

T BIO-AIR FILTER

Sanitised, certified aircontinuous cycle
in large buildings



The T BIO-AIR filter is an **advanced, modular, continuous-cycle sanitising system** for AHUs that can be used in all buildings with closed rooms where there is a recirculating centralised HVAC system.

It uses an **innovative method for air sanitisation** with a focus on personal safety, avoiding the use of technologies that are harmful to health.

TONALI E.A. presents the T BIO-AIR filter for continuous air sanitation in large buildings based on Phoebe® technology

After an intense period of research and many hours of testing at the most renowned laboratories, TONALI E.A. presents T BIO-AIR technology, the effective, safe and certified solution for the elimination of viruses, bacteria and polluting gases.

The T BIO-AIR modular filter, installed in centralised AHU systems, operates at H24. Lightweight, low pressure drop, easy to install and with low maintenance costs.



TONALI E.A.
Energia & Ambiente

Advantages of the T BIO-AIR filter

Effective elimination of viruses and bacteria

- not simple mechanical capture (with HEPA filters): with T BIO-AIR the devitalised organic material is transformed into harmless substances

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 standard size used and the coupling systems to the air passage section

Low energy costs

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

Light weight

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

Low maintenance costs

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

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 construction or electrical work

Quick time to ensure sanitisation of rooms

Monitoring of air quality parameters

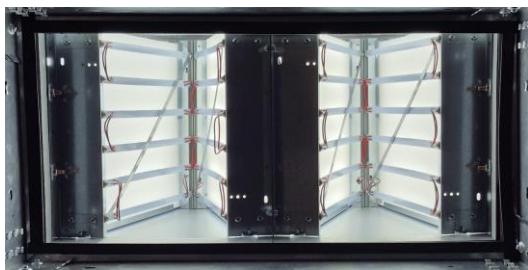


- AIR QUALITY T70 : possibility of integrating the filter with a monitoring system to be installed in certain rooms to control air quality parameters, correct operation and actual working hours (predictive maintenance).

The system: how it was born and how it works

TONALI E.A. has designed and developed the T BIO-AIR filter using Phoebe® technology. This filter, designed to be introduced in new AHUs or applied to existing ones, has insertion characteristics such that it occupies the entire usable space in the HVAC section and has at the same time characteristics of lightness of construction and ease of installation in various sizes.

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



T BIO-AIR filter 60 x 30 x 42 cm (LxHxW)



T BIO-AIR filter 60 x 60 x 42 cm (LxHxW)

Phoebe® technology induces photocatalysis (a virucidal, bactericidal and anti-pollution 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 span 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 **virucidal, bactericidal and anti-pollutant action** was tested using **European Certification Institutes**, some of which adopt the even more stringent American parameters (ASTM, EPA).

In addition to the virucidal, bactericidal and anti-pollutant action, the presence of volatile gases (VOCs) is continuously reduced according to international parameters (Well-Leed), and PMs (2.5 and 10) are retained in special pre-filters to prevent pathogens from being transmitted. In fact, it is well known that PMs are considered as 'buses' for viruses.

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 costly VMC and sanitises indoor environments in a very short time.

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-AIR 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 shown 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-AIR filters can be equipped with a pre-filter (e.g. G4 standard) for dust protection inserted at the top of 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-AIR 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

AIRMIID HEALTH GROUP LTD

- MS2 bacteriophage abatement analysis in a single pass with air velocity through filter typical of AHU systems

EUROFINS BIOLAB SRL

- Aerosol-dispersed Escherichia coli abatement analysis of a glovebox. Abatement = 99%
- Abatement analysis CORONAVIRUS deposited on filter inside glovebox. Abatement \geq 99.9%

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



TONALI E.A.

TONALI E.A. srl | Via Santa Caterina da Siena 25, 20004 Arluno (MI), Italia

www.tonaliea.it | info@tonaliea.it | Tel. +39 02 90374.309/221 | C.F.-P.I. 10932960965

Ed. 10/24