

Doekélec

"it's all about you, today and tomorrow"



NEXT GENERATION ACTIVE INDOOR AIR + SURFACE PURIFICATION SOLUTIONS



DOCKELEC - ATD 20D, 40D, 100D, 250D, 500D

Why we're unique: **DOCKELEC ATD unit is ACTIVE, not PASSIVE**

The technology does what no normal purification system can to continuously control fine air particles, airborne bacteria, VOCs and surface pathogens – safely & cost-effectively. The best way to address this risk is to control or eliminate the sources of pollution.



These units are discrete and easily installed in existing or new ducting system. Also, it can be integrated at air handling units (AHUs). Our units are based on gas-phase heterogeneous photocatalysis technology, **TO REMOVE AND REDUCE MICROBIAL LOAD IN ENVIRONMENTS AND SURFACES:** A solid titanium dioxide based catalyst, photoactivates with UV light to generate innocuous active oxidant species on its surface, whose reactions lead to safe degradation of microbiological and gaseous phase chemical contaminants, getting to eliminate them from both: environment and surfaces. It is not a filter. It is an active technology and works continuously.

DOCKELEC devices extend shelf life of all fresh foods, fruits and vegetables, and more importantly, results in improved productivity and clear economic benefits, allowing companies to become more competitive in their respective markets.

Storing food in air treated with photocatalysis, is a method of preservation which seeks to extend the average life of the product and increase the hygienic-sanitary qualities of food. Food preservation with **NCC®** prevents or replaces chemical treatments. Does not alter the organoleptic properties of food and frees food of pathogens without introducing foreign substances nor causing the product to lose its quality.

Extends marketing time and reduces wastage. Allows reaching further internal and external markets avoiding the use of fumigants, biocides and chemical preservatives.

SAFE, EFFECTIVE, PROVEN, CERTIFIED

NCC® is an exclusive environmental technology that can solve many everyday indoor air and surface contamination problems in the health industry. Traditional passive technologies, such as HEPA, use filtration or electrostatic systems, which remove contaminants only if and when they travel through the purification unit. These traditional filtration systems can help reduce air pollution to a degree, but they do not reduce surface contamination at all and do not adequately reduce airborne contaminants. Our proprietary NCC® Technology actively targets contaminants in the air and on surfaces, eliminating them on contact.

NCC® Technology is derived from NASA Technology as used on the International Space Station. It is the only Based on Research by NASA certified technology in the world in its class. NCC® Technology utilizes a proprietary hydrophilic photo catalytic coating, consisting of non-nano titanium dioxide with a proprietary combination of additional doping elements to enhance efficiency. Activated by multiple specific wavelengths of ultraviolet light, oxygen and humidity are extracted from the air to create a host of powerful oxidizers that target surface and air pollution. These oxidizers are extremely effective at destroying bacteria, volatile organic compounds (VOCs) and other environmental contaminants, and most significantly, they are not harmful to humans, pets and plants. They are completely safe for indoor use.

The key oxidizers created by NCC® Technology are the following:

- Hydrogen Peroxide (H₂O₂)
- Hydroxyls (OH⁻)
- Super Oxides (O²⁻)

HYDROGEN PEROXIDE

A major oxidizer created by NCC® Technology is hydrogen peroxide (H₂O₂), which has proven to be effective against indoor pollutants and contaminants on surfaces and in the air. NCC® Technology produces hydrogen peroxide molecules from the oxygen and humidity already present in the air. The hydrogen peroxide molecules are then carried throughout the indoor environment, neutralizing pollutants and contaminants in places that other technologies and filtration systems can't reach. Because hydrogen peroxide molecules have both positive and negative charges, they are drawn to pollutants and contaminants by the process of electrostatic attraction. Contaminants are then safely broken down into oxygen (O₂) and water (H₂O) vapor. Hydrogen peroxide is odorless, colorless and safe to use in occupied spaces.



According to the Occupational Health and Safety Administration (OSHA), exposure to one part per million (1.0~ ppm) of hydrogen peroxide is considered safe throughout the day. NCC® Technology produces only 0.02 ~ 0.04 ppm, well below the OSHA limit.

HYDROXYLS

Another important oxidizer created by NCC® Technology is hydroxyls. Hydroxyls (OH-) are safe, naturally occurring, powerful oxidizers that quickly and safely neutralize many airborne and surface contaminants, odor-causing bacteria and chemical VOCs. As part of the NCC® process, hydroxyls are formed when an ultraviolet light of special wavelengths is absorbed by the unit's proprietary coating. The coating strips the hydrogen (H) atoms from water molecules (H₂O) in the ambient air, forming negative hydroxyls (OH⁻). These hydroxyls break down carbon and hydrogen-based VOCs and other organic contaminants, converting them into harmless carbon dioxide (CO₂) and water (H₂O) vapor. While extremely effective at destroying odors, bacteria, VOCs and other contaminants, hydroxyls are completely safe for human, animal and plant exposure indoors. The hydroxyls produced by NCC® Technology are the same as those produced naturally in the earth's atmosphere by the reaction of UV rays and water vapor, and function to safely and naturally "scrub" and decontaminate indoor environments

SUPER OXIDES

Super oxides are oxygen molecules that arise when free hydrogen atoms (H) combine with ozone (O₃) are created in small amounts by nature in the air. When combined, they form the powerful oxidizers oxygen (O₂) and hydroxyls (OH). NCC® Technology utilizes a UVC light source, naturally occurring ozone (O₃), humidity and a photo catalyst to create powerful super oxides that eliminate bacteria, viruses, mold and other contaminants. This technology is not only safe for human exposure but is significantly more effective at destroying contaminants than simple UV technology alone. In the process of creating super oxides, NCC® actually reduces the amount of ozone (O₃) that naturally exists in the air.

Super oxides have been utilized for decades in food processing plants, hospitals, and dental and doctor's offices to control environmental contamination and disinfect safely without chemicals.



OZONE

Ozone (O₃) is created naturally by nature and is present in our air and can also be created by man-made technologies. The EPA has determined that ozone at levels in excess of 0.5 ppm may be damaging to health. NCC[®] Technology has been proven to create only minuscule amounts of ozone, at levels over one thousand times lower than the EPA safeguard levels. Moreover, NCC[®] Technology actually converts and lowers naturally occurring ozone as described above, as it creates safe super oxides (O₂-) which in turn eliminate harmful pathogens.

BASED ON RESEARCH BY NASA – TECHNOLOGY CERTIFIED

The Based On Research By NASA Foundation has recognized NCC[®] and our company for utilizing technologies originally invented for use in space programs to eliminate VOCs and other contaminants, and adapting these technologies for everyday use. NCC[®] Technology is based on a variation of technology originally developed for use by NASA on the International Space Station and is recognized globally as the only Based on Research by NASA Technology in its class. You can only get this technology from us.

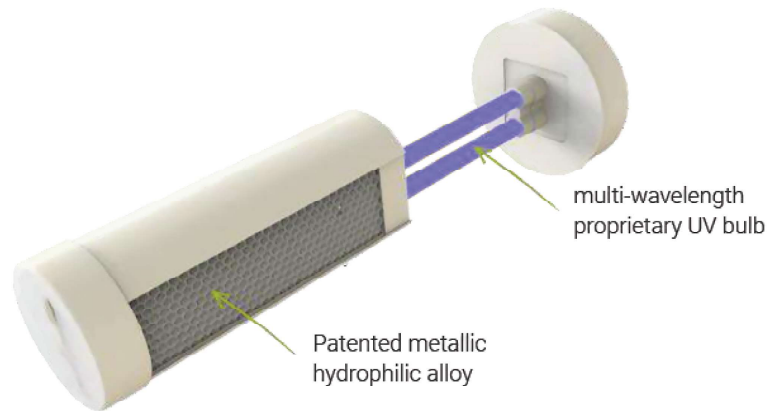
PRODUCT EFFICACY AND TESTING

NCC[®] Technology has consistently proven its ability to safely control and neutralize contaminants such as viruses, bacteria, mold, fungi and VOCs in numerous tests and studies, without harm to humans, animals and plant life. Extensive laboratory testing conducted at Microchem Laboratory in Texas, showed NCC[®] Technology to be effective against H1N1, Norovirus, MRSA, Staph, E-Coli, Listeria, and more. These university studies have shown that NCC[®] can reduce as much as 99.999% of surface contaminants within the first 24 hours.

APPLICATIONS

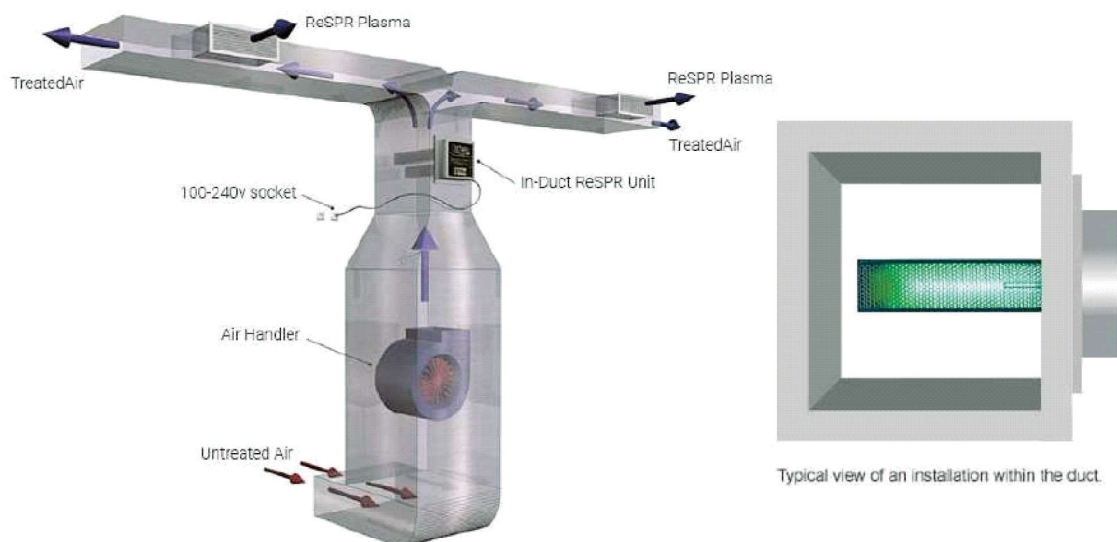
Our NCC[®] Technology has been successfully and safely used in hospitals, homes, doctor's offices, professional sports facilities and other applications across the world.

Our revolutionary and unique technology uses up to 5 natural processes to recreate natural air conditions, Indoors.



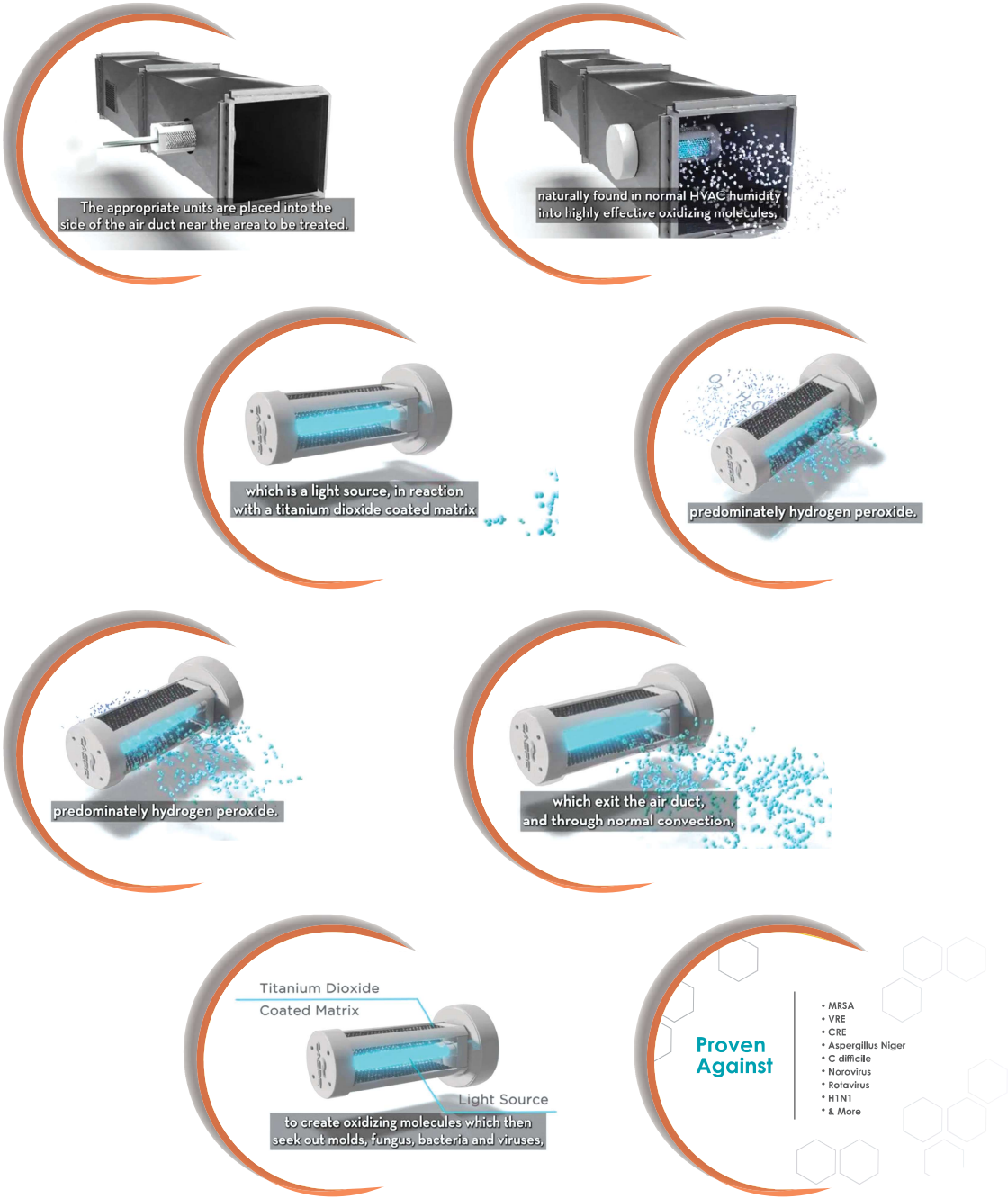
- Creates the same oxidation and ionization as naturally occurring sunlight, using UV light as a source of energy for our Natural Catalytic Conversion (NCC) process.
- Combines these ionizing properties with photocatalytic reactions of specific rare and noble metals.
- Proactively sends out friendly oxidants to decontaminate all air & surfaces in a room (unlike other systems that rely on air to passively move through filters.)

TYPICAL INSTALLATIONS IN EXISTING SYSTEMS INDUCT:





Once the DOCKELEC – ATD unit is activated, it utilizes photocatalysis to convert the air & water molecules naturally found in normal ATD humidity into highly effective oxidizing molecules predominantly hydrogen peroxide. A completely organic process, DOCKELEC – ATD unit uses cold plasma, which is a light source in reaction with titanium dioxide coated matrix to create oxidizing molecules which then seek out molds, fungus, bacteria and viruses oxidizing and destroying them at the cellular level.





SAMPLE TEST 1 :

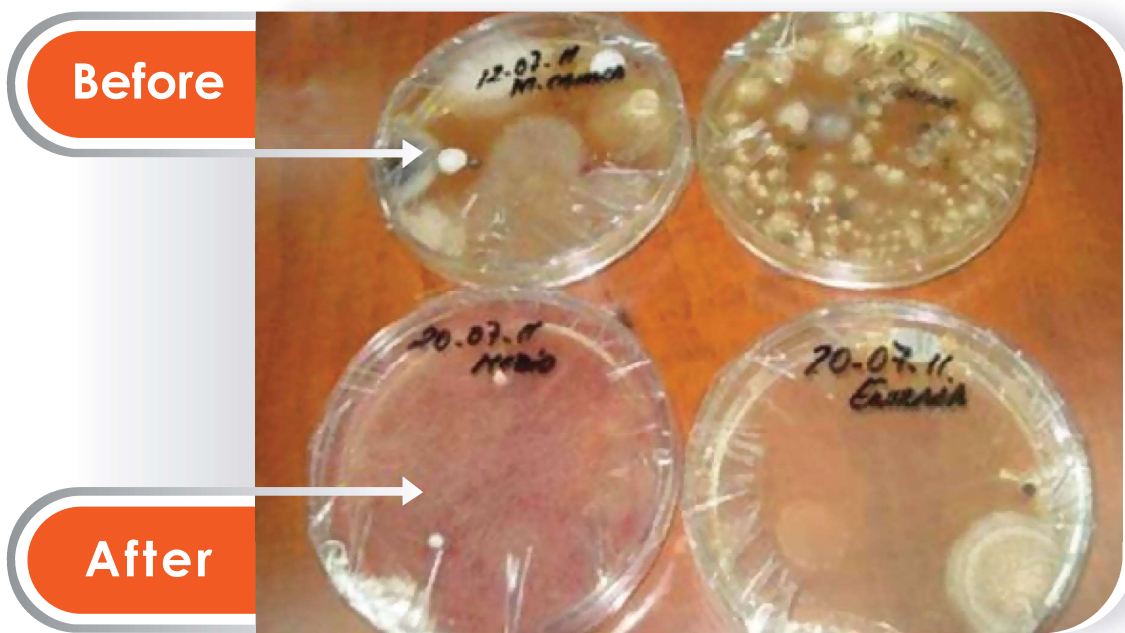
Pathogens – Reduce up to 99.99% of mold, fungi, bacteria and viruses. Multiple, independent tests show how strikingly effective surface results are in just 24 hours on common bacteria & fungi including E.coli, Streptococcus & MRSA.

- DOCKELEC removes up to 99.99% of bacteria & fungi.

SAMPLE TEST 2 :

Pathogens – Visual bacteria & mold growth test DOCKELEC effectiveness is easy to see with the naked eye in frequent independent and client based studies.

- In this example, airborne samples were taken with Petri Dishes before and after the installation of DOCKELEC inside the ducting.
- The significant reduction in bacteria (white dots) and mold (gray dots) is clear.





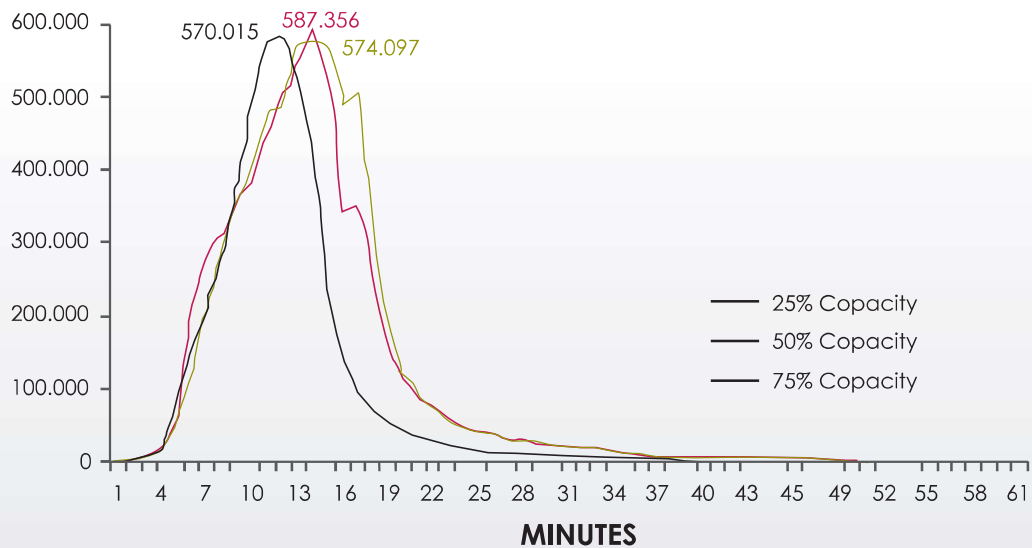
SAMPLE TEST 3 :

VOCs – Elimination of air-suspended particles the smallest particles are often the ones that cause the most respiratory problems. Independently tested on volatile organic compounds and proven in daily use worldwide.

- Test carried out by SGS on tobacco smoke as example of respirable small particles <math><4\mu\text{m}</math> (PM4).
- Sample product: 5000.
- Result: Up to 98% elimination of respirable particles.
- Significant reductions as well in carbon monoxides & CO2

Evolution of respirable particles (PM4)

CONCENTRATION (mg/m³)





SAMPLE TEST 4 :

VOCs – Elimination of ethylene (<0.3µm) cells are effective across fine particle VOCs that even high-quality HEPA filters do not remove. One of the best examples is in ethylene gas (C2H4) reduction.

- Scientific test carried out at two independent client fruit growers in Spain.
- Reading taken before and after the standard installation of DOCKELEC.
- Result: Up to 85% reduction in ethylene (under 0.3µm) concentrations.

Ethylene (<0.3µm) VOC Reduction

	Before	After	+/-
Test A	1.4ppm	0.2ppm	-85%
Test B	1.1ppm	0.2ppm	-82%

BASED ON RESEARCH BY NASA

NCC® was developed for space missions to control ethylene gas, the natural aging & ripening accelerator emitted by plants that is highly damaging to them in enclosed spaces. The tiny particle size of the gas (below 0.3µm) meant that no existing filter could control it, apart from DOCKELEC of course.





MAIN ADVANTAGES OF OUR DEVICES WITH NCC® TECHNOLOGY:

- **Maintains quality standards required by large multinationals in the industry**, and extends product shelf life, thus minimizing waste and **maximizing operational efficiency**
- NCC® technology applied in food bio-preservation, **reduce and eliminate the microbial load, eliminating pathogens that can be harmful to human health**
- Clean environments can be maintained **without stopping the production line and avoiding spraying harsh chemicals**
- **Active, not passive technology.** All areas and corners of a room can be reached, including hard- to-reach areas.
- In cold storage applications, NCC® **purifies indoor environments**, preventing the development and proliferation of microorganisms, **both, in the air and on surfaces**
- NCC® technology **slows down the ripening process**, and is very effective in the **removal of volatile organic compounds (VOCs) such as ethylene**
- When installed at **fresh products transportation vehicles**, allows transported products to maintain the quality and freshness, **reducing the number of complaints**
- **Energy efficient with low operating costs**, and only **one annual maintenance**
- **Easy to install** and works **24 hours / 365 days** in most environments

APPLICATIONS IN THE INDUSTRY:

- **Healthcare & Medical Centers**
- **Hospitality / F & B Outlets**
- **Sports Facilities & Wellness Centers**
- **Educational Institute**
- **Hypermarkets, Supermarkets & Departmental Stores**
- **Commercial & Residential Buildings**
- **Industrial**
- **Transportation**
- **Agriculture & Horticulture**
- **Other any other wide range uses**



- **ATD installed unit**
- **zero ozone generation system**
- **easy installation**
- **no fan, no moving parts**
- **Low maintenance – Low cleaning required**



THE TECHNOLOGY

Our ATD units substantially reduces odors, visible smoke in the air, and microbial populations in air and on surfaces, utilizing the NCC technology.

Perfect for indoor pollution control, odor reduction, contamination prevention, etc...

NCC consists of a special UV light and photocatalyst target, creating an Advanced Oxidation Process containing several friendly oxidizers.

SPECIFICATIONS

ATD 20 D, 40 D, 100 D, 250 D, 500 D

ELECTRICAL

100/240 VAC, 12/24 VDC 12-80 watts*

MAX TEMP

150 F 65 °C

DIMENSIONS

SN	MODEL NUMBER	CELL SIZE	AREA COVERAGE	AIR FLOW
1	ATD 20 D	10 cm	Up to 25 m ²	500 m ³ /h
2	ATD 40 D	12 cm	Up to 40 m ²	850 m ³ /h
3	ATD 100 D	22 cm	Up to 100 m ²	2550 m ³ /h
4	ATD 250 D	36.5 cm	Up to 250 m ²	5950 m ³ /h
5	ATD 500 D	37 cm	Up to 500 m ²	12000 m ³ /h

BENEFITS

- **Up to 99.999% kill rate on surfaces**
 - **Effective against bacteria, virus and mold**
 - **Easy installation. Plug and play operation**
 - **Effective against odors and VOC's**
 - **Safe, discreet, silent**
- Scientific tests have demonstrated the use of ATD surface and air purifiers substantially reduce microbial populations on surfaces. These products are not intended to diagnose, treat, or cure any disease.



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