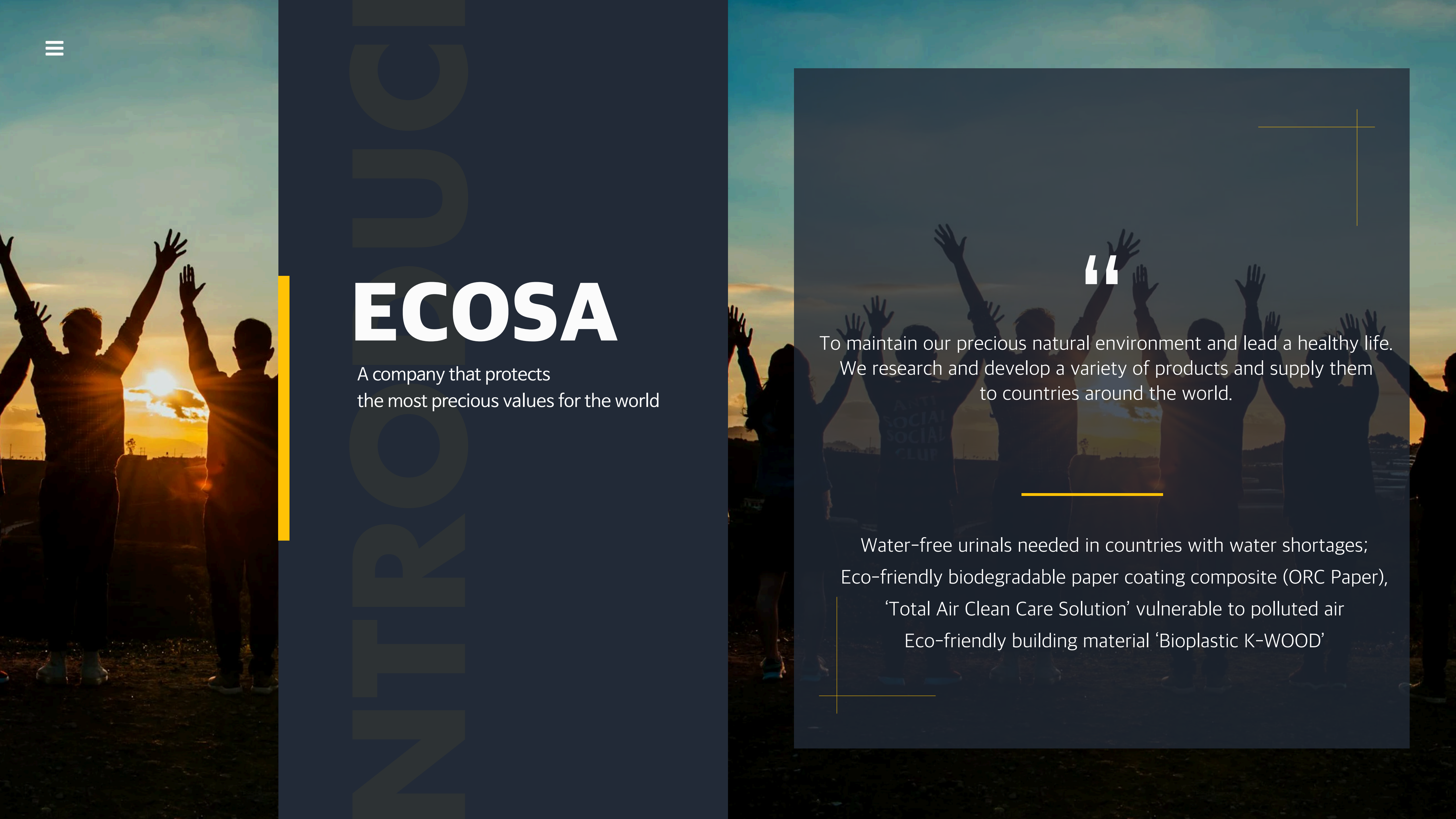


ECOSA

A company that protects
the most precious values for the world

Through sustainable management that pursues harmonious
coexistence between nature and people We will become
a company respected by customers around the world.



ECOSA

A company that protects
the most precious values for the world

“

To maintain our precious natural environment and lead a healthy life.
We research and develop a variety of products and supply them
to countries around the world.

Water-free urinals needed in countries with water shortages;
Eco-friendly biodegradable paper coating composite (ORC Paper),
‘Total Air Clean Care Solution’ vulnerable to polluted air
Eco-friendly building material ‘Bioplastic K-WOOD’



01

Maintaining and sustaining the precious natural environment

02

ECOWAY

03

04

ECOSA has developed and supplied eco-friendly urinal which utilized the patented 'Magic valve' to sustain and manage our natural environment.

Korea has already been designated as a water-stressed country and needs an eco-friendly toilet system.

This water shortage phenomenon is spreading all over the world.

ECOSA will go beyond simple product sales and awaken the need of eco-friendly toilet system to our customers to protect our precious environment and deliver economic value through energy saving.

Vision to solve Global water shortage

ECOSA working with a vision
to solve water shortages
around the world.



Water shortage trend

Even if we collect all the water on Earth, including sea water, groundwater, and glaciers, That amount is only a drop. It is 96.5% sea water. Only 3.5% of fresh water is drinkable by humans. Even here, 68% is frozen as a glacier.





Social problems – Increasing water consumption

Kuwait needs a reduction of water consumption.

Per capita water consumption is 450 liters (100 gallons) per day, ranking 3rd in the world. According to a report published by the (World Resources Institute) in August 2015, Kuwait will be at 'very high water risk' by 2040. It is one of the top 9 countries you will face.

(Source: Food and Water Security in Kuwait by Haweya Ismail, September 1, 2015)



Water resource–Desalination

Desalination plants are the main source of freshwater for drinking and domestic use in Kuwait. The cost of supplying fresh water to Kuwait through a desalination plant exceeds \$1.2 billion annually. Desalination alone cannot meet the needs of Kuwait's growing population. Kuwait faces a real threat of not being able to afford desalination costs. are facing it.

Social problems – Hiking water tariff

Kuwait needs a reduction of water consumption.

Kuwait City, November 13, 2016: The Ministry of Water Resources announced that the new electricity and Finalizing the implementing regulations of Law No. 20/2016 on water tariffs It's on the verge, Al-Qabas reports daily. Water prices are as follows:

- Investment, trade and official sectors (KD 4.0 per 1,000 UK gallons)
- Industrial and agricultural sectors (KD 2.5 per 1,000 UK gallons)
- Water filling stations (KD 1.0 per 1,000 imperial gallons)

This Circular will come into effect from May 22, 2017 for the trade and investment sector. In the formal sector, it will come into effect from November 2017. It will come into effect from February 22, 2018 for industry, agriculture and other sectors.



Water crisis in Kuwait

Social problems – Water saving

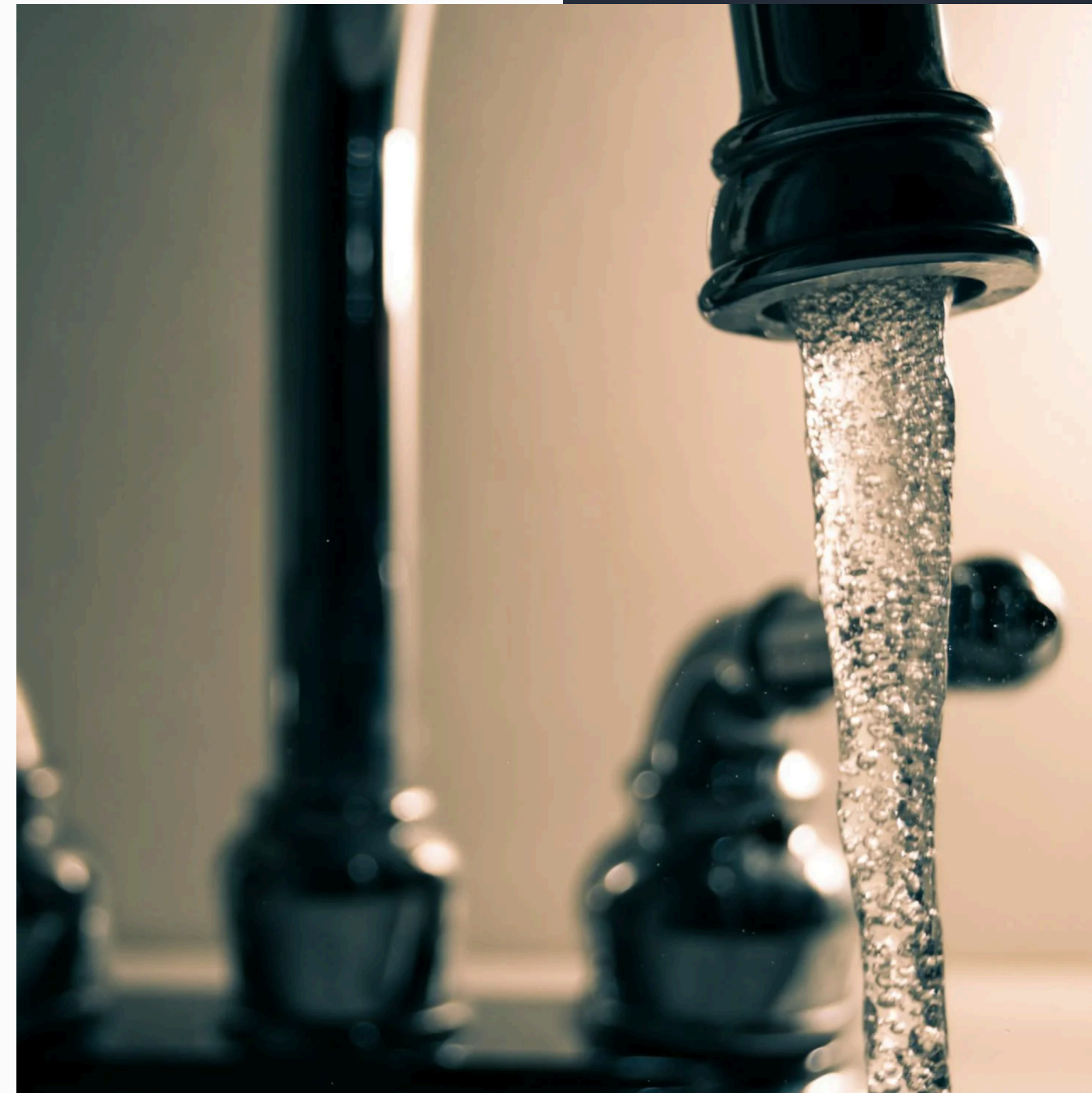
How much water can we save with Ecoway urinal?

Water saving with Ecoway's urinal

annual water consumption

4,500 mill.gall
 2.5 million (male population) X 5 gallon(22.6L)
 X 365 days = 20,600 milliliters

- Kuwait population (2016): Total 4,197,676 (2,503,158 men / 1,694,518 women) Water consumption (high efficiency urinal): 0.42 gall. 0.84 gall. (3.8 L) per flush/per use
- Desalination cost at Shuwaikh plant: KD1.55/gallon.
- (Source: Gulf News, presented by Khalid Al Barrak, Kuwait Institute of Science)



Benefit of Ecoway

Water saving with Ecoway urinal a year :

4,500mill. gall. X KD1.55 = KD7,000mill. (U\$23,100mill.)

Water shortage and toilet hygiene problems due to water pollution

caused by water pollution
water shortage
and restroom **Hygiene**
and **odor issues**



A groundbreaking water saving plan is needed.

Social problem Water shortage due to water pollution

Average individual uses 90L of water per day

Water consumption per serving



6L (Toilet)



2L (urinal)

Average daily water usage per person



50% global water shortage by 2025

Due to water pollution and indiscriminate use of water 50% of the world will be exposed to waterborne diseases by 2025



8% water shortage in 2000

50% water shortage by 2025

Social problems – Water shortage due to water pollution

Water shortage and toilet hygiene problems due to water pollution

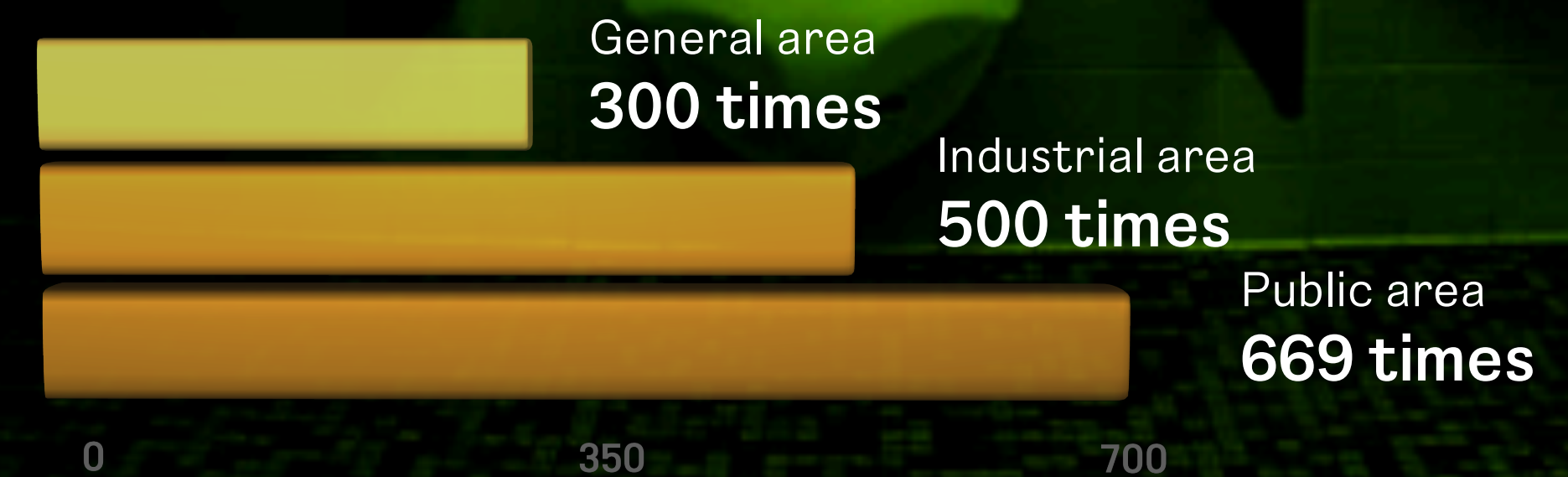
Public hygiene problem restroom

If urine remains in the pinhole over time,
It may cause discoloration and odor.
All ceramic toilets have pinholes.
Porcelain toilet bowl with tiny holes
Because there are pinholes in
all The pinhole is so small
that it is difficult to deal with.
This type of toilet is difficult to maintain.

Odor Concentration: Dilutes foul-smelling samples through odorless air.
An Odor Concentration is defined as the total volume(1ft) when an odor sample(1ft) is diluted
through odorless air by the level of minimum sensible value.

Public restroom's odor problem

Odor concentration
Public restroom > Industrial area > General area



Social problems – Restroom hygiene and odor problems

We need a hygienic plan in the restroom

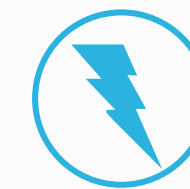
ECOWAY's

Product introduction

ECOSHI



WATER ZERO



ELECTRICITY ZERO



Magic Cup Valve System

Urine odor and other foul odors
Completely blocks backflow

Hydrophilic coating

No residual urine remains Easy to
Clean with a small amount of water

Can be installed anywhere and is easy to maintain

technological
alternative

Hydrophilic

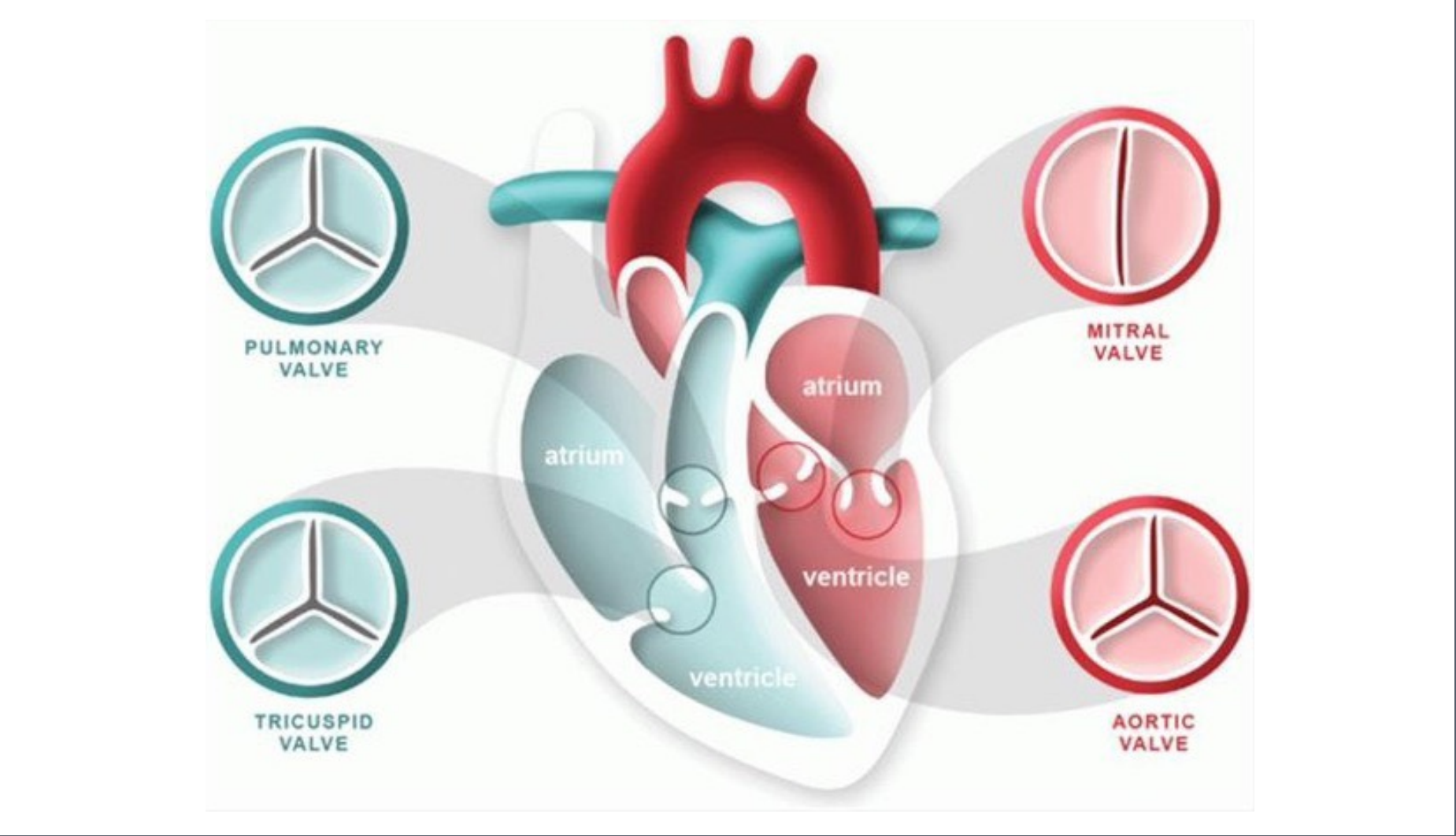
Hydrophilic coating technology was applied to save water and improve hygiene. Hydrophilic coating technology is applied to ECOSA's urinals. It leaves no residual urine and is easy to clean with a small amount of water



Regular pottery urinal

ECOSA
Hydrophilic coating urinal

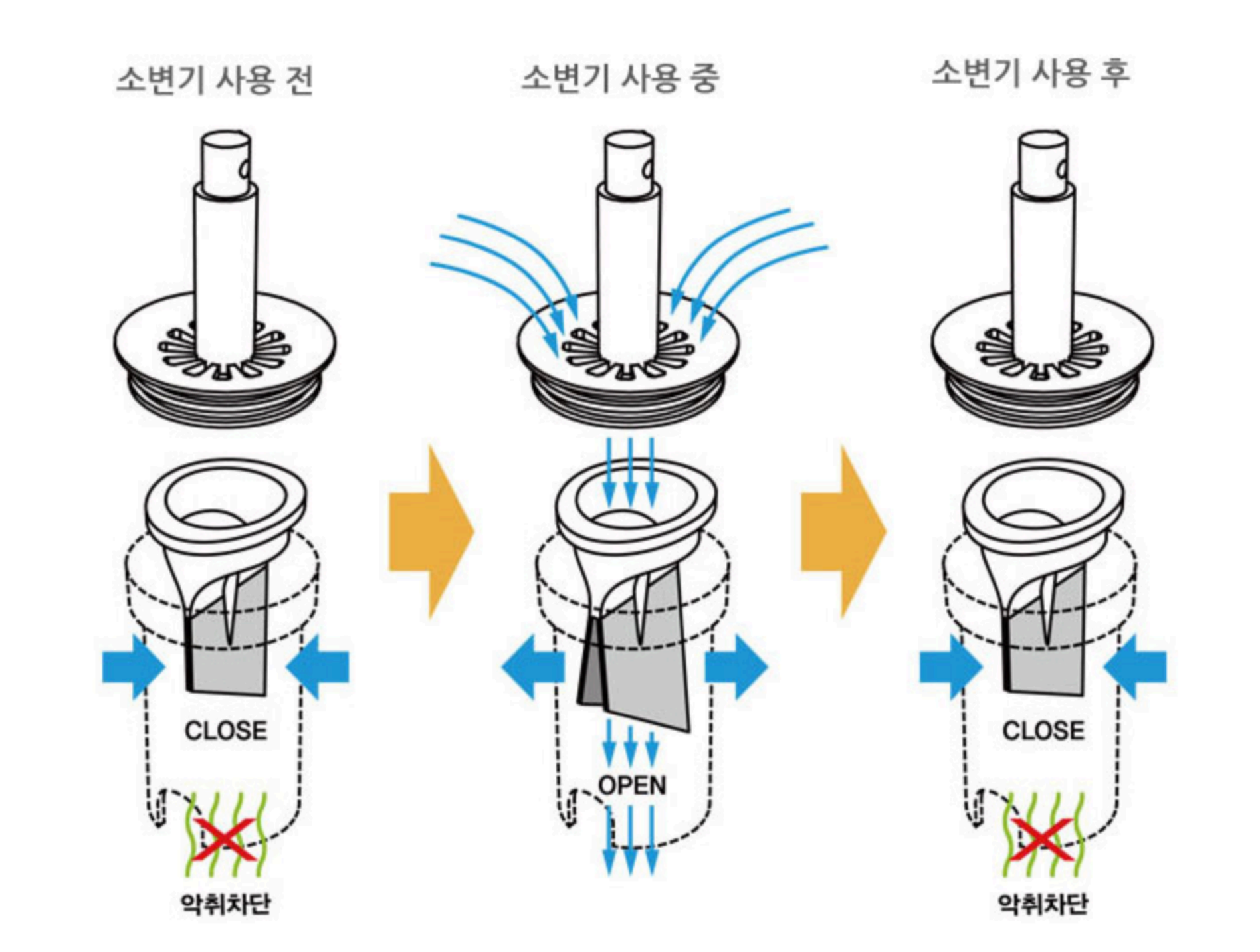
Hydrophilic coating technology



technological alternative

Application of the principles of heart valves
Heart valves help blood flow consistently in one direction.
It is a thin membrane structure that opens and closes due to pressure differences

Urine goes through the drain, through the valve, through the silicone trap, and down into the drain pipe. When the last drop of urine has passed, the plate of the internal trap automatically closes due to the tension of the liquid. It is closed and completely blocks backflow of urine and other odors



Magic Cup Valve System

Completely blocks reflux of urine and other odors





Magic Cup Valve System

We are expanding our product line with the Magic Valve system



1st product improvement
Patent No. 10 1597321



Improvement of original
technology products
Patent No. 10 1166553



Launch of product
application sewer trap
Patent application 18 0161638



Launch of product
application sink trap
Patent application 19 0007621



Certificate

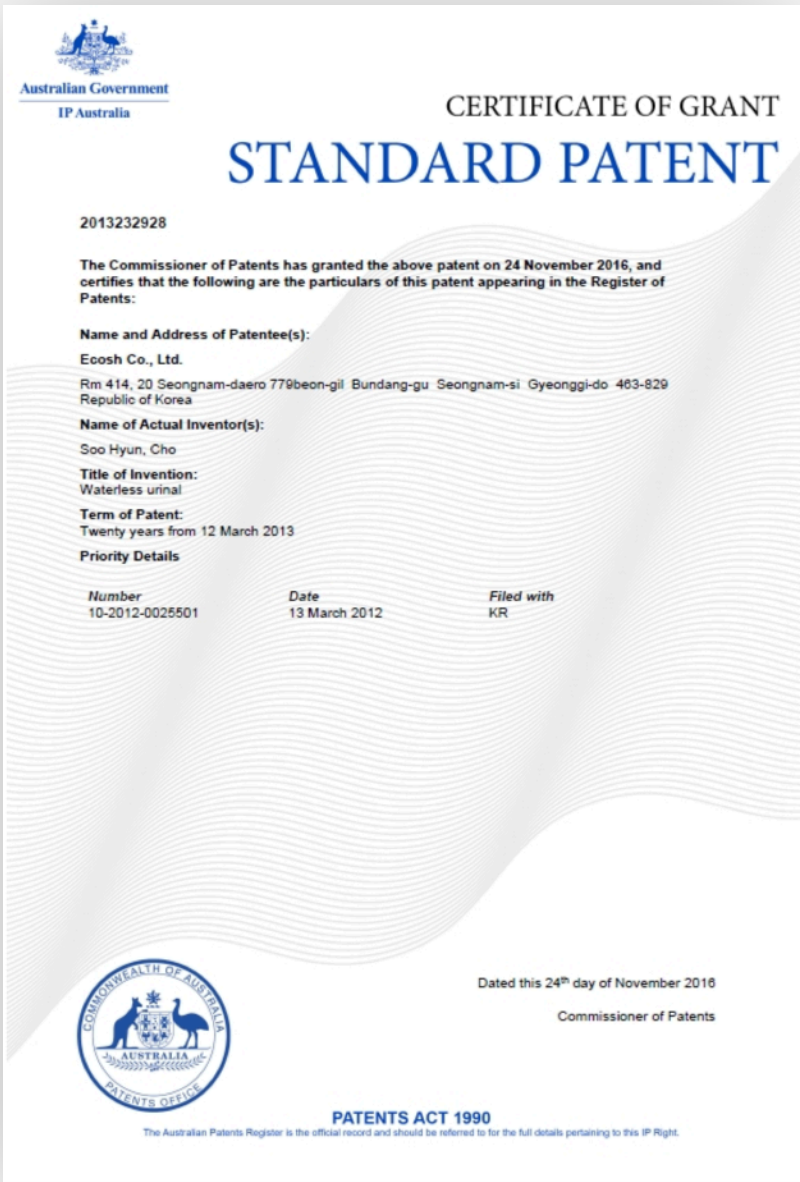
인증서



US patent certificate



Chinese patent certificate



Australian patent certificate



Using technology the
'heart valve principle' Original
for urinals with no odor at all



Problems with existing urinal products

1 Uses up to 4 Liters of water per use

Power usage due to automatic draining

Drain pipe / water pipe

Drainage pipe is always open wet environment



“
Improved problems with existing products
ECOSA solves this problem with a new product

ECOWAY



WATERZERO



ELECTRICITY ZERO

Drain
pipe

Magic
Valve

Dry
environment

Easy
construct

Easy
main-
tenance



Toilet configuration

3.5L with vacuum and pressure washing method Configuration diagram of ultra-saving water toilet

Toilet configuration





Toilet configuration

Technology

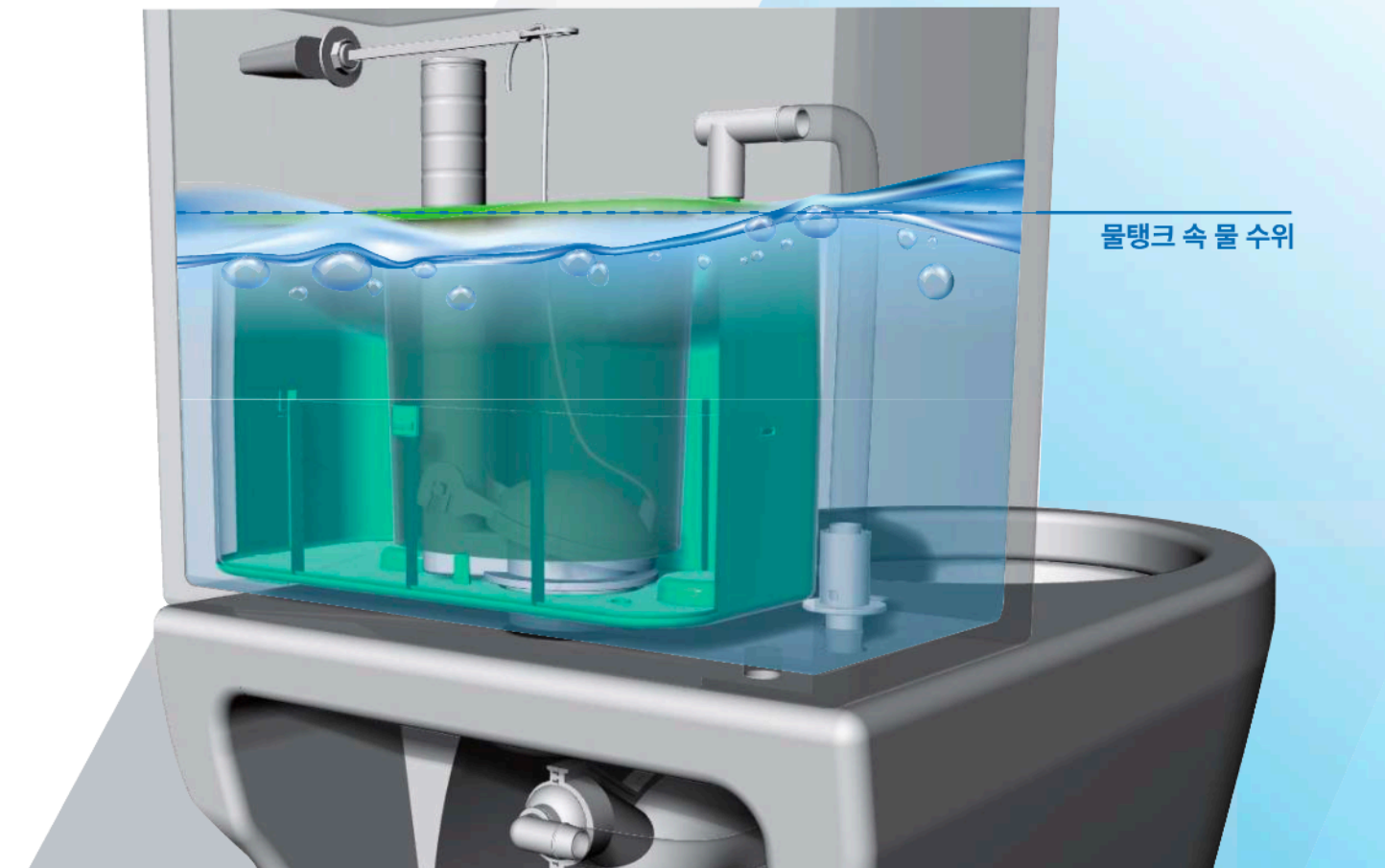
Vacuum and pressure cleaning methods

Inspired from toilets used on airplanes and high-speed trains

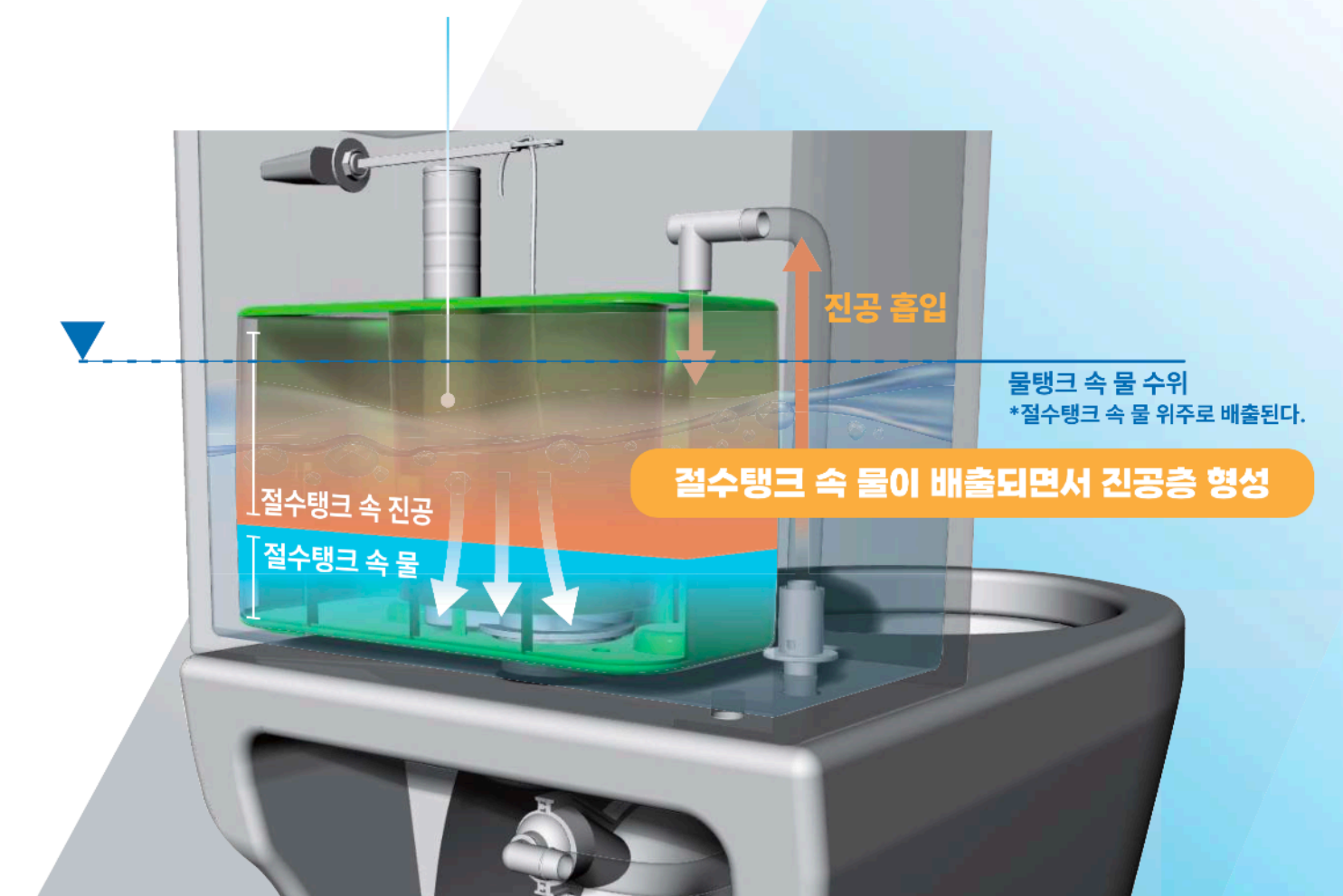
Toilet configuration



1 절수탱크 속 물 배출



2 절수탱크 속 진공 흡입



S트랩 속 가뒀진 공기를 흡입

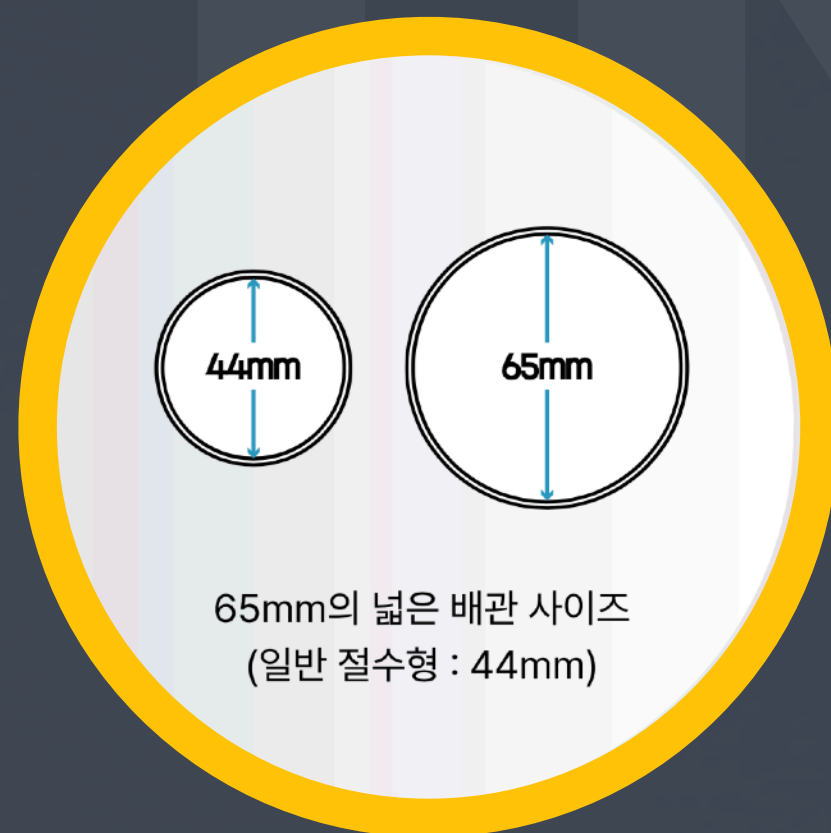
작동상태





Feature Point

Technology points that enable strong performance even with a small amount of water



6Wide piping size of 65mm
(General water saving type: 44mm)



7 large holes in the center of the rim
Water is discharged from 33 small holes.
Powerfully suctions and expels dirt



Material with minimal friction
Low resistance to discharge of waste



ECOSA's TOILET

Can be used continuously
(up to 3 times)

Removable trap piping Easy
to remove foreign substances

Eliminates odor/gas due to
double sealing structure
Perfect blocking



“

Improved problems with existing products
ECOSA solves this problem with a new product

ECOWAY



We can meet
at the Blue House.

ECOWAY waterless urinal

ECOWAY is Making it like a country
We are contributing greatly.





01

Air Clean Care Solution

02

NEOAMICO

03

04

The world's first core technology for sterilization, odor deodorization,
and dehumidification. through Optimize Developed 'Air Clean Care Solution'
We want to provide a comfortable environment in every space where we stay.



Air Clean Care development background

Indoor air contains harmful gases, including bacteria and mold Contamination by various causative substances continues to occur, Health issues are becoming a big issue. In particular, it greatly affects the health of the elderly and children



Care for indoor air pollution



Dress Care development background

The Dress Room, which stores a variety of clothing,
is Due to air circulation problems,
it becomes a breeding ground for mold and bacteria.
Especially in the summer, due to odor and mold problems,
It is very harmful to health

눈에 보이는 오염 물질만 해로운 것이
아닙니다.

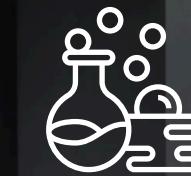
눈에 보이지 않는 물질도 마찬가지로 해롭습니다.



Carbon dioxide

Emission sources: breathing, heating, kitchen facilities

Effects on human body: headache, malaise,
dizziness, vomiting



Volatile organic compounds

Emission sources: smoking, adhesives, plastic raw materials

Effects on human body: Difficulty breathing, dermatitis



Mold

Emission sources: High humidity and poorly ventilated space

Effects on human body: Asthma, rhinitis, eczema, athlete's foot

Care for indoor air pollution



R&D Technology

Sterilization, odor deodorization, powerful dehumidification, and maintaining optimal humidity.
'Air Clean & Health Care' needs increase Core functions can be implemented simultaneously in one product Technology development required

“

R&D Technology

Virus sterilization and air purification

(Health Care)

Odor deodorization

(Optimum air purity environment)

Low Temperature Dehumidification Tech

(Auto indoor humidity management)

(Suppresses indoor temperature rise)

(Increased air circulation and sterilization effect)

Extremely Low power/ Low noise

(Using our own ultra-small inverter compressor)

Application of automatic control system

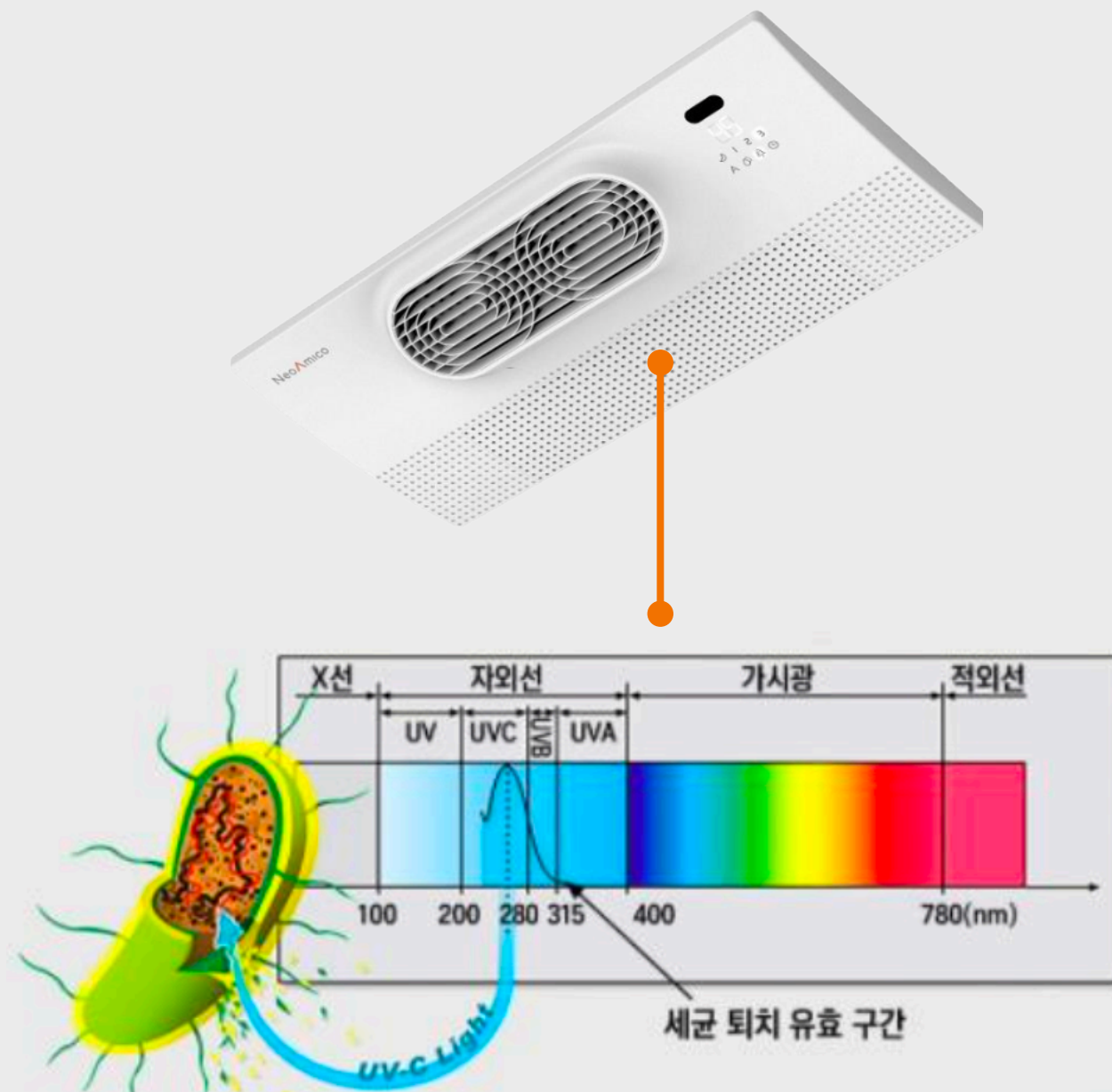
(humidity, drainage, safety)

Convenience of installation

(No refrigerant piping work required)

Mold and virus Sterilization system

- Application of UV-C LED
 - Highest sterilizing effect among ultraviolet rays
 - › Decomposes microbial nucleic acids (DNA or RNA)
 - › Neutralizes fungi, bacteria and viruses



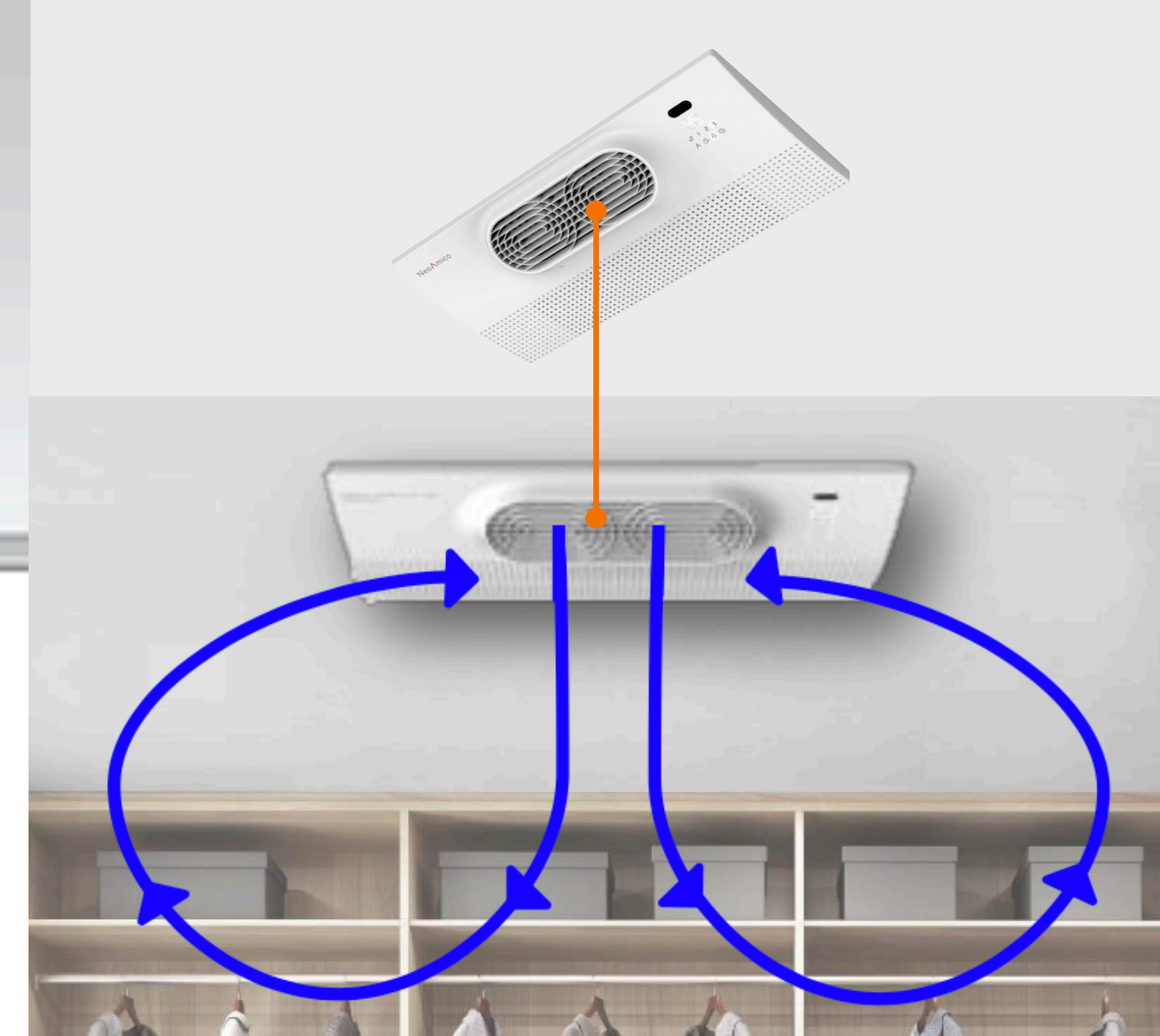
Sterilization tech

Through optimized design of cold air flow path and UV-C irradiation amount Mold, bacteria, and virus sterilization technology was implemented.

Through optimized air circulation of ultra-strong dual fans, The world's first product that maximizes sterilization effect

Ultra Dual Fan System

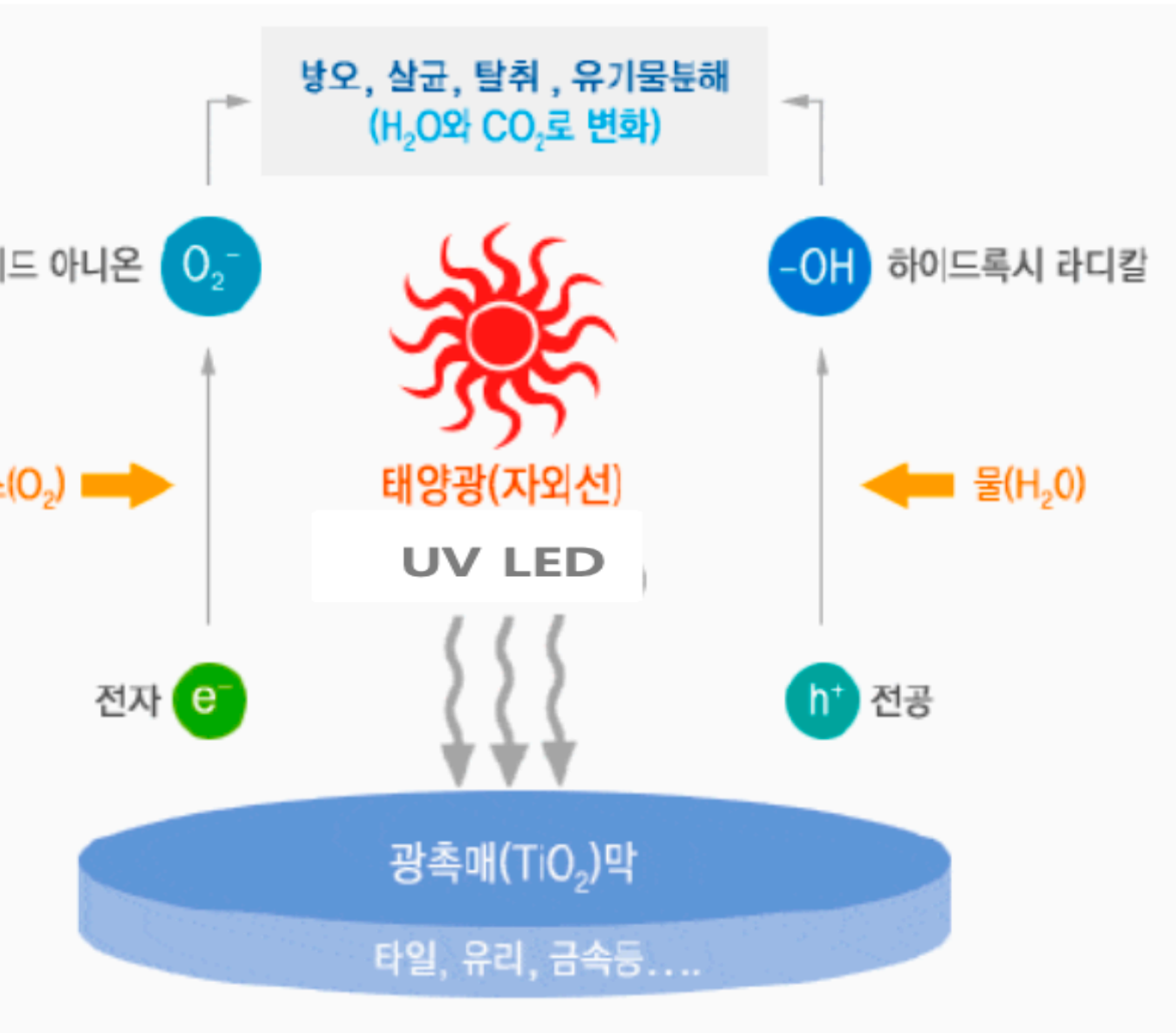
- Dual FAN application to maximize sterilization effect
 - Sterilization efficiency due to increased air circulation ↑
 - FAN structural design to maximize air channel efficiency
- Low noise axial FAN applied



Titanium dioxide (TiO2)

Photocatalyst technology principle

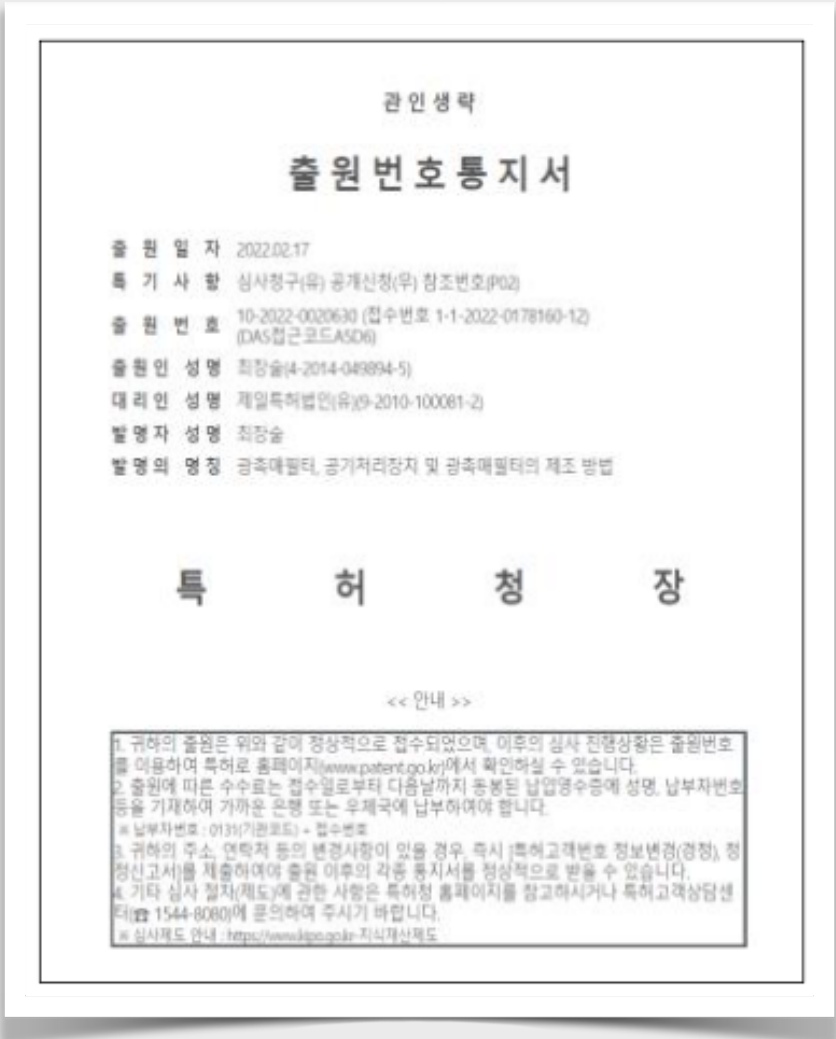
- Photocatalyst titanium dioxide (TiO2) is activated by ultraviolet rays or Optimized UV light and response
- Hydroxy radical (-OH) and superoxide anion (-O2) produces
 - › Decomposes odors and harmful bacteria, which are organic compounds, by oxidation



Deodorize odor tech

Photocatalyst (TiO2) and UV Tech that are harmless to the human body. through combination Elimination of bad odors and harmful bacteria

: special photocatalyst filter and optimized sterilization UV-C LED irradiation → Filter can be used semi-permanently



Photocatalyst

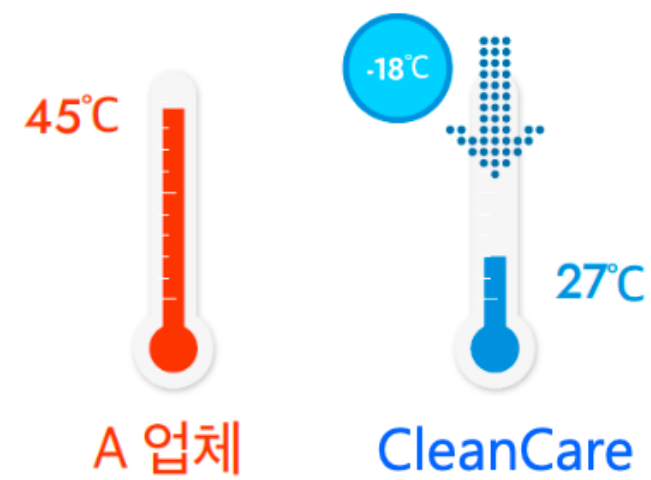
Patent Application

- Photocatalyst application technology + special structure filter
- Optimization of deodorization/sterilization performance
- CleanCare applied special photocatalyst TiO2 filter + UV-C LED

High Efficiency Air Cooling System

- Solved the problem of high temperature discharged during dehumidification
› Prevent indoor temperature rise & create a comfortable environment

토출 바람 온도 비교
(주변 환경 온도 30℃ 기준)



- Forced fan circulation + natural convection to maximize air circulation
> Hot air rises, cold air falls



Dehumidification tech

As a global leading compressor and refrigeration application technology company, Using Cooling Air-Solution and dehumidification technology Optimized
Air Clean Care Solution



※ 제습량은 27℃, 습도 60% 표준 시험 규격 측정

High Performance Dehumidifying

- Dehumidification amount per day: 4,000 ml/day ↑
- Refrigeration cycle optimization technology

Airborne bacteria in indoor air and Captures viruses and moisture simultaneously

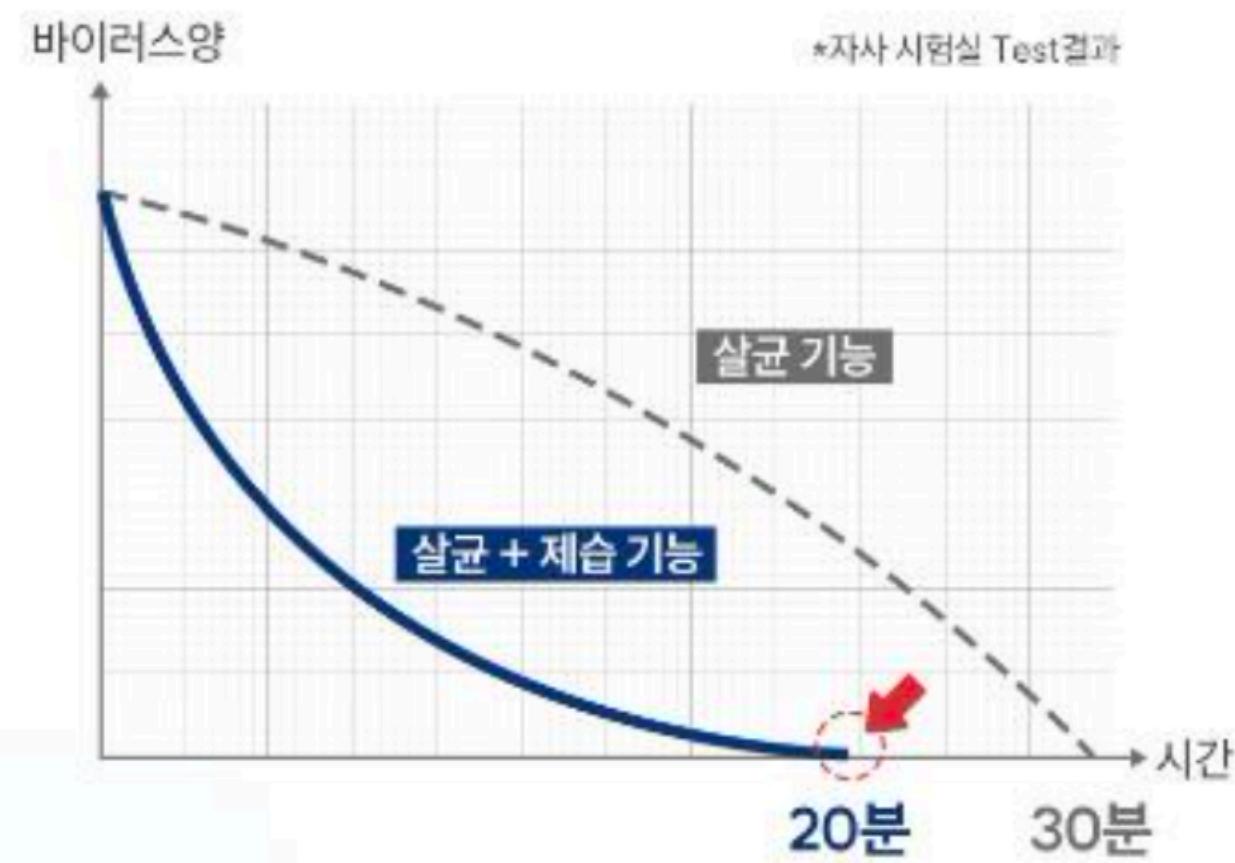
- Directly discharges/removes contaminated bacteria and viruses to the outside
Sterilization + dehumidification simultaneous operation: shorten sterilization time

Dehumidification tech

Simultaneous application of UVC sterilization & dehumidification technology Shorten sterilization time and maximize performance

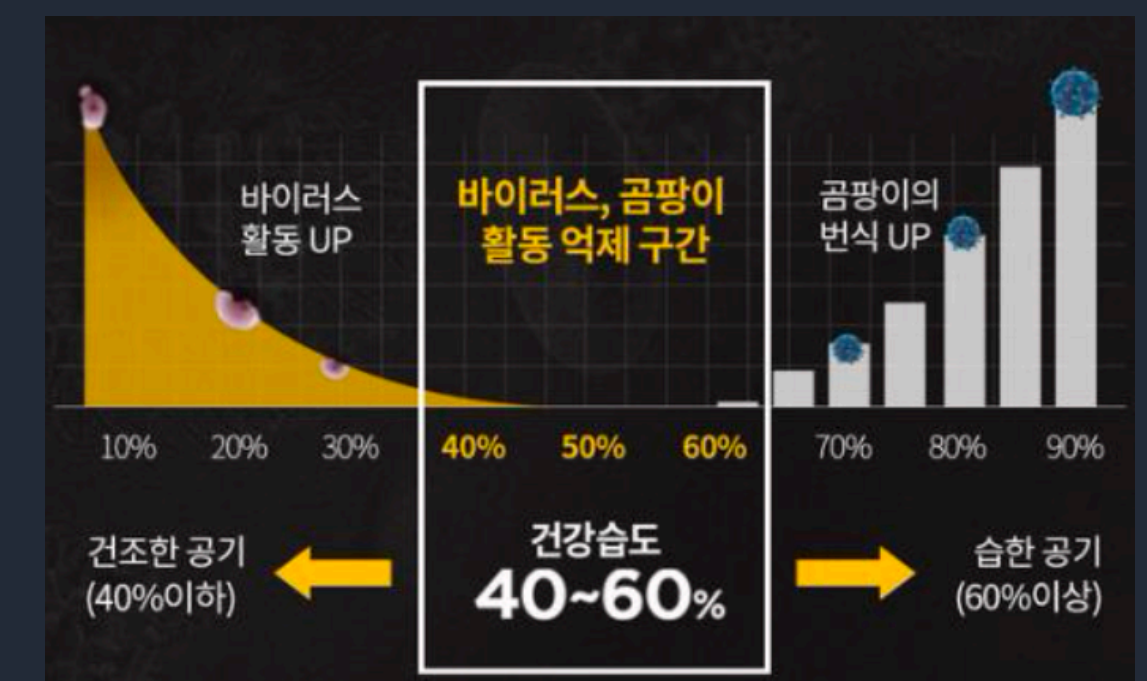
Air from which moisture has been removed Prevent light scattering

- Maximize UV-C LED sterilization performance and photocatalyst reactivity



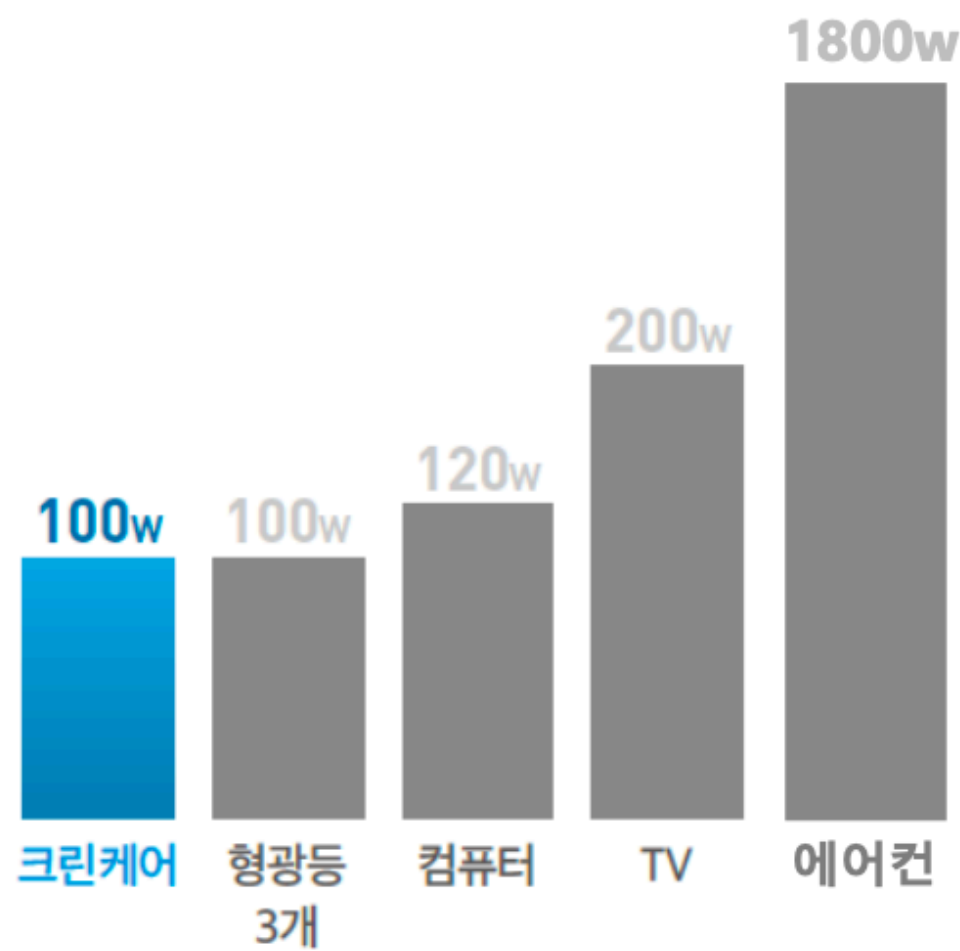
Dry air is prone to bacteria and viruses prevent breeding

- Maintains humidity that makes it difficult for viruses and mold to grow



Extreme power saving

- Power consumption: up to 100W



Ultra-low power low noise

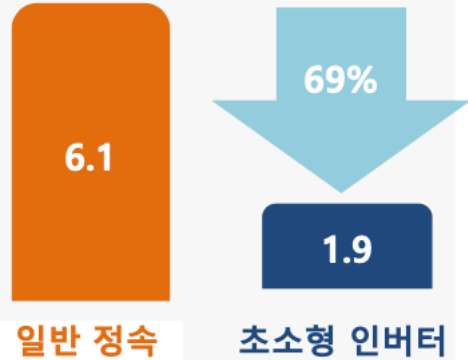
Application of ultra-small inverter compressor technology developed by the company Solving weight, size, noise, and vibration problems
→ High efficiency, ultra-low power/low noise/low vibration



초소형 인버터

압축기

무게 [Kg]



초소형 인버터 압축기 등록 특허(4건) 및 전기안전 인증

Low noise & Low vibration

- Below 36dB (sleep mode)
- Ex) Home water purifier 38dB

Space environment Sensing System

- Temperature/ Humidity Sensing Control

Dehumidifying water Sensing & Auto Control

- Space environment detection sterilization
& deodorization control Dehumidification level
detection Auto Sensor
> Automatic discharge of dehumidifying water

Auto Control & Safety Tech.

Dress Room Care through humidity/dehumidification water
level detection and control Through detection of product
abnormalities and application of safety sensors
Reliability Guarantee Auto Safety System Implementation

Optimal humidity Control System

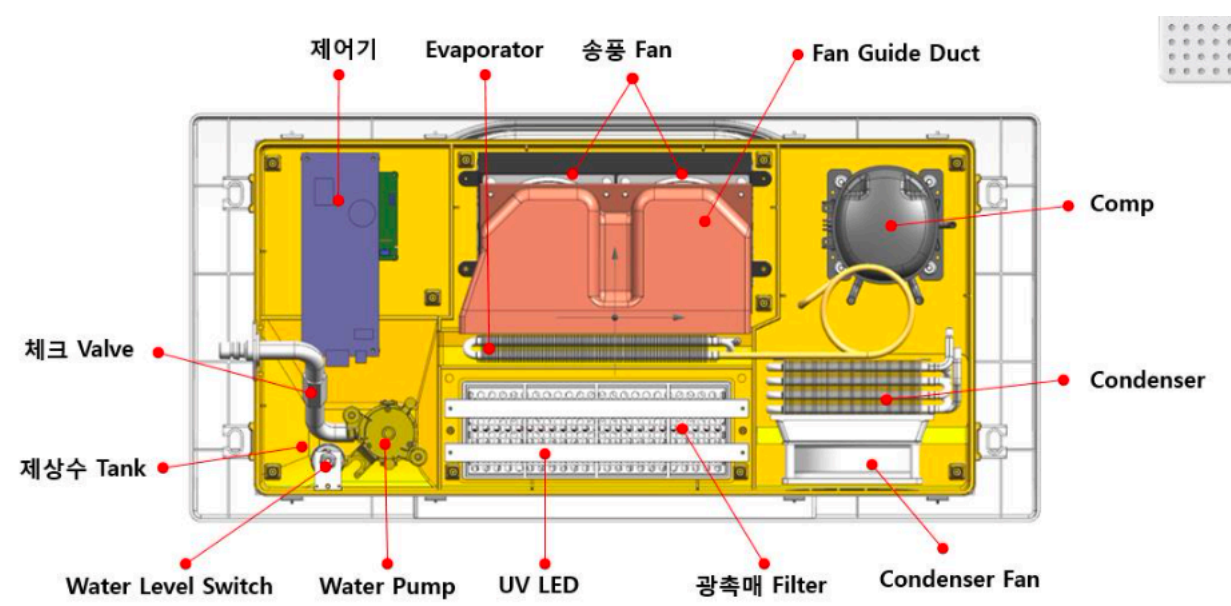
- Auto Dehumidifying Control
- Reach target humidity: Auto-Off
- Humidity rise: Auto-On

Auto Safety System

- Application of safety sensors
to major components
- Product abnormality detection
and notification function

Outdoor unit, indoor unit All-in-one product

- Refrigerant charging when shipping product
- No refrigerant piping or welding work required



Easy Built-In

An all-in-one product for outdoor and indoor units
No need for refrigerant piping

Light weight Easy to construct

- Easy ceiling installation work with 9 Kg weight

Drain pipe and power construction required

- Condensate discharge drain pipe
- System air conditioner drain pipe connection
- AC power line connection



THANK YOU