



Nova Gas Techniques a futuristic company
offers a complete range of Nitrogen
Gas generation and Purification for Tyre Inflating

Nova Gas Techniques Private Limited

Manufacturer of World's most advanced Nitrogen Tyre Inflators

Welcome to Nova Gas Techniques

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Welcome to Nova

NOVA manufactures exclusive products for the automotive segment such as PSA Nitrogen Tyre Inflators, Membrane Nitrogen Tyre Inflators, and Automatic Digital Tyre Inflators which are used in fuel stations, tyre shops and auto garages. We customize our products suitable to OEM's requirements and have special range of Nitrogen Tyre Inflators for off road vehicles.

We have the privilege of being associated with all the major Oil companies.

Our commitment to innovation and development provide a cutting edge technology that benefits our customers.





About Us.

Overview

Nova Gas Techniques offer a complete range of Nitrogen Tyre Inflators, Digital Air Tyre Inflators and allied products for automotive segments. The company has full in-house capabilities to produce all the equipments which includes latest state of art fabrication facilities, CNC machining centres, test facilities, etc. The company caters to many public and private sector industries in India also exporting to Middle East, Europe and Africa.

The Company also manufactures and supplies custom made products to many original equipment manufacturers.

Reliability & Design

Nova believes in Quality and Reliability and the same is vigorously persuaded from the design stage through manufacturing till customer service by the entire organization. Nova Gas techniques is equipped with sophisticated testing facilities which include (but not limited to) nitrogen purity analyser, dewpoint measurement, filtration particle measurement, flow and velocity measurement etc.

Many corporate companies have approved Nova as a preferred vendor.

The core strength of Nova relies on technology development. Innovative and Qualified design engineers strive to invent and upgrade the technical know-how in the field of Nitrogen generation. The feedbacks from customers are heard with great care to enhance continuous product improvement.

The technology development department has sophisticated tools like 3D modeling software, analysis software, test rigs etc.

What is Nitrogen?

Nitrogen is a naturally occurring element that is essential for growth and reproduction in both plants and animals. It is found in amino acids that make up proteins, in nucleic acids, that comprise the hereditary material and life's blueprint for all cells, and in many other organic and inorganic compounds. In addition, nitrogen comprises about 80% of the Earth's atmosphere.

The Forms of Nitrogen

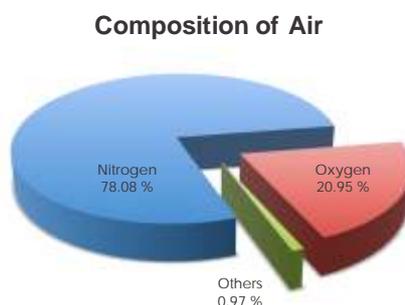
To appreciate the intricacies of nitrogen loading to coastal waters, some understanding of how nitrogen reacts chemically in the environment may be useful. Nitrogen is an element that can combine with itself or with other elements to make different compounds. For instance nitrogen gas, N_2 , is a compound made when two nitrogen atoms form a chemical bond. It makes up about 80% of the atmosphere, while oxygen gas, O_2 , makes up a little less than 20% of the atmosphere. So nitrogen gas is very common and plentiful. However, only a specialized group of bacteria, and industrial fertilizer manufacture, can "fix" this largely inert compound into biologically useful nitrogen compounds. Fertilizer production now exceeds natural nitrogen fixation in making N_2 available to the biosphere.

Nitrogen in Living Things

Nitrogen is a component of amino acids and urea. Amino acids are the building blocks of all proteins. Proteins comprise not only structural components such as muscle, tissue and organs, but also enzymes and hormones essential for the functioning of all living things. Urea is a byproduct of protein digestion. We use the term "organic nitrogen" to describe a nitrogen compound that had its origin in living material. The nitrogen in protein and urea is organic nitrogen. Organic nitrogen can enter septic systems as bodily wastes, discarded food material, or as components of cleaning agents.

Why Nitrogen?

- ✓ Consistent tyre pressure
- ✓ Reduced wheel corrosion
- ✓ Prevent rubber deterioration due to oxidation
- ✓ Tyre runs cooler
- ✓ Increase tread life
- ✓ Helps prevent uneven wear

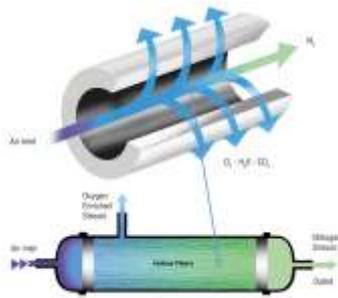


Gas	% of Earth atmosphere at sea level
Nitrogen	78.08
Oxygen	20.95
Argon	0.93
Carbon dioxide	0.03
Neon	0.0018
Helium	0.0005
Krypton	0.0001
Xenon	0.00001

Types of N2 production

Pressure Swing Adsorption (PSA)

The pre treated air is passed through the CMS vessel where the O2 is adsorbed preferentially in the CMS Pores so that Nitrogen remains in the gas stream

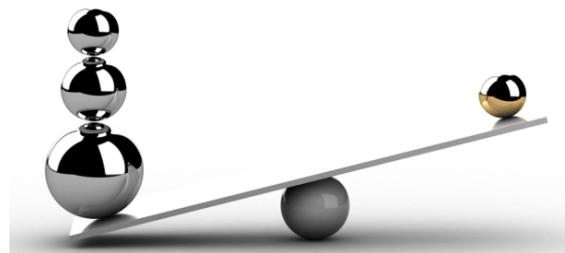


Membrane separation

Hollow fiber membrane separates O2, CO2 and H2O from the compressed air and supply N2 at the outlet

Comparison between Air & Nitrogen

NITROGEN	COMPRESSED AIR
Comparatively lighter	Comparatively heavier
Diffusivity is less	Diffusivity is more
Heat generated is comparatively less	Heat generated due to collision of air molecules
Negligible chances of impurities & moisture content	Moisture content and impurities is more
It itself a gas	It is a mixture of gases



Advantages of Nitrogen

Nitrogen	Compressed Air
Dry and Clean	Oily and Wet
Remains stable at any temperature	Highly reactive to temperatures and pressure changes
Eliminates condensation which prevents rim and valve corrosion (rust)	Supports moisture storage inside the wheel which leads to corrosion (rust)
Slows gas migration through rubber	Faster "through the rubber" migration,



Effect of under inflated tyre

% Under Inflation	% wear Increase	% Fuel use increase
10	5	2
20	16	4
30	33	6
40	57	8
50	78	10



Nitrogen Tyre Inflators

How we generate Nitrogen

Nitrogen can be easily generated by a simple process called Pressure Swing Adsorption (PSA). A typical PSA system has 2nos of adsorber vessels, surge tank, storage tank, flow control valves and a Controller. The compressed air is pre treated for removal of moisture, oil and particle and passed through the adsorber vessel filled with Carbon Molecular Sieve (CMS) where the oxygen is adsorbed preferentially in the CMS pores so that nitrogen molecules discharges from the outlet valve and stored in the receiver. Before saturation of the adsorber vessel the air stream is switched to the second adsorber, the CMS bed of first adsorber is being regenerated by a portion of Nitrogen.

Salient Features

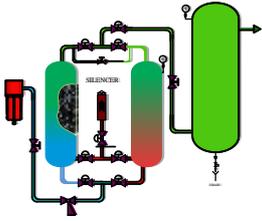
- Inbuilt Air dryer and High efficiency micro filter
- Inbuilt Nitrogen storage tank
- Pressure based vacuum ensures only Nitrogen in the tyres
- Supplies uncontaminated pure Nitrogen to the tyres
- Tyre counter and hour meter
- Mimic display for complete operation
- Bright individual LED display for Tyre Pressure & Set pressure
- One time setting ensures any no of repeatability
- Automatic Nitrogen generation on demand
- Highly reliable solenoid valves and sensor

Technical Specification

Parameter / Model	UoM	NITROPAQ 10	NITROPAQ 20	NITROPAQ 30	Other Models
Nitrogen purity	%	95.5 to 99	95.5 to 99	95.5 to 99	Nitropaq 60 for OTR vehicles *Contact factory for details
Outlet N2 Pressure	bar g	6 to 8	8 to 10	10 to 12	
Pre filter	Micron	5	5	5	
Air dryer		Integrated	Integrated	Integrated	
Inlet Air pressure	bar g	8 to 10	10 to 12	12 to 15	
Inbuilt Nitrogen storage tank	lit	60	90	130	
Power supply	VAC	100 to 230 /1ph/ 50/60Hz ± 10V	100 to 230 /1ph/ 50/60Hz ± 10V	230 /1ph/ 50/60Hz ± 10V	
Nett Weight	Kg	86	115	285	
Overall Dimension (WxDxH)	mm	620 X 375 X 1290	675 X 470 X 1390	840 X 650 X 1600	
Suitable for		Motor bike, Car, SUV, LCV (intermittent)	Motor bike, Car, SUV, LCV	Motor bike, Car, LCV, Buses and Trucks	



Pressure Swing Adsorption (PSA)



The compressed air is pre treated for removal of moisture, oil and particle and passed through the adsorber vessel filled with Carbon Molecular Sieves (CMS) where the oxygen is adsorbed preferentially in the CMS pores so that nitrogen molecules discharge from the outlet valve and stored in the receiver for nitrogen inflation.

Unique Features :

Nitrogen Generator



Nitrogen Purity 95.5 % to 99 %
Automatic Nitrogen generation on demand
Fully non corrosive aluminium extruded towers & Valve manifold provide uncontaminated nitrogen gas

Modular construction nitrogen generator
Inbuilt nitrogen Storage Tank



Inbuilt air dryer & high efficiency borosilicate filter enhance the life of CMS
Highly efficient CMS for consistent purity & long life.

Digital Tyre Inflator

- Micro processor board for highest reliability
- Ceramic pressure transmitter for high reliability & accuracy
- Pressure based automatic vacuuming ensure no air in the Tyre during first time nitrogen inflation
- Inbuilt "Tyre counter" , "Hour meter" helps better monitoring
- User friendly keypad with highly reliable tactile keys
- Pressure units selectable for "psi" and "bar"
- Separate key for "Flat tyre" inflation
- PU braided hose with hose clip for inflation
- Independent pressure gauges for N2 & Air



- Independent LED display for "Tyre pressure" & "Set pressure"
- Mimic Display for "N2 Generation", "Inflation", "Deflation", "Vacuuming", "Complete" "psi" & "bar"
- Independent 25mm LCD display with "bright" "Amber Color" Back light for "Tyre pressure" & "Set Pressure"
- Status annunciation on the LCD panel for "Inflation", "Deflation", "Vacuuming", "Complete" "psi" & "bar"



Advantages of Nitrogen

Consistent tyre pressure :



Nitrogen migrates through the tyre walls 3 to 4 times slower than normal air

More Mileage

Maintaining right tyre pressure reduces the rolling resistance of the tyre and improves fuel economy



More tread life and overall tyre life :



Tread wear is reduced and tread life is increased in nitrogen filled tyres

Reduce corrosion :

Nitrogen is 100% dry and a clean inert gas which prevent damages to the inner linings and rims due to oxidation

Tyre runs cooler :

Nitrogen does not get over heated at high speed run on the highways

Effects of Compressed Air



Normal compressed air contains oxygen in 21% volume which has smaller molecular size than Nitrogen molecule hence oxygen permeates through the tyre walls causing

pressure loss in a short time. During this process oxygen reacts with rubber and results in ageing and weakening of the tyre.



Moisture present in compressed air expands and contracts which leads to uneven tyre pressure results in high wear and tear & oxidation on the lining which damages the tyres.



Installations at :



NITROPAQ 30 & 60



Salient features

- ✓ Inbuilt Air dryer and High efficiency micro filter
- ✓ 3 stage pre treatment process ensures moisture free, dust free & oil free N2 gas
- ✓ High Pressure (190psi) and high volume N2 gas ensures continuous and fast filling of truck tyres
- ✓ Code of design: ASME Sec VIII Div 1
- ✓ Inbuilt Nitrogen storage tank
- ✓ Pressure based vacuum ensures only N2 in the tyres
- ✓ Supplies uncontaminated pure N2 to the tyres
- ✓ Tyre counter and hour meter
- ✓ Mimic display for complete operation
- ✓ Bright individual LED display for Tyre Pressure & Set pressure
- ✓ One time setting ensures any no of repeatability
- ✓ Automatic Nitrogen generation on demand through highly reliable pressure switch
- ✓ Highly reliable valves and sensor
- ✓ Inflation through braided PU hose
- ✓ Specially designed strainer collects dust particle comes from the tyres
- ✓ Highly pressure (290psi) inflation valves
- ✓ High pressure inlet hose and 20meters PU braided hose with Q/R connectors for convenient operation

NITROPAQ

Specification

	bar g	PSI
Inlet Air Pressure	: 12 to 15	174 to 217
Output N2 Pressure	: 10 to 12	145 to 174
Purity	: 95.5 % and above	
Tank Capacity	: 130 Liters	
Over all Dimension	: 1580 x 845 x 650 mm	
Usages	: HCV (Trucks)	



Internals – NP 30



Control Panel



NITROPAQ 30 & 60 Accessories



Digital Tyre Inflators



Salient Features

- ✓ Nitrogen Purity 95.5% to 99%
- ✓ Highly reliable memberane
- ✓ 5 micron & 1 micron coalescing filters
- ✓ Inbuilt nitrogen Storage Tank
- ✓ Pressure based automatic vacuumzing ensures no air in... ..the Tyre during first time nitrogen fill
- ✓ Inbuilt "Tyre counter" helps better monitoring
- ✓ Silent operation
- ✓ Reliable Micro processor controller
- ✓ Pressure units Selectable for "psi" and "bar"
- ✓ Separate key for "Flat tyre" inflation

Technical Specification

Description	UOM	Parameter
Model		NI 020 NI 020 LED
Operation Pressure	Psi/Bar	0-10 bar g/ 0-145 psi g
Operating Temperature	Deg C	-10 to 60
End Connection	BSP	1/4"
Pre Filter (Optional)	Micron	5 micron Borosilicate Glass Fibre
Input Voltage	VAC	100 to 230,1ph,50/60 hz±10 V
Power	W	8 W
Control System		Micro processor based
Number of Displays	Nos	
Set Pressure		25mm,7SegmentLCD with Bright
Tyre Pressure		25mm,7SegmentLCD with Bright
Set Pressure Accuracy	%	<0.5 % of Full Scale
Pressure Unit		psi / bar Selectable
Keyboard		5 Keys tactile
Measuring Resolution	psi	0.1
Display Resolution	psi	1
Status Indication		
Inflation		Through LCD Mimic LED
Deflation		Through LCD Mimic LED
Pressure Unit psi / bar		Through LCD Mimic LED
Complete		Through LCD Mimic LED
Audio Signal		
Key Pad Tone		Beep
End of Inflation		Long Beep
Pressure Transmitter		
Measuring Range	bar g	0 - 16
Burst Pressure	bar g	25
Protection		
Ingress Protection		IP 65
Inlet / Outlet hose		PU / Nylon Braided hose
Inflating Valve		Push Type Normally Closed
Cabinet MOC		Powder coated CRC Sheet
Dimension (WxDxH)	mm	225x110x255



Tyre Inflating Guns



Accurate Reading

Handheld device

Easy Inflation and Deflation

Pressure unit selectable
psi/bar/kg/cm²/Kpa

Range

0 to 255psi

0 to 18bar

0 to 15kg/cm²

0 to 1800Kpa²



General Applications of Nitrogen Gas

Food storage & Packaging

Pharmaceutical Industries

Heat treatment & annealing

Electronics & semiconductor mfg

Chemical Industries

Glass Industry

Plastic Injection molding

Tyre Inflation

and many more...



Customer Care

Nova believes in retaining customers by professional relationship & providing excellent after market support.

Customer care team practices 8D & FMEA process that use a combination of effective techniques and tools assisted by a cross functional team.



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