

**Bringing nature's balance indoors**

nanoe™ X, technology with the benefits of hydroxyl radicals

## Bringing nature's balance indoors

The well-being benefits of nature are well known – but do you know the power of hydroxyl radicals?

Abundant in nature, hydroxyl radicals (also known as OH radicals) inhibit pollutants, viruses, and bacteria to clean and deodorise. nanoe™ X, technology can bring these incredible benefits indoors so that hard surfaces, soft furnishings, and the indoor environment can be a cleaner and pleasant place to be, whether at home, at work, or visiting hotels, shops, restaurants etc.

WE BREATHE IN  
**18Kg**  
OF AIR A PERSON  
A DAY

In today's health-conscious world, we care about taking exercise, we care about what we eat and what we touch, we also care about what we breathe – and technology exists to bring good outdoor air, indoors.

WATER  
**1.2Kg**  
A PERSON  
A DAY

FOOD  
**1.3Kg**  
A PERSON  
A DAY





Hydroxyl radicals contained in water

## A naturally occurring process

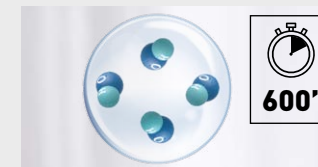
Hydroxyl radicals are unstable molecules looking to react with other elements like hydrogen, capturing it. Thanks to this reaction, hydroxyl radicals inhibit the growth of pollutants such as bacteria, viruses, moulds, and odours, breaking them down and neutralising the unpleasant effects. This naturally occurring process has major benefits to improve indoor environments.

**Panasonic's nanoe™ X technology takes this a step further and brings nature's detergent – hydroxyl radicals – indoors to help create an ideal environment.**

By creating hydroxyl radicals contained in water, nanoe™ X technology significantly boosts their effectiveness, increasing hydroxyl radicals lifetime from less than a second in nature, to more than 600 seconds – 10 minutes so that nanoe™ X can spread over long distances.

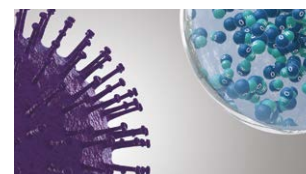


Hydroxyl radicals in nature



Hydroxyl radicals contained in water

Thanks to the nanoe™ X properties, several types of pollutants can be inhibited such as bacteria, viruses, mould, allergens, pollen and certain hazardous substances.



nanoe™ X reliably reaches pollutants.



Hydroxyl radicals denature pollutants' proteins.



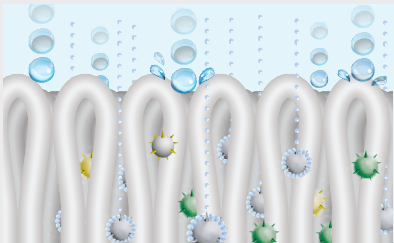
Pollutants activity is inhibited.



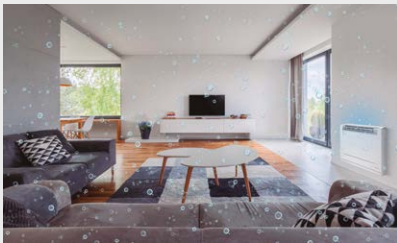
What is unique about nanoe™ X?



Hydroxyl radicals inhibits pollutants, viruses, and bacteria to clean and deodorise. Thanks to this advanced technology, even tightly woven fabrics can be treated using this solution, meaning that curtains, blinds, carpets and furniture can all benefit from this technology to inhibit hazardous substances – including on hard surfaces and, of course, the air that we breathe.



1 | Microscopic Scale. At one billionth of a metre, nanoe™ X is much smaller than steam and can deeply penetrate cloth fabrics to deodorise.



2 | nanoe™ X can reach every corner of a space and its surfaces. Contained in tiny water particles, it has a long lifespan and is able to spread over long distances.



3 | nanoe X Generator Mark 2 produces 9.6 trillion hydroxyl radicals per second. Greater amounts of hydroxyl radicals contained in nanoe™ X lead to outstanding effects in the inhibition of pollutants.



4 | No maintenance. nanoe™ X is not based in filter maintenance-free solution made with Titanium.



Deodorises



Odours

Inhibits 5 types of pollutants



Bacteria and viruses



Mould



Allergens



Pollen



Hazardous substances

Moisturises



Skin and hair

\* The image shows nanoe™ X Generator Mark 2

\* Refer to <https://aircon.panasonic.eu> for more details and validation data.

nanoe™ X, internationally-validated technology

The effectiveness of nanoe™ X technology has been tested by 3rd party laboratories in Germany, Denmark, Malaysia and Japan.

99,9 %\*  
OF CERTAIN  
BACTERIA  
INHIBITED

The effectiveness of nanoe™ X

Tested contents			Result	Capacity	Time	Testing organisation	Report No.
AIRBORNE	Virus	Bacteriophage ΦX174	99,7 % inhibited	Approx. 25 m³	6 h	Kitasato Research Center for Environmental Science	24_0300_1
	Bacteria	Staphylococcus aureus	99,9 % inhibited	Approx. 25 m³	4 h	Kitasato Research Center for Environmental Science	2016_0279
ADHERED	Virus	Feline Coronavirus	99,3 % inhibited	45 L	2 h	Yamaguchi University Faculty of Agriculture	21_0084_1
		Xenotropic murine leukemia virus	99,999 % inhibited	45 L	6 h	Charles River Biopharmaceutical Services GmbH	
		Influenza (H1N1 subtype)	99,9 % inhibited	1 m³	2 h	Kitasato Research Center for Environmental Science	
	Bacteria	Staphylococcus aureus	99,9 % inhibited	20 m³	8 h	Danish Technological Institute	868988
	Pollen	Ambrosia pollen	99,4 % inhibited	20 m³	8 h	Danish Technological Institute	868988
		Cedar	97 % inhibited	Approx. 23 m³	8 h	Panasonic Product Analysis Center	4AA33-151001-F01
	Odours	Cigarette smoke odour	Odour intensity reduced by 2,4 levels	Approx. 23 m³	0,2 h	Panasonic Product Analysis Center	4AA33-160615-N04



More about tests:  
<https://www.panasonic.com/global/consumer/clean.html>



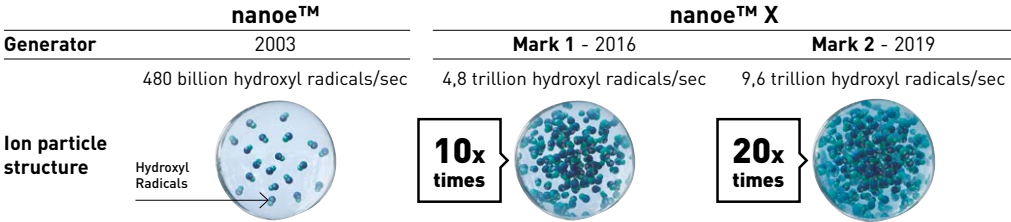
First nanoe™ device was developed by Panasonic in 2003. After years R&D investments, the technology has been improved with launch of nanoe™ X.

The latest nanoe™ X device uses a “multi-leader discharge” system that focuses the discharge to 4 needle-shaped electrodes, greatly expanding the hydroxyl radicals.



How nanoe™ X is Generated

- 1 | Atomised electrode produces condensation.
- 2 | Electrical discharge is applied to the water
- 3 | nanoe™ X particles are generated



\* The image shows nanoe X Generator Mark 1

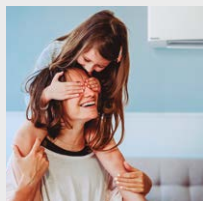
Reduction of 99,9% of Staphylococcus aureus after 8 hours of exposure. Texting organisation: Danish Technological Institute. Report no. 868988.

## Where is nanoe<sup>™</sup>X technology used?

Since 2003, “nanoe” has become a part of people’s lives.

Such technology can be found in diverse applications for cleaning air and surfaces, such as trains, elevators, cars, home appliances and personal beauty ... as well as in air conditioning.

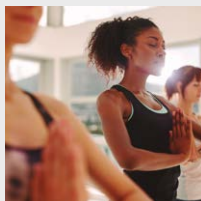
Panasonic Heating and Cooling Solutions is incorporating nanoe<sup>™</sup> technology in a wide range of equipment for residential applications as well as for commercial spaces and, it is a solution that does not require filters or maintenance and can work independently from heating or cooling.



Home



Shop



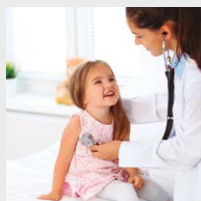
Gym



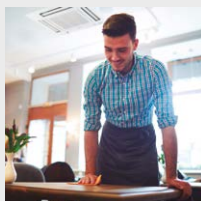
Hotel



Office



Clinic



Restaurant



Hospital

It has been adopted in people’s homes as well as in public facilities where improved air quality is desired, such as offices, hospitals, healthcare centres and hotels etc



### HOME

#### Split and Multi Split. Built-in nanoe X Generator Mark 1



**Wall Etherea Z**  
CS-[M]Z\*\*VKEW[M]. 7 capacities: 1,6-7,1 kW



**Wall Etherea XZ**  
CS-XZ\*\*VKE[W]. 4 capacities: 2-5 kW



**Floor console**  
CS-Z\*\*UFEAW. 3 capacities: 2,5-5 kW

#### Split. Built-in nanoe



**Wall VZ**  
CS-VZ\*\*SKE. 2 capacities: 2,5-3,5 kW

Panasonic Heating and Cooling Solutions is incorporating nanoe<sup>™</sup> technology in a wide range of equipment

### COMMERCIAL

#### PACi. Built-in or accessory nanoe X Generator Mark 1



**Cassette 90x90 PU2. Accessory CZ-CNEXU1**  
S-\*\*\*PU2E5B. 7 capacities: 3,5-14 kW



**Cassette 90x90 PU3. Built-in**  
S-\*\*\*PU3E. 7 capacities: 3,5-14 kW

#### PACi. Built-in nanoe X Generator Mark 2



**Duct type PF3**  
S-\*\*\*PF3E. 7 capacities: 3,5-14 kW

#### VRF (ECOi & ECO G) Built-in or accessory nanoe X Generator Mark 1



**Cassette 90x90 MU2. Accessory CZ-CNEXU1**  
S-\*\*\*MU2E5A. 11 capacities: 2,2-16 kW



**Floor console. Built-in**  
S-\*\*\*MG1E5N. 5 capacities: 2,2-5,6 kW

**More about Panasonic Heating and Cooling Solutions**

[www.aircon.panasonic.eu](http://www.aircon.panasonic.eu)

**Panasonic**  
heating & cooling solutions