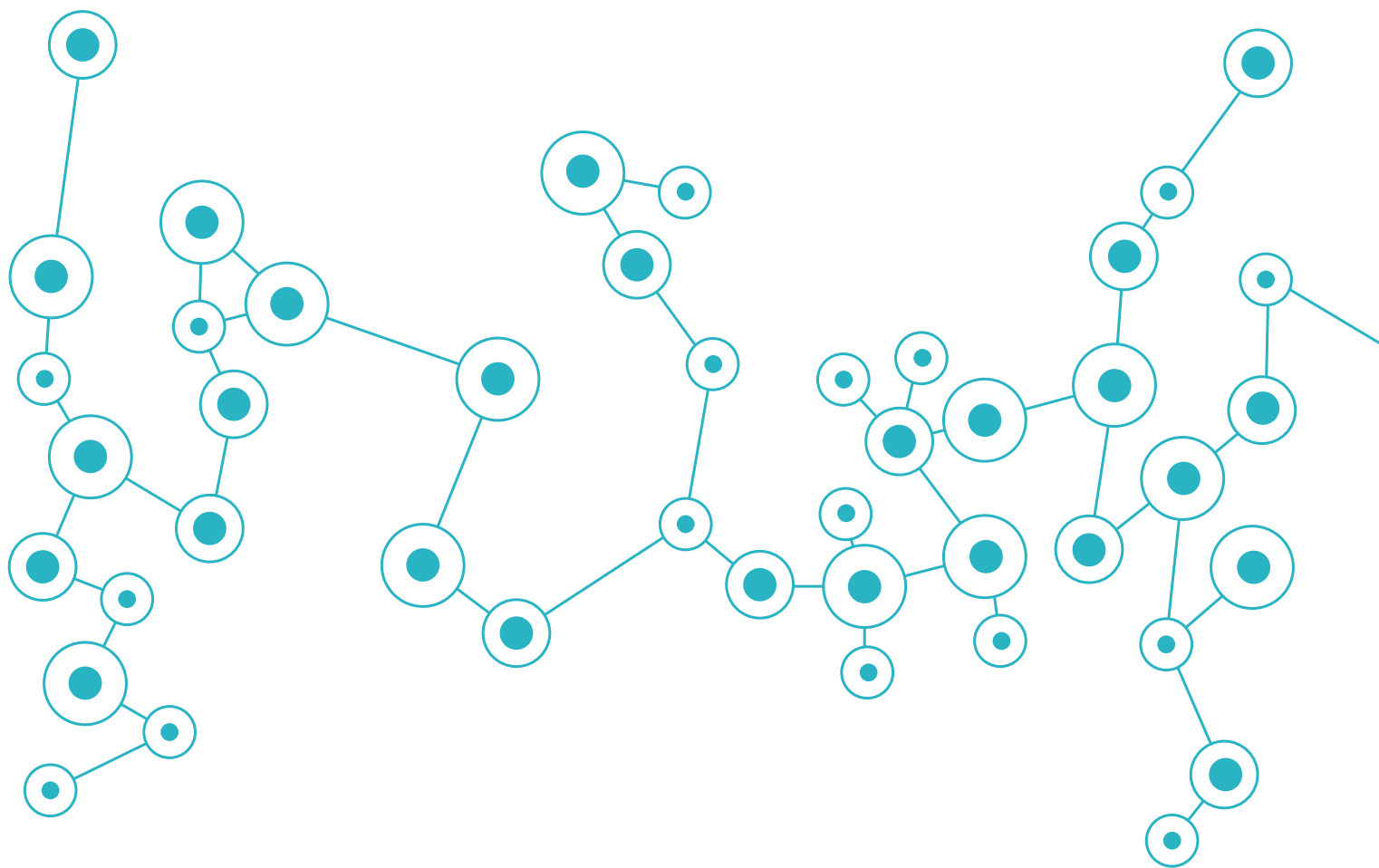


LIGHT that **PURIFIES AIR**



wivactive
TECHNOLOGY

WIVA





LIGHT that PURIFIES AIR

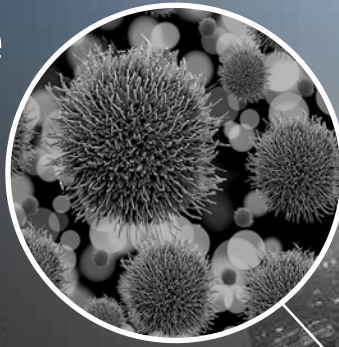
WivActive is an innovative technology developed by Wiva Group for air purification through the use of light and nanomaterials.

The result of **many years of experience of the company operating in the lighting sector** and in **collaboration** with major internationally accredited **research centers**, **WivActive** technology offers an **intelligent and effective solution to the problem of pollution and unhealthy air in closed environments**.

WivActive products are completely **Made in Italy: designed and developed by the Tech Lab** of Wiva Group **and manufactured at the company's dedicated production facilities**.







Bacteria



Virus



Pollution



Unpleasant smells

PROBLEM

INDOOR POLLUTION

At home and in the office we are surrounded by elements that are invisible, let them enter our body simply breathing, without realizing it. Outdoor and indoor air pollution is considered by the World Health Organization as the main environmental risk factor of population's health.

90%

Time of day that we spend indoors

5x

Indoor pollution is 5 times higher than the external one

90%

The amount of PM10 compared to all the particles in the air

8lt

Air amount that we breath in a minute

350

Millions of particles ingested every minute

25

Millions of particles ingested with each breath

PROBLEM

Indoor pollution

- 1) What is the indoor pollution
- 2) From what it's caused: which substances, how they spread
- 3) What are the negative consequences: why should we fight them/prevent them

The most known air pollution factors derive mainly from the transport sector, industrial sector, activity of power plants and incinerators, domestic heating, agriculture use of pesticides and mining dust. Much less known is the pollution of domestic environments which, in addition to being sensitive to external agents, is also sensitive to the internal ones caused by products present in every home:

Furnishings	Glues	Carpets and moquette
Paints	Detergents	Spray cosmetics
Solvents	Liquid waxes	Insecticides
Sealents	Spray and hygiene products	Soaps

These products cause other pollutants: fine dust, mold, mites, bacteria, carbon monoxide, nitrogen dioxide and a large family of molecules known as **“volatile organic compounds”**. The category of volatile organic compounds (VOCs) includes a series of substances all containing carbon in complex mixtures, which easily evaporate already at room temperature. More than 300 are known, most of all aliphatic hydrocarbons, terpenes, aromatic hydrocarbons, chlorinated hydrocarbons, alcohols, esters, ketones and aldehydes.

In some cases their concentration in indoor environments may exceed that of outdoor.
This class of compounds can cause short and long term damage to human health, leading to carcinogenic effects.

THE PROBLEM

Air pollution is the main environmental risk factor for world population's health and the air we breathe at home is often even worse than the outside one.

When we talk about pollution, is the air that hides the greatest dangers to our health. According to the latest WHO data, about one death of nine, worldwide, can be attributed to exposure at particulate matter, ozone, nitrogen dioxide, and other main pollutants produced by human activity. The smog that fills the busy streets of urban areas is the most obvious indicator of risk, but on closer inspection, we are not safe even by taking refuge within the walls of our house.

Quite the opposite: the dangers could be even worse indoors, where pollutants from outside tend to concentrate, and they add up to those produced by our domestic activities. How can defend yourself? Some simple daily practices can be helpful to make the air we breathe indoors considerably healthier, also air monitoring and purification devices, which are increasingly popular on the market are recommended, but still not always reliable. Thanks to a total regulatory vacuum and the poor perception of this problem, however, experts warn: too little is done to defend ourselves from the risks of pollution that we face within the house walls.

THE DANGERS OF POLLUTION

Among the hours we spend at home, those spent in the office, at school, gym or mall, it's estimated that 90% of our city life takes place indoors. This is why indoor air quality has fundamental relevance to health. Important studies shows that in many areas of Europe life expectancy is one year reduced due to air pollution, and 90% of the population living in urban areas is exposed to unsafe levels of pollutants. Do not see the smog hood unfortunately doesn't mean being safe, if you don't take adequate countermeasures. Air in tiny spaces, on average, is even more polluted: 5 to 10 times more than the outside one. The problem is that in closed environments pollutants tend to accumulate, and to those produced by cars and other external factors are also added those that are produced directly in homes, when cleaning for example, or simply cooking.

MANY INVISIBLE ENEMIES

The substances we are talking about can be divided into two macro groups. On one hand, chemical-physical pollutants: combustion gases (such as nitrogen oxides (NOx), sulfur dioxide (SO₂), carbon monoxide), atmospheric particulate

matter, dust, volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (IPA), radon, and even passive cigarette smoking. On the other hand, however, those of more purely biological origin: bacteria, pollen, mites, biological residues and other allergenic compounds. These are substances that have effects on respiratory system, causing asthma and allergies, disorders of the immune system, damage to cardiovascular and nervous systems, as well as on exposed skin and mucous membranes. Even more dramatic, perhaps, are the radon's effects: a colorless and odorless radioactive gas, which spontaneously emerges from the soil in some areas of Italy and accumulates in closed environments, binding to fine dust, thus reaching the bronchi. Here it's radioactive decay irradiates the lung cells, causing damage to the DNA.

Finally, phthalates deserve a separate discussion: chemical compounds used in plastic industry to improve flexibility and moldability, which are part of atmospheric particulate.

In homes they can be found almost everywhere, and with the deterioration of objects due to time and cleaning, they are released into the air and tend to accumulate indoors. Studies in this field are still in their infancy, but experts believe that they can represent a very serious risk for the health of children, because they are known endocrine disruptors, substances capable of altering the hormonal balance, fundamental for fetal development, correct growth of children, sexual development and for reproductive activities.

REGULATIONS

Although the danger is known, each country is still making its own story about indoor air pollution in Europe. Several European countries, like Germany, France, Great Britain, Holland, and Finland, have set up working groups in recent years with the specific mandate to develop guiding values for air quality in confined spaces. For countries like Finland, Belgium and France (partially, in the latter case), the conclusions have acquired legal value, while the others has drawn up a recommendations list to evaluate indoor air quality.

INDOOR POLLUTION PREVENTION

Pending specific rules and guidelines, experts recommend some simple rules to improve the air quality in our homes. The suggestion for everyone is to ventilate the home, at least 2-3 times a day for five minutes; use the fan extractor and open the windows when cooking; always ventilate when cleaning the house and prefer products such as bleach, ammonia,

vinegar and bicarbonate (many commercial products contain high percentages of volatile organic solvents), and finally use good quality vacuum cleaners, preferably water ones and not with a bag.

Particular attention should also be paid to those most at risk: children and seniors. For parents it's advisable to pay particular attention at rooms where children spend most time: ventilate the rooms to obtain complete air exchange every 4-6 hours (regardless of rooms volume), keep temperature between 18° and 20° and humidity between 45% and 55%. From climatic analyzes carried out in bedrooms where the children rest, has been noted a tendency to use humidifiers even when there's already a sufficient humidity for child's health. Senior people, being more fragile and often subject

to chronic diseases, need frequent air changes and adequate ventilation in rooms where they stay more often and longer.

TECHNOLOGY

Good prevention practices aside, today technology can help guarantee a quality air inside our homes, but often it's still an untapped opportunity.

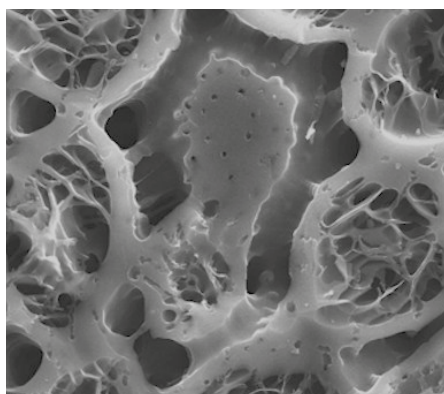
Although not widespread, there are many devices on the market with two objectives: air monitoring and purification. In both cases, devices do not always live up to the promises, but even in this case is possible to give a couple of tips: first, don't be influenced by aesthetics, because the most important thing is not the product design, but quality of sensors and technologies inside.

POLLUTION	DISEASE	MEDICAL IMPACT	DIRECT COSTS (Euro)
Allergens (mites, molds, animal dandruff)	Bronchial asthma (children/adolescents)	>160.000 prevalent cases/year	>80 millions
Radon	Lung cancer	>1500-6000 deceases/year	25-105 millions
Tobacco smoke	Bronchial asthma (children/adolescents)	>30.000 prevalent cases/year	>15 millions
	Infezioni acute delle vie aeree superiori e inferiori	>50.000 new cases/year	not valuable
	Lung cancer	>500.000 deceases/year	>9 millions
	Myocardial infarction	>900 deceases/year	>7,5 millions
Benzene	Leukemia	36-190 cases/year	0,5-3,5 millions
Carbon Monoxide (CO)	Acute CO poisoning	>200 deceases/year	0,5 millions

PAST SOLUTIONS

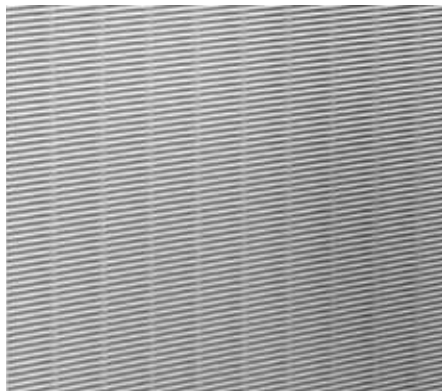
ACTIVATED CARBON

Its effectiveness is extremely tied to the time of use; if in the short term it turns out to be one of the most effective systems on a given substance, its capacity decreases and gradually deteriorates with the cycles of increase and use. Activated carbon filters are not effective against some pathogenic bacteria and viruses, and can also lead to bacterial cultivation. In addition, many contaminants such as fluorides, nitrates, sodium and heavy metals are not attracted by active carbon. The disposal problem is not usually perceived but recovery of product often requires a special and expensive uninstallation (or extraction), as the absorbent material used can be considered a hazardous waste, plus some contaminants can become violently exothermically (danger of explosion).



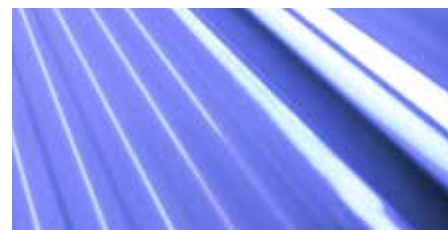
HEPA

HEPA filters are considered the best filter systems, because they are able to trap particles up to $0.3\mu\text{m}$. However, many allergens, bacteria, viruses and chemicals dispersed in the air are smaller than $0.3\mu\text{m}$. The HEPA filter is therefore an excellent dust collector, from large to small up to $\text{PM}_{2.5}$, but it breaks down very few harmful substances. Furthermore, being a dust collector, must be changed frequently and it loses its effectiveness over time.



UV

The UV is the only alternative system for removing bacteria and viruses; its functionality is undisputed, but attention must be paid to the UV bands involved, because of the three used (UVA 315 - 400nm, UVB 280 - 315nm, UVC 100 - 280nm), UVC is the only one that works as germicidal. The possible presence of ozone can enhance the germicidal effects of lamps and exert a good deodorizing effect, but it represents a not negligible risk factor for people: the use of ozone-producing UVC lamps is therefore reserved for closed systems (AHU and pipes), checking that all the ozone produced reacts into system itself, without propagating to environment. Use in open systems (in confined spaces) is admissible only in absence of people, and if concentration limit set for ozone in the environment is never exceeded (0.05 ppm for a maximum of 8 hours of exposure). In addition, the very strong oxidizing power of ozone can quickly damage the gaskets and insulating coating of electrical cables near the lamps.



PHOTOCATALYSIS

TiO2 LIKE SEMICONDUCTOR

Thanks to its semiconductor characteristic, TiO₂ has the ability to act as a photocatalyst (with self-cleaning effect, decomposition of harmful nitrous oxides from automobile exhausts, water and air purification), to function as an electron acceptor in DSSC cells of innovative solar panels and to be used in photoelectrochromic windows of new generation.

The photocatalytic system allows the destruction of pollutants, bacteria and viruses.

A strongly oxidizing system, capable of:

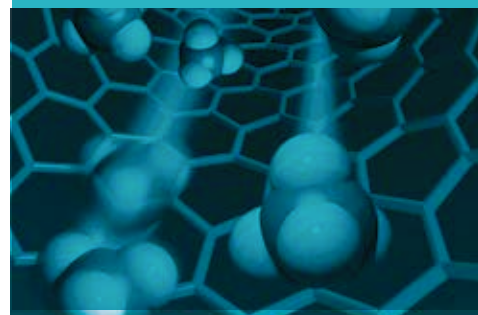
- Purify the air with a intense reduction of organic and inorganic substances from human activity
- Factories, cars, home heating;
- Deodorize, decomposing the organic toxic gases that are source of domestic illness (thiols/mercaptans, ant aldehyde and odors from fungal growth);
- Perform an antimicrobial action: bacteria and fungi that attack the surfaces are eliminated thanks to the strong oxidizing power of photocatalyst (Escherichiacoli, Staphylococcus etc.).
- Requires no maintenance

PHOTOCATALYSIS WITH ULTRAVIOLET LIGHT

Photocatalysis is a process based on “photochemical” reactions, activated by a light source. This source supplies energy in the form of photons of suitable wavelength, capable of extracting an electron from a suitable semiconductor and using it for the production, in situ, of free radicals from water, or oxygen, or from organic substances present in contact with the surface. A semiconductor highly used for photocatalytic systems is TiO₂. If this semiconductor is irradiated with photons of energy greater than 3.2eV, typical of UV light with wavelengths less than 388nm, it will produce charge carriers which, in contact with the water close to the surface, will react by forming radicals. The process of standard TiO₂ therefore requires an energy of ultraviolet light in order to function.

WIVACTIVE PHOTOCATALYSIS WITH VISIBLE LIGHT

WivActive is based on a photocatalysis process induced by a light source in the Visible spectrum from 3000 K to 6000 K. This is an absolute innovation and brings, as immediate advantage, the removal, inside the filtration devices, of ultraviolet sources which, in addition to being difficult to miniaturize, have higher consumption, shorter life in terms of hours of operation, and above all produce O₃ ozone as a by-product, a substance now recognized as harmful to human health. The product that allows you to exploit the visible light source is based on a new form of TiO₂, with a patented morphological and doping composition, which requires a lower activation energy of 3.2 eV to produce free radicals.





A large, white industrial machine with a grey control panel on the left side. The panel features a circular fan and the 'WIVA' logo. A large, flexible metal duct is connected to the top of the machine. In the foreground, a metal rack holds several rectangular metal plates. The background shows a clean, industrial environment with other equipment and structural elements.

WIVA

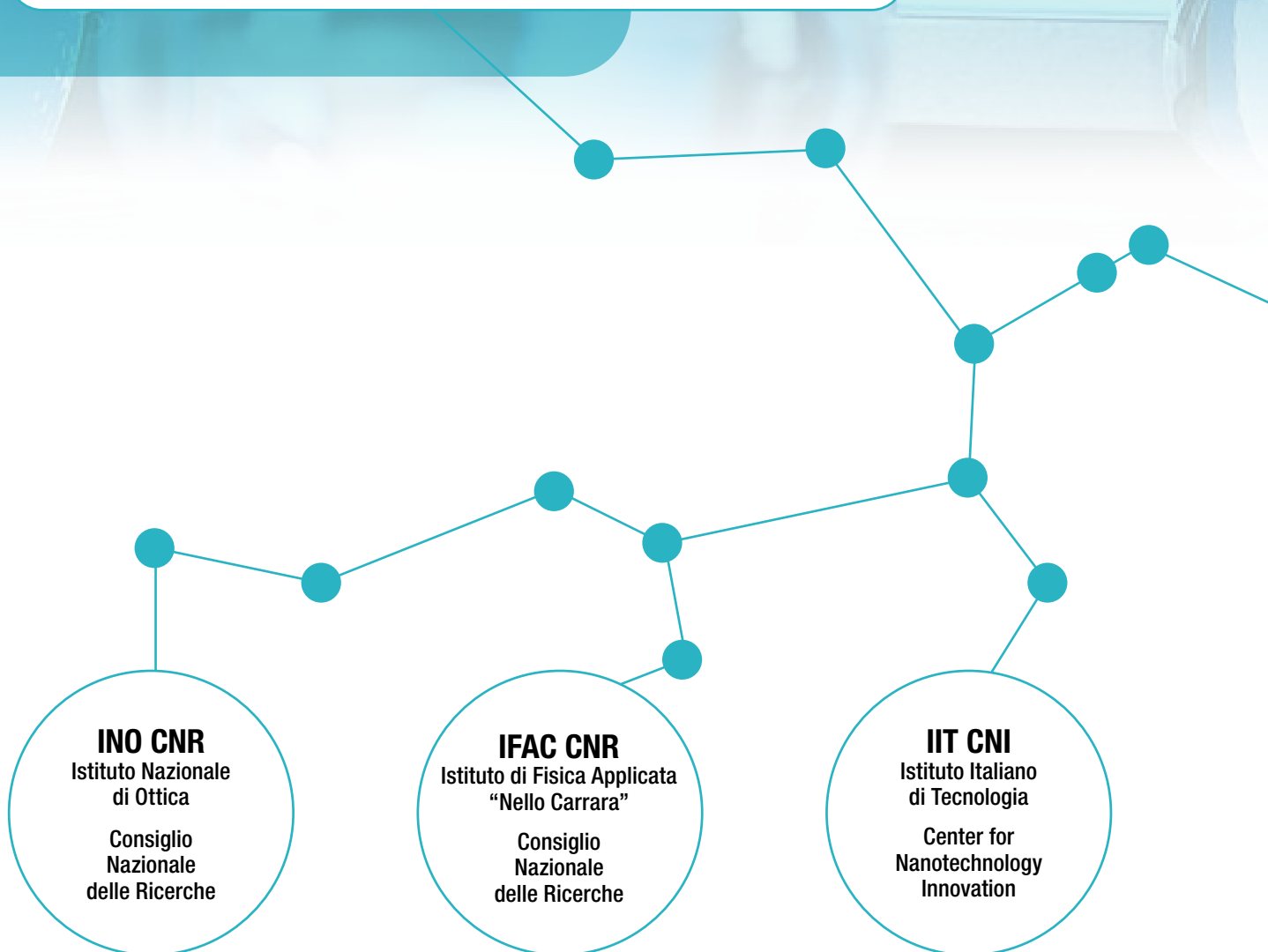
WIVACTIVE Plant

Wiva Group has designed and built, with the scientific supervision of CERICOL, a production plant dedicated to sanitizing products. The plant represents an absolute European excellence in the treatment of nanocomposed materials. In House realization allows a total control of all technological and industrial functions.

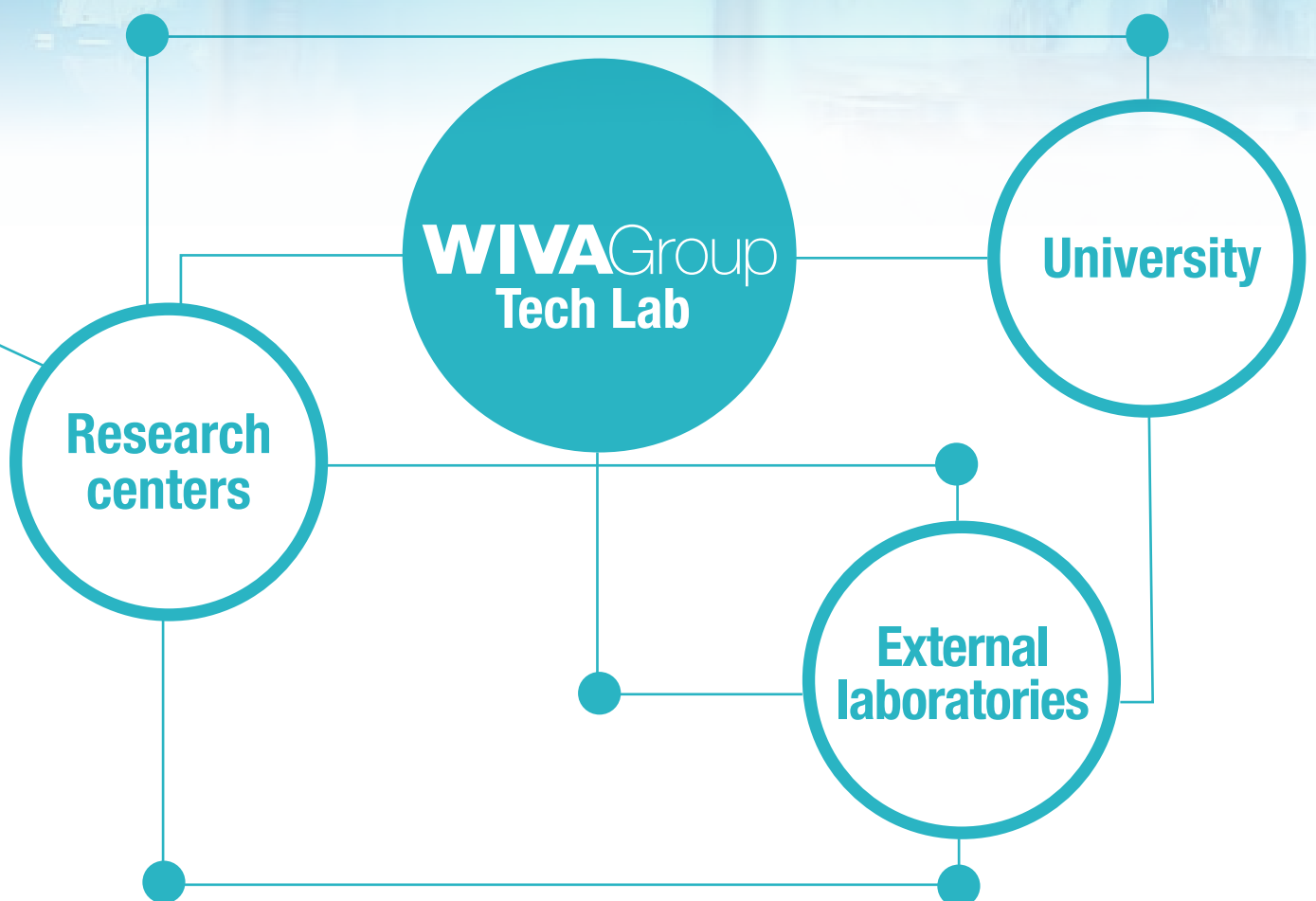
Ce.Ri.Col.

Scaling up new materials

Ce.Ri.Col. Colorobbia Research Center is today one of the most advanced Italian laboratories in the field of new materials. The continuous development of know-how, through collaborations with the most prestigious national and international research institutes, place the Ce.Ri.Col. in activities of very high innovative content that touch the most diverse scientific fields.



The RESEARCH





PHOTOCATALYSIS WITH VISIBLE LIGHT, THE WIVACTIVE INNOVATION

WivActive is an innovative technology developed by Wiva Group for air purification through the use of light and nanomaterials. Result of company's many years of experience in the lighting sector and collaboration with major internationally accredited research centers, **WivActive** technology offers an intelligent and effective solution to the problem of pollution and unhealthy air in closed environments.

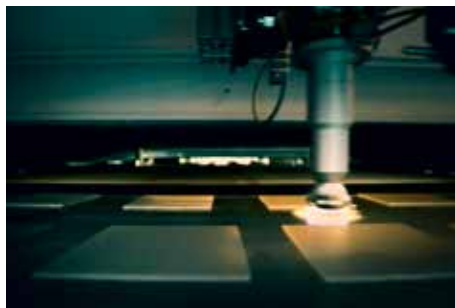
WivActive products are completely **Made in Italy**:

designed and developed by the Wiva Group Tech Lab and manufactured at the company's dedicated production facilities.



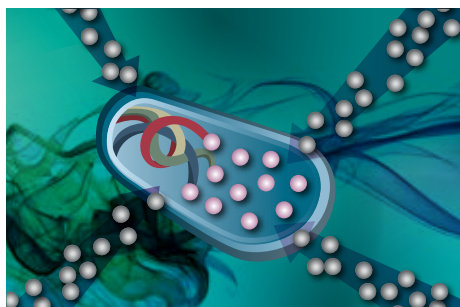
COATING

Nanomaterials are applied to surfaces through a specifically developed coating treatment (fixing the nanocomposite). The chemical composition of this substance, based on a special patented form of titanium dioxide, from the point of morphology, and doping with silver and other elements, means that's will be active simply thanks to the action of white artificial light, even in absence of UV rays.



THE SILVER IONS

The finely dispersed metallic silver molecules react with the water molecules present in the air, releasing silver ions that purify air by exerting an antibacterial action.



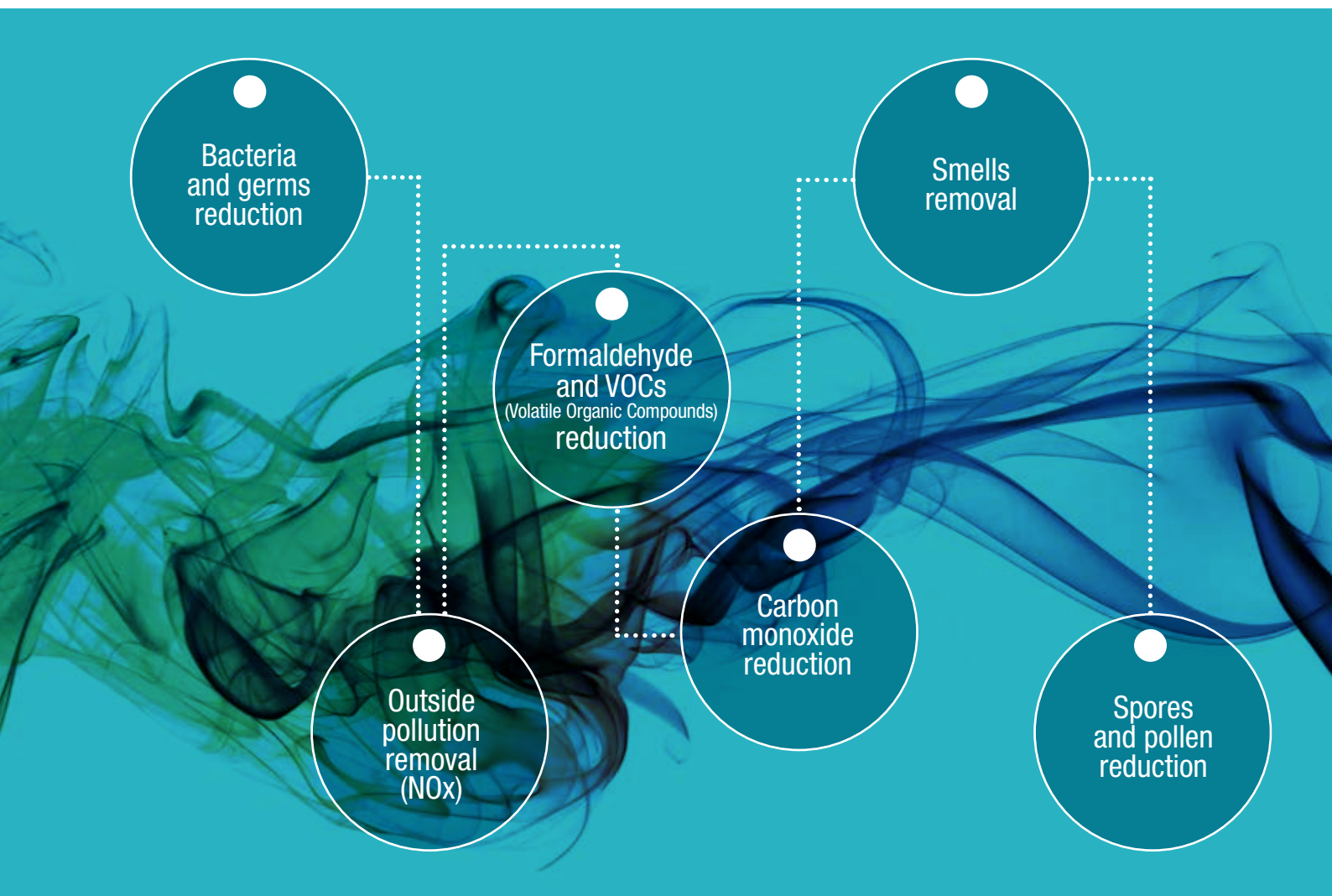
BENEFITS

AIR PURIFICATION

Decomposition of harmful organic substances that cause atmospheric pollution and unpleasant smells

ANTIMICROBIAL AND ANTIVIRAL ACTION

Bacteria and fungi that attack the surfaces are brought down thanks to the Photocatalyst oxidant activated by artificial visible light





Wivactive

Wivactive
FILTER

WIVACTIVE PATENT

Studies and research carried out by Wiva Group, in partnership with CE.RI.COL., have led to the development of a unique nanomaterial. The result is a TiO₂ doped with nitrogen and silver nanoparticles together with particular chemical elements. This particular and unique mixture has allowed us to eliminate the use of UV rays to perform a photocatalysis process. The doped silver nanoparticles and TiO₂ react with the water molecules present in the air, releasing free radicals, but also silver ions that allow the purification of air itself by exerting an antimicrobial action.

The nanomaterial used within the **Wivactive** technology, subjected to the action of visible light, allows the generation of free radicals and silver ions capable of oxidizing most of the organic VOC contaminants, breaking down nitrogen oxides (NO_x), carbon monoxide and also to control and reduce the bacterial load due to fungi and bacteria.

All without the making of Ozone.

HEART OF THE SYSTEM: THE GEAR BOX

Gear Box is where photocatalytic activation takes place through visible light and no longer UV. Different LED sources were analyzed, different optical schemes to illuminate the filters and light's energy levels necessary for photocatalytic activation, to achieve the creation of the **Gear Box**, a patented system that allows you to illuminate in an homogeneous, effective and calibrated way, in terms of light spectrum, the individual filter elements. This allowed the achievement of maximum effectiveness of filter. The patented lighting scheme has allowed the optimization of the system pressure drops in order to have the maximum efficiency of air flow for the filter. The use of a special magnetic levitation technology for the fan, in combination with the light scheme, has allowed the reduction of power consumption, increase in flow rate and above all the reduction of noise in a very significant way. Only 13dBA of noise for this filtration system, that is enormously quieter than the current ones on the market.

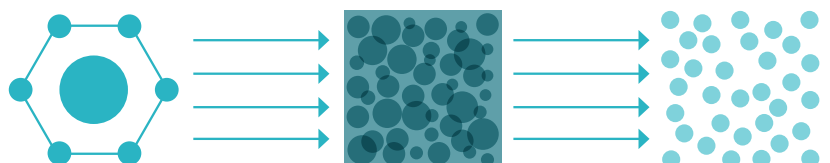
THE FEATURES

Filters with ceramic support
and high porosity
which allow maximum
absorption of TiO₂

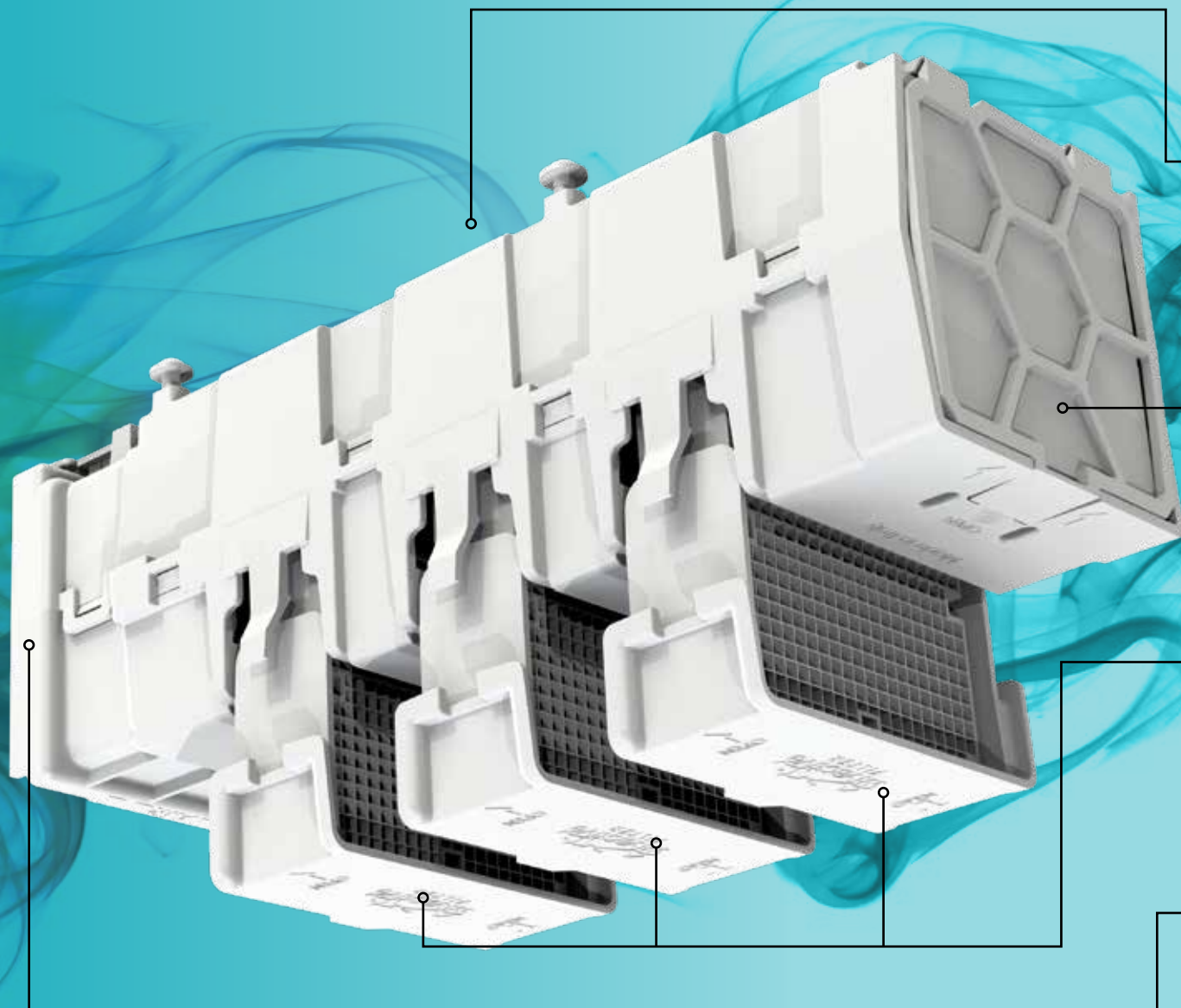
Each filter is composed
by 100.000 mm²
of coated surface

The Gear Box
has 3 filters

Central core of the technology is doped TiO₂. Thanks to his doping it's possible to reduce the energy band gap necessary for the photocatalytic activation of product. Industrial process for the realization of TiO₂ coating on ceramic support involves cooking it in an oven at 550° C for over 30min, allowing the maximum adhesion of the nanocomposite, which becomes an integral part for the surface of filter itself.



GearBox Filter



GearBox Filter

LED SOURCE

The LED source installed on board is calibrated in the visible light spectrum which allows the photocatalytic activation of the filter, ensuring to the parts the correct lighting and energy supply (WIVA patent).

1° FILTERING STAGE

The first filtering surface encountered by the air conveyed inside the GEARBOX is a very dense G4 filter. The quality of this filter allows stopping of larger particles. It comes down to 100% PM10 and up to 40% PM2.5.

2°/3°/4° FILTERING STAGE

This very important phase is ensured by the three ceramic filters coated with doped titanium dioxide (WIVA patent). The amount of surface dedicated to the passage of air allows a massive reduction of harmful substances.

SUCTION

Forced suction ventilation through the use of a magnetic levitation fan that ensures the right air circulation in the environment with very low noise and very long life.



Certifications



	LIMONENE ug/m ³ conc.	LIMONENE % trend
point zero	2052,0	100,0
1h	406,1	19,8
2h	87,5	4,3
4h	62,7	3,1
8h	---	---
12h	---	---
24h	---	---

LIMONENE

Aromatic hydrocarbons group

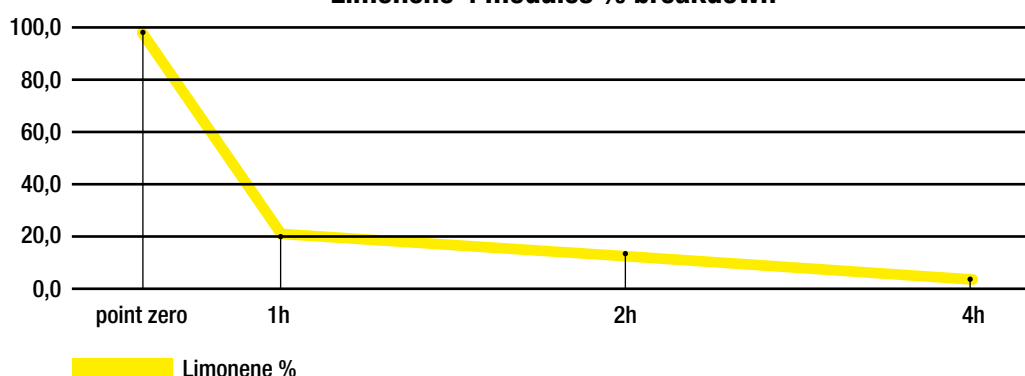
Found in:

- Cosmetics product
- Toothpastes

Cause:

not harmful but basis for control
on aromatic hydrocarbons

Limonene 4 modules % breakdown



	TOULENE ug/m ³ conc.	TOULENE % trend
point zero	2116,7	100,0
1h	1927,4	91,1
2h	1789,0	84,5
4h	1705,9	80,6
8h	1296,5	61,2
12h	774,0	36,6
24h	<50	0,5

TOULENE

Aromatic hydrocarbons group

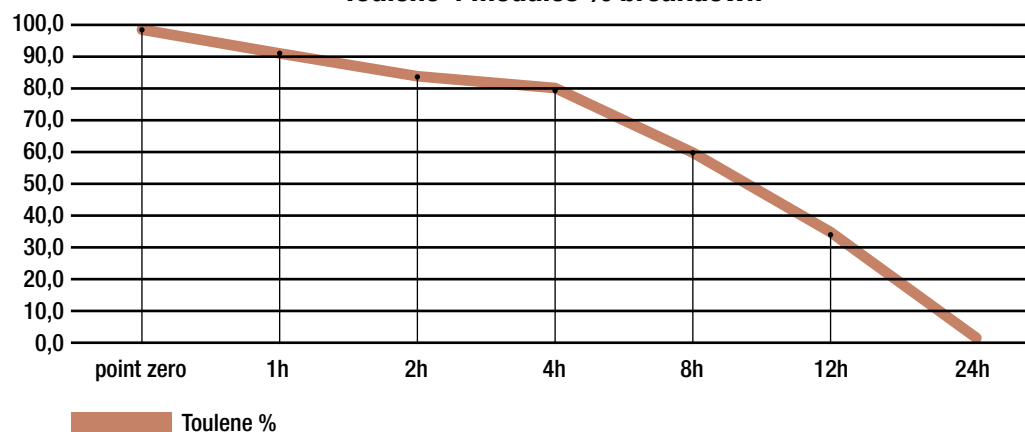
Benzene substitute:

thinner for glues, resins, dyes

Cause:

- anxiety
- insomnia
- muscle fatigue
- liver and kidney damage

Toulene 4 modules % breakdown



	FORMALDEHYDE ug/m ³ conc.	FORMALDEHYDE % trend
point zero	244,0	100,0
1h	32,0	13,1
2h	20,0	8,2
4h	-	-
8h	-	-
12h	-	-
24h	-	-

FORMALDEHYDE Aldehydes group

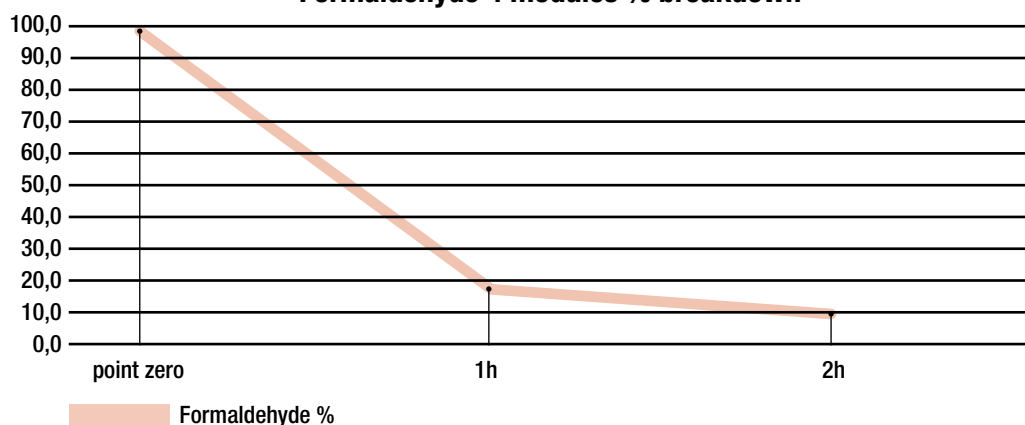
Found in:

- compound products with plywood

Cause:

- nasal, ocular and throat irritation
- skin rash
- since 2004 indicated by the IARC as group I (carcinogen)
- Unit of reference for the Sick Building Syndrome (SBS)

Formaldehyde 4 modules % breakdown



	ETHANOL ug/m ³ conc.	ETHANOL % trend
point zero	1019,0	100,0
1h	274,8	27,0
2h	178,5	17,5
4h	73,0	7,2
8h	-	-
12h	-	-
24h	-	-

ETHANOL Alcohol group

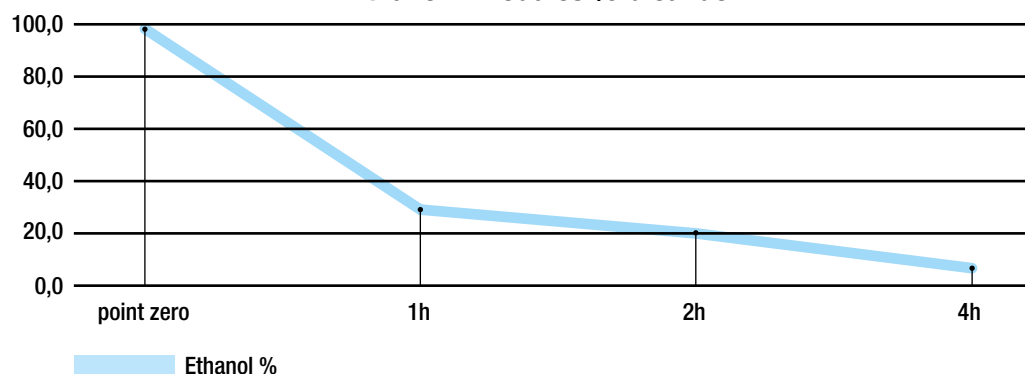
Found in:

- natural resin solvent
- paint preparation

Cause:

- irritating to eyes and respiratory tract
- easily flammable
- effects for central nervous system

Ethanol 4 modules % breakdown



	ACETONE ug/m ³ conc.	ACETONE % trend
point zero	1045,2	100,0
1h	337,5	32,3
2h	34,4	3,3
4h	-	-
8h	-	-
12h	-	-
24h	-	-

ACETONE Ketone group

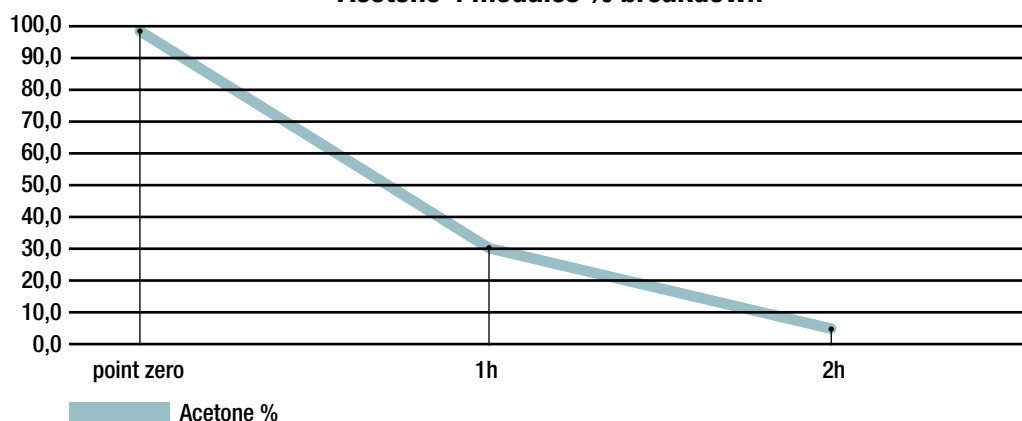
Found in:

- solvent
- raw material in various organic syntheses

Cause:

- eye and respiratory irritation
- mood swings and nausea
- sleepiness
- dizziness and loss of strength

Acetone 4 modules % breakdown



	ETHYL ACETATE ug/m ³ conc.	ETHYL ACETATE % trend
point zero	1810,6	100,0
1h	780,2	43,1
2h	290,7	16,1
4h	-	-
8h	-	-
12h	-	-
24h	-	-

ETHYL ACETATE Foreign group

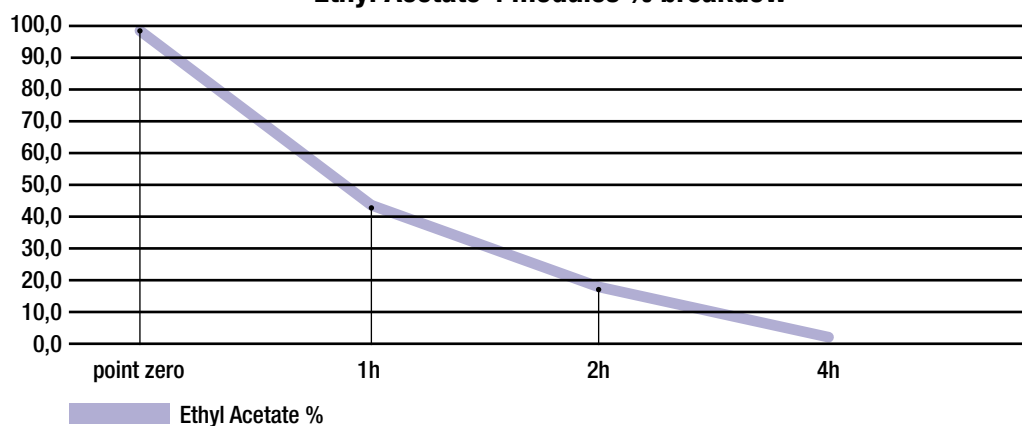
Found in:

- solvent used for coffee production
- restoration

Cause:

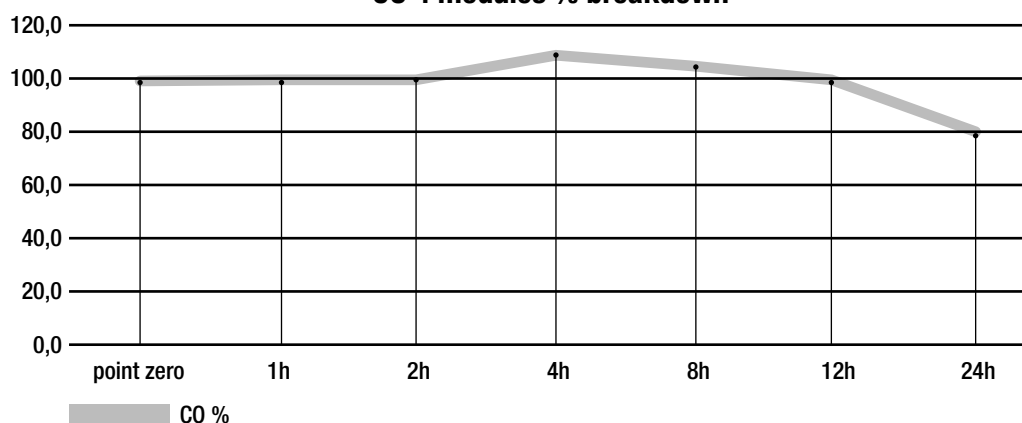
- temporary corneal irritation and damage
- dermatitis and eczema
- lung irritation
- liver damage
- anemia

Ethyl Acetate 4 modules % breakdown



	CO ppm conc.	CO % trend
point zero	2,926	100,0
1h	2,881	98,4
2h	2,952	100,9
4h	3,223	110,1
8h	3,015	103,0
12h	2,882	98,5
24h	2,300	78,6

CO 4 modules % breakdown



CARBON MONOXIDE

Harmful gas

Caused by:

- incomplete combustion in absence of oxygen

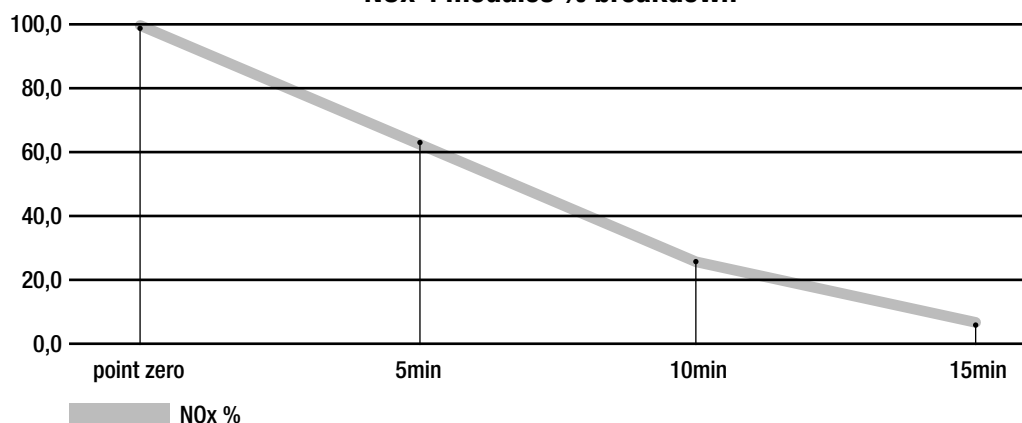
Cause:

- headache
- dizziness
- nausea
- convulsions
- accelerated heart beat



	NOx ppm % conc.	NOx % trend
point zero	103	100,0
5 min.	66	64,0
10 min.	27	26,0
15 min.	5	4,8

NOx 4 modules % breakdown



NITROGEN OXIDES

Harmful gas

Caused by:

- combustion of internal combustion engines
- air pollutants

Cause:

- aggravates asthma, respiratory and cardiac diseases
- increased susceptibility of lung infections
- among the main environmental pollutants



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COLOROBBI
CONSULTING

Sovigliana, 26/02/2019

Ns. Rif.: da R0087 a R0091_2019

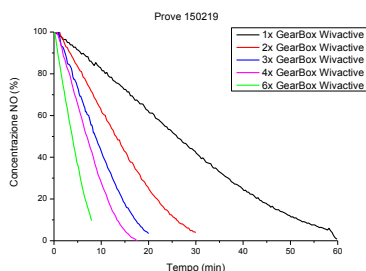
Cod. metodi d'analisi:

Oggetto: Valutazione del grado di abbattimento di NOx di n°6 prototipi GearBox Wivactive forniti dalla ditta Wiva Group S.p.A.

L'analisi è stata condotta montando il prototipo all'interno di una glovebox.
Il volume della camera è di 1 m³.

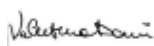
La concentrazione iniziale di NO è stata di 100 ± 10 ppbv di NOx totali, ottenuti attraverso miscelazione di NO a partire da una bombola di NO in azoto (Siad, lotto 226294-S0743427). L'analisi è stata eseguita mediante chemiluminescenza (Thermo, modello 421).

Di seguito viene riportato il grafico riferito ai cinque prototipi del valore di NO espresso come percentuale di abbattimento in funzione del tempo.



Conclusioni:

L'Analista
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Giovanni Baldi



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M04 L_01 Ed 01 16/07/2014 Rapporto d'analisi

Pagina 1 di 1

COLOROBBI

BIOCHIMIE lab
competenza italiana nel settore analisi

Firenze, 17/04/2019

RELAZIONE TECNICA

Spett.

WIVAGroup SpA

Via Siena, 47/37 int. 29
50142 Firenze (FI)

PROTOCOLLO DI ANALISI

Lo scopo delle analisi riportate nella presente relazione è quello di valutare l'efficacia del motore sanificante nella sua configurazione commerciale.

1. Solventi organici volatili VOC (Volatile Organic Compounds)

Per le analisi dei VOC è stata utilizzata una CELLA A TENUTA STAGNA: cella di dimensioni 1 metro x 1 metro x 1 metro con 6 facce uguali, con un volume totale di 1 m³ e spessore delle lastre di 0.80 cm. La cella è dotata di un rubinetto a tenuta di gas da 1 cm di diametro ed un campionatore per gas con gomma perforabile da usare sia per contaminare la cella che per prelevare l'aria da indirizzare alle analisi. All'interno della cella è introdotto un piccolo ventilatore a batteria per poter mantenere l'aria il più omogenea possibile.

Il volume è di 1 m³ e i campionamenti sono di 1 ml ciascuno in maniera da trascurare l'errore di misura dovuto al campionamento, la concentrazione di inquinante iniziale è di 500 ppb. I prelievi sono effettuati dopo 1 h, 2 h, 4 h, 8h, 12h e 24h.

Per testare l'efficacia del dispositivo sull'enorme varietà di VOC ad alta volatilità esistenti (circa 400 sostanze diverse) sono state scelte 5 molecole rappresentative per i loro gruppi funzionali e per la loro eventuale presenza come contaminanti indoor, in particolare: un estere (acetato di etile), un'aldeide (formaldeide), un idrocarburo ciclico (limonene), un idrocarburo aromatico (toluene), un alcool (etanolo).

Risultati: I risultati sono rappresentati nei grafici riportati nei singoli Rapporti di Prova in tutti i casi si ha un abbattimento degli inquinanti VOC nell'arco delle 24h, ciascuno con una propria cinetica. I dati sono presentati come % di abbattimento vs tempo (in ore).



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AIRPanel

First LED panel that **purifies** the environment

Suggested installations

Collective
spaces

Health
Structures



Nursery and
Schools

Gyms
and sports
Structures

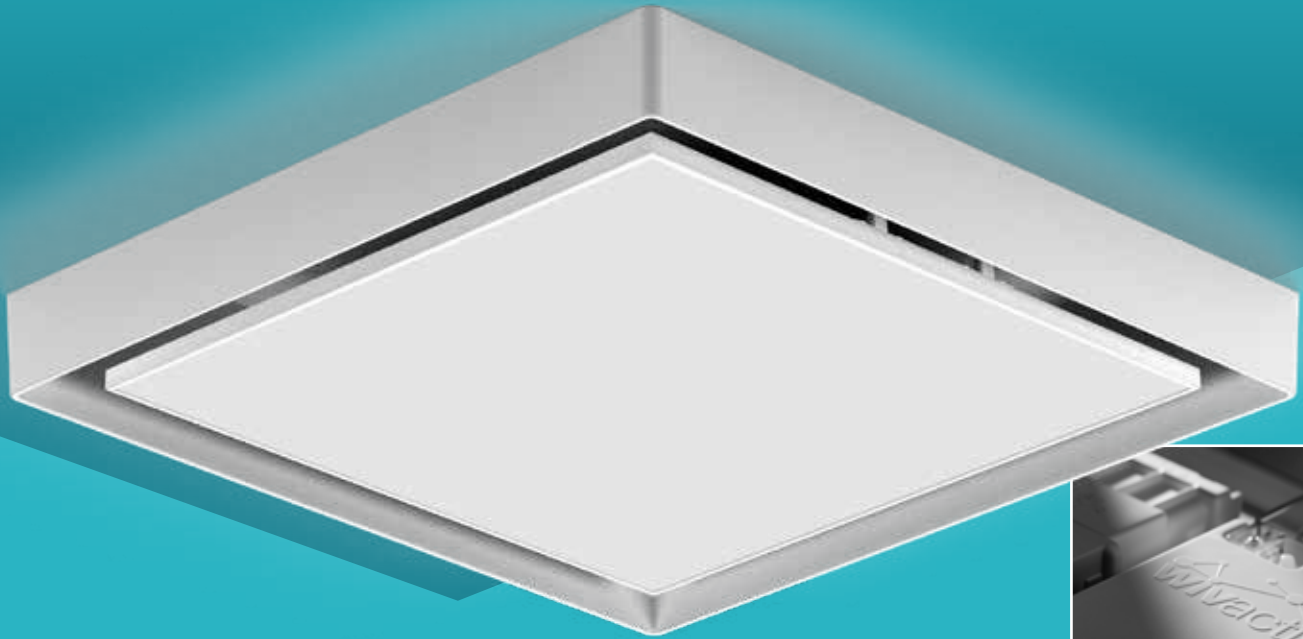


Public
Offices

Surgeries

Home and
Office





WIVA

AIRPanel

High Efficacy

105 lm/W

3800 lm

36 W

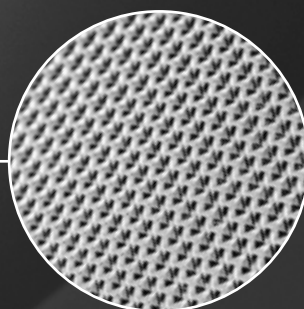
CRI 90+



x2 x4

GearBox Filter

12W
22m³/h
10 dBA



UGR<19

Microprismatic
Screen
for a controlled ight

LGP
PMMA

AIRPanel

TECHNICAL FEATURES

LED PANEL

- Panel with “SLIM” frame, color white RAL9016.
- Screen and Light Guide Plate in PMMA plastic polymer which make it possible not to degrade the quality of light emitted and prevent yellowing over time.
- Microprismatic screen to reduce luminance and guarantee UGR<19, suitable for work environments.
- Structure in ABS plastic polymer certified UL94-HB, color white RAL9016.
- “User friendly” open-close system and Gearbox (does not require tools for opening, routine maintenance and cleaning).

GEARBOX FILTER

- White RAL9016 PP structure to ensure resistance to the chemical action of filtration.
- First stage of G4 filtration capable of retaining PM10 100% and PM2.5 40%.
- Triple filtration stage through microporous ceramic modules treated with doped titanium dioxide (WIVA patent) capable of activating the photocatalysis principle with visible light. The light spectrum used has been studied and calibrated by our laboratories without the aid of violet (400nm) and UV wavelengths, very harmful to health.
- Optical scheme (WIVA patent) for light mixing, which guarantees perfect light uniformity without affecting ventilation and obtain the maximum photocatalytic yield.
- LED card with controlled visible light spectrum for a perfect activation of nanomaterial compound on the filters.
- A special magnetic levitation fans guarantee performance with minimum noise and high lifetime.

AIRPANEL CONFIGURATIONS

- From 2 to 4 Gearbox
- DALI Panel, DALI Gearbox (ON/OFF only)
- Can be integrated into a DALI system and able to switch the filtering on or off, via DALI command.

ORDINARY MAINTENANCE

- FILTER - G4 replacement every 12 months (in standard conditions).
- CERAMIC FILTER CARTRIDGE - Cleaning every 12 months (in standard conditions).

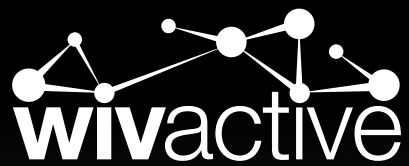
EXTRAORDINARY MAINTENANCE

- Extraordinary maintenance is not foreseen.

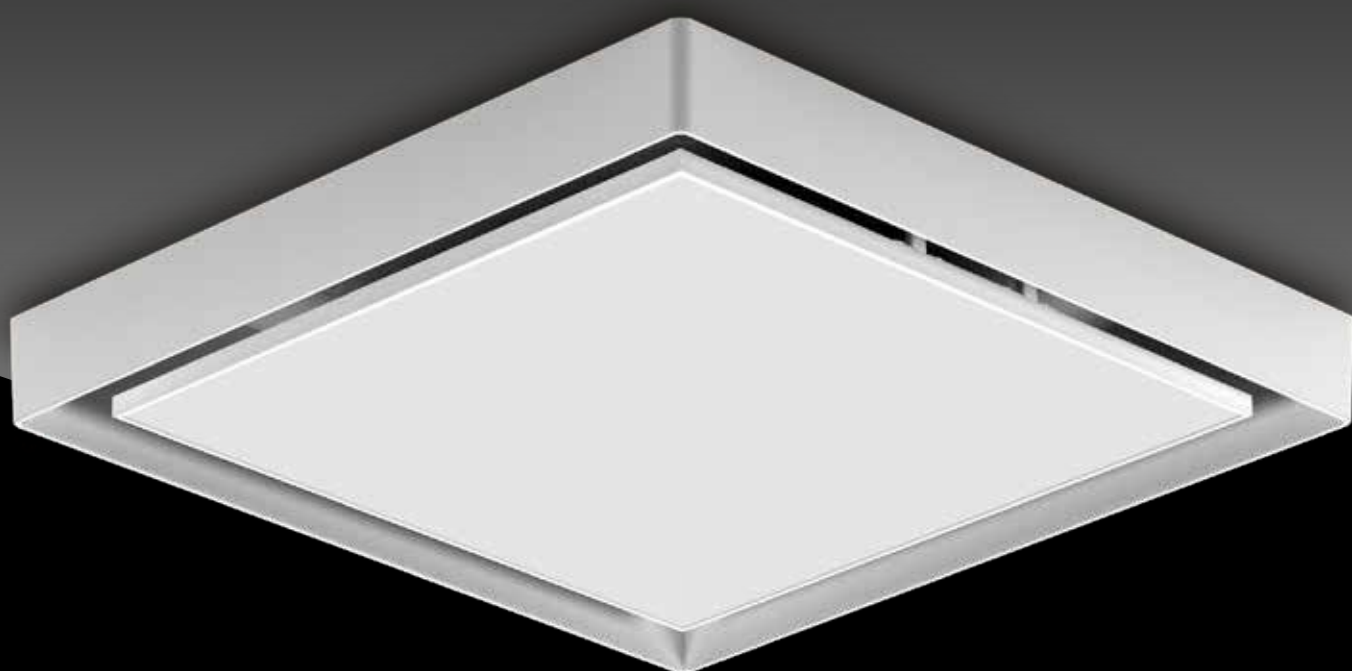
AIRPanel

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS	
Dimensions	595x595x105mm
Direct light	3800lm, 36W, 105lm/w
Color precision	3 MacAdam
Power	36W
Color temperature	3000K/4000K CRI90+
Photocatalytic Gearbox	12W
Noise	13dB (2 gear) / 19dB (4 gear)
Electrical protection class	II
Fire resistant class	F
Photobiological risk	RISK 0
IP Grade	IP20
Power supplies lifetime	50.000h
LED panel lifetime	50.000h L80B10
Fan lifetime	50.000h
Supply	Panel ON/OFF, Gearbox ON/OFF
	Panel DIM DALI, Gearbox ON/OFF DALI



AIRPanel



AIRPANEL 36W

AIRPANEL 4 GEAR • 36W (LED Panel) 48W (GearBox)

				ON/OFF	DALI
3000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600058	<input type="checkbox"/> 41600058D
4000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600059	<input type="checkbox"/> 41600059D

AIRPANEL 2 GEAR • 36W (LED Panel) 24W (GearBox)

				ON/OFF	DALI
3000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600056	<input type="checkbox"/> 41600056D
4000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600057	<input type="checkbox"/> 41600057D

AIRPANEL Coating • 36W

				ON/OFF	DALI
3000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600060	<input type="checkbox"/> 41600060D
4000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600061	<input type="checkbox"/> 41600061D

AIRPANEL • 36W

				ON/OFF	DALI
3000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600062	<input type="checkbox"/> 41600062D
4000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600063	<input type="checkbox"/> 41600063D

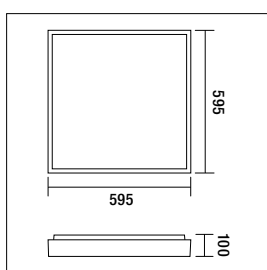
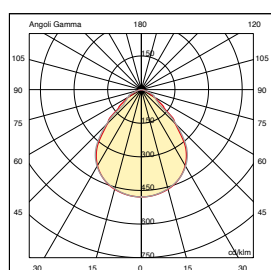
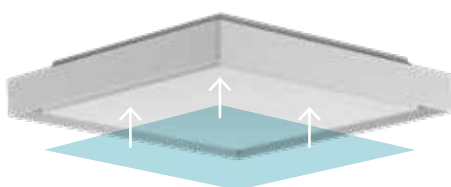
ACCESSORIES

OPTIONAL MOUNTING KIT

41900178	Trimless KIT 600x600
41900298	4 cables suspension mounting KIT (1.5 m)
41900148	Security cable

REPLACEMENT FILTER

41900299	AIRPANEL G4 Filter
41900300	AIRPANEL ACTIVE Filter



Type: LED panel for recessed, surface-mounted and suspended installation - Luminaire with Wivactive technology for air purification via visible photocatalytic system - Luminaire suitable for work environments with UGR values <19 via microprismatic screen - Can be installed ceiling and recessed directly or via suspension kit - Available with GearBox Active filters in 2 or 4 element configuration, Active coating and with or without active functionality - **Body:** structure in ABS plastic polymer UL94-HB certified white RAL9016 - "user friendly" opening-closing system: no need to use tools for opening, routine maintenance and cleaning for both panel and individual gearboxes - **LED:** SMD LED with high efficiency and high color rendering - **Screen:** Microprismatic and LGP screen in PMMA plastic polymer - **Power supply:** high efficiency supplied with specific internal driver - **Dimmable:** DALI version available, with on/off air filtration system management.

HGPanel

COATING



LED PANEL

- Backlight panel, color white RAL9016.
- Screen and lenses in PMMA plastic polymer that allow to not degrade the quality of light emitted and prevent yellowing over time.
- Micro-prismatic screen to reduce luminance and guarantee UGR<19, suitable for working environments.

FILTRATION

- Microprismatic screen treated with doped titanium dioxide (WIVA patent) to active photocatalysis principle with visible light.
Our laboratories has studied and calibrated a light spectrum without the aid of violet (400nm) and UV wavelengths that are very harmful to health.
- LED card with controlled visible light spectrum, for perfect activation of nanomaterial compound on filters.

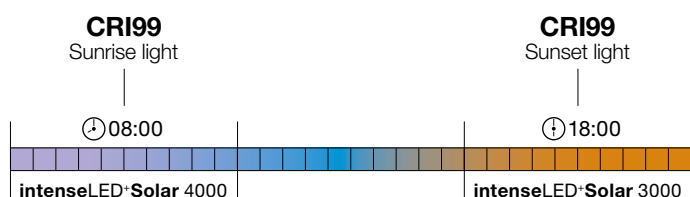
HG PANEL CONFIGURATION

- Colore temperature 3000K / 4000K - CRI 90+
- Available with WIVA **intenseLED⁺Solar** technology
- Constant current panel powered with special drivers

intenseLED⁺ SOLAR

LED Chip Technology by WIVA

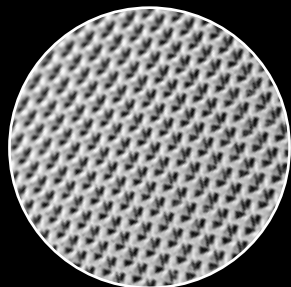
intenseLED Solar is a LED spectrum **technology** focused on man and his **physiological** and **psychological** well-being.



TECHNICAL FEATURES	
Dimensions	595x595x30mm
Direct light	3800lm, 32W, 105lm/w
Color precision	3 MacAdam
Power	32W
Color temperature	3000K/4000K CRI90+
	intenseLED* Solar 3000/4000 CRI99+
Electrical protection class	II
Fire resistant class	F
Photobiological risk	RISK 0
IP Grade	IP40
Panel LED Lifetime	50.000h L80B10
Supply	ON/OFF, 0/1-10V, PUSH, DALI available on request with special driver

HGPanel

COATING



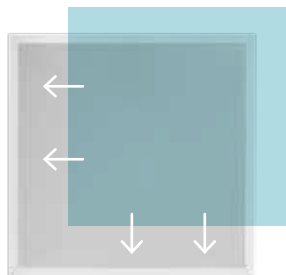
UGR<19

Microprismatic screen
for a controlled light





HG PANEL 32W

intenseLED⁺
SOLAR





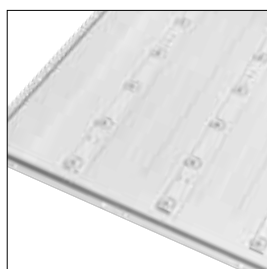
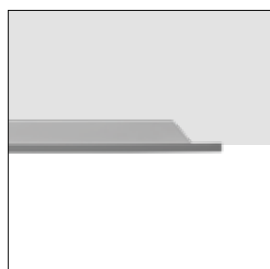
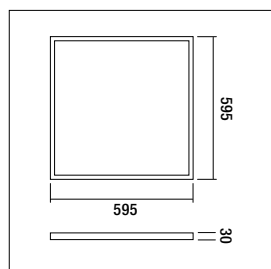
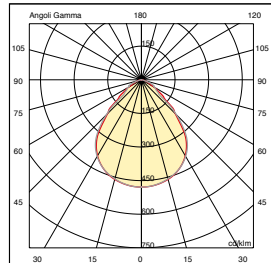
HGPANEL Coating • 32W

3000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600064
4000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600065
 intenseLED [®] Solar 3000	CRI 99+	86°	3000 lm	<input type="checkbox"/> 41600066
 intenseLED [®] Solar 4000	CRI 99+	86°	3000 lm	<input type="checkbox"/> 41600067



HGPANEL • 32W

3000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600068
4000K	CRI 90+	86°	3800 lm	<input type="checkbox"/> 41600069
 intenseLED [®] Solar 3000	CRI 99+	86°	3000 lm	<input type="checkbox"/> 41600070
 intenseLED [®] Solar 4000	CRI 99+	86°	3000 lm	<input type="checkbox"/> 41600071



DRIVER

	ON/OFF	1-10V/DALI/PUSH
32W 900mA 36V	61100036	61102006

to be order separately

ACCESSORIES

KIT DI MONTAGGIO OPZIONALI

41900178	Trimless KIT 600x600
41900302	4 cables suspension mounting KIT (1.5 m)
41900301	Ceiling mounting KIT 600x600
41900148	Security cable



Type: LED backlight panel for recessed, surface-mounted and suspended installation - Luminaire with Wivactive technology for air purification through visible photocatalytic system - Luminaire suitable for work environments with UGR<19 values via microprismatic screen - Available in Active coating and with or without active functionality - **Body:** white aluminum frame - **LED:** SMD LED with high efficiency and high color rendering. Available with intenseLED Solar technology - **Screen:** Microprismatic screen and PMMA plastic diffuser - **Power supply:** high efficiency supplied with specific driver to be ordered separately - **Dimmable:** 0/1-10V, PUSH, DALI available on request with specific driver.



AIRPanel

Internal and external **photocatalysis activation**

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