



Rapid Automatic Surface Disinfection

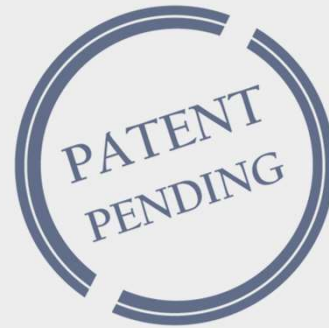
12.5.2021

Seppo Ojanen, Sales Director, Marine

LED Tailor

Finland

LED Tailor photon disinfection system is award-winning and IPR protected technology



Company in brief

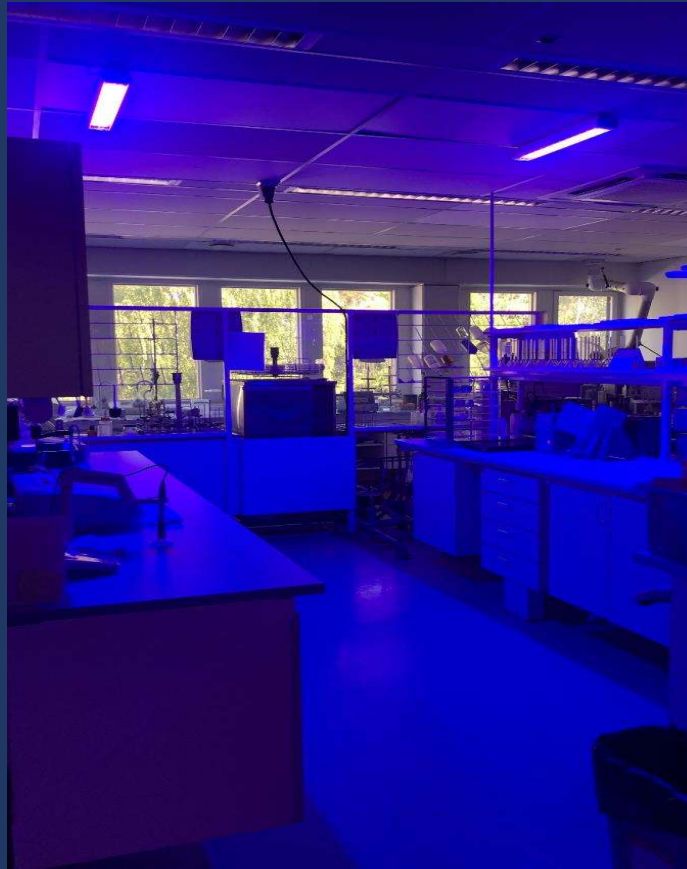
- 3 years of photon disinfection innovation
- 12 employees, strong scientific background
- Distributors in 18 countries + 9 OEM partners



PHOTON DISINFECTION CUSTOMERS

- Chemical-free, safe and automatic surface disinfection of rooms and other spaces:

- Hospital OR:s
- Cruise ships
- Automobiles
- Nursing homes
- Cleanrooms
- Retail stores
- Dentists
- Veterinary clinics
- Laboratories
- Schools
- etc...



CUSTOM SOLUTION PARTNERS

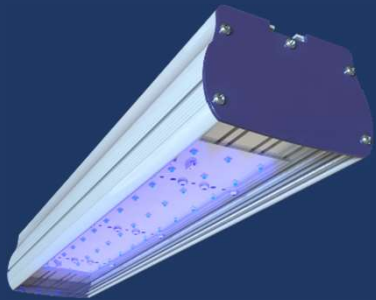
- Tailored solutions for specific purposes and use cases:



- Marine lighting manufacturer
- Vehicle manufacturer
- Elevator manufacturer
- Cold room manufacturer
- Air conditioner manufacturer
- Meeting rooms manufacturer etc...

BLUE LIGHT DISINFECTION SYSTEM

Blue light
disinfection devices



Automation
optional



Photocatalytic coating
optional



An automatic system with three components



BENEFITS OF PHOTON DISINFECTION

ECOLOGICAL

Chemical-free

CONSISTENT

Consistent disinfection result

MAINTENANCE-FREE

No running costs

AUTOMATIC

No manual labour
No human-factor

LONG LIFETIME

at least 50 000 hours
= 10 years of normal use

EASY TO USE

No training needed

SAFE

UV-free and better occupational
safety without chemicals

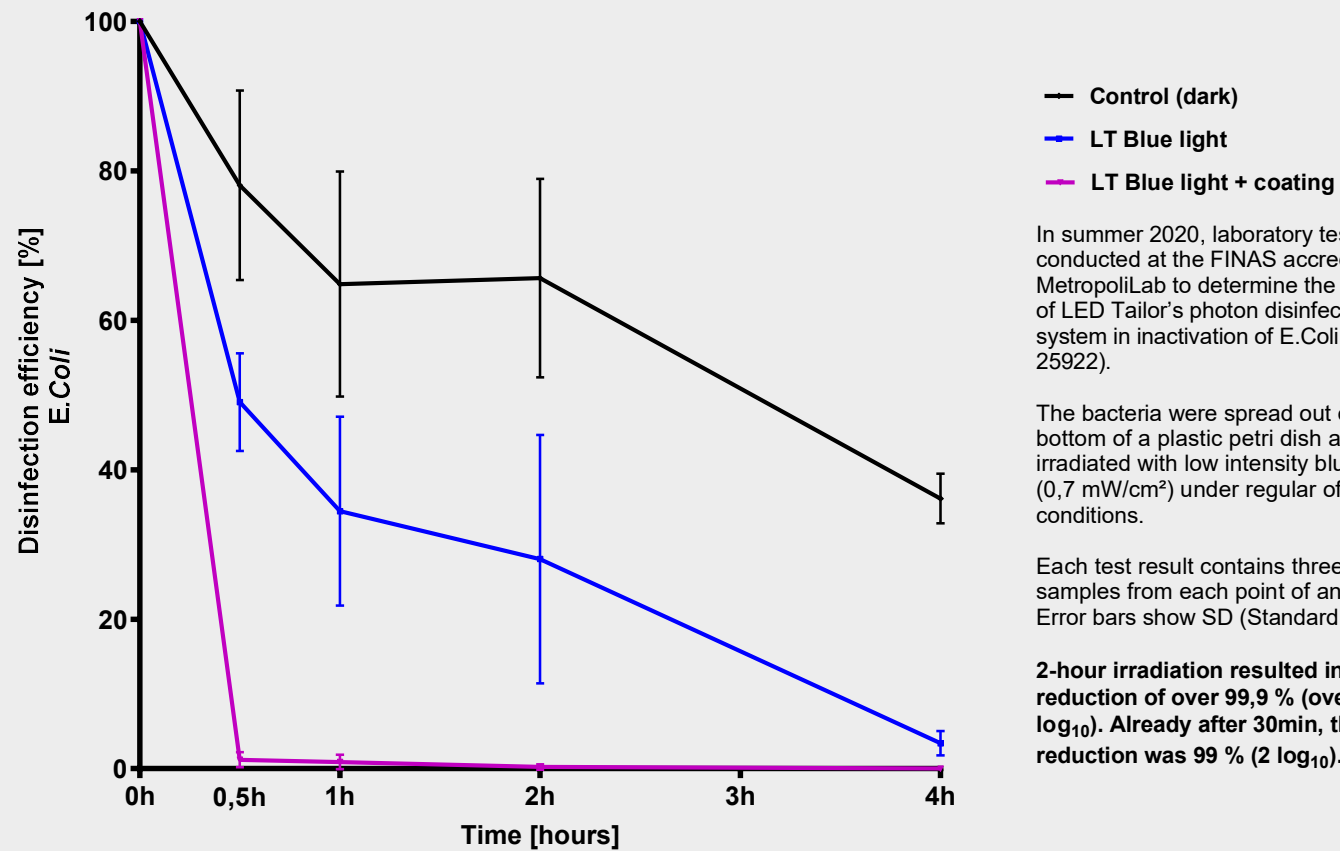
Does not promote
antimicrobial resistance

NON-IONIZING

Suitable for sensitive materials
(test report 2017)

TESTED DISINFECTION RESULTS

LED Tailor Blue light photon disinfection solution



In summer 2020, laboratory tests were conducted at the FINAS accredited MetropoliLab to determine the efficiency of LED Tailor's photon disinfection system in inactivation of E.Coli (ATCC 25922).

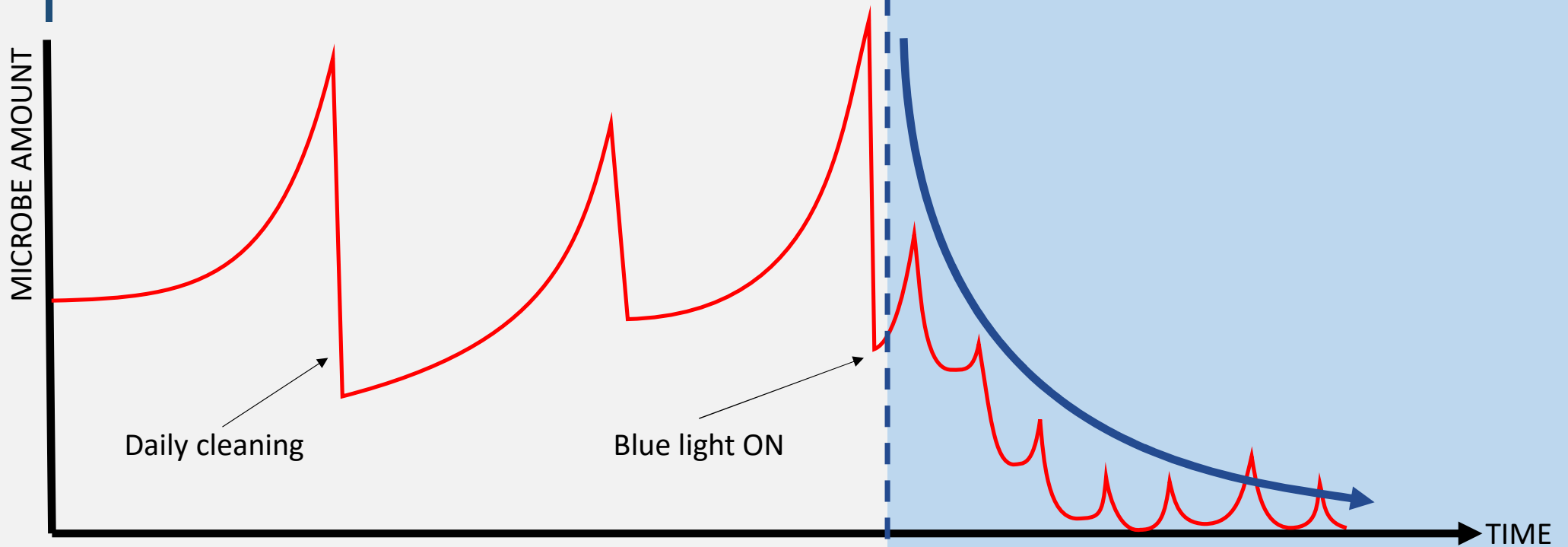
The bacteria were spread out on the bottom of a plastic petri dish and irradiated with low intensity blue light (0,7 mW/cm²) under regular office conditions.

Each test result contains three parallel samples from each point of analysis. Error bars show SD (Standard deviation)

2-hour irradiation resulted in reduction of over 99,9 % (over 3 log₁₀). Already after 30min, the reduction was 99 % (2 log₁₀).



HOW BLUE LIGHT CONTINUOUSLY AND GRADUALLY IMPROVES HYGIENE?



Daily cleaning

Blue light ON

Manual cleaning only:

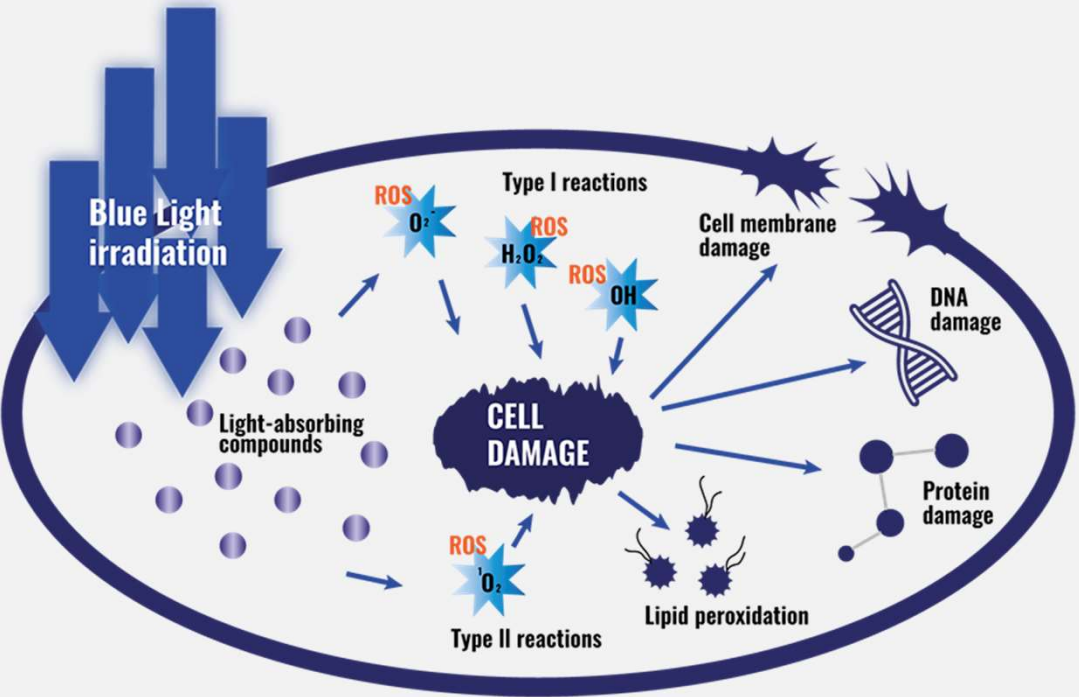
Long intervals, varying performance, use of chemicals
- Microbes grow freely between cleaning rounds

Blue light system added:

Activates frequently, between users
- Microbe levels are constantly suppressed



ANTIMICROBIC EFFECT OF BLUE LIGHT



SAFE FOR PEOPLE:
No photobiological hazard for human eye
(EN 62471 / RG1)

HARMLESS TO MATERIALS:
Non-ionizing
(Radiation and nuclear safety authority of Finland)



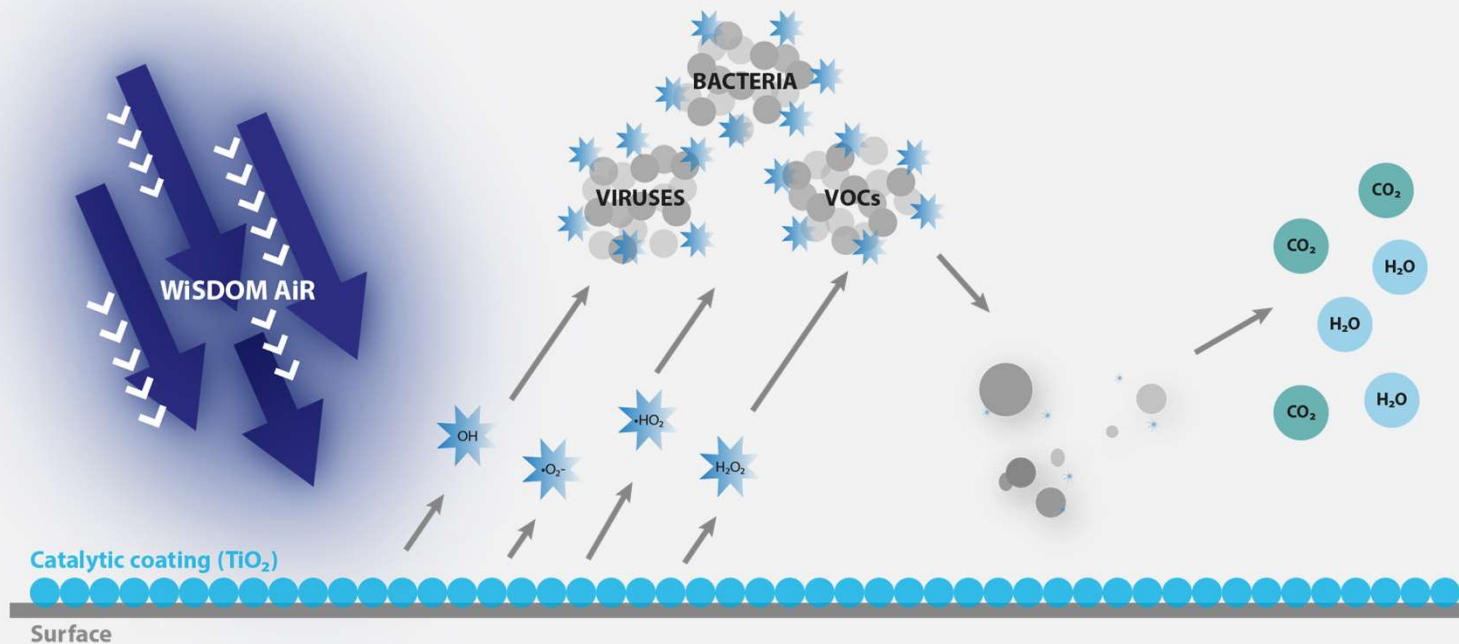
Over 1800 scientific researches published on antimicrobial properties of blue light

The ability of blue light to destroy microbes is based on its ability to energize naturally light-sensitive compounds inside the micro-organism, so that they start producing reactive oxygen radicals. Reactive oxygen species (ROS) are molecules containing a very reactive oxygen, causing the bacteria to damage ja destroy internally.

PHOTOCATALYTIC REACTION OF CATALYTIC COATING



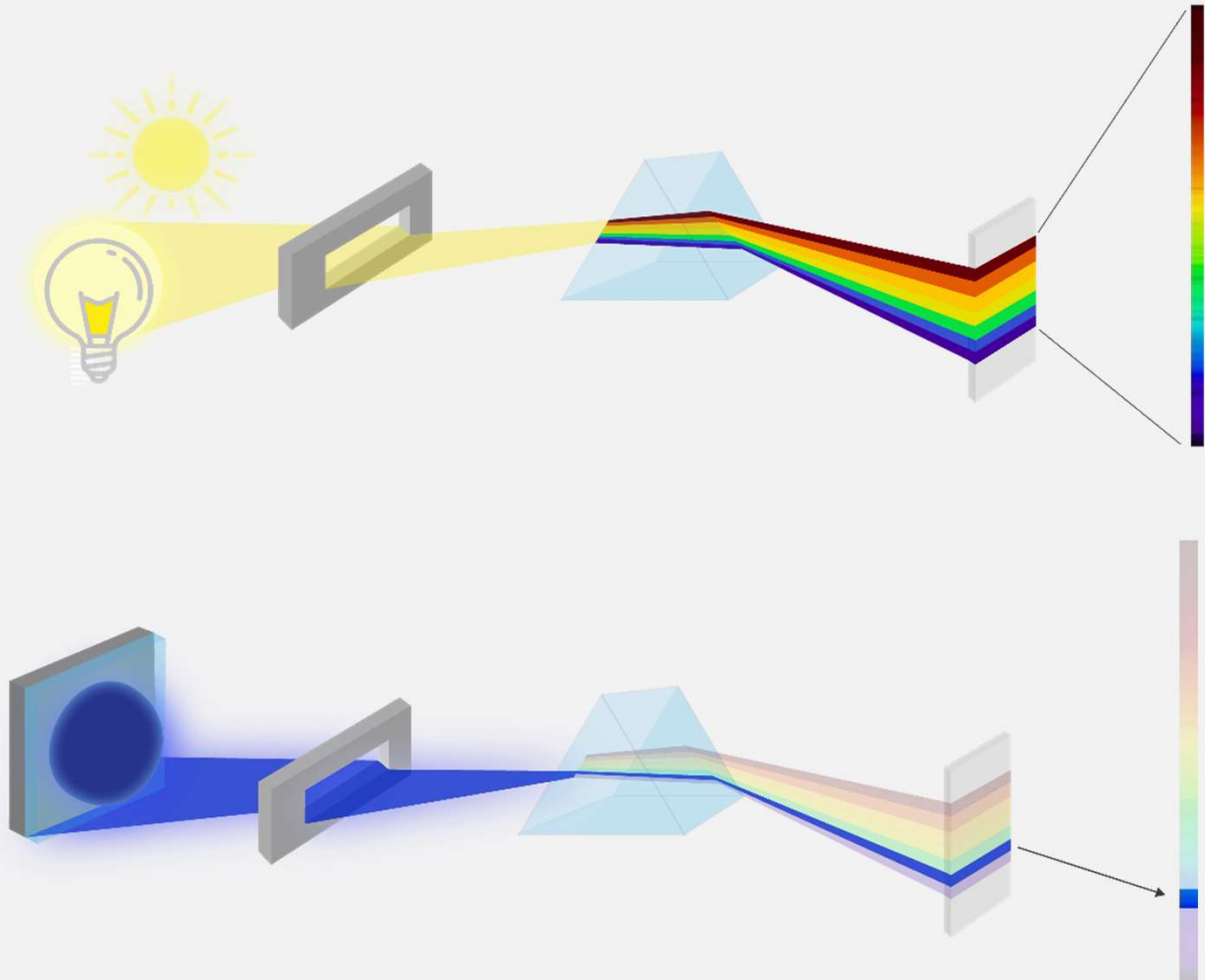
CATALYTIC COATING



1. The coating is activated by light with suitable wavelength and intensity.
2. The activated coating produces reactive oxygen species, ROS.
(superoxide radicals ($\bullet\text{O}_2^-$), hydroperoxide radicals ($\bullet\text{HO}_2$), hydroxyl radicals ($\bullet\text{OH}$) ja H_2O_2)
3. The ROS are extremely short-lived, reacting with the microbes and VOCs on the surface.
4. Microbes and VOCs disintegrate, and ROS are neutralized into water and carbon dioxide.

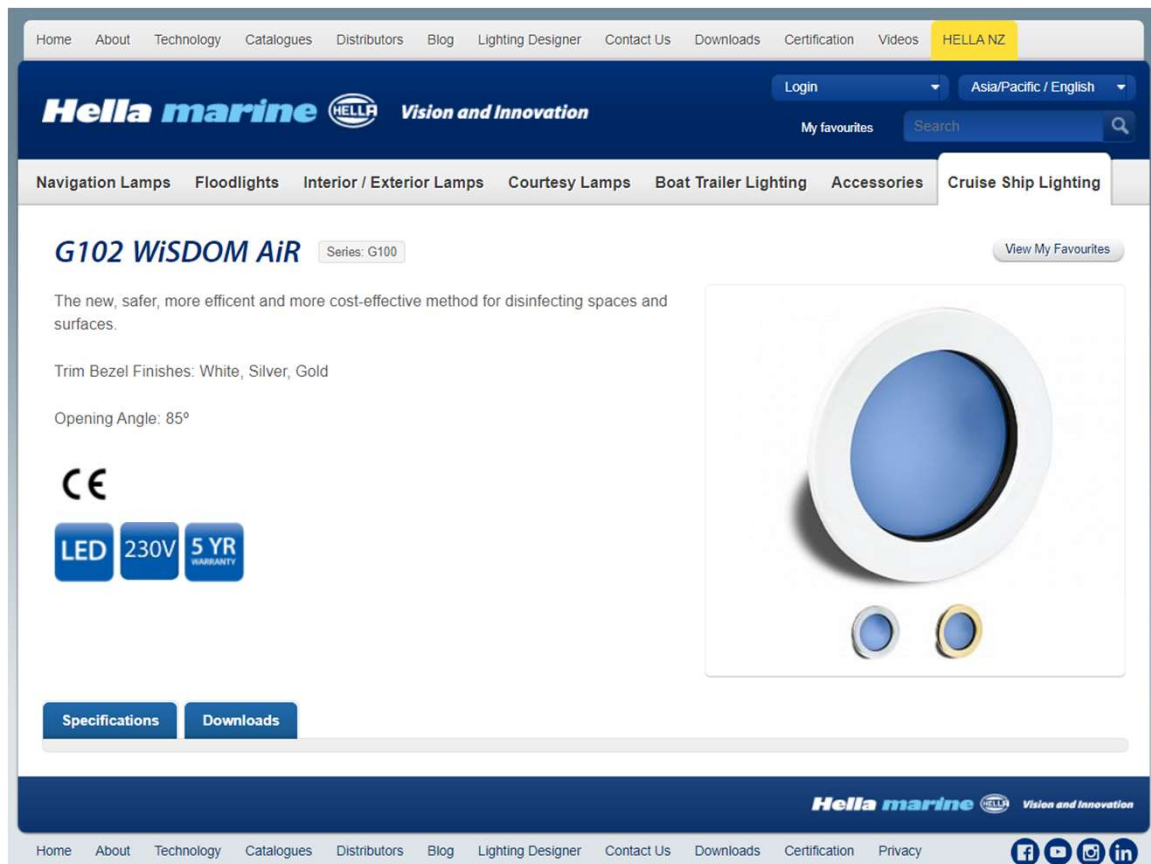
WHY NOW?

The development of LED technology during recent years has made it possible to produce very strictly limited spectrum with high intensity.



PARTNERING WITH **Hella marine**

Vision and Innovation



Hella marine is world leading marine lighting manufacturer.

Hella marine is cooperating with **LED Tailor** in disinfection device manufacturing.

LED Tailor is selling Hella's marine products globally.

For marine needs you will get disinfection devices and white lighting from one source.



Disinfection mode



White mode

OEM References



PORKKA BLUE

The new, safer, more efficient and more cost effective method for disinfecting in commercial kitchens and supermarkets.

RESCUE

VEHICLES FOR EMERGENCY MEDICAL SERVICES AND RESCUE OPERATIONS



Give your ideas a breath of fresh air.

- SAFELY DESTROYS VIRUSES AND BACTERIA
- HIGH AIR PURIFYING LEVEL (ISO-7)
- EXCEPTIONAL SOUND INSULATION
- AUTOMATIC FIRE EXTINGUISHING SYSTEM



DISTRIBUTORS & PARTNERS



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Steripolar Oy



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Suomi
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Suomi
IHMEC-projekti



Saksa
Hella marine



Tanska
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Espanja
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Itävalta
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SpaceMedical



Suomi



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