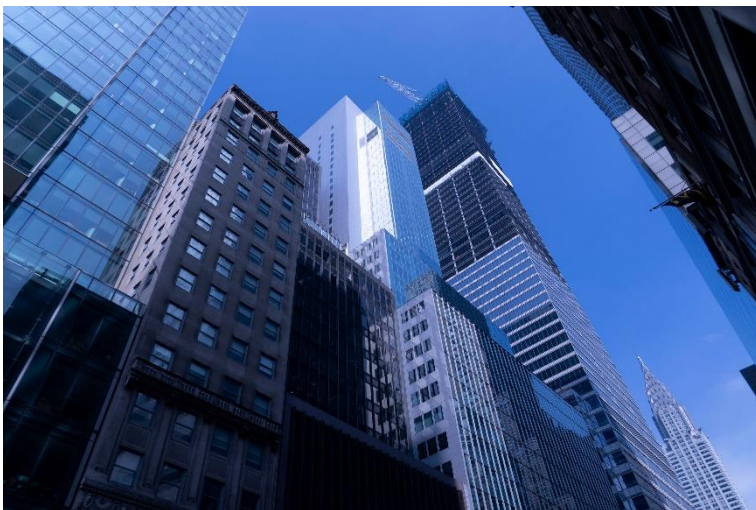


# T BIO-GAS FILTER

Continuously sanitized, certified air  
for large buildings



The T BIO-GAS FILTER is an **advanced, modular continuous cycle air purification system** for AHUs which finds its place in all air-conditioned buildings with the presence of pollutants

It uses an **innovative method for sanitizing the air** with **particular attention to the safety of people**, avoiding the use of technologies that are harmful to health (ozone, UV, oxidative peroxides, etc.).

TONALI E.A. presents the T BIO-GAS FILTER for the continuous cycle air purification from VOCs, for example from formaldehyde in industrial buildings and ethylene in containers or warehouses for exotic fruit, flowers, ...

After an intense period of research and many hours of testing at accredited laboratories, TONALI E.A. proposes T BIO-GAS technology, the **effective, safe and certified solution** for the abatement of polluting gases both with integrated autonomous systems and inserted into centralized AHU systems, operating 24 hours a day.

Lightweight, easy to install and with reduced maintenance costs.



**TONALI E.A.**  
Energia & Ambiente

# Advantages of the T BIO-GAS FILTER

## Real elimination of gas

- the purification of polluted air in the work environment avoids the use of external air subject to heating or cooling depending on the season with consequent energy savings

## Continuous reduction of volatile gases

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

## Can be used also when people are present

- no risk to people from the technology used

## Certified effectiveness

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

## Easy installation

- thanks to the standard sizes used and the hooking system to the AHU air passage section

## Low energy costs

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

## Low maintenance costs

- the filter elements must be replaced every 6-12 months according to the working hours of the AHU

## Low weight

- thanks to the use of lightweight plastic materials treated with TiO<sub>2</sub>

## Low disposal costs

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

## No type of additional costs for construction works

## Quick times to guarantee the sanitation of the environments

## Control of air quality parameters

- possibility of integrating the filter with a monitoring system for the control of air quality parameters, correct operation, energy consumption and hours actually worked (**predictive maintenance**).



# The system: how it was born and how it works

This AHU filter has insertion characteristics such as to occupy entirely the useful space in the HVAC section and, at the same time, it has characteristics of lightness of construction and ease of installation..

Tonali E.A. it also tested and certified that the filter load quota was sufficiently low (<100Pa) not to impact the performance of the original aeraulic system.

The T BIO-GAS FILTER was designed for autonomous systems. Built from modular elements suitably coupled and mechanically assembled, it resists the typical working conditions of AHUs (see the chart).

The individual modules are made up of a load-bearing structure in galvanized steel, which contains the polycarbonate filter elements treated with TiO<sub>2</sub> and capable of generating the photocatalytic effect thanks to the white light of the calibrated frequency LEDs.

To ensure the best filtering effect, the length of the T BIO-GAS FILTER is approx. 400 mm in order to obtain contact times between the polluted air and the filter, more than sufficient for perfect purification and maximum reduction of polluting gases (VOC/VOC).



Integrated autonomous T BIO-GAS FILTER



T BIO-GAS FILTER to be applied to HVAC

For the creation of this filter, special LEDs were chosen (to induce photocatalysis) which guarantee the *lowest energy consumption*. Innovative plastic materials were selected which, in addition to the aforementioned characteristics of lightness and flexibility of installation, ensure high industrial circularity and maximum reduction of environmental impact with ease of disposal.

Colorobbia Consulting has provided for the *certification of the anti-pollutant action* using European Certification Institutes, some of which adopt the even more stringent American parameters (ASTM, EPA).

The technology induces photocatalysis (anti-pollutant process) by irradiating white LED light (above 400nm and therefore not producing ozone) on innovative materials treated with visible-activated **titanium dioxide** (Colorobbia Consulting patent).

With this technology, the presence of volatile gases (VOC/VOC) is continuously reduced according to international parameters (Well-Leed).

Tonali E.A. focusing on new technologies and innovative materials, it has created a product that is easy to manage and position in the HVAC sectors, which at the same time avoids the expensive VMC and makes internal environments healthy in a very short time, thus also avoiding union disputes in the workplace.

# Details and certifications

Applied regulations EN 1822 – ISO 17025	TYPE 1 295 x 580 x 420 mm	TYPE 2 580 x 580 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 into AHUs exactly like all other standard filters used in the HVAC sector and is manufactured in two different sizes:

580 x 580 x 420 mm (depth) on standard galvanized steel subframe

295 x 580 x 420 mm (depth) on standard galvanized steel subframe

The filter modules are placed in a metal box that can be easily inserted and removed from the standard counter frame of the filtering section of any AHU, new or existing. The LED lights are powered by 3 drivers of adequate power capable of providing 12V direct current for approximately 30,000 hours.

The T BIO-GAS FILTERS for HVAC can be equipped with a standard G4 pre-filter for dust protection inserted upstream in the same counter frame.

## MAINTENANCE and GUARANTEE

Maintenance of the filters is scheduled every 6 months and it will be possible to wash only the filter elements to reuse all the remaining part of the filter (casing, frames, LED lights with power supply, ceramic filters).

T BIO-GAS FILTER can be **integrated with a sophisticated monitoring system to control air quality parameters**, its correct functioning, energy consumption and the hours of effective virucidal, bactericidal and anti-pollutant action (predictive maintenance).

The guarantee on the filter is by the law.

## DISPOSAL

Polycarbonate filters are disposed of in incinerators or can be disposed of in a municipal waste landfill like common plastic.

## CERTIFICATIONS OBTAINED BY COLOROBIA CONSULTING

BIOCHEME LAB srl

- VOC (Volatile Organic Compounds) reduction analysis inside a glovebox. In all cases, the tested VOC pollutant is reduced
- Analysis of total microbial load reduction in the office for common use. With the active Phoebe® system, the elimination of the presence of microorganisms is detected
- Analysis of ozone production in common office use. By not using UV lights, the absence of ozone production by the Phoebe® system was confirmed

Internal laboratory Ce.Ri.Col. by Colorobbia Consulting

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



**TONALI E.A.**

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