

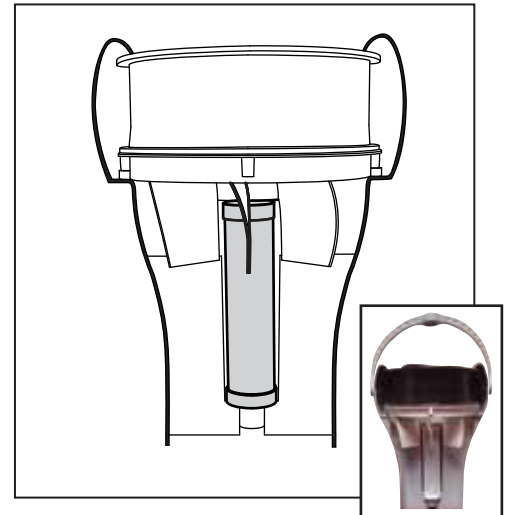
## Photohydroionization Destratification Unit

The PHI unit creates a very aggressive advanced oxidation atmosphere that reduces airborne bacteria, mould & viruses up to 99%, as well as odours and Volatile Organic Compounds (VOCs) by up to 97%.

## OVERVIEW OF AIRIUS PHI

The Airius Photohydroionization (PHI) is a combination of two new proprietary technologies:

- (1) Airius Destratification Unit – Air movement technology
- (2) Photohydroionization Cell (PHI) – Air purification technology - Advanced Oxidation Technology



### Description of Airius Destratification Unit

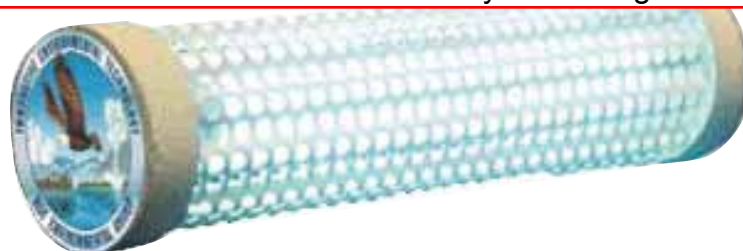
The Airius Destratification Fan Unit is a new technology that significantly reduces HVAC energy consumption in non-domestic buildings. The Airius system recirculates heated air which constantly rises to the ceiling, directing it back down to floor level in a concentrated column; this

#### Description of Airius Destratification Unit

The Airius Destratification Fan Unit is a new technology that significantly reduces HVAC energy consumption in non-domestic buildings. The Airius system recirculates heated air which constantly rises to the ceiling, directing it back down to floor level in a concentrated column; this results in an equalisation of temperature from floor to ceiling. The net result is reduced energy consumption and reduced carbon emissions, whilst dramatically improving the comfort of staff and visitors in a building by eliminating hot and cold spots.

#### Description of Photohydroionization (PHI) Cell and Technology

Air purification is critical in maintaining healthy building environments through the removal of contaminants in the air. Indoor Air Quality (IAQ) and indoor air pollution has a major influence on the health, comfort and well-being of building occupants and with recent health epidemics such as MRSA and SARS, IAQ is recognised by government agencies and organisations, (such as BRE, FETA, HSE etc.) as a major environmental health issue. Poor air quality has been linked to Sick Building Syndrome, reduced productivity in offices and impaired learning in schools. Mould, once considered an unpleasant natural product, is now believed to be the cause of many respiratory diseases. Most colds and viruses are transmitted indoors by airborne germs.



### The Effects of Indoor Air Pollution

Extensive research has been conducted into the effects of Indoor air pollution. One report 'Indoor Air and Your Health - 1995'<sup>1</sup> details these effects and some of the main points from this report have been listed below:

- Impacts on health from indoor air pollutants may be experienced soon after exposure or years later.
- Immediate effects may show up after a single exposure or repeated exposures.
- Immediate symptoms from indoor air pollution can be similar to those from colds or other viral diseases.
- Symptoms can include irritation of the eyes, nose, and throat, headaches, dizziness and fatigue.
- Symptoms of diseases including asthma, hypersensitivity pneumonitis and humidifier fever may show up soon after exposure to indoor air pollutants.
- Some people can become sensitized to biological pollutants after repeated exposures as well as chemical pollutants.
- People react very differently to exposure to indoor air pollutants.
- The effects of poor Indoor Air Quality which include respiratory diseases, heart disease and cancer can be severely debilitating or fatal. It is prudent to try to improve the indoor air quality in your workplace even if symptoms are not noticeable.

The PHI Cell is designed to reduce sick building syndrome risks by eliminating most biological and chemical contaminants using an Advanced Oxidation Technology and by dramatically improving air circulation. It utilizes a broad spectrum high intensity UV light targeted on a quad metallic catalyst UV target in a low-ozone and moist atmosphere. This creates a unique oxidation process providing friendly oxidizers that can target specific chemical and biological contaminants, or very safe and aggressive oxidizers that revert back to oxygen and hydrogen after the oxidation.

In short the process used in the Airius PHI unit substantially kills micro-organisms and neutralizes harmful airborne chemicals, whilst improving air circulation and providing energy savings in the winter.

<sup>1</sup>EPA Document # 402-K-93-007, April 1995



# Airius PHI-Cell™ Kit

## Photohydroionization Destratification Unit

The PHI unit creates a very aggressive advanced oxidation atmosphere that reduces airborne bacteria, mould & viruses up to 99%, as well as odours and Volatile Organic Compounds (VOCs) by up to 97%.

### Reasons to use the Airius PHI Technology

Germicidal UV light rays have been used for decades by the medical industry as a method for destroying microorganisms (germs, viruses, bacteria). However, germicidal UV light is effective in reducing only the airborne micro-organisms that pass directly through the light rays. The Airius PHI continually circulates the air through the Airius PHI unit, passing the air directly through the UV light to destroy the biological micro-organisms.

Germicidal UV light has little to no effect on gases, vapours or odours. PHI, on the other hand, is very effective on gases, vapours, VOCs (volatile organic compounds) and odours.

The combination of safe low level ozone (O<sub>3</sub>) and UV light enhanced by a hydrated quadmetallic compound target develops an advanced oxidation reaction that creates as well as reduces ozone to safe low levels. This process also produces hydro-peroxide, super oxide ions, ozonide ions and hydroxides that have the ability to bond and neutralize chemicals such as mercury, benzene, formaldehyde, chloroform, and ammonia. By engineering the proper UV light wavelength in combination with a triple function and minimal maintenance, the Airius PHI provides safe hydro-peroxides, super oxide ions, ozonide ions and hydroxides to purify the air that is being continuously circulated through the Airius PHI unit.

With the Airius PHI, micro-organisms can be reduced by over 95%. Gases, VOCs and odours can also be reduced significantly and the room will have ozonide ions, hydro-peroxides, super oxide ions and hydroxides that will give facilities fresh, clean and odour free air.

In addition, while the air is continuously being purified, the space is also being thermally equalized. This results in improved comfort through the elimination of hot and cold spots and the potential for a significant reduction in energy consumption by balancing the floor and ceiling temperature.

### Where Should I Use the Airius PHI Technology?

The types of facilities for the Airius PHI applications include those listed below.

Public event facilities	Waste disposal & refuse collection facilities
Educational facilities	Recreational facilities
Educational institutions	Selected industrial and commercial facilities
Selected retail – restaurants & bars	Government facilities
Law enforcement facilities	Hospitals

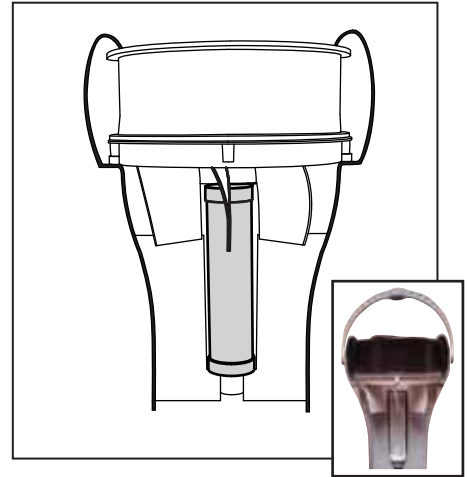
The applications within the above include, but are not limited to those listed below:

Sanitation facilities	Locker rooms
Swimming pools	Medical and first aid rooms
Food preparation	Food processing
Law enforcement holding rooms	Disposal and refuse areas
Contaminated space or rooms	Jails

The new patent-pending PHI-Cell™ by RGF is the latest advancement in Photohydroionization™ Technology. Currently available in Airius models 10, 15 & 25

### RGF's PHI-Cell™ Kit

The new patent-pending PHI-Cell™ by RGF is the latest advancement in Photohydroionization™ Technology. Currently available in Airius models 10, 15 & 25.



RGF has developed a proprietary broad spectrum, high efficiency UV bulb (HE/UV™) to work with RGF's hydrated quad-metallic target and RGF's PPC-UV bulb coating.

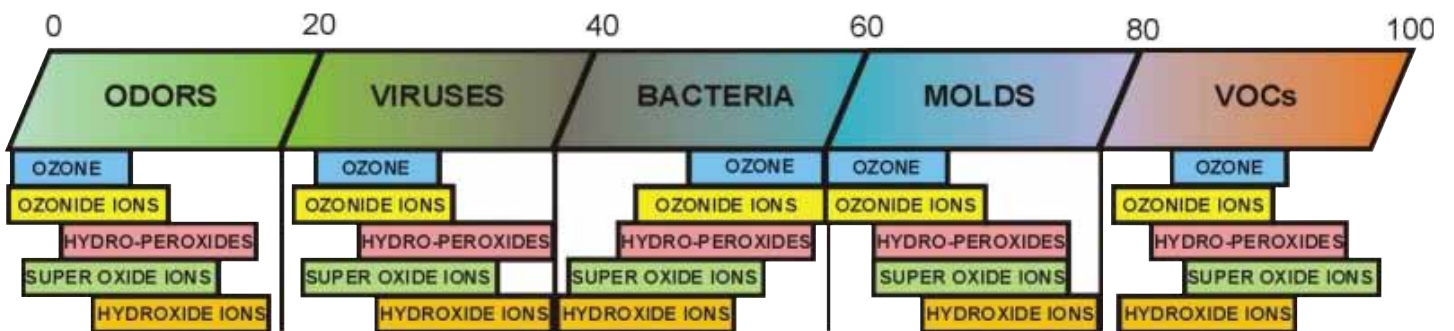
The target acts as a catalyst for a hydroxyl radical reaction of the broad spectrum 100-300 nm HE/UV™ energy with water vapour on the hydrated target. The results are hydro peroxides, super oxide ions, passive negative ions hydroxides and ozonide ions.

The cell creates a very aggressive advanced oxidation atmosphere that has the ability to reduce airborne bacteria, mould and viruses up to 99% and also odours and Volatile Organic Compounds (VOCs) by up to 97%.

A proprietary protective poly shield (RGF PPS) shields the bulb from temperature fluctuations and breakage that could release mercury, which is a problem for all UV bulbs.

The new proprietary, high efficiency rated bulb has an estimated life of 25,000 hours, just short of three years. RGF is providing a three year warranty with the cell. RGF has successfully used its PHI-Cell™ in air, water, food and laundry purification systems.

The Chinese Government has tested the RGF PHI-Cell™ and approved it for use in all government buildings and subways for SARS protection.

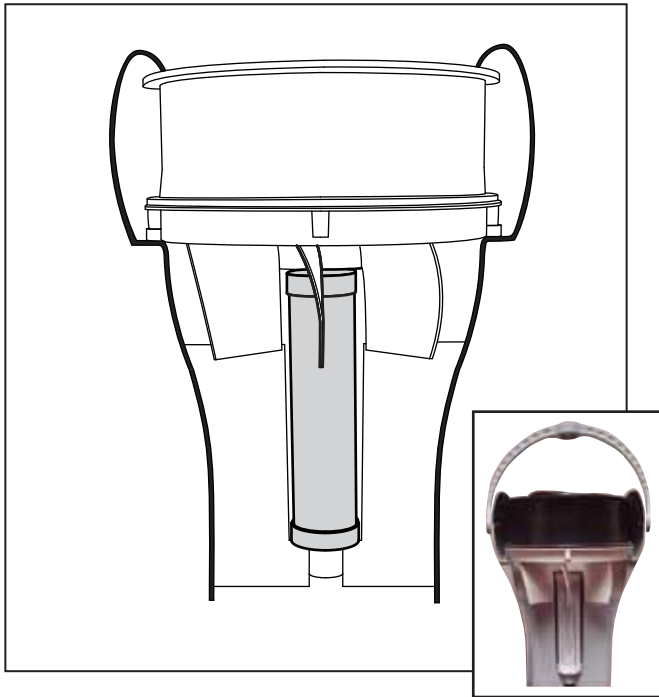


# Airius PHI-Cell™ Kit Product Information Sheet

## Photohydroionization Destratification Unit

The PHI unit creates a very aggressive advanced oxidation atmosphere that reduces airborne bacteria, mould & viruses up to 99%, as well as odours and Volatile Organic Compounds (VOCs) by up to 97%.

### PHI™ KIT - Works with Airius Models 10, 15, 25



## PHI KIT FEATURES

### DESCRIPTION

- Photohydroionization kit
- Broad spectrum HE/UV light targeted on a quad metallic target that produces hydroperoxides

### USES

- Used to flood a space with airborne hydroperoxides
- Used to mitigate airborne bacteria, mould, viruses, smoke, odours and VOCs

### ATTRIBUTES AND CHARACTERISTICS

- Creates aggressive advanced oxidation atmosphere
- Kills 99% of Bacteria, Viruses and Mould (Surface and Airborne)
- Kills 85% of VOCs and Odours

### SELECTION

- Works with Airius models 10, 15, and 25
- Contact manufacturer for a selection consultation

## PHI KIT PROPERTIES

PHI BULB	Applicable Airius Unit:	10 - 25	10 - 25	10 - 25
	Length:	5" PHI	9" PHI	14" PHI
	Wattage:	9 watts	10 watts	14 watts

### PERFORMANCE

- Estimated life of 25,000 hours, continuous runtime (3 years)
- Broad spectrum 100-300 nm HE/UV
- Low level ozone (0.01 - 0.02 ppm)

### WARRANTY

- Warranty offered - 3-years (RGF)

### SAFETY PRECAUTIONS

- UV bulb is encased in a protective poly tube to prevent any glass or mercury breakage/leakage

### MATERIALS, DIMENSIONS & PROPERTIES

- High intensity broad spectrum UV tube (100 - 300nm)
- Hydrated catalytic matrix cell (Quad-Metallic)
- UV bulb encased in a protective poly tube
- Entire assembly is encased in a protective metal cell

### ACCESSORIES & OPTIONS

- Available in Airius models 10, 15 & 25.

### INSTALLATION

- PHI cell installed at factory

### OPERATION

- Designed to operate 24 hours-a-day, 7 days-a-week to protect against airborne mould, bacteria, viruses, odours and VOCs

### MAINTENANCE

- No maintenance required
- If the PHI cell fails, contact manufacturer