

Gas Generators



Athena
Technology

One Stop Laboratory Solution...



JAS-ANZ



Nitrogen Generator & Zero Air Gas Generator for GC& TOC



Salient Features:

- Deliver constant pressure & flow
- Easy Maintenance and space saving
- Improves instrument performance
- Fully regenerative, durability with PSA (pressure swing absorption) technology
- Fully Automatic Programmable System
- Effortless and easy operation

Technical Specification :

| SPECIFICATIONS | Nitrogen Gas Specification of ATN-01 & ATN-02 | Zero Air Specification of ATZ-01 & ATZ-02 |
|-------------------------------|---------------------------------------------------------|-------------------------------------------|
| Flow Rate Capacity of ATNA-01 | 500ml/min | 4000ml/min |
| Flow Rate Capacity of ATNA-02 | 200ml/min | 1500ml/min |
| ATN-02 (M) | 500ml/min to 1000 LPM | 5-1000 lpm |
| Pressure | 5 kg/cm ² (bar) / 7 kg/cm ² (bar) | |
| Moisture | < 2 ppm | |
| Oxygen | <1 ppm | — |
| Total Hydro Carbon (THC) | < 0.3 ppm | |
| CO & CO ₂ | < 2 ppm | |
| Purity | UHP / GC grade | |
| Micron particulates | < 0.01μ | |
| Method of Purification | Pressure Swing Adsorption (PSA) & Depressurizations | |
| Start up time | 2 hr / programmable by timer | 10 min |
| Electrical requirements | 230 V AC, 50 Hz, 1 ph, 5 Amp | |

Applications:

- GC-FID, FPD, NPD, TCD, AED
- GC-MS, LC-MS-MS, ICP / NMR
- FTIR/IR, ELSD detector
- Purging, Ampule Filling
- Analytical Grade
- Turbo Evaporator
- TOC Analyzer
- TOC Online Analyzer

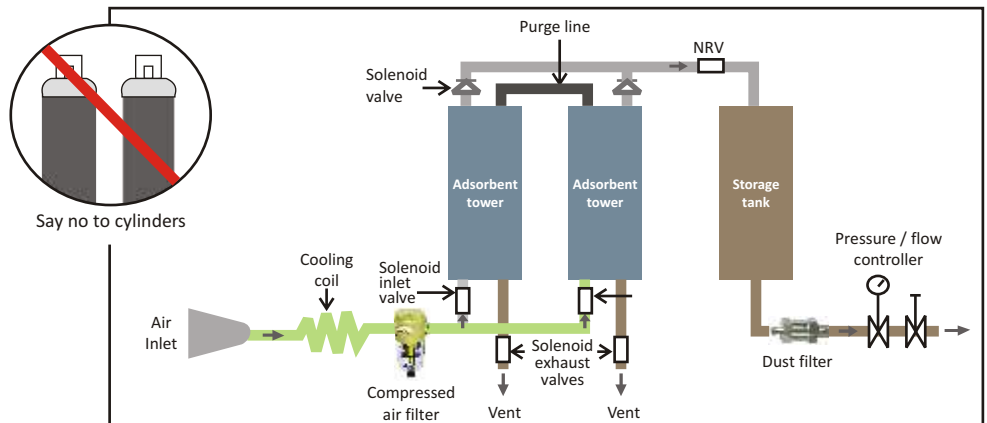
High Capacity Nitrogen Gas Generator



Salient Features:

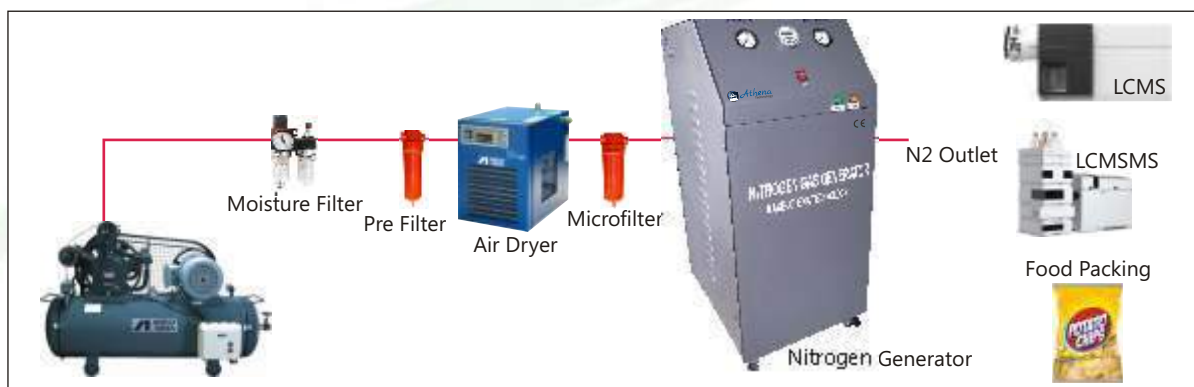
- Deliver constant pressure & flow
- Easy Maintenance and space saving
- Improves instrument performance
- Fully regenerative, durability with PSA (pressure swing absorption) technology
- Fully Automatic Programmable System
- Effortless and easy operation
- CE & ISO 9001:2008 Certified

Schematic Diagram of Gas Generator



Nitrogen Generator for LC-MS / LC-MS-MS & Turbo Vap Evaporator

- Nitrogen Generator produces a continuous flow of high purity Nitrogen at selected pressure.
- The modular pressure swing adsorption (PSA) unit operates with alternating pressure increase and decrease.
- Untreated air flows under pressure through the reaction towers containing carbon molecular sieves adsorber. Moisture, CO, CO₂, THC, O₂ and other unwanted components in the air are adsorbed, leaving Nitrogen Gas of required purity.
- During the desorption cycle, the trapped substances adsorbed are released again at low pressure and the adsorber is ready for next cycle.
- Flow range available from 10 LPM to 30 LPM and above.



Technical Specification for N2 Generator for LC-MS & LC-MSMS :

| Specifications | For LC-MS (TNG-02L) | For LC-MS-MS (TNG-02LS) (for Sciex model) |
|------------------------------------|---------------------------------------------|-------------------------------------------|
| Flow rate Capacity of N2 Generator | 6 to 30 LPM (as per selection of model) | 12 LPM (filtered zero air) |
| | | 8 LPM (purified dry air) |
| | | 4 LPM (pure nitrogen) |
| Pressure | 5 kg/cm ² or 100 psig or 60 psig | |
| Purity | 99.99% | > 99.995% |
| Moisture | 5 ppm | |
| Total Hydro Carbon | < 0.5 ppm | |
| CO & CO2 | < 2 ppm | |
| Micro Particulates | < 0.01μ | |
| Method of purification | PSA - Pressure Swing Adsorption | |
| Room temperature | 5°C | - 45°C |
| Startup time | 1 hrs / programmable timer | |
| Electrical requirements | 230 V AC, 50 Hz, 1 Ph, 2 Amp | |

Technical Specification for N2 Generator for Turbo Evaporator & Food Packing

| Specifications | For Turbo Evaporator (TNG-02T) | For Food Packing & Purging |
|-------------------------------------------|---------------------------------------------|----------------------------|
| Flow rate Capacity of N2 Generator | 50 to 700 LPM (as per selection of model) | 100 to 5000 LPM |
| Pressure | 5 kg/cm ² or 100 psig or 60 psig | |
| Purity | >99% or 99.99% | |
| Moisture | 100-200 ppm | |
| Total Hydro Carbon | < 10 ppm | |
| CO & CO2 | < 10 ppm | |
| Micro Particulates | < 0.01μ | |
| Method of purification | PSA - Pressure Swing Adsorption | |
| Room temperature | 5°C - 45°C | |
| Startup time | 1 hrs / programmable timer | |
| Electrical requirements | 230 V AC, 50 Hz, 1 Ph, 2 Amp | |
| Net Weight (without compressor) (approx.) | 100 kg - 200 kg (as per selection of model) | |

ZERO AIR GENERATOR for GC, TOC & Online TOC

Technical Specification

| Principle | ATZ-01 (for 2-5 GC's) (for Imported GC) | ATZ-02 (for TOC Analyzer) | ATZ-03 (for Online Specifications TOC Analyzer) |
|-------------------------|-----------------------------------------|-------------------------------------------------------|-------------------------------------------------|
| Moisture | < 2 ppm | < 0.5 ppm | <1 ppm |
| Total Hydro Carbon | < 0.5 ppm | < 0.2 ppm | < 0.5 ppm |
| CO & CO2 | < 2 ppm | < 0.2 ppm | <1 ppm |
| Purity | GC/UHP grade | TOC/XL grade Online | TOC Grade |
| Micro Particulates | | < 0.01μ | |
| Capacity of ZAG | 4 LPM at 5kg/cm ² | 500 ml/min at 5kg/cm ² | 1 LPM at 5kg/cm ² |
| Method of purification | Pressure Swing Adsorption (PSA) | Pressure Swing Adsorption (PSA) & HC Cracking furnace | Pressure Swing Adsorption (PSA) |
| Room temperature | 5 °C - 25 °C | | |
| Start up time | 5 minutes | 30 minutes | 5 minutes |
| Electrical requirements | 230 V / 110V AC, 60 /50 Hz, 1 ph | | |
| for ZAG | 4 Amp | 5 Amp | 4 Amp |

- Zero Air Generator for TOC Analyzer produces a continuous flow of high purity Zero Air at selected pressure.
- System has built in moisture separator with Air Filter & Desiccant Air Dryer
- The modular pressure swing adsorption (PSA) unit operates with alternating pressure increase and decrease.
- Untreated Air Flows under pressure through the reaction towers containing molecular sieve adsorber .
- Moisture, CO, CO2, THC and other unwanted components in the air are adsorbed, leaving Zero Air Gas of required purity.
- The Zero Air Generators are suitable for use in laboratories for Online TOC Analyzer.

Salient Features:

- Deliver constant pressure & flow
- Fully Automatic Programmable System
- Easy Maintenance and space saving
- Effortless and easy operation
- Improves instrument performance
- Fully regenerative, durability with PSA technology

Hydrogen Gas Generator



- Hydrogen is produced in the ATH Series Hydrogen Generators by the most advanced electrolytic membrane technology.
- The application of voltage across the electrolyte results in hydrolysis, breaking down the water molecule into hydrogen and oxygen gas, which are separated by the gas permeable membrane.
- Once separated, the hydrogen gas goes through a series of purification and moisture removal systems to achieve the desired level of purity while the oxygen gas is being discharged into the atmosphere.
- Electrolytic membrane technology has its advantages over alternative hydrogen generating techniques as it is clean, requires less maintenance and there is no need to store chemicals to maintain operation.
- Only pure double distilled water (initially some KOH), is required to provide trouble free long term operation.
- Membrane separation is also less time consuming as only water is needed for routine maintenance.

| | ATH-300 | ATH-500 | ATH-1000 |
|-----------------------|-----------------------------------------------|------------|-------------|
| Max Hydrogen Flowrate | 300 ml/min | 500 ml/min | 1000 ml/min |
| Delivery Pressure | 0-60 psig (0-4 kg/cm ² or 0-7 bar) | | |
| Purity | >99.999% or 99.9999% | | |
| Power Consumption | 150 W | 180 W | 220 W |
| Power | 198-242V (AC); 50Hz, 1 Phase | | |
| Min/max Temperature | 5-40°C | | |
| Max. Ambient Humidity | <85% RH | | |
| Suitable Environment | non-corrosive and dust-free | | |
| Dimensions | 420 x 210 x 350mm (LxWxH) | | |
| Weight | 12 kg (approx) & 15 Kgs | | |
| Fluid Tank Capacity | 1.5 L, 2.5 L, & 3.5 L | | |
| Fluid Consumption | Weekly or when level falls below 0.6 | | |

Note: Higher capacity model also available like 2 LPM & 3 LPM

Applications:

| Instruments | Gas Requirement | Purity | Flow Rate | Generator Recommendation |
|----------------------------------------|----------------------------|-------------------------|------------------|--------------------------|
| Products for Gas Chromatography | | | | |
| GC-FID | Hydrogen for fuel gas | UHP Hydrocarbon-free | 30-50 cc/min | Hydrogen |
| | Hydrogen for capillary | UHP, Zero grade | up to 10 cc/min | Hydrogen |
| GC-FPD | Hydrogen for fuel gas | UHP | 60-90 cc/min | Hydrogen |
| GC-NPD | Hydrogen for capillary gas | UHP | up to 50 cc/min | Hydrogen |
| GC-TCD | Hydrogen as carrier gas | UHP | up to 50 cc/min | Hydrogen |
| GC-ELCD | Hydrogen as reaction gas | UHP | 70 to 200 cc/min | Hydrogen |
| Products for Analyzers | | | | |
| THA | Hydrogen for fuel gas | UHP | 5 to 50 cc/min | Hydrogen |

- Hydrogen Generators provide an onsite supply of hydrogen gas, eliminating the need of gas cylinders, which can be bulky and require special cylinder storage space. They provide ultra-high purity hydrogen gas.
- power on to produce gas.
- High reliability, easy to maintain. Match with all kinds of GC.



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