Canadian Scientific Lab Systems

**In Association with**
**Air Master Systems**

# Green Fume Hood Catalogue

Serving Canada's academic, research,
industrial and commercial
laboratories since 1985.

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# Green Solution Hood

**The Green Solution Hood** with proprietary Neutrodine® Filtration Technology: Save energy without compromising usage, performance or safety.

**The Green Solution Hood**—with the breakthrough Neutrodine® system by Erlab®—offers a revolutionary turnkey solution providing a variety of installation, operational and environmental benefits to virtually any laboratory. Compared to traditional fume hoods in operation today, **The Green Solution Hood** enables designers to:

- Retrofit old buildings without redesigning HVAC
- Save energy while maintaining 100 fpm face velocity.
- Cut energy costs by 96% and reduce operating costs by 70%.
- Eliminate associated heating and cooling costs.
- Handle liquids and solids (including acids, bases, solvents and powders)—individually or together—with a single hood.
- Perfect for swing spaces.
- Zero impact on building HVAC so adding a fume hood is now as simple as filling out a questionnaire.
- Maintain productivity without changing the way lab technicians work.
- All fume hoods are certified with a Life Cycle Payback. This certification by our lab assures researcher safety as well as economic feasibility

patent pending

# The Green Solution Hood

**The Green Solution Hood—**including Neutrodine® and gGuard®—delivers a global solution for green buildings.

Fume hoods have a long history of issues, from enormous energy consumption to environmental impact, inflexible installation requirements to expensive operation. For many of today's laboratories, they are simply a necessary burden.

## Not any more.

Engineered with a range of patented innovations, **The Green Solution Hood** with Neutrodine® Technology offers a safe, high-performance, energy-efficient, fully flexible solution ideal for virtually any environment from a cleanroom to a teaching lab. With a unique, modular filtration column and proprietary Neutrodine® filtration, **The Green Solution Hood** can handle multidisciplinary tasks involving everything from acids and solvents to liquids and powders while exhausting 100 times fewer contaminants than are allowed by the official Threshold Limit Value (TLV).

With **The Green Solution Hood,** saving energy doesn't mean compromising safety or performance. The system can be left on at all times—sash up or down—without over consumption of energy or polluting the environment. At the same time, it maintains the industry's preferred face velocity of 100 fpm.

**The Green Solution Hood** with Neutrodine® Technology also offers the first ever remote communication software, developed with Microsoft® technologies, to provide unprecedented management capabilities for a network of up to 250 fume hoods.

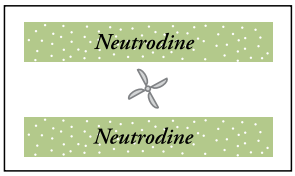
Welcome to a truly unique solution that is both user-friendly and environmentally friendly.

**Welcome to the fume hood of the future.**

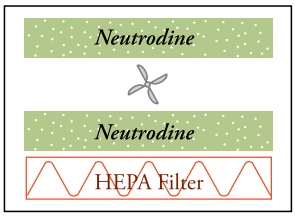
For the first time ever, it is possible to efficiently handle acids, solvents and bases with the same filter. In fact, Neutrodine® can handle such a broad spectrum of molecules that it allows **The Green Solution Hood** to compete with the usage capabilities of traditional fume hoods without the major drawbacks of significant energy consumption, installation costs and toxic atmospheric emissions. Contact AMS for a list of approved chemicals.

## Modular filtration column configuration examples

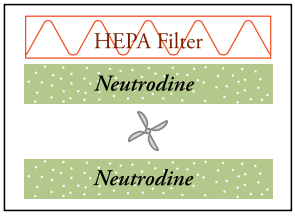
For chemistry use




For chemistry and powder use




For cleanroom use

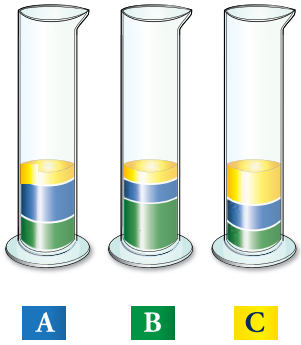



### Comparison of vapor retention for:

**SOLVENTS** **ACIDS** **BASES**

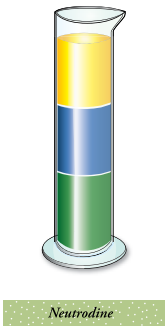
*With different high performance carbon filter types:*

- **A** Non-impregnated filter
- **B** Impregnated filter for acids
- **C** Impregnated filter for bases




### Compared to:

*Neutrodine® Technology Filter*




Neutrodine® Technology filter performance for filtration and retention has been tested according to the AFNOR NF X 15-211: 2009 requirements by Intertek, a leading provider of product quality certification. Official test report is available for download at

www.airmastersystems.com

## Why carbon? And how is Neutrodine® different?

Within the field of molecular adsorption, a large number of materials—ranging from the mediocre to the elaborate— are capable of adsorbing gaseous molecules. However, when efficiency is taken into account, activated carbon is by far the best with respect to filtration quality and retention capacity.

Historically, the one knock on carbon has been its inability to capture a large variety of molecules from diverse chemical families (acids, bases and solvents) and to handle their reactive behavior (polarity, boiling point and molecular weight). To counter this, many manufacturers offer carbon that has been impregnated with materials such as rare earths. This practice has the major downfall of blocking about 50% of the micro pores responsible for molecular adsorption. And this, in turn, diminishes the retention capacity of the filter. The same is true with bonded carbons, since the bonding agent obstructs a portion of the pores needed for adsorption.

Neutrodine®, by contrast, has been engineered to effectively adsorb a broad spectrum of molecules while increasing retention capacity. The result is a multitask filtration system that is far more effective than traditional carbons—impregnated or not.

## Standards and certification

The Green Solution Hood with Neutrodine® filtration passed ASHRAE 110-1995 testing as verified by Exposure Control Technologies' independent testing. It is also compliant with AFNOR NF X 15-211, the stringent industry standard developed by a committee of independent scientists and manufacturers specializing in filtration and safety. These standards establish specific performance criteria for the quality of the filtered air that fume hood operators must be able to breathe during their professional lifetime without encountering any health risks. At no time is a possible accumulation of the Threshold Limit Value (TLV) tolerated under these standards.

## Advantages of Neutrodine® compared to traditional carbon filtration:

- Multi-usage of acids, bases and solvents, separated or combined.
- Airflow speed within the adsorption media increased by 25%, which ensures a face velocity of 100 fpm at a comfortable sash height without the need to use a variable air volume system.
- 50%+ increase in retention capacity, which doubles filter life.
- Increased variety of retained molecules to the majority of commonly used chemicals within laboratories. The remaining are either non-toxic or extremely rare molecules used by less than 0.1% of labs.


## gGuard capabilities

The gGuard onboard computer monitors and controls the internal workings of **The Green Solution Hood** with Neutrodine® Technology, providing access to and status updates on:

- Filter type (Neutrodine®, HEPA)
- Filter integrity
- Sash position
- User identification
- Blower motor speed
- Ambient laboratory air
- Enclosure temperature breach
- Energy savings data
- Usage time data

Every operational aspect listed can be controlled remotely by a computer equipped with the gGuard network-monitoring software. This software has the ability to memorize the usage history of every unit and provide statistical information such as overall energy savings, safety and fire data, laboratory air condition, usage behavior and frequency, filter change frequency or even service frequency for an entire network of enclosures.

## A choice of monitoring techniques

For added convenience and flexibility, gGuard gives you two ways to monitor and control **The Green Solution Hood** enclosures with Neutrodine® Technology:

**gGuardOnsite (PC or Pocket)**

The network-monitoring software that comes standard with **The Green Solution Hood,** this package is pre-loaded onto the computer of a site manager or safety officer, allowing them to communicate directly with **The Green Solution Hood** or network via Ethernet, local area network or Bluetooth®. For even more convenience, the system also allows **The Green Solution Hood** with Neutrodine® Technology to communicate with a PDA or cell phone.

**gGuardOnline**

An optional service with which AMS communicates directly with **The Green Solution Hood** via the Internet to provide both monitoring and maintenance services.

## Exclusive twin-sensor filter saturation detector


To ensure complete security and protection for laboratory personnel, **The Green Solution Hood** with Neutrodine® Technology features an exclusive saturation detector. Able to detect both solvents and acids, this innovative system uses two sensors, each with a unique sensitivity level tailored to its individual function. The detector also includes an electronic sensitivity adjustment system that automatically adapts to the molecules in use. The first sensor is located inside a detection chamber between the main and back-up filters of the Adaptable Modular Filtration Column (AMFC). The second sensor is located within the laboratory environment, allowing for a permanent comparative sensitivity adjustment of the filter saturation detection sensor. This unique design enables a constant recalibration of the detection system relative to the ambient laboratory air, therefore avoiding false alarms triggered by nontoxic molecules traveling through the filter and being picked up by the extreme sensitivity of the main detection sensor. As an added safety benefit, the ambient air sensor also allows for the permanent monitoring of laboratory air toxicity levels, making **The Green Solution Hood** with Neutrodine® Technology an invaluable addition to any laboratory environment.


## Temperature detection and alert system

A temperature sensor inside **The Green Solution Hood** with Neutrodine® Technology detects unusual fluctuations in temperature and alerts the user via an audible alarm. As an added precaution to ensure immediate response, an electronic alert message is simultaneously transmitted to the safety officer or site manager via the gGuard monitoring software, identifying the specific unit involved. This system provides two detection levels: A first alert is triggered when the temperature reaches 176°F and remains steady. When the ambient temperature reaches 212°F, a second alarm is then triggered.

## User identification and approval system

Designed to provide unprecedented safety and control, **The Green Solution Hood** with Neutrodine® Technology can only be operated with the insertion of a personalized RFID card. Three distinct levels of access are offered:

- User—Allows full operation of **The Green Solution Hood** with Neutrodine® Technology for approved applications and activates all safety alarms.
- Administrator—Identifies a site manager or safety officer responsible for a network of fume hoods and gives him/her unrestricted access to important historical data such as recorded usage and alarm history.
- Maintenance—A total access card that enables calibration functions, such as blower speed adjustments, along with troubleshooting features allowing for easy service and fast repairs.

# Challenging Preconceived Ideas.

## 1 All manufacturers' products are similar.

**Not any more:** **The Green Solution Hood** is a filtering fume hood that uses multitask Neutrodine® filtration technology instead of standalone carbon filtration commonly found in application-specific products known as ductless fume hoods. Furthermore, **The Green Solution Hood** combines the highly versatile proprietary Neutrodine® filtration technology with the revolutionary gGuard monitoring package to offer a much larger usage spectrum than has ever been available before. Neutrodine®—which is in compliance with the ASHRAE 110-1995 and AFNOR NF X 15-211 filtration standards—enables **The Green Solution Hood** to exhaust 100 times less toxic contaminants than are allowed by the official TLV while maintaining the industry's preferred 100 fpm face velocity at various working sash heights. In addition, gGuard gives **The Green Solution Hood** owners total control and an unprecedented level of safety.

## 2 There are a great variety of chemicals in the lab and carbon filters are too specifc.

**Not any more:** Neutrodine® can handle the majority of chemicals traditionally used in laboratories*. Furthermore, thanks to the world's first Adaptable Modular Filtration Column (AMFC), **The Green Solution Hood** can handle liquids and powders—either individually or together—even in a cleanroom environment.

## 3 Heavier molecules can push out lighter molecules.

**Not any more:** This problem only occurs with low quality carbons or carbons that are specifically designed to desorb such as the carbon used in industrial filters to recover solvents. Neutrodine® filtration technology uses a proprietary high quality carbon with a plurality of pores so large and diverse that both light and heavy molecules are retained independent of one another. If high quality carbon were able to desorb, military gas masks would be rendered useless by an enemy simply releasing a heavier gas. Obviously this isn't the case. High quality carbon is trusted in applications worldwide, even when—as in this example—reliability is a matter of life and death.

## 4 In the event of a spill, carbon filtration has limited capacity for containing large concentrations of chemicals.

**Not any more:** **The Green Solution Hood** uses Neutrodine® Technology instead of the standalone carbon filters found in limited application ductless fume hoods. Test reports show that **The Green Solution Hood** with Neutrodine® Technology delivers back-up redundancy capabilities capable of containing chemical spills in excess of 1 gallon.

## 5 Carbon filtration requires controlled conditions, operator intervention and constant monitoring. Ducted fume hoods are much simpler to use.

**Not any more:** Unlike application-specific products that require operator intervention, **The Green Solution Hood** with Neutrodine® Technology is very simple to use. Activating an on/off switch is the only responsibility required from the operator. All other functions are controlled and monitored with the help of the gGuard management package. This system—which uses proprietary software developed with Microsoft® technologies—makes **The Green Solution Hood** with Neutrodine® Technology easier to use since safety-related functions are taken out of the hands of the operator and handled remotely, and constantly, by the person(s) in charge of safety. **The Green Solution Hood** with Neutrodine® Technology also features a series of innovative detectors and monitors that provide a wealth of operational information and management capabilities never before seen in a laboratory fume hood.

## 6 Filters are expensive and difficult to change.

**Not any more:** Unlike previous generations of filters, we are able to estimate the life of your filters with our Life Cycle Payback. Simply fill out our questionnaire to find out if our system is not only safe for your application, but economical as well. When it comes time to change the filters, no special tools are required and you will be back up and running within an hour.

Supplying Laboratory Fume Hoods in Canada since 1985

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