

Next-Gen Eco-Friendly Water Treatment System.

O2&B Water Treatment Specialized Company



01 Water Problem

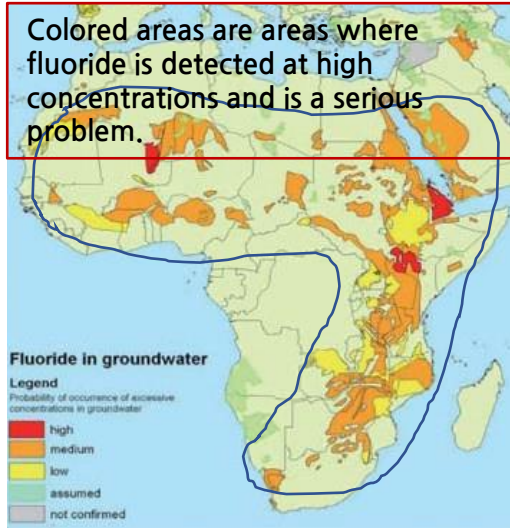


“ **The world** is experiencing **water shortages** due to climate change and environmental pollution. The groundwater that is used is clean, **but it is contaminated with heavy metals (ionic substances such as fluorine, arsenic, lime, and iron).** ”

+ European Water Calcium



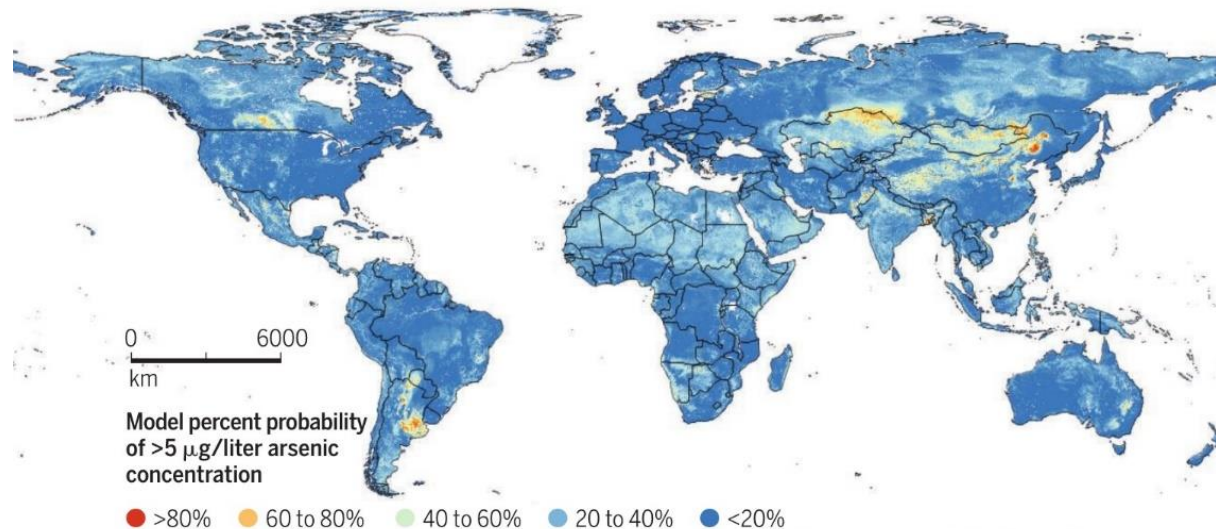
Colored areas are areas where fluoride is detected at high concentrations and is a serious problem.



+ Africa. Fluoride Distribution Map

A world model for groundwater arsenic risk

Lowering arsenic concentrations in drinking water helps avoid a range of adverse health outcomes. Modeling the probability of groundwater arsenic with excess risks helps guide testing. Podgorski and Berg developed global models for groundwater arsenic concentrations exceeding 5 and 10 $\mu\text{g}/\text{liter}$.



Reduced average life expectancy when wearing water contaminated with ionic substances (heavy metals)

+ US environmental group "more than 200 million US citizens exposed to PFAS-contaminated drinking water"



+ Southeast Asia/China Arsenic Contamination Problem

“
Resolving a distant problem despite the help of developed countries
 ”

Despite the help of advanced countries, the RO method is inappropriate due to the nature of fluorine (the filter is often clogged).

It is costly, so after 6 months to 1 year, it turns itself off and most people just drink the water as it is.



◀ **Gefishi Village, Ghana**

RO System 100t/day
 Stopped after 6 months of operation
 Can't afford electricity due to high cost



◀ **Tanzania**

100KW of solar power was installed with the RO system (1400 tons/day) installed in Arusha, but the equipment stopped due to excessive expenditure of electricity



◀ **Senegal**

21 water tower
 All drinking water is not possible

◀ **Ethiopia**

RO System 100t/day
 Stop after 1 year of operation
 Expensive, no local repair

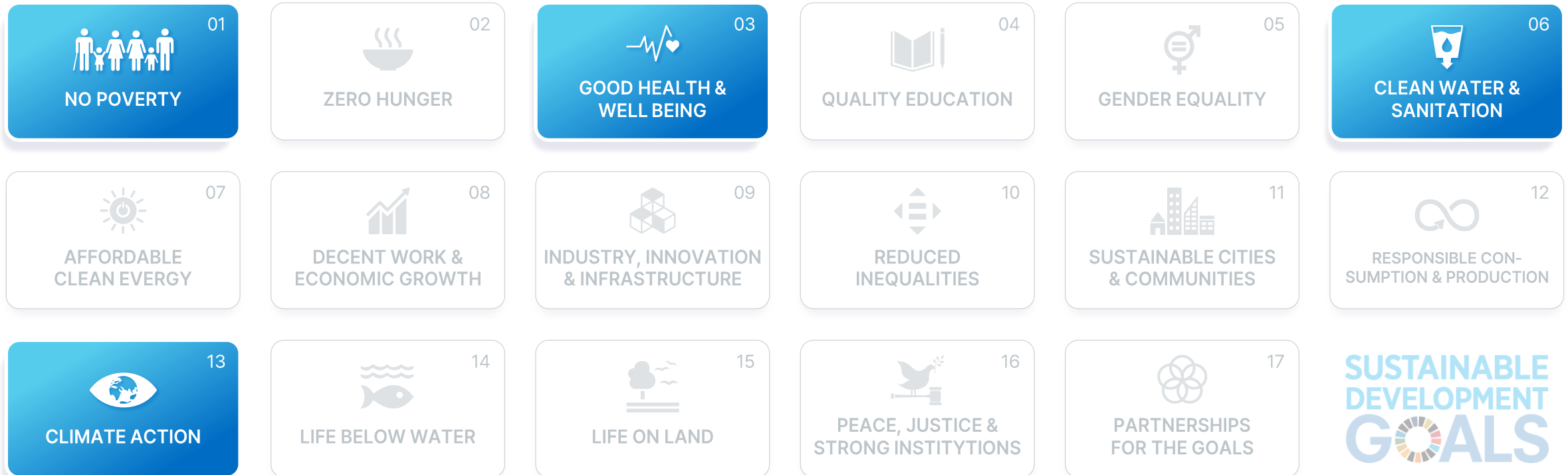


◀ **Tanzania**

The RO system installed in Korea has not been operated for a month..

“ SDG 6th Key Agenda **Clean Water and Sanitation** ”

By 2050, one quarter of the world's population will suffer from chronic water shortages.





02 Introduction of our water purification technology



“ We have a water purifier **MCDI** with an **80% reduction in electricity, SW management without experts, and a recovery rate of over 90%, and have proven the world's highest efficiency.** ”

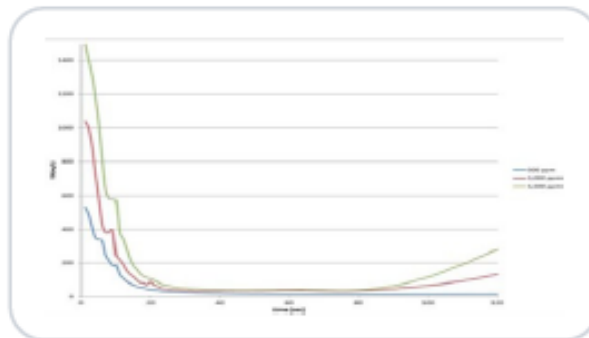
Efficient MCDI System

01 Innovative management strategy apart from the original method

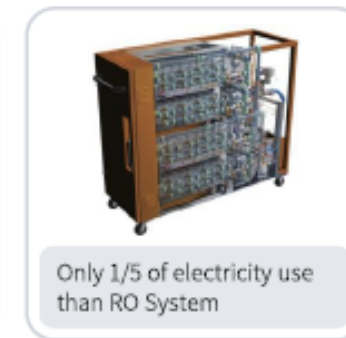
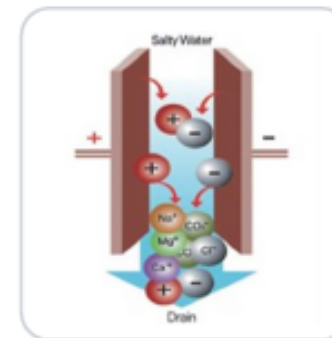
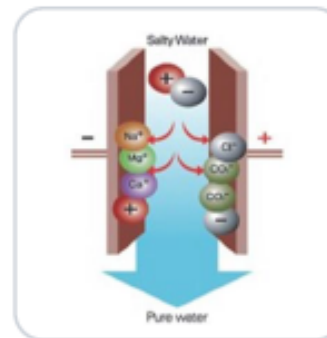
◆ Principle of CDI(Capactive deionization) desalinization technique

- ☑ This technique removes dissolved ionic substances through the absorption of carbon electrode surface to ionic materials in water.
- ☑ Water treatment is processed by the absorption of the surface of the (+)pole to the (-) pole and vice versa.
- ☑ The poles change ways and the adhered materials are easily extracted and emitted within the salvage process.

Decrease in electric cost by 80% compared to RO



◆ Removal rate per hour



“ We have a water purifier **MCDI** with an **80% reduction in electricity**, **SW management without experts**, and a **recovery rate of over 90%**, and have proven the world's highest efficiency. ”

O2&B MCDI water purification technology

Low-cost water purification equipment

Excellent processing efficiency

Easy to install and simple to manage

expandability

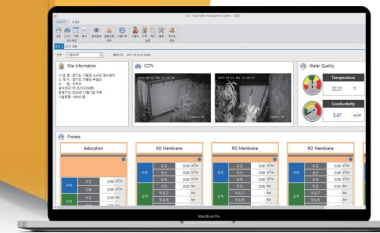
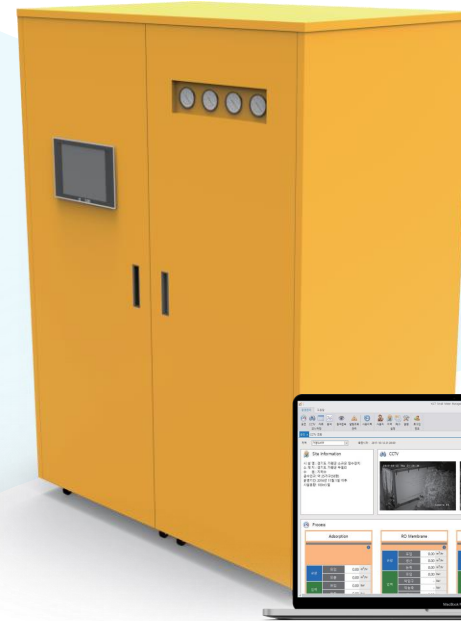
environmentally friendly

– No Chemical

Low Energy, Low Cost



water purification HW/SW



Eco-friendly
water
treatment

Carbon
credits

“ 1. Eco-friendly high efficiency, 95% removal efficiency by removing fluorine concentration from 18PPM to 0.26PPM ”

The Results from the laboratory of water quality is as follows

The Results from the laboratory of water quality is as follows

SN	DATE	SOURCE	pH	E.C	TDS	TH	Ca	Mg	TA	Na	F
1	23/8/18	Raw water	8.61	487	243	92.0	25.6	6.80	198	120	18
2	23/8/18	Treated water	6.55	23.6	11.8	5.80	1.60	0.44	16.0	0.65	0.26
3	3/9/18	Treated water	6.66	33.5	16.7	10.2	1.36	1.65	15.0	0.45	0.40
4	TZS		6.50-8.50	n.m	500-2000	500-600	75-300	50-100	n.m	200	1.50

The results of experiment from the laboratory shows that the purified water are efficient to be used for home uses.

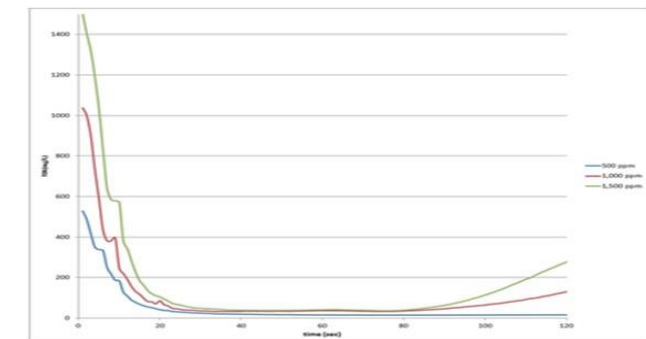
3 USES

The machines can produce 20,000litres per day according to the report from o2nb company

After inspection it shows that the villagers of oldonvosambu area they accented the



Only 1/5 of electricity use than RO system.)

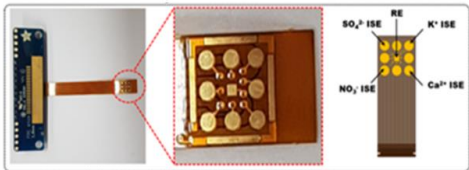


80% less electricity cost than RO

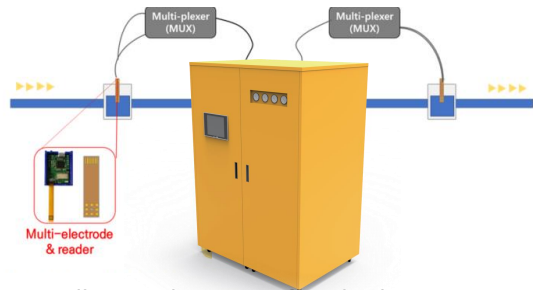
시간별제거율

“ Smart water technology continuous development and upgrade & option ”

Optimizing the system with rapid water quality analysis through rapid water quality investigation



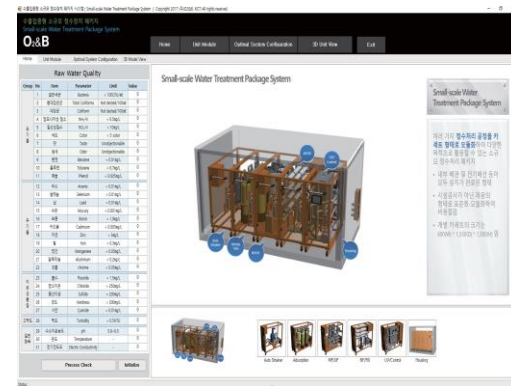
PCB-based multi-ion sensor electrode platform



Installation diagram of multiple ion sensors and measuring instruments

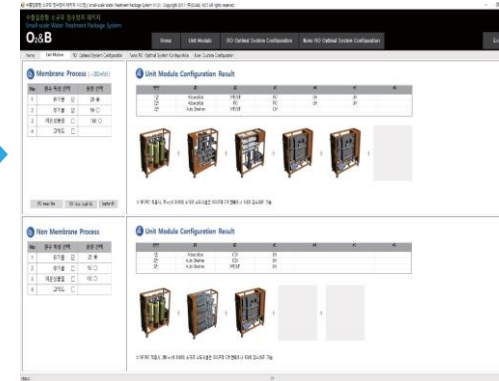
Customized water quality module supply

+ Check the status of each part



· Enter raw water quality data

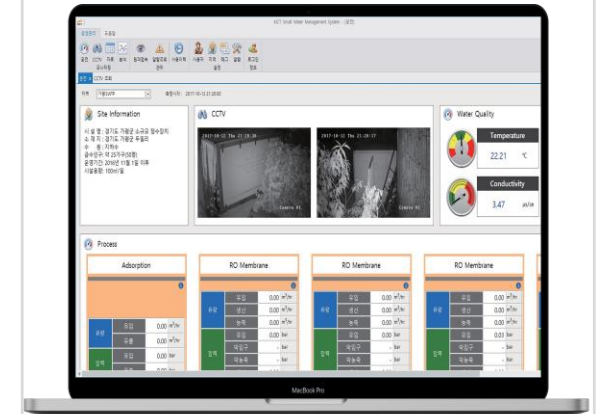
+ Automatically suggests optimal module combination



- Automatically selects and presents the optimal module.
- Presents optimal performance of combined equipment.

Real-time remote monitoring

One person manages multiple plants anytime, anywhere Reduces maintenance costs required by professional personnel



“ 6. Optimal facility installation and construction for **various facility** configuration purposes

household water purifier

Household water purifier
using an MCDI cell dedicated
to lime removal



water station

village water station



industrial water treatment plant

Large-scale water purification system
Possession of basic technology for
water treatment system



One-chip system configuration

Minimize the size by reducing the main
board to the size of a fingernail.
One-chip for system stability.
Secure absolute price competitiveness.



+ 2022.11. Selected as Government Innovative Product Procurement

“ 7. Fast water supply in a small-scale form that can be transported by modular vehicles ”



Quick Provision of water through transport

Quick provision available through small-scaled form suitable for transport

Foundation Work



Foundation work for cassette installation

Lift Equipment



Transfer of cases and cassettes through Lift equipment

Installation Complete



Completion in Installation

Cassette Installation

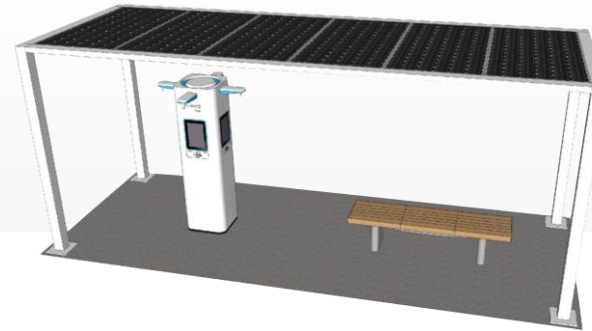


Install cassettes

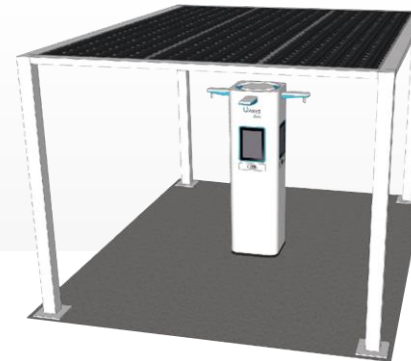
“ **8. Carbon neutral(RE100) Modular, low-power and space-efficient water station** ”

TYPE 01**rest type**

It is advantageous for roadside installation and can serve as a rest area

**TYPE 02****Road-corner type**

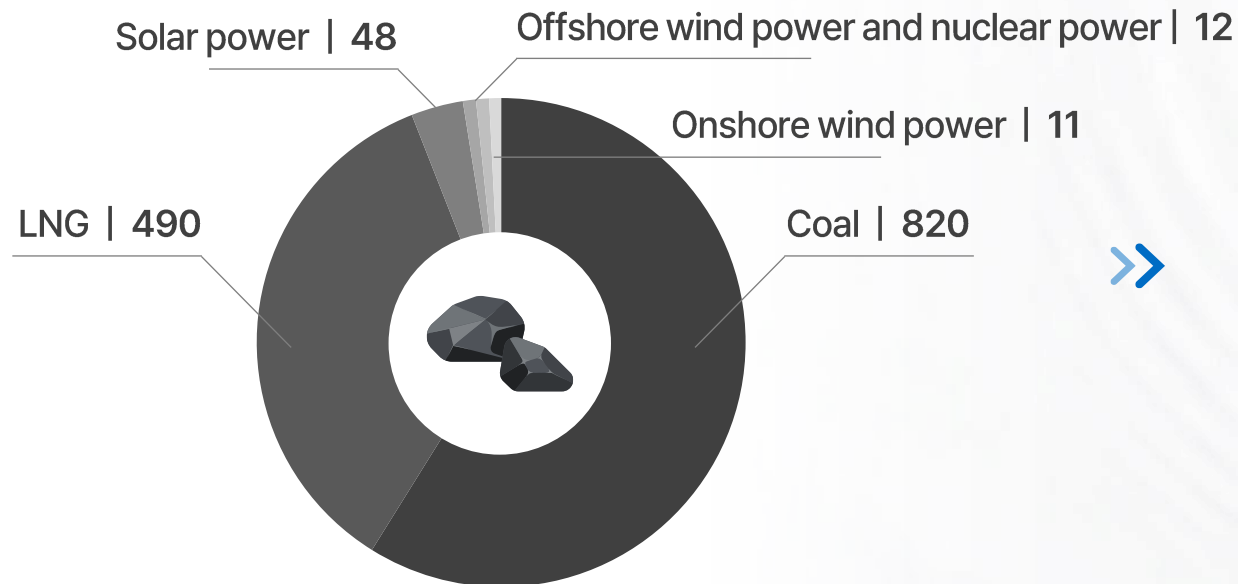
It is advantageous for a road-corner installation and can be installed in a narrow space.



“Compared to other alternative energies, **carbon emission is ZERO**”
and miniaturization is possible, providing water supply solutions for
cities with water shortages and cities requiring purification.

Other Alternative Energy Carbon Emissions

[Figures including direct and supply chain emissions and albedo effects / IPOC]



MCDI

Carbon Emissions ZERO!



Procurement of operation and management
expenses through **voluntary carbon credits**



Future water station, **platform scalability**



EDCF, cooperation with international
organizations, **impact fund**

“ Government Innovation Procurement Products ”



상품상세정보



전기흡착식 소규모 정수장치 패키지 시스템 41,800,000 원

※ 위 판매희망 가격은 혁신장터 운영규정(조달청 고시 제2020-36호)에 따른 견적가격 (VAT 포함)이며, 혁신장터 이용약관(조달청 고시 제2020-37호) 제16조 2항에 따라, 「국가를 당사자로 하는 계약에 관한 법률 시행규칙」 제5조 1항 1호에서 규정하는 조달청장이 조사하여 통보한 가격이 아님을 알려드리오니 유의하시기 바랍니다.

기본정보

- 업체명 : 주식회사 오투엔비
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- 모델명 : OCDI-40
- 세부품명번호 : 4710151402
- 제조/공급 : 제조
- 물품식별번호 : 24017460
- 단위 : 조
- 기업규모 : 기술혁신형 | 소기업
- 중간경쟁제품 : 아래 사이트 참조

중소벤처기업부에서 고시한 중소기업자간 경쟁제품은 <https://www.smpp.go.kr> 사이트로 접속하신 후 [정보조회]-[제품정보]-[중소기업자간 경쟁제품]에서 조회하실 수 있습니다.

인증정보	가격정보	규격정보	속성정보
상품정보	납품조건		

구매 유의사항

1. 금액별 구매방법(추정가격 *기준)

- 1) 1억원 이하 : 수요기관 자체 수의계약 체결
- 2) 1억원 초과 : 수요기관 자체 수의계약 체결 또는 중앙조달요청



전기흡착식 소규모 정수장치

- # 수질 맞춤형 카세트
- # 응급재난 이동형설비
- # 지능형 통합 관리시스템
- 다목적 소규모 정수처리 패키지 시스템



손잡이
작동 버튼

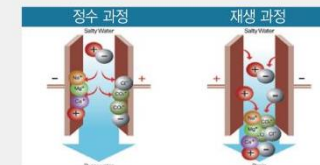


+ CDI (Capacitive deionization) 탈염 기술 원리

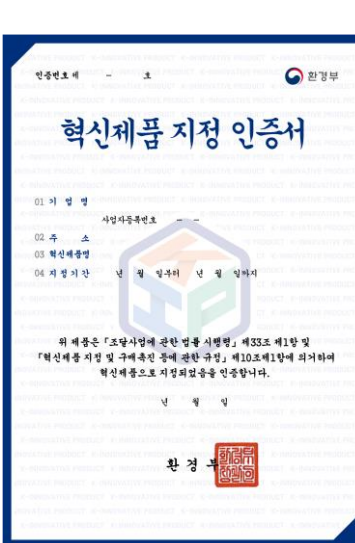
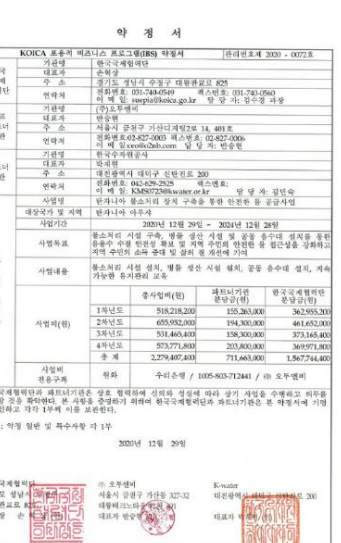
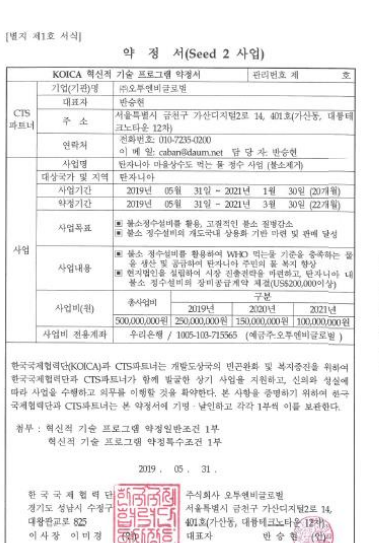
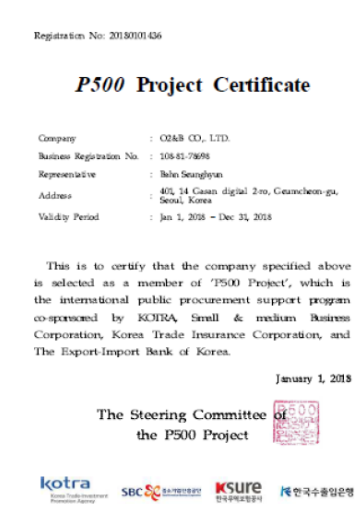
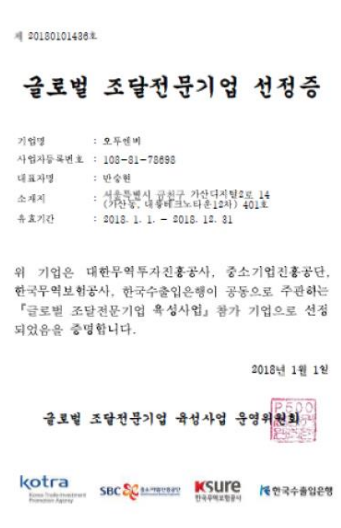
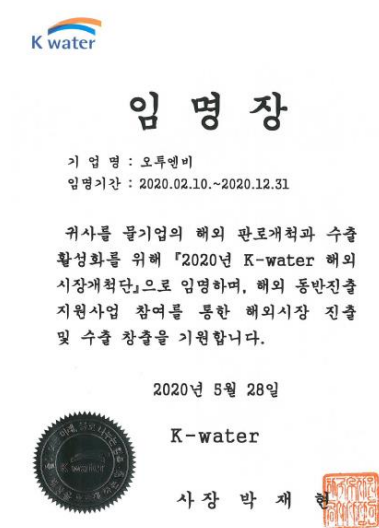
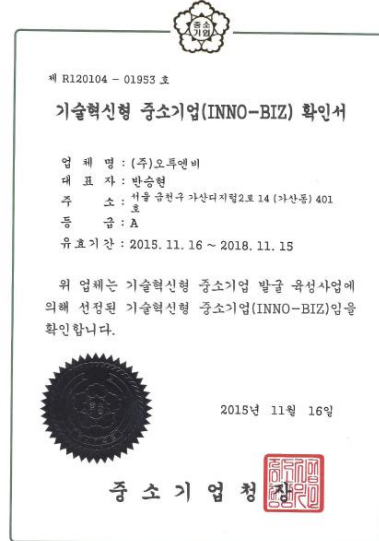
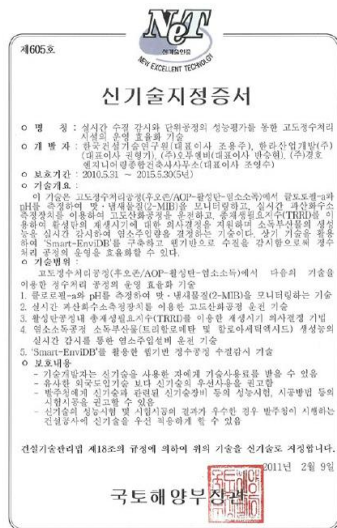
- 물 속의 이온성 물질을 탄소전극 표면에 전기적으로 흡착하여 이온성 용존물질을 제거
- 정수공정에서는 수중의 (+)이온은 (-)전극표면에 부착하고, (-)이온은 (+)전극 표면에 부착 제거되어 순수한 유출
- 재생공정에서는 전극의 방향이 바뀌고 부착된 물질이 쉽게 석출되어 배출

+ CDI (Capacitive deionization) 탈염 기술 특징

- 소모성 여재가 없으며 자동으로 역세척
- 질산성질소, 석회, 불소, 염소 등 모든 이온성 물질을 제거
- 시스템에서의 흐름이 자연유하이므로 운전 전기가료가 극히 적음
- 퇴수량이 적고 회수량이 높음
- 유입 원수의 수질의 변화에 적응이 쉬움



“ Business competency certificate ”





03

Overseas Reference



“ Tanzania - KOICA CTS ”

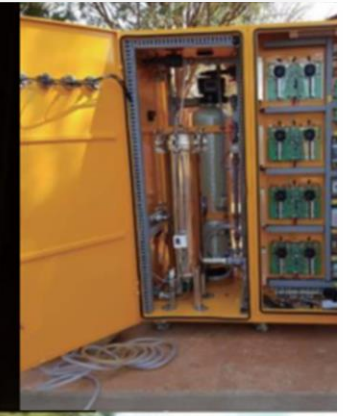
In fluoridation treatment, the AfDB is showing a lot of interest in supplying 18ppm water down to 0.2ppm level. It is treated with fluoride and supplies 4,000 tons of water per day to 7 areas including Ngorodoto Village.



Fund: KOICA
Project size: 100 tons/day
Budget: 300,000 USD
Beneficiaries: 5,000 households



H1(IN TDS)	CH2(OUT TDS)
248ppm	9ppm
7.974mA	4.146mA
1.000	1.000
1000ppm	1000ppm



“ 2017 Procured water purification equipment to the presidential palace through Tanzania government bidding ”



Fund: Government of Tanzania
Project size: 100 tons/day
Budget: \$300,000
Beneficiaries: 5,000 households

“ Since then, O2&B fluoride removal facilities have been installed in various places in Tanzania. ”



Kongwa 40t/d - CSR



Lemanda 20t/d - CSR



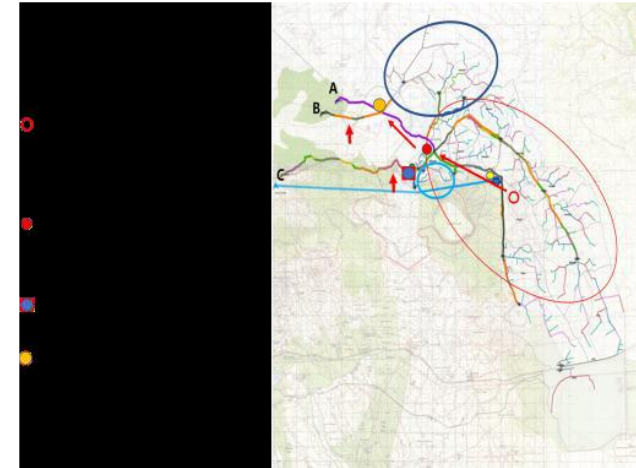
Uwiro 40t/d - CSR



Arusha City 40t/d



Ngongongare 100t/d



Makilenga 2000t/d

Tanzania – Establishment of Korea Water Center



킬로만자로산과 메루산을 동시에 볼 수 있는 특별한 장소

본 대성지는 아프리카를 대표하는 2개의 명산을
동시에 볼 수 있는 특별한 가치를 지니고 있어
관광적 가치가 매우 큰 장소입니다.

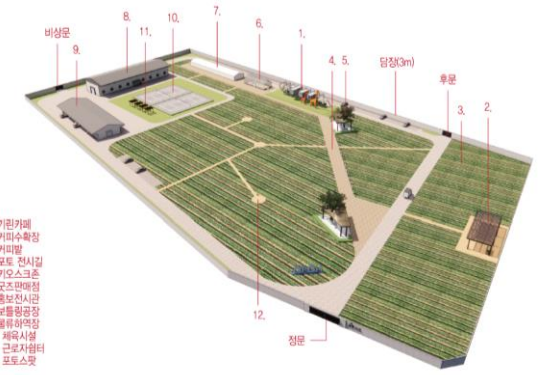
01. 서쪽

메루산
왕자, 3,000에서
두만개로 높은 산



02. 동쪽

킬로만자로산
아프리카에서
가장 높은
만년설이 유명



Fund: KOICA
Project size: 2,000 tons/day
Budget: \$1.7 million
Beneficiaries: 50,000 households



“ Ethiopia Canterbury Village - Ministry of Environment ”

Due to the fluorine problem, a 200-ton scale was installed in Canterbury Village and received a recommendation from the Minister of Water Resources.



Fund: KEITI
Project size: 200 tons/day
Budget: \$300,000
Beneficiaries: 5,000 households



“ Senegal rope Village - Ministry of Environment ”

Water that cannot be used as agricultural water **due to its high salt concentration is purified and supplied as agricultural water and drinking water**. Originally, it was 1 cropping, but it is growing into a wealthy central village by purifying water to solve drinking water and agricultural water 4 cropping. There was a commotion, such as the smell of water and nearby cows rushing and banging their heads against the equipment to ask for water.



Fund: Korea Environmental Industry Association
Project size: 160 tons/day
Budget: \$300,000
Beneficiaries: 1,000 households + agricultural water



“ Ghana ”

The Ghana facility supplies purified water to villagers. Due to electricity supply issues, the water purification facility was **operated by solar energy**, and the installation was completed in a situation where overseas business trips were difficult during the **COVID-19 pandemic**.



Fund: Korea Environmental Industry Association
Project size: 160 tons/day
Budget: \$200,000
Beneficiaries: 1,000 households + 1,000 households



Ahodwo Water Facility



Ahwerease Water Facility

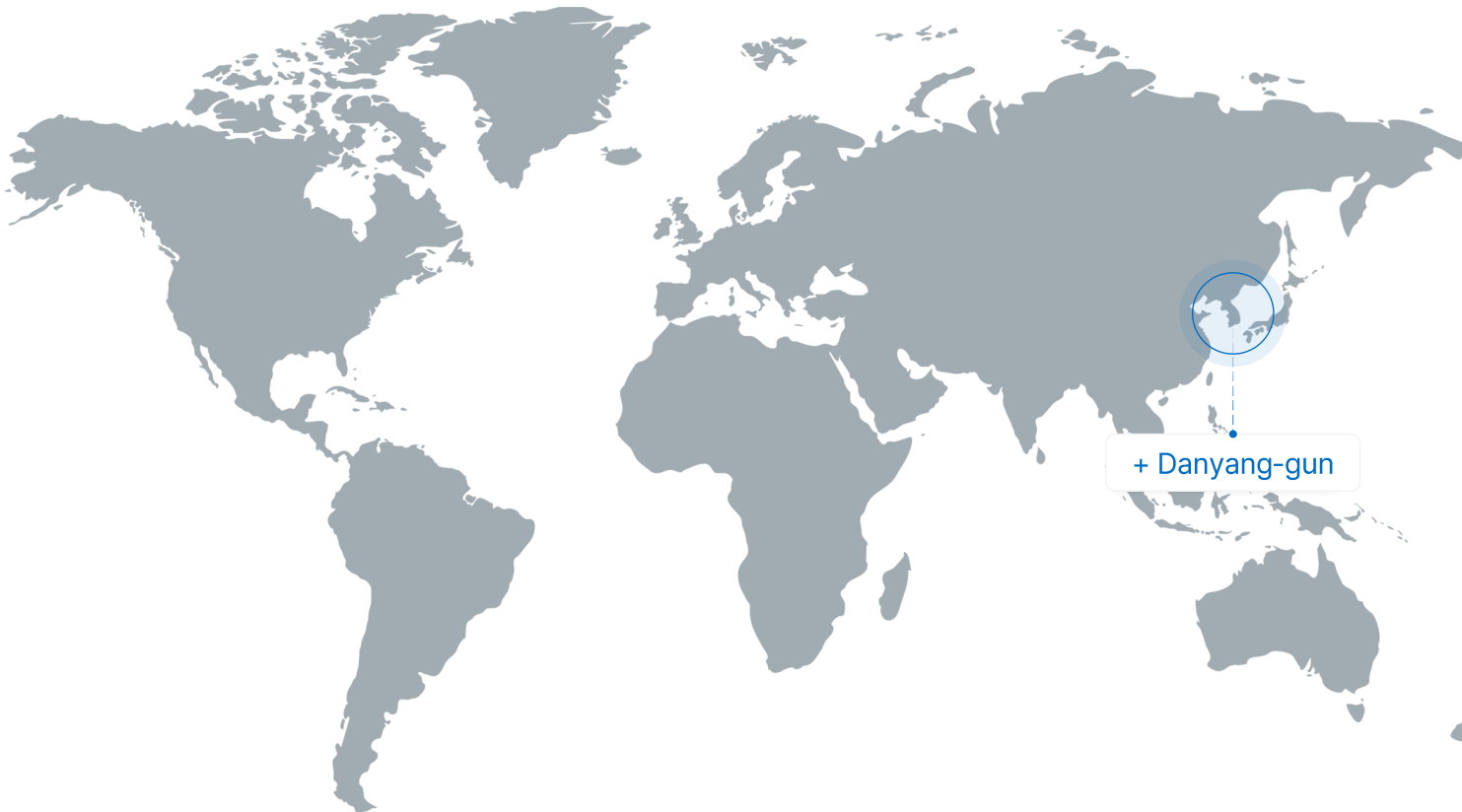
04

Domestic(Korea) Reference



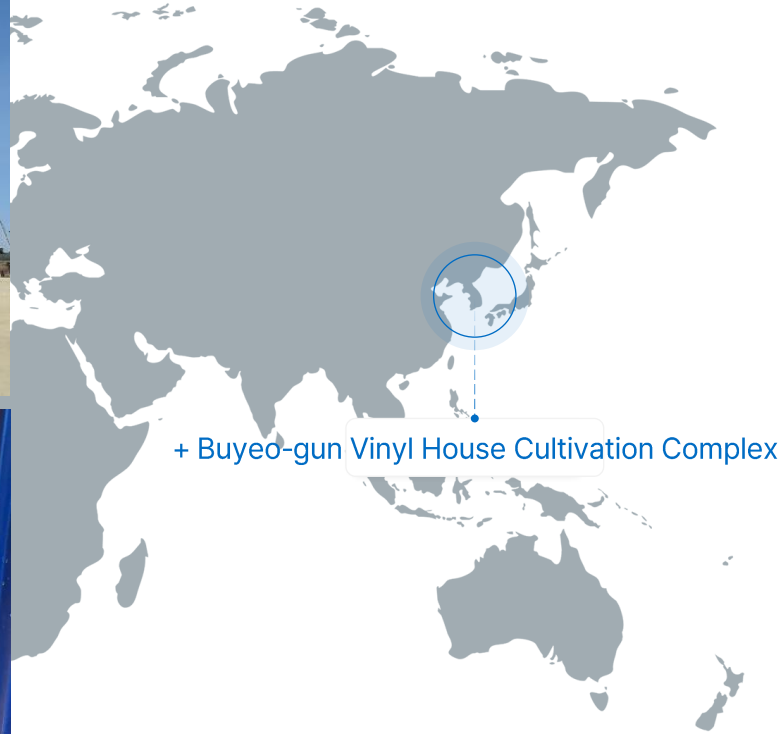
“ Domestic installation status (**drinking water** - village waterworks) ”

It is a project site that Danyang-gun is promoting to install due to a flood of civil complaints **from villagers as limestone was detected in the village waterworks previously installed in Danyang-gun.**
The current installation is determined and installed by our company.



“ Domestic installation status (for agriculture) ”

High-concentration iron content was detected in 1000 groundwater wells installed by the Ministry of Environment, and our equipment was tested in a situation unsuitable for use as agricultural water, and demand for supply of 1000 places is expected.
Agricultural machine registration completed (when purchasing, government subsidy of 4 million won can be received)



“ Domestic installation status (for Agricultural-Smart Farm) ”

Icheon, Gyeonggi-do OO smart farm production facility discharge water quality improvement discharge water purification system.
Smart farm (pure water) supply essential, crop cultivation medium recipe easy discharge water quality improvement system.
Agricultural machine registration completed (when purchasing, government subsidy of 4 million won can be received)



KAMICO
한국농기계공업협동조합

수 신 : (주)오투엔비 대표(이사)

참 조 :

제 목 2021년 4월2차 정부지원용자모델 선정 안내(수수료 납부요청)

1. 관련 : 2020년 농식품사업시행지침[농기계구입지원사업]
2. 관련에 의거 정부지원용자모델 선정 접수 시 발생하는 선정검토수수료를 아래와 같이 안내드리오니 '21. 05. 25.(화)까지 납부하여주시기 바랍니다.
3. 아울러 신청하신 모델이 아래와 같이 이상이 없을 시 아래 확인서 양식을 작성 하시기 회신해주시기 바랍니다.(k2@kamico.or.kr, F.041-555-4491)

▲ Agricultural Machinery Registration Certificate



“ Domestic installation status (for Industrial) ”

High-concentration hazardous wastewater treatment test in Daejeon OO Petrochemical plant A technology to treat high-concentration TMAH (1000mg/l), which removed more than 90% through initial tests, and a demonstration pilot is in progress

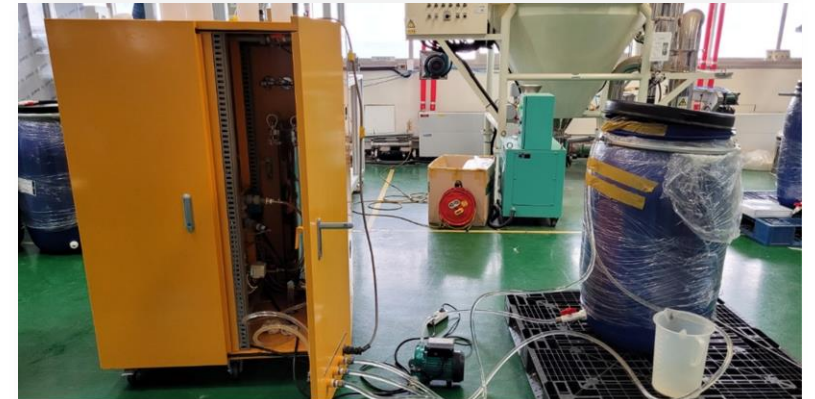
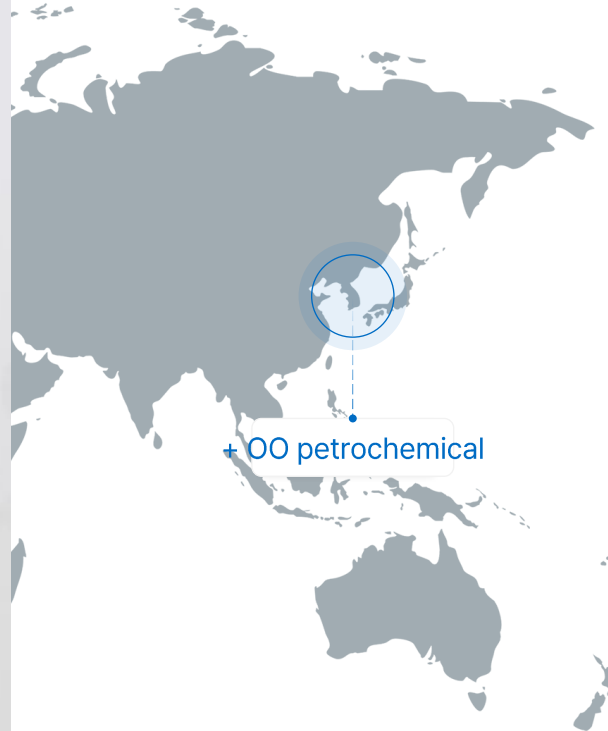
TH density (ppm)

	Raw water	Clean water	Waste water
1 Day*	640	150	600
2 Day	600	60	1,700
3 Day	450	20	1,400
4 Day	440	50	2,100

* start-up and stabilization step

NH₄OH density (ppm)

	Raw water	Clean water	Waste water
1 Day	90	10	60
2 Day	90	20	300
3 Day	100	10	390
4 Day	100	20	470



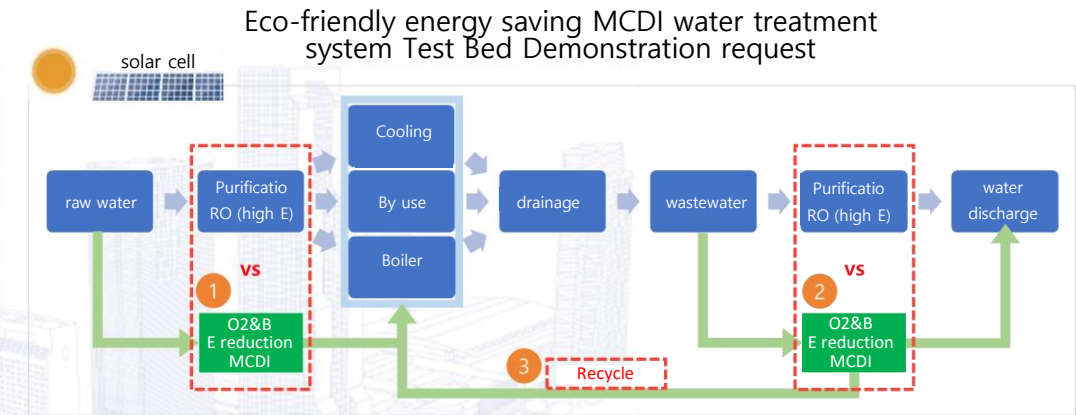
“ Domestic installation status (for Buildings - COEX) ”

Seoul Gangnam Landmark "Trade Center COEX Block"

2023 Trade Center Test Bed Demonstration Project – Energy Saving Sector

O2&B, eco-friendly energy saving MCDI water treatment system Test Bed Demonstration project selection, demonstration in progress.

SMART CITY & MICE Industry ► smart water purification system



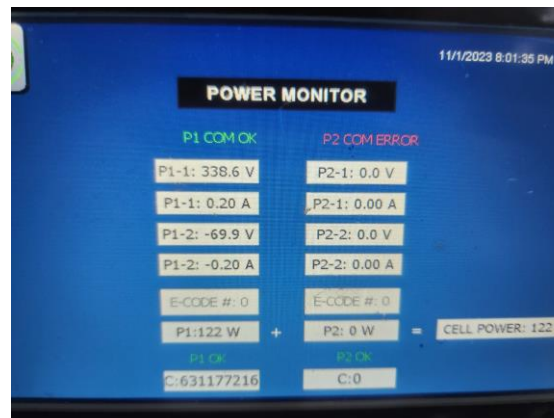
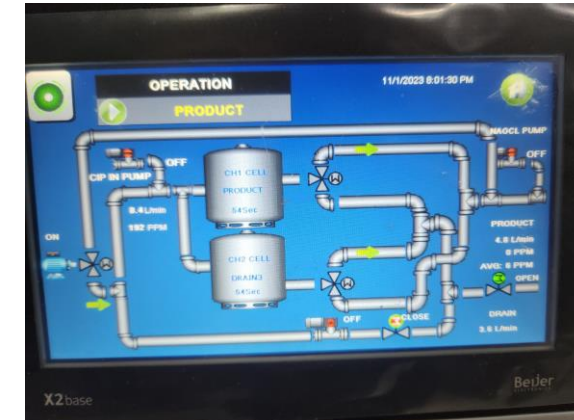
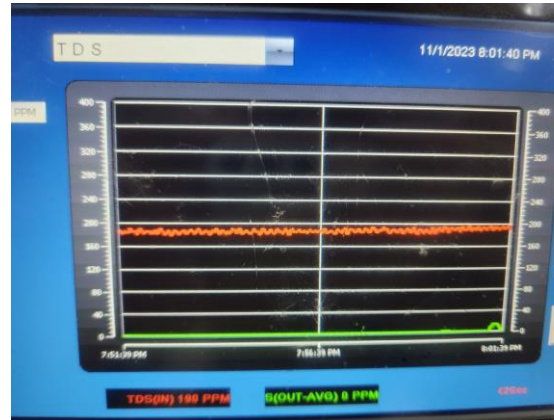
1. High energy consumption of raw water purification RO equipment in buildings.
 - Demonstration of MCDI energy efficiency compared to RO (quantitative data such as power consumption) (Indoor use / Cooling water / Boiler water, etc. Circulation system and facility life extension and usability increase effect through scale prevention)
2. Discharge after purifying wastewater RO after use.
 - Demonstration of MCDI energy efficiency compared to RO (quantitative data such as power consumption)
3. Contributing to eco-friendly ESG by reusing water quality higher than the discharge standard.

“ Strengthening policies for climate-responsive biodiversity by applying ESG ”
mandatory application to metropolitan city buildings

Seoul Gangnam Landmark "Trade Center COEX Block"

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O₂nB, eco-friendly energy saving MCDI water treatment system Test Bed Demonstration project selection, demonstration in progress.



[Trade Center (COEX) empirical test]

- Raw water density (TDS) : 192ppm
- Purified water density (TDS) : 0~6ppm
- Removal rate of polluting ions : 96%
- power consumption : 122W

* Reference

Tap water average (TDS) : 80ppm

Bottled water average (TDS) : 35ppm

“ Gyeongnam Smart Farm Innovation Valley – move into research and demonstration complex ”

A study on the efficient water quality improvement of smart farm raw water in
Gyeongsangnam-do Smart Farm Innovation Valley Research and Demonstration Complex.

Participated in a research project to improve raw water quality using smart farms in
comparison to our water treatment system RO.



A company that creates a platform with water
purification solutions, **O2 & B**

Thank you

