

# T BIO-GAS FILTER

Purified air, certified continuous cycle in industrial buildings



Fruit and vegetable processing : Ethylene



Wood processing : Formaldehyde

The T BIO-GAS filter is an advanced, **modular, continuous-cycle air purification system** for AHUs or **with integrated self-ventilation** that can be used in all air-conditioned buildings with the presence of pollutants (VOCs e.g. formaldehyde in buildings with wood and formica processing, ethylene in fruit and vegetable processing).

It uses an **innovative method for air purification** with a **focus on personal safety**, avoiding the use of health-damaging technologies (ozone, UV, oxidative peroxides).

Developed after a long period of monitoring and testing by accredited specialist laboratories, T BIO-GAS by TONALI E.A. offers an effective, safe and certified solution for the abatement of pollutant gases. The application is functional H24, both for systems with integrated self-ventilation and when integrated in AHUs.



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# Advantages of the T BIO-GAS filter

## Real gas elimination

- the purification of polluted air in the working environment avoids the use of external air subject to heating or cooling depending on the season, thus saving energy

## Continuously reducing volatile gases

- VOC/VOCs according to international parameters (LEED-WELL)

## Suitable for use in the presence of people

- no risk to people from the technology used

## Certified efficacy

- according to international standards in situations totally overlapping with real operating conditions in a normally crowded environment

## Easy installation

- thanks to the dimensional standard used and the coupling systems to the air passage section of the AHUs. Also available in a self-contained, wheeled version

## Low energy costs

- both for the low consumption of the LEDs and the low pressure drop in the air filter < 100 Pa

## Low maintenance costs

- filter elements should be replaced every 8-12 months depending on the operating hours of the AHU

## Light weight

- through the use of perforated polycarbonate filters doped with titanium dioxide

## Low disposal costs

- the replaced materials are not considered hazardous waste and are therefore disposed of in the same way as normal plastics

## No additional costs for building works

## Quick time to ensure sanitisation of rooms

## Monitoring of air pollutant parameters



- DETECTOR CR102PM : possibility of integrating the filter with a monitoring system to control the parameters of the amount of gas present in the air.

# The system: how it works

This AHU filter has insertion characteristics such that it occupies the entire usable space in the HVAC section and at the same time has characteristics of light weight construction and ease of installation.

Tonali E.A. also tested and certified that the filter's loading rate was low enough (<100Pa) not to impact on the performance of the original aerualic system.

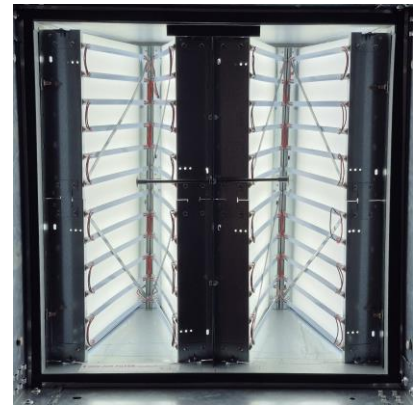
The T BIO-GAS FILTER is designed for stand-alone systems. Constructed from suitably coupled and mechanically assembled modular elements, it withstands the typical working conditions of AHUs (see table).

The individual modules consist of a galvanised steel supporting structure, which contains the filtering elements in polycarbonate treated with TiO<sub>2</sub> and capable of generating the photocatalytic effect thanks to the white light of calibrated frequency LEDs.

In order to guarantee the best filtering effect, the length of the T BIO-GAS FILTER is approx. 400 mm so as to obtain contact times between the polluted air and the filter that are more than sufficient for perfect purification and maximum reduction of polluting gases (VOCs).



T BIO-GAS filter with autonomous ventilation: trolley version



T BIO-GAS filter to be applied to HVAC

Phoebe® technology induces photocatalysis (a virucidal, bactericidal and anti-infectious process) by irradiating white LED light (above 400nm and therefore not producing ozone) on perforated polycarbonate treated with visible activated **titanium dioxide**. The LEDs used guarantee lower energy consumption (life of 3/4 years) and the polycarbonate plastic materials, in addition to the aforementioned characteristics of lightness and flexibility of installation, ensure high industrial circularity and maximum reduction of environmental impact with easy disposal.

The **anti-pollutant action** was tested using European Certification Institutes, some of which adopt the even more stringent American parameters (ASTM, EPA).

This technology continuously reduces the presence of volatile gases (VOCs) according to international parameters (Well-Leed),

By focusing on new technologies and innovative materials, Tonali E.A. has created a product that is easy to handle and position in the HVAC sector, which at the same time avoids the costly VMC and makes indoor environments healthy in a very short time, thus also avoiding labour disputes in the workplace.

# Details and certifications

Regulatory references EN 1822 – ISO 17025	MODEL 1 (L x H x W) 560 x 295 x 420 mm	MODEL 2 (L x H x W) 560 x 560 x 420 mm
Air flow rate at 2,75 m/s	1785 mc/h	3570 mc/h
Initial and final pressure drop	68 Pa	68 Pa
Air flow rate at 3.0 m/s	2000 mc/h	4000 mc/h
Initial and final pressure drop	85 Pa	85 Pa
Air flow rate at 3,5 m/s	2250 mc/h	4500 mc/h
Initial and final pressure drop	100 Pa	100 Pa

The T BIO-GAS filter has been designed to be inserted in AHUs in exactly the same way as all other standard filters used in the HVAC sector and is manufactured in the two models indicated above on a standard galvanised steel or AISI 316 stainless steel subframe for humid and polluted environments or in the presence of salt.

With this modularity, the filter can be used on both new and most existing AHUs. The power supply of the LED lights is provided by 1 driver of adequate power capable of supplying 24V direct current with a MTBF of approximately 50,000 hours. The LED boards are also tropicalised against humidity. T BIO-GAS filters can be equipped with a pre-filter (e.g. standard G4) for dust protection inserted upstream in the same subframe.

## MAINTENANCE

The filter is serviced every 8-12 months in relation to the hours of operation (with a degradation of approximately 10-15%) and only the filter elements can be replaced, reusing the entire remaining part of the filter (casing, frames and LED lights with power supplies). T BIO-GAS FILTER can be integrated with **a sophisticated monitoring system to control air quality parameters**, its correct functioning, energy consumption and hours of effective virucidal, bactericidal and anti-polluting action (predictive maintenance).

## DISPOSAL

Polycarbonate filters can be disposed of in a municipal waste landfill like ordinary plastic

## CERTIFICATIONS

### BIOCHEME LAB SRL

- VOCs (Volatile Organic Compounds) abatement analysis inside a glovebox. In all cases there is abatement of the VOCs pollutant tested (5 representative families were tested)
- Analysis of total microbial load abatement in the office environment. With the active Phoebe® system the abatement of microorganisms is detected
- Analysis of ozone production in shared use office. No UV light was used to confirm the absence of ozone production by the Phoebe® system

Ce.Ri.Col. internal laboratory of Colorobbia Consulting

- NO (nitrogen monoxide) abatement analysis inside a glovebox. In the presence of an active Phoebe® system, NO is completely eliminated



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