
SNE-120	101,6	83,6	59,9	33,0	20,0	12,6
SNE-130	124,6	103,0	73,8	40,2	25,1	14,9
SNE-140	158,9	131,7	94,2	51,3	32,2	19,0
SNE-150	190,1	156,8	112,1	61,1	38,3	22,8
SNE-160	219,9	181,2	129,7	70,7	44,3	26,3
SNE-170	249,0	206,0	147,0	80,0	50,0	30,0
SNE-180	299,0	247,0	176,0	96,0	60,0	36,0
SNE-190	349,0	288,0	206,0	112,0	70,0	41,0
SNE-200	399,0	329,0	235,0	128,0	80,0	48,0

cfm

For higher capacities, please contact us.

Inlet Air Technical Data

Required Air Quality:	ISO8573-1:2001 1.4.1
Max. Particulate:	0.01 micron
Max. Water Vapor:	< +3°C dew point
Max. Oil:	0.003 mg/m^3
Air Pressure:	6 -10 bar

Ambient Conditions

Ambient Temperature:	0°C-50°C
Ambient Humidity:	%40-%90 RH

Nitrogen Generator General Data

Voltage Information:	110/220V 50/60 Hz
Elektrical Information:	<0.2 W
Sound Level:	75 dB(A)

Newly designed Simtar SNP Model Nitrogen generators offer cost-effective, long lifetime and simple solutions for your applications with low flow rate.

- Long term use without interruption with only one valve.
- Compared to comptetitives, lightweight, practical
- Cost-effective.
- Only 20 watt electric consumption.
- With aluminium adsorption tank system, longer use without any corrosion risk. No need for periodic pressure checks compared to steel tanks.
- CMS bedding with longer lifetime and problem-free production because of spring system.
- Silent use <45 dba (1m)
- Simple use with one button. Turn generator “on” position and get your nitrogen gas on right flowrate and purity demanded.
- Long hours run without stop.
- Maximum CMS powder holding with 5 micron inner sieve.
- Internal 0.1 micron outlet filter
- Internal activated carbon filter & 0.01 micron filter
- 2 years guarentee.
- Optional purity analyser with continous measurement
- Opsiyonel hand-held purity analyser (saflık ≤ %99.5). Used to measure the purity of produced nitrogen gas.
- Fits for any application with low flow rate.
- OEM orders are welcome.

SNP Model Simtar Nitrogen Generator Performance Table

Model		%95	%99	%99.5	%99.9	%99.99	%99.999
SNP-100	m^3/h	0,8	0,3	0,18	-	-	-
SNP-200		1,7	0,8	0,5	0,25	-	-
SNP-300		3,2	1,5	1,2	0,7	0,4	0,2
SNP-400		7,0	3,2	2,5	1,4	0,85	0,5
SNP-500		11,0	5,2	4	2,2	1,35	0,8

Model		%95	%99	%99.5	%99.9	%99.99	%99.999
SNP-100	cfm	0,4	0,15	0,1	-	-	-
SNP-200		0,95	0,4	0,3	0,15	-	-
SNP-300		1,8	0,8	0,7	0,4	0,2	-
SNP-400		3,9	1,8	1,4	0,8	0,5	0,3
SNP-500		6,1	2,9	2,2	1,2	0,75	0,4

Notes :
Reference Standards : 20oC ve 1 atm.
Air pressure : 7.5 barg. Minimum required : 6.5 barg. Maximum 9 barg.
We keep the right of changing parameters given above because of ongoing R&D studies.

Inlet Air Technical Data

Required Air Quality:	ISO8573-1:2001 1.4.1
Max. Particulate:	0.01 Micron
Max. Water Vapor:	< +3°C dew point
Max. Oil:	0.003 mg/m^3
Air Pressure:	6.5 - 9 bar

Ambient Conditions

Ambient Temperature:	4 - 50 °C
Ambient Humidity:	%40 - %90 RH

Nitrogen Generator General Data

Voltage Information:	220V , 50 Hz
Electrical Information:	20 Watt
Sound Level:	45 dB(A)

PSA Nitrogen Generators

CE

REGISTERED COMPANY ISO 9001: 2008

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