

Technical specifications GFH 6400



Green fumehood[®]
A Global Solution For Green Buildings.



Green Fume Hood Overview



Prepared for C Armistead by Camlab Ltd.

Following our initial discussions regarding the Erlab Green fume hood I have pleasure in providing the following information for your consideration. I would be happy to sit down with you and your customer to discuss the products unique environmental and safety benefits in more detail at a time and place to suit you.

A breakdown of all the product features is available on the Erlab GFH website at the link below under Product Highlights. This includes detailed product information, safety information and an energy calculator which clearly demonstrates the lifetime benefits of Ductless Filtration technology over ducted solutions for both the user and the environment.



Green Fume Hood Website

<http://www.greenfumehood.com/>

Lifecycle Payback Questionnaire

http://paybacksurvey.greenfumehood.com/Pay_Back_Report/HomePage.php

Erlab

Erlab are the worldwide leaders in Ductless Filtration technology and sell about 2000 cabinets a year in Europe of which about 400 go into the UK. The new Green Fume Hood range utilizes new and innovative filter technology to increase the capacity and scope of the existing Filtration System. This technology is currently being sold across the States and already throughout Europe and we are proud that it will be exclusively sold into the UK through Camlab Ltd. Existing customers in France include L'Oréal, Chanel, Etypharm, Oril, Groupe Servier, Roquettes Frères and Arkema and we will be installing a system in the UK shortly.

Chemical Compatibility

The new Neutrodine filters on the GFH are unique and are able to handle 99.9% of chemicals which makes this a very flexible solution for any lab. In fact, this is why we list the chemicals these units can't handle rather than the ones they can ...

Exclusions

1. Gaseous chemicals with very low boiling points e.g. Hydrogen, Ethane Carbon Dioxide etc
2. Organ phosphoric compounds (Chemical weapon use and highly toxic)
3. Mercury - this is retained well but cannot be detected easily
4. Hydrogen Cyanide - immediately lethal

See the Official list from Erlab on following pages.

Flexible Solution

Because ductless units, as the name suggests, do not require expensive ductwork therefore very quickly become significantly cheaper to install. As there is no ductwork in place they can be moved as requirements change and are available in a range of four units from 1.1 to 1.9 meters in widths to suit all applications. The filter configuration can also be adapted to applications with the choice of chemical filters to HEPA filters depending on requirements.

Safety

It is important to note that although the filters can handle most chemicals we still insist on validating the use for end-users. This allows us to check the chemicals as well as the quantities involved to ensure end user safety at all times. This is a FREE service from Camlab that can be undertaken at any time when usage is changed.

The construction of the Green fume hood means that as soon as the filters are saturated the detector alerts the user and can even email the engineer. The user can continue to use the hood as the secondary layer of filters now comes into play. When the engineer brings the replacement filters the top layer is moved down and the new filters are placed on the top to form the new safety layer. With typical filter lifetimes of 12-18 months you are always well protected in this way.

Additional safety features on the Green Fume Hood range mean that it can automatically alert you or your Health and Safety team via LAN or Bluetooth. These alarms can include filter saturation, fan faults, power outages, users using the hood with sash too wide open, unit left running or an array of other options.

Each user can have their own access card for use of the hood to prevent unauthorized use and to allow you to set individual user administration rights.

Energy Efficiency

Generally the hoods unit itself is comparable in price with a ducted solutions but because there is no requirement to run them 24 hours a days they offer significant energy savings in operation – up to 97% less than ducted units. When you consider that a standard ducted fume hood consumes the same amount of energy as three houses a year the savings becomes quite significant. Ductless fume hoods save energy as they can be run independently of each other and so can be switched off after use. They return clean filtered lab air back to the lab rather than wasting energy by expelling the lab air, which will have been heated in winter or cooled in summer.

Some customers are concerned about switching off their fume hoods as they store chemicals in the fume hood. We would strongly advise against this practice as having bottles stored in the cabinet disturbs the airflow and compromises safety. We offer a range of chemical storage units specifically



for this which can be run continuously using filtration or ducting. These units are more energy efficient than a larger hood and keep chemicals out of the way until needed. They are available in full size, counter top, wall and under bench configurations.

Costs of Operation

The Erlab Green Fume Hood ductless filtration hood is significantly cheaper to run than a ducted solution due to the elimination of the massive waste associated with expelling heated /cooled lab air. Ducted solutions also require all hoods to be running 24 hours a day to prevent backflows which again represents a massive waste.

Even taking the cost of replacement filters into account the Green Fume Hood is significantly less expensive to run than a standard or low flow ducted fume hood. The figures below are a guide only and will vary from installation to installation but give you an idea of how it breaks down.

	Traditional Ducted Hood	Low Flow Ducted Hood	Green Fume Hood	Traditional Ductless Hood	Notes
Energy Cost p.a.	£3,000	£1,500	£50	£50	Cost of running unit plus energy costs to reheat/cool replaced air. Typical ducted units use 3.5 times as much energy as a house.
Operating Cost p.a.	£400	£400	£1,250	£1,000	Filters parts and Maintenance. Based on a three filter ductless unit. Note - standard units also require dust filters.
Ductwork Cost p.a.	1000*	£1000*	£0	£0	* Based on a £10k ductwork installation depreciated over 10 years.
Ease of Planning	Difficult	Difficult	Easy	Easy	No pre-planning is required for a Ductless unit. Just a plug!
Adaptability	Low	Low	High	High	Ductless Fume Hoods can be easily moved or changed for other use e.g. HEPA
Usage Spectrum	100%	100%	99.9%	70%	Ducted offers the widest spectrum but fumes are expelled into the surrounding environment untreated.

Prices

It is difficult to quote exact prices at this stage as this will depend on which additional options you have fitted but the 1.6m wide hood with filters is just under £12,500. This unit would have a three column filter setup and would require 3 filters at each service change at £395 each.

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Structure	Metallic parts	Electrogalvanized steel sheet - anti acid polyester coating
	Front Sash	Laminated glass
	Side panels	Laminated glass
	Control panel	Polypropylene (PP) - Acrylonitrile Butadiene Styrene (ABS)
	Work surface	Phenolic resin
Technical specifications	Processed air flow	between 880 and 920 m ³ /h
	Average air face velocity	between 0,4 and 0,6 m/s
	Working sash height	34 cm at 0.5 m/s 66 cm at maximum working sash height
	Fan electrical protection rating	IP44
	Voltage	100 - 240 v
	Frequency	50 - 60 Hz
	Total power consumption	5A max
	Noise level	67 dbA at 4600 t/m
	HEPA filter	HEPA H14 - 99,995% filtration efficiency (according to EN-1822 - MPPS test)
	Molecular filter	Neutrodine® - discharge inferior to 1% of the TLV (according to NF X 15-211 : 2009 standard)
	Pre-filter	Electrostatic filtering media
	Weight	240 kg
	Enclosure air renewal	669 times/hour

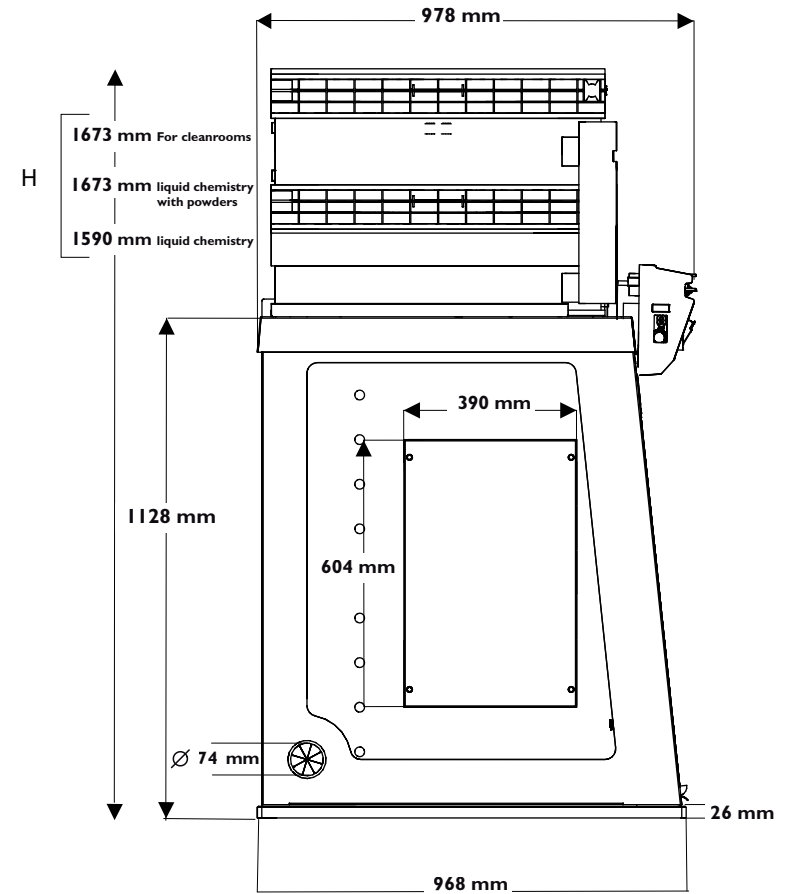
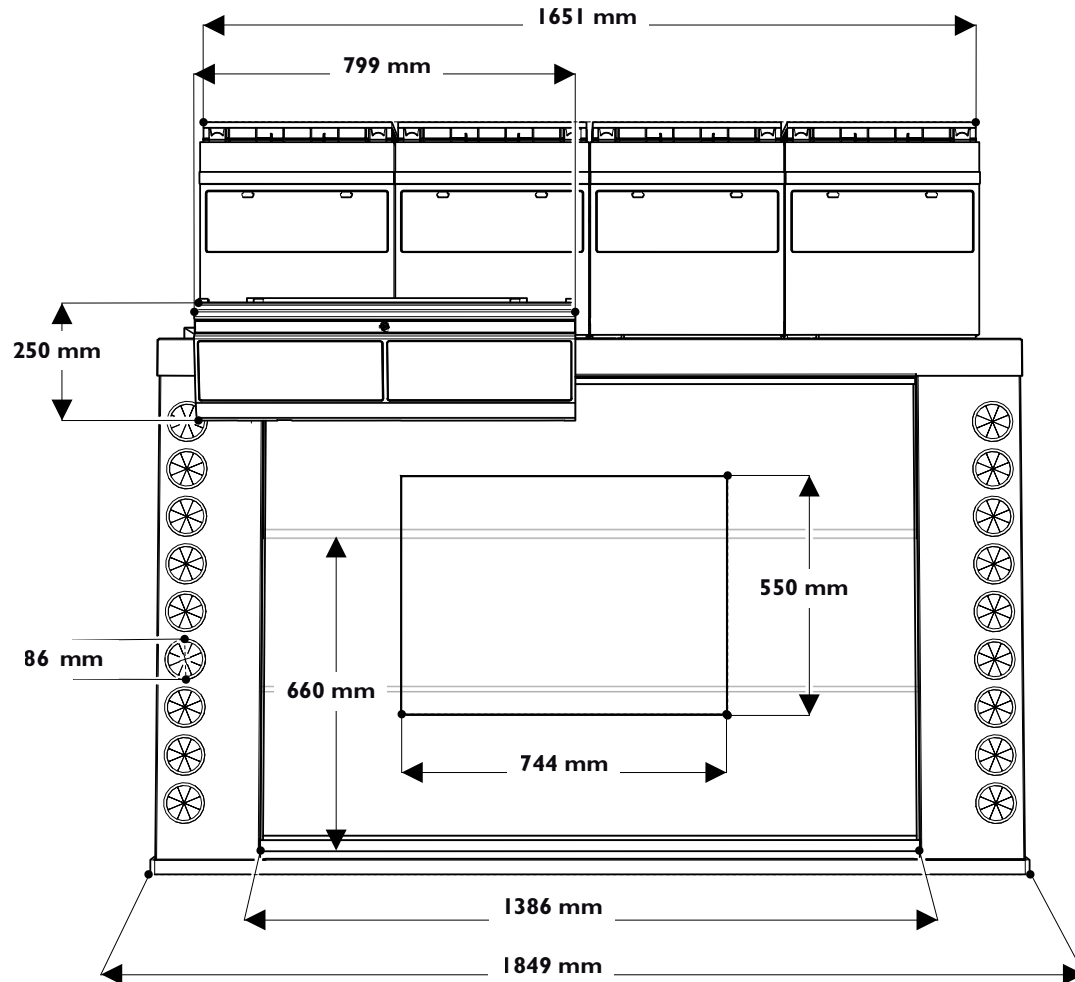
Standards

Compliant with the AFNOR NFX 15-211 : 2009 standard requirements
Containment tested according to ANSI / ASHRAE 110-1995 - EN 14 175 standards
CE marking

Standard equipment	Master module	1
	Number of modular filtration columns	4
	Number of main filters	B - Liquid chemistry : 4 G - Clean room : 4 D - Liquid chemistry and powders :4
	Number of safety back up filters	B - Liquid chemistry : 4 G - Clean room : 4 D - Liquid chemistry and powders : 4
	Number of HEPA Filter	B - Liquid chemistry : 0 G - Clean room : 4 D - Liquid chemistry and powders : 4
	Number of pre-filters	4
	Number of fans	4
	Temperature sensor	Control range: -15 to 120° C Alarms at 60 and 80°C
	Sash position detection system	from 15 to 66 cm
	Lighting	type 2 G11 - IP68 Compact fluorescent tubes x 4 1x18 Watt (1 tube per module) - ≥ 500 lux
	Embedded electronic system	ARM 9 Motherboard - 16 Mo cache Windows CE 5.0
	Ethernet port	1 RJ45 port
	Access control	RFID card access control: 3 access levels
Molecode S (solvents)	semi-conductor sensor	
Laboratory air quality sensor	semi-conductor sensor	
Utility module	Module for fluid integration (right module) Module for electrical accessories (left module) - Access door	

Optional equipments	gGuard™	Remote monitoring software
	gStation	Fixed work bench
	Molecode A (acids)	Electrolytic cell
	Electrical equipments adapter	Standard 45x45 diam. 22 or 27 mm for direct taps or remote control
	Mounting racks supports	Aluminium diam. 16 mm

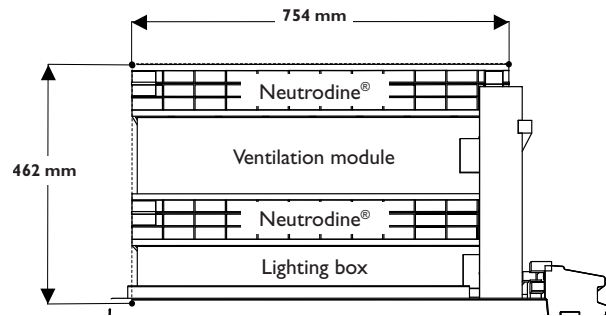
Green Fume Hood 6400



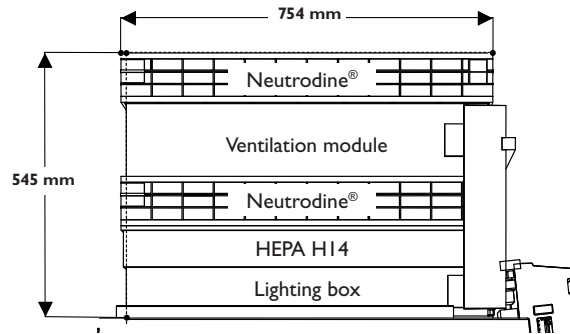
Green Fume Hood 6400

Filtration columns types

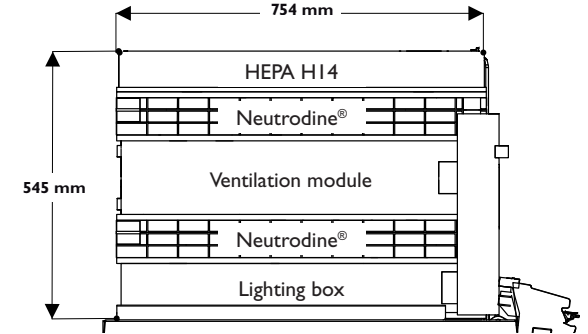
B For liquid chemistry



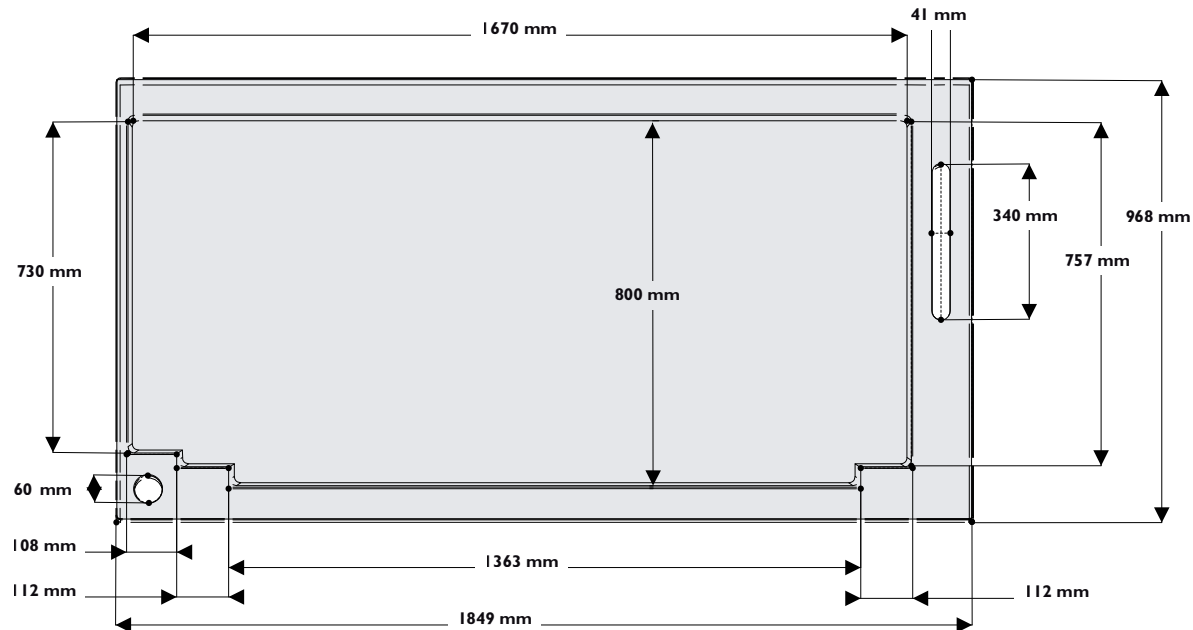
D For liquid chemistry with powders



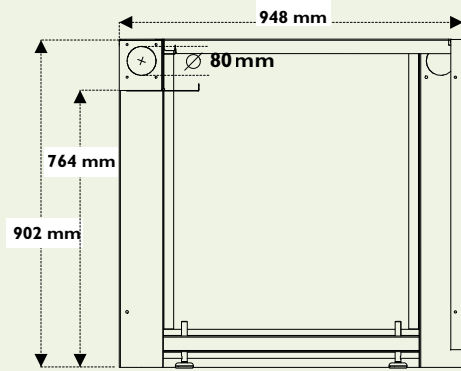
G For cleanrooms



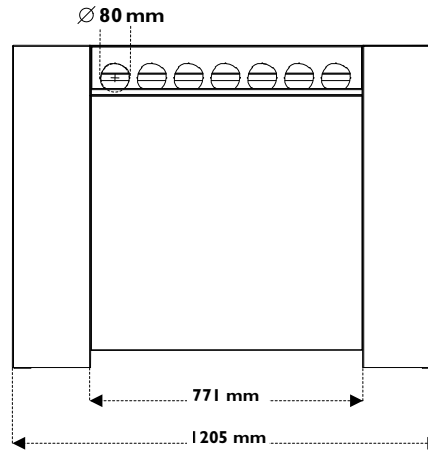
Work surface



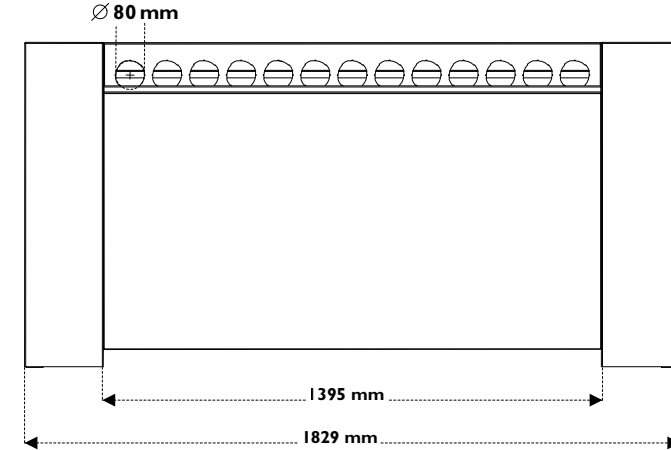
Side View



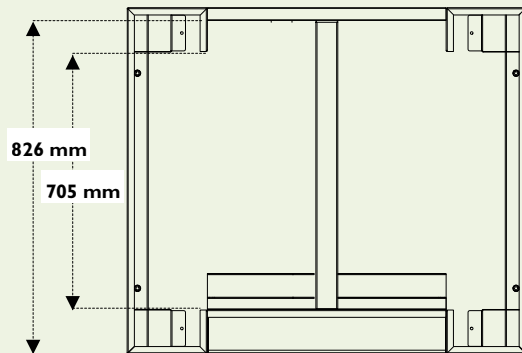
gStation 4200



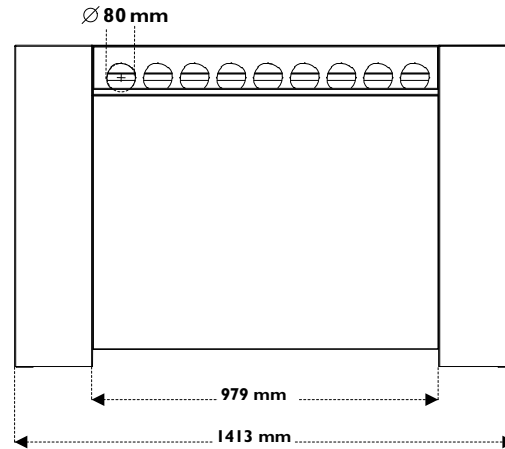
gStation 6400



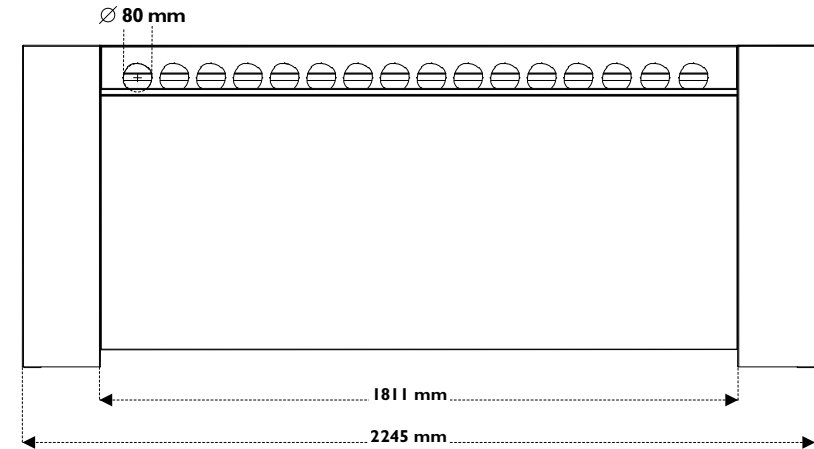
Rear View (4200)



gStation 5300



gStation 7500





GreenFumeHood® protects users with an innovating filter technology called Neutrodine®. This breakthrough filtering technology captures and neutralizes a large spectrum of chemicals such as acids, bases or volatile organic solvents on the same media. The few rare chemicals that follow are however not recommended for use under GreenFumeHood®.

LIST OF CHEMICALS NOT RECOMMENDED*

Gaseous chemicals in normal temperature and pressure conditions with a very low boiling point (25°C, 1 Atmosphere).

Examples :

- Hydrogen (H₂),
- Helium and noble gases,
- Methane,
- Ethane,
- Ethylene oxide,
- Carbon monoxide,
- Carbon dioxide,
- Nitrogen monoxide,
- Propylene,
- Propyne,
- Acetylene

Organophosphoric compounds :

Because of their very high toxicity (compounds that can be used as Chemical weapons).

Mercury :

In spite of the fact that this product is very well retained by Neutrodine®, it remains extremely toxic (TLV = 0,05 ppm) and very hard to detect.

Hydrogene Cyanide :

Immediately lethal

*Non exhaustive list

Our technical and sales departments remain fully at your service to study any specific project requirements. Do not hesitate to contact our local offices for more information.

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