



Generate a continuous source of UHP hydrogen gas for applications such as:

- GC-FID, NPD, FPD, TCD, ELCD, HALL
- GC-carrier gas
- THA

Eliminate high pressure hydrogen cylinders from the laboratory by generating a continuous source of UHP hydrogen gas. Cometa Scientific hydrogen generators produce a continuous flow of ultra-pure hydrogen reliably and cost effectively from de-ionised water and electricity. Three models are available with flow rates ranging from 160 cc/min to 500 cc/min.

Cometa hydrogen generators provide a safe and hassle-free alternative to high pressure gas cylinders. Hydrogen is only generated on demand at low pressure and the volume of stored gas is minimal.

The generators are ideal for supplying fuel gas to all known combustion detectors used routinely in GC and THA, and can also be used to supply hydrogen for GC carrier gas applications and for ELCD reaction gas.

### Benefits

#### Ultra safe operation

- Patented seven mode failure protection system

#### High purity, low lifetime costs

- Option of high purity without the worry of costly palladium purifier replacements

#### Convenience

- Gas on demand, no warm-up period

#### Seamless system integration

- Optional remote PC monitoring and control

#### Improved productivity

- Using hydrogen as a carrier gas increases analysis speed and sensitivity when compared to helium. Continuous hydrogen generation means no interruptions to analyses due to cylinder changes

#### Reduced Health and Safety administration

- No high pressure explosive gas storage, manual handling or distribution line management

### Features

- Automatic H<sub>2</sub> leak detection
- High capacity water tank
- Water level / quality alarms
- Environmental protection filters
- Compact design
- Simple installation and operation
- Digital interface
- CE and UL approved

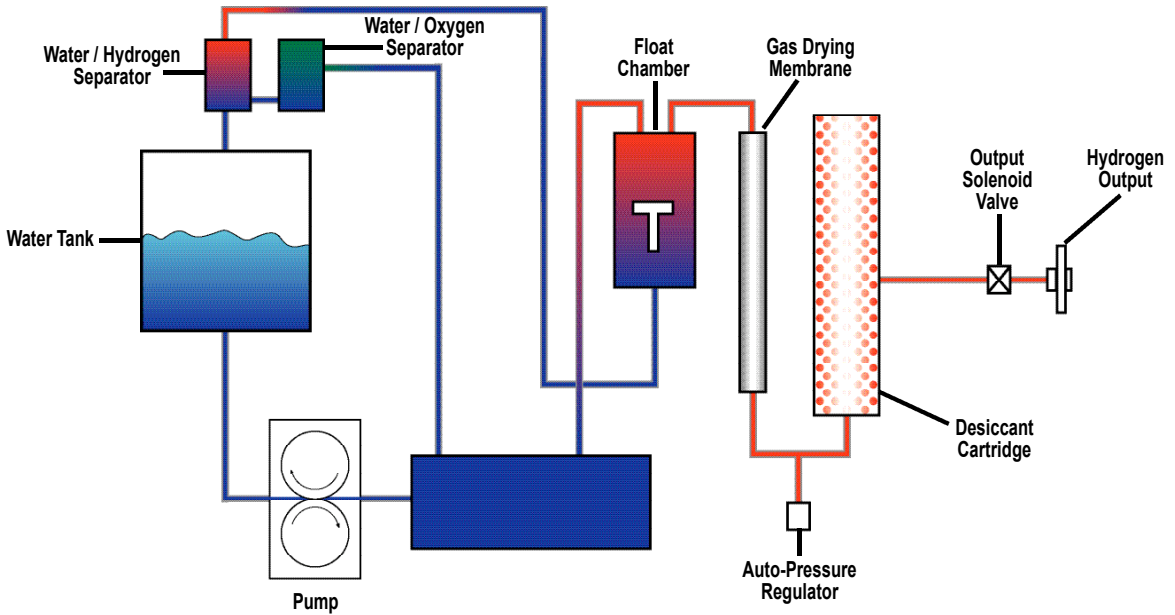
Cometa hydrogen generators use a special ion exchange membrane to produce a flow of ultra-pure hydrogen. Use of the electrolytic dissociation process enables water to be broken down into hydrogen and oxygen.

The oxygen is released into the air, while the hydrogen is retained to form the product flow.

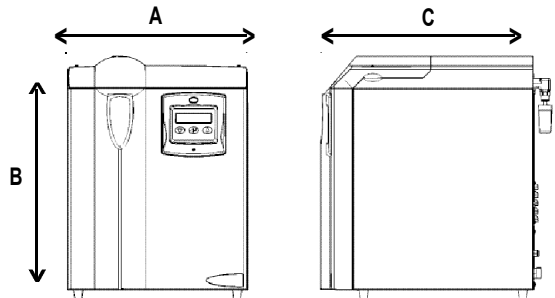
A long-life desiccant cartridge purifies the hydrogen even

further so that it attains the desired grade of purity and ensures constant reproducible results.

Having proved its worth in thousands of systems worldwide, this technology eliminates the need to use liquid electrolytes, such as caustic solutions; since it only uses de-ionised water and electricity, continuous operation is assured.



### 20H - 60H Models



Models	Flowrate cc / min	Purity %	Pressure	Connections BSP H <sub>2</sub> Outlet	Voltage Vac	Electrical Consumption	Dimensions mm			Weight Kg
							A	B	C	
<b>C/G/20H</b>	160	99.9999%*	0.7 bar (0-100 psl)	1/8" Swagelok	110-230	125 w	342	456	437	24
<b>C/G/40H</b>	250	99.9999%*	0.7 bar (0-100 psl)	1/8" Swagelok	110-230	185 w	342	456	437	24
<b>C/G/60H</b>	500	99.9999%*	0.7 bar (0-100 psl)	1/8" Swagelok	110-230	235 w	342	456	437	24

\* When used with oxygen / moisture trap



Cometa LC/MS nitrogen generators are specifically designed to meet the gas flow, purity and pressure requirements of the latest generation of LC/MS instruments.

The technology used to produce a continuous flow of high purity N<sub>2</sub> is pressure swing adsorption (PSA).

This technology uses a combination of molecular sieves to selectively eliminate O<sub>2</sub> and other contaminants in the ambient air.

The CMS column(s) alternate between the purification and regeneration modes to ensure continuous N<sub>2</sub> production.

The gas generator is designed to take pre-filtered compressed air at 7 or 8.5 barg (102 or 123 psi g) (depending on model) from the existing laboratory supply or via the integrated oil-free compressor.

This flow of filtered compressed air then passes through the CMS column which is in the purification mode. At this point, the O<sub>2</sub>, CO<sub>2</sub>, humidity and hydrocarbons are removed from the compressed air stream, leaving a flow of clean and dry nitrogen. For Zero N<sub>2</sub> generators, a heated catalyst oxidises additional hydrocarbons from the N<sub>2</sub> gas flow providing zero grade N<sub>2</sub> with a remaining hydrocarbon content of <0.1ppm.

### Features and Benefits

#### Designed in conjunction with instrument manufacturers

- Ideally suited to nebulising, sheath and drying gas applications

#### Wide range of flow rates available

- Total flexibility allowing single or multiple instruments to be supplied

#### Fully regenerative PSA technology

- Reduced risk of gas contamination

#### Guaranteed consistent nitrogen purity

- Improved instrument stability and greater reproducibility of results

#### Integral oil-free compressors

- Fully secure supply – no reliance on existing compressed air supplies

#### Soundproofed compressor box

- Low compressor noise

#### Phthalate-free

- Clean analyses

#### Compact design

- Fits under bench

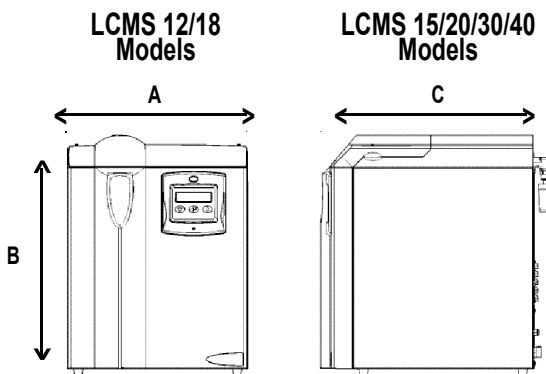
#### CE, UL and CRN approved

- Peace of mind

### Technical Specifications

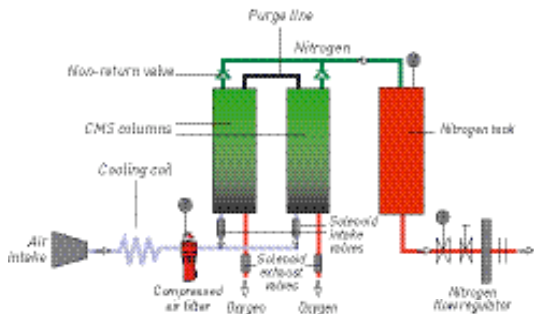
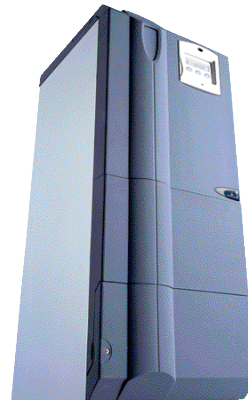
Models	Flowrate L / min	Purity % O <sub>2</sub>	Connections BSP		Voltage Vac	Dimensions			Weight Kg
			Air Outlet	Gas Outlet		mm	A	B	
C/G/LCMS 15-0	15	0.5	1/4"	1/8"	110/230	510	705	559	89
C/G/LCMS 15-1*	15	0.5	-	1/8"	110/230	510	705	826	129
C/G/LCMS 20-0	20	1	1/4"	1/8"	110/230	510	705	559	89
C/G/LCMS 20-1*	20	1	-	1/8"	110/230	510	705	826	129
C/G/LCMS 30-0	30	1	1/4"	1/8"	110/230	510	705	760	135
C/G/LCMS 30-1*	30	2	-	1/8"	110/230	510	705	826	129
C/G/LCMS 40-0	40	1	1/4"	1/8"	110/230	510	705	760	135

\* With integral compressor, otherwise an external compressor is required.



Increase the efficiency of your laboratory by replacing nitrogen gas cylinders for applications such as:

- \* GC make-up/carrier gas
- \* ICP
- \* ELSD
- \* XRD
- \* Solvent evaporation
- \* NMR
- \* CD



### Features and Benefits

#### Proven durability PSA technology

- Best in class life expectancy, no need for secondary purification

#### Constant and guaranteed flow of instrument grade nitrogen

- Improved consistency and reproducibility of results

#### Economy mode option

- Reduced operating costs

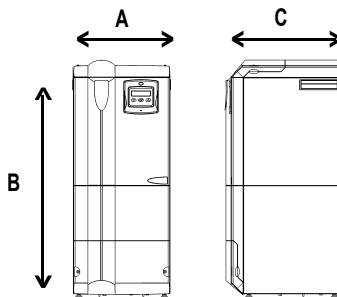
#### Simple Installation

- Only one set up operation required for reliable service

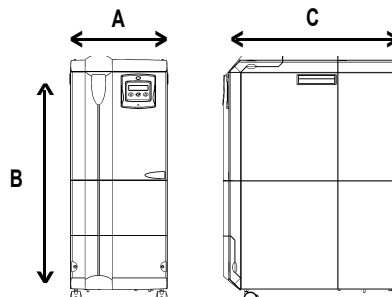
#### Compressor

- Includes integral compressor

### G1 Model



### G2 - G4 Models



### Technical Specifications

Models	Flowrate L / min	Purity % O <sub>2</sub>	Connections BSP		Voltage Vac	Dimensions mm			Weight Kg With Compressor
			Air Outlet	Gas Outlet		A	B	C	
C/G/G155	0.55	10 ppm	1/8"	1/8"	110-230	345	842	413	56
C/G/G175	0.75	10 ppm	1/8"	1/8"	110-230	345	842	413	56
C/G/G2150	1.5	10 ppm	1/8"	1/8"	110-230	345	873	663	90
C/G/G2300	3.0	10 ppm	1/8"	1/8"	110-230	345	873	663	90
C/G/G3250	2.5	100 ppm	1/8"	1/8"	110-230	345	873	663	83
C/G/G3400	4.0	0.1	1/8"	1/8"	110-230	345	873	663	83
C/G/G3500	5.0	0.5	1/8"	1/8"	110-230	345	873	663	83
C/G/G3700	7.0	1	1/8"	1/8"	110-230	345	873	663	83
C/G/G3800	8.0	2	1/8"	1/8"	110-230	345	873	663	83
C/G/G4500	5.0	100 ppm	1/8"	1/8"	110-230	345	873	663	90
C/G/G4600	6.0	0.1	1/8"	1/8"	110-230	345	873	663	90
C/G/G41000	10.0	0.5	1/8"	1/8"	110-230	345	873	663	90
C/G/G41250	12.5	1	1/8"	1/8"	110-230	345	873	663	90
C/G/G41400	14.0	2	1/8"	1/8"	110-230	345	873	663	90



# Gas Generators

## Nitrogen Generators for higher flowrates

To complement the smaller bench top laboratory nitrogen generators, **Cometa Scientific** also supplies a comprehensive range of **MIDIGAS** and **MAXIGAS** nitrogen generators. These provide flowrates from 10 l/min to 882 l/min at purities from 10ppm to 2% oxygen content. Even higher flowrate generators can be provided if required.

The larger flow rates afforded by the **Cometa Scientific MAXIGAS** range means the generators are ideally suited for use as the basis of centralised laboratory nitrogen supply systems capable of supplying multiple instruments and applications. System modularity allows the capacity of the system to be easily increased as laboratory operations expand.

For more detailed information about this range, please contact **Cometa Scientific**.



MIDIGAS  
Nitrogen Generator



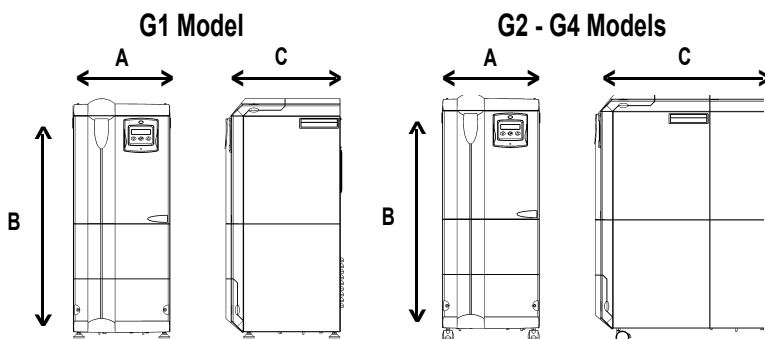
MAXIGAS  
Nitrogen Generator

## Zero N<sub>2</sub> and Dry Air Generators

In addition to the stand-alone nitrogen generators, we also supply Zero nitrogen, dry air and combined nitrogen and dry air generators for the following applications:

- \* GC-FID
- \* THA

Compressor - Includes integral compressor



### Technical Specifications

Models	Flowrate L / min	Purity % O <sub>2</sub>	Connections BSP Voltage			Dimensions mm			Weight Kg With Compressor
			Air Outlet	Gas Outlet	Vac	A	B	C	
<b>Zero Nitrogen</b>									
C/G/G510	1.0	10 ppm	1/8"	1/8"	110-230	345	842	413	51
<b>N<sub>2</sub> and Dry Air Models</b>									
C/G/G6AN	N <sub>2</sub> 0.6 Air 1.5	10 ppm -55°C adp	1/8"	1/8"	110-230	345	842	413	54
C/G/G7AN	N <sub>2</sub> 3.0 Air 3.0	10 ppm -55°C adp	1/8"	1/8"	110-230	345	842	663	80
<b>Dry Air Models</b>									
C/G/G830	3.0	-55°C adp	1/8"	1/8"	110-230	345	842	413	50
C/G/G960	6.0	-55°C adp	1/8"	1/8"	110-230	345	842	413	50

Cometa Scientific zero air generators produce a continuous flow of clean, dry air with an ultra low residual methane content of less than 0.1 ppm from an existing compressed air supply.

An interchangeable top panel allows for direct mounting of a Cometa Scientific UHP hydrogen generator.

The generators can be used to supply zero air to the following applications:

- \* GC - FID, FPD, NPD
- \* LC / MS
- \* THA
- \* Gas Sensing

### Features and Benefits

- High performance catalyst
- OIL-X EVOLUTION pre-and after filtration
- Compact, modular design for easy mounting of a Cometa Scientific UHP hydrogen generator
- Simple operation
- Digital temperature display
- Minimal maintenance
- CE, UL and CRN approved



### Benefits

#### Gas quality assured

- Catalyst air temperature monitoring and display gives reliable indication of gas purity. High performance OIL-X EVOLUTION filtration effectively removes contamination

#### Improved instrument performance

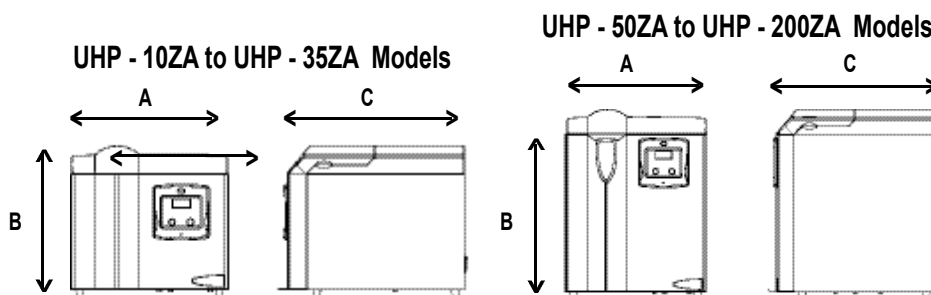
- Guaranteed consistent purity reduces baseline noise and improves stability

#### Maximised uptime, maximised productivity

- No cylinder changes mean no interruptions to analyses and no instrument re-calibration. Cleaner air reduces frequency of instrument cleaning

#### Economy

- Quick return on investment typically 12 months. No cylinder rental charges and no price inflation



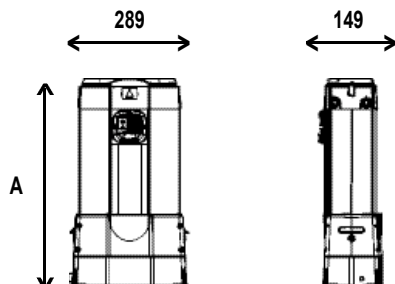
### Technical Specifications

Models	Flowrate L / min	Purity % O <sub>2</sub>	Connections BSP		Voltage Vac	Dimensions mm			Weight Kg
			Air Outlet	Gas Outlet		A	B	C	
C/G/UHP10ZA	1.0	<0.1 ppm	1/8"	1/8"	115 / 230	342	325	400	10.8
C/G/UHP35ZA	3.5	<0.1 ppm	Swagelok 1/8"	Swagelok 1/8"	115 / 230	342	325	400	10.8
C/G/UHP50ZA	5.0	<0.1 ppm	Swagelok 1/8"	Swagelok 1/8"	115 / 230	342	455	400	16.1
C/G/UHP75ZA	7.5	<0.1 ppm	Swagelok 1/8"	Swagelok 1/8"	115 / 230	342	455	400	16.1
C/G/UHP150ZA	15.0	<0.1 ppm	Swagelok 1/8"	Swagelok 1/8"	115 / 230	342	455	400	16.1
C/G/UHP200ZA	20.0	<0.1 ppm	Swagelok 1/8"	Swagelok 1/8"	115 / 230	342	455	400	16.1

# Gas Generators

## Clean Dry Air Generators

Cometa Scientific desiccant dryers are ideal for laboratory use, providing a constant flow of clean, dry compressed air.



### Benefits

- Point of use installation provides clean and dry air where you need it
- Compact and lightweight
- Can be bench or wall mounted
- Larger flowrate models available

- NMR
- AA
- GC
- ATD
- Rheometry
- Sample preparation
- Auto-samplers

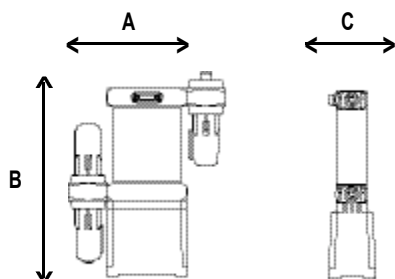


Models	Output Air Flow	Dimensions (A)		Weight
	L / min	mm		Kg
C/G/DAS 1	70	422		11
C/G/DAS 2	115	500		13
C/G/DAS 3	182	616		16
C/G/DAS 4	227	692		18
C/G/DAS 5	295	847		20
C/G/DAS 6	340	906		23
C/G/DAS 7	453	1098		28

Max. Working pressure: 12 bar g (175 psi g)  
 Pressure dewpoint: -40°C (-40°F)  
 Purity: Non-methane HC's <0.01 ppm  
 particles <0.1 micron<sup>3</sup>  
 oil <0.01mg/m

## CO<sub>2</sub> Free Air Generators

Replace high pressure synthetic air cylinders by generating your own CO<sub>2</sub> and moisture free air.



### Benefits

- Reduced signal to noise ratio improves instrument performance
- Protects sensitive optics and air bearings from moisture
- Constant, guaranteed purity supply increases laboratory efficiency
- Tested and approved by TOC and FT-IR instrument manufacturers
- Compact design frees up floor space

- TOC Analyser
- FT-IR Purge
- Microscope Purge



Models	Output Air Flow	Dimensions mm			Weight
	L / min	A	B	C	Kg
C/G/CO2RP015	1.5	310	380	90	8
C/G/CO2RP140	14	310	470	90	10
C/G/CO2RP280	28	310	710	90	12
C/G/CO2RP850	85	420	1020	150	36

Max. Working pressure: 10.5 bar g (152 psi g)  
 CO<sub>2</sub> Content <1 ppm  
 Pressure dewpoint: -70°C (-100°F)  
 Purity: Non-methane HC's <0.003 ppm  
 particles <0.1 micron

Instrument	Gas Requirement	Purity	Flow Rate Recommendation	Generator
<b>Products For Gas Chromatology</b>				
GC-FID	Hydrogen for fuel gas	UHP	30-50 cc/min	Hydrogen
	Zero Air for flame gas	Hydrocarbon-free	300-500 cc/min	Zero Air
	Hydrogen for capillary carrier gas	UHP	up to 10 cc/min	Hydrogen
	Nitrogen for packed carrier gas	UHP, zero grade	20-50 cc/min	Zero Nitrogen
GC-FPD	Nitrogen for make-up gas	UHP, zero grade	30-50 cc/min	Zero Nitrogen
	Hydrogen for fuel gas	UHP	60-90 cc/min	Hydrogen
GC-NPD	Zero Air for flame gas	Hydrocarbon free	90-120 cc/min	Zero Air
	Hydrogen for capillary gas	UHP	up to 50 cc/min	Hydrogen
GC-ECD	Nitrogen for make up gas	UHP, zero grade	up to 30 cc/min	Zero Nitrogen
	Nitrogen for carrier gas	UHP, zero grade	up to 60 cc/min	Zero Nitrogen
GC-TCD	Nitrogen for make up gas	UHP, zero grade	up to 100 cc/min	Zero Nitrogen
	Hydrogen as carrier gas	UHP	up to 50 cc/min	Hydrogen
GC-ATD	Dry air purge	Clean and dry air	less than 2L/min	Clean Dry Air
GC-AED	Nitrogen for carrier gas	UHP, zero grade	less than 1L/min	Zero Nitrogen
<b>Products For LCMS Instruments</b>				
LCMS API/ LCMS APCI, Electrospray, LCMS/MS, TOF	Air for nebuliser gas Nitrogen for curtain and sheath shield gas	Clean and dry air, hydrocarbon free 99%	18L/min 5 to 40L/min	Clean Dry Air or Zero Air Nitrogen
<b>Products For Spectroscopy</b>				
FT-IR Spectrometer	Purge gas for sample compartment, optics, air bearing and microscope	Clean dry, CO <sub>2</sub> free	14 to 85L/min	CO <sub>2</sub> free air
NMR Spectrometer	Air for lifting spinning and ejecting	Clean and dry air	up to 300L/min	Clean Dry Air & Nitrogen
ICP Spectrometer	Nitrogen or Zero Nitrogen for purge gas	99.99 %	up to 9L/min	Nitrogen or Zero Nitrogen
AA Spectrometer	Air for oxidant gas	Clean and dry air	28 to 200L/min	Clean Dry Air
<b>Products For Analysers</b>				
TOC	Dry air or Nitrogen for carrier gas or combustion gas	Clean dry, CO <sub>2</sub> free/ hydrocarbon free UHP	100-500 cc/min	CO <sub>2</sub> free air / Zero Air
			50-700 cc/min	Zero Nitrogen
THA	Zero Air for FID Hydrogen for fuel gas	Hydrocarbon free UHP	50 to 500 cc/min	Zero Air
			5 to 50 cc/min	Hydrogen
DSC	Air for air shield	Clean and dry	100cc/min	Clean Dry Air
TGA	Nitrogen or dry air as furnace gas	Clean and dry air or high purity N <sub>2</sub>	100cc/min	Clean Dry Air or Nitrogen
TOD	Nitrogen carrier gas	UHP, Zero grade	300cc/min	Zero Nitrogen
CO <sub>2</sub> analyser	Calibration air	Clean dry, CO <sub>2</sub> free hydrocarbon free	550 to 1000cc/min	CO <sub>2</sub> free air
<b>Other Laboratory Applications</b>				
Sample Prep Autosamplers	Nitrogen for solvent evaporation	95% to 99%	up to 130L/min	Nitrogen
	Air for pneumatic controls	Clean and dry	28L/min	Clean Dry Air
	Nitrogen for sample injector	UHP, zero grade	550cc/min	Zero Nitrogen
Circular Dichroism	Nitrogen	UHP, zero grade		Zero Nitrogen
ELSD Detector	Nitrogen or Zero Air for nebulisation	98%/zero grade	2-8 L/min	Nitrogen or Zero Air
Particle sizing by Laser Diffraction	Clean and dry air for nebulising gas	Clean and dry air		Clean Dry Air