BLUE TECH
ENVIRONMENTAL ENGINEERING

BLUETECH COMPANY PROFILE

Environmental Plant Engineering Specialists in Air Pollution Control

www.bluetechkorea.com

Ver. 202608-03_EN

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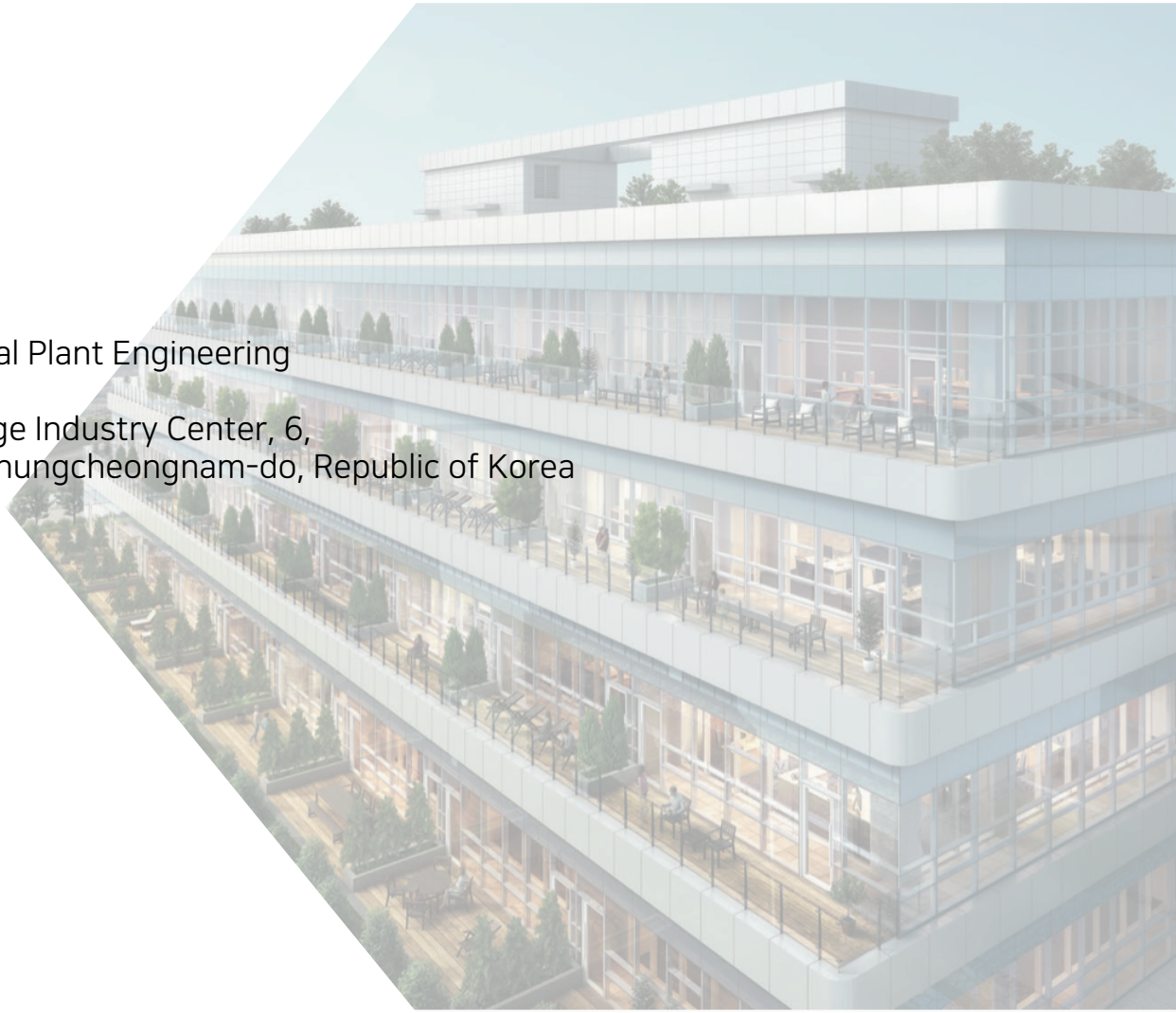
ABOUT COMPANY



- ✦ Company Name: BLUETECH CO., LTD.
- ✦ Core Business: Air Pollution Control & Environmental Plant Engineering
- ✦ Headquarters: #K1012, Baekseok StarBiz Knowledge Industry Center, 6, Baekseokgongdan 5-gil, Seobuk-gu, Cheonan-si, Chungcheongnam-do, Republic of Korea
- ✦ Tel: +82-1668-5776
- ✦ Website: www.bluetechkorea.com
- ✦ Email: ms@bluetechkorea.co.kr

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COMPANY HISTORY (2023~)

✦ 2025 ~

- 2026 | Awarded: Minister’s Commendation from the Ministry of Environment
- 2026 | Established Corporate R&D Center
- Certified as an Innovative Venture Company
- Secured Order: C.N.F-Applied Hybrid AirX System (2,100 CMM x 2 sets) for Automotive Painting Process | Company OO
- Patent Registered: Apparatus for Purifying and Recovering Harmful Gases (Patent No. 10-2756575)
- Delivered: C.N.F-Applied Hybrid AirX System (2,800 CMM) for Automotive Painting Process | Company OO

✦ 2024 ~

- Member of the Voluntary Carbon Market Alliance (VCMC) (2024 – Present)
- Delivered: C.N.F-Applied VOCs Recycling System | Korea Carbon Industry Promotion Agency (KCARBON)
- Delivered: C.N.F-Applied Hybrid AirX System (450 CMM) for Chemical Manufacturing Process | Company OO
  (Supported by Korea Environment Corporation Smart Eco-Factory Project)
- Awarded: Excellent Invention Award at the Korea Invention Patent Exhibition (Purification Device for Harmful Gas)
- Korea Invention Promotion Association (KIPA)

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COMPANY HISTORY (2023~)

✦ 2023 ~

- Delivered: Hybrid AirX System Test Pilot (50 CMM) | Company OO
- Exhibited: C.N.F-Applied VOCs Purification System at Carbon Korea 2023
- Committee Member of ENTAS (Environmental Technology Advisory Staff), Korea Environmental Engineers Association (2023 – Present)
- Delivered: C.N.F-Applied Hybrid AirX System (100 CMM & 250 CMM) for Painting Process | Company OO
- Patent Registered: Plasma Gasification Apparatus (Patent No. 10-1326670)
- Patent Registered: Purification Device for Harmful Gas (Patent No. 10-2506391)
- Incorporated as BLUETECH CO., LTD. (Converted from Private Business to Corporation)

✦ 2021 ~

- Active Member of ESG Forum: ESG Blue Technology (2021 – Present)
- Awarded: Excellent Invention Award at the Korea Invention Patent Exhibition (Organic Waste Treatment Apparatus)

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COMPANY HISTORY (2019~)

✦ 2018 ~ 2021

- Developed and Commercialized Organic Waste Treatment Apparatus

✦ 2012 ~ 2019

- Developed IoT Smart Controller for Organic Waste Treatment Apparatus | Korea Electronics Technology Institute (KETI)
- Member of Fine Particulate Matter (PM2.5) & Air Quality Knowledge Research Group | Korea Institute of Science and Technology Information (KISTI)
- Participated in R&D: Low-Energy, High-Efficiency VOCs Removal System | Korea Institute of Industrial Technology (KITECH)
- Participated in R&D: Oil Mist & PM2.5 Purification System | KHANTEC Co., Ltd.

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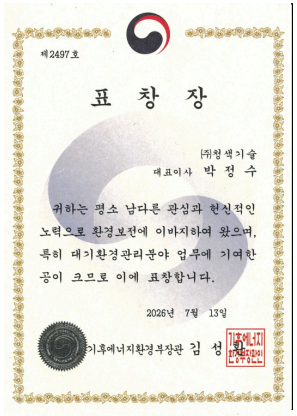
LICENSES, CERTIFICATIONS & PATENTS



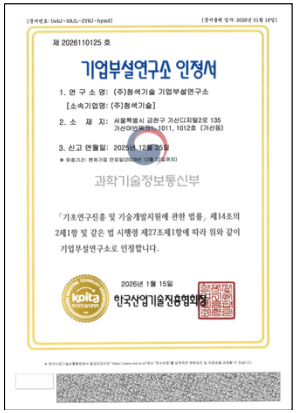
MINISTRY OF CLIMATE, ENERGY AND ENVIRONMENT (2026)

PATENT CERTIFICATE PATENT NO. 10-1326670

PATENT CERTIFICATE PATENT NO. 10-2506391

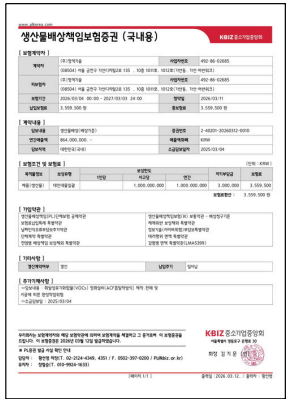
PATENT CERTIFICATE PATENT NO. 10-2756575

VENTURE ENTERPRISE CERTIFICATE

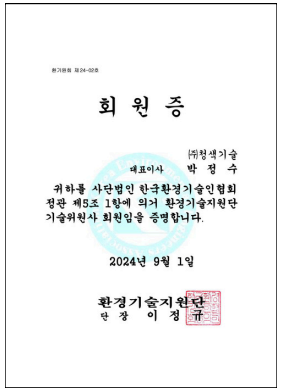


CERTIFICATE OF CORPORATE R&D CENTER

CHAIRMAN'S AWARD (2024) KOREA INVENTION PROMOTION ASSOCIATION



CERTIFICATE OF PRODUCT LIABILITY INSURANCE



ENTAS MEMBERSHIP CERTIFICATE

FAMILY COMPANY CERTIFICATEKOREA INSTITUTE OF ENERGY RESEARCH

BUSINESS REGISTRATION CERTIFICATE

KONEPS REGISTRATION CERTIFICATE

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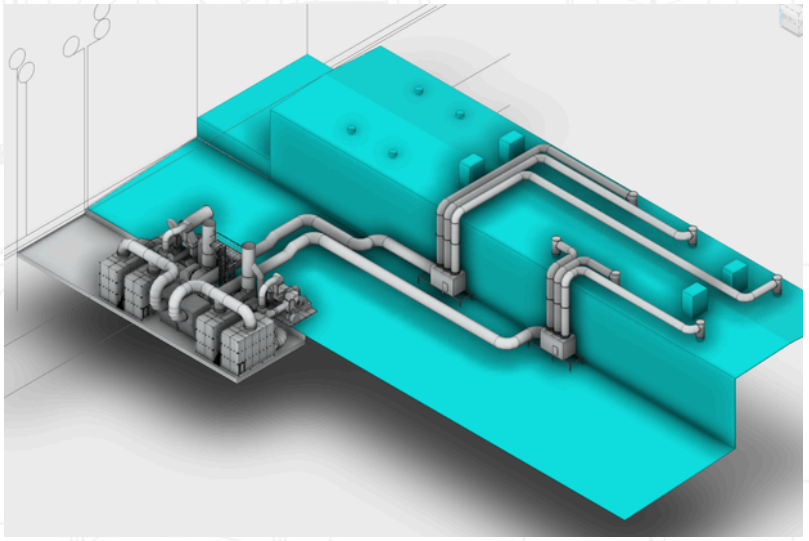
CORE PRODUCTS & SYSTEMS

- ✦ Hybrid AirX System
- ✦ VOCs Recycling System
- ✦ High-Efficiency Filtration Device
- ✦ Centrifugal Rotor Scrubber (For Low Pressure Drop)



ECO Train 2 & 3 Layout Drawing (3D Modeling)

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HYBRID AIRX SYSTEM

Core Technology & Applications

- VOCs & Multi-Component Odor Abatement
- Low-Temperature Desorption / Regeneration
- Catalytic Oxidation of Desorbed Gas

✦ Standard System Configuration Types

- Type : CCO, C.N.F + CO ..

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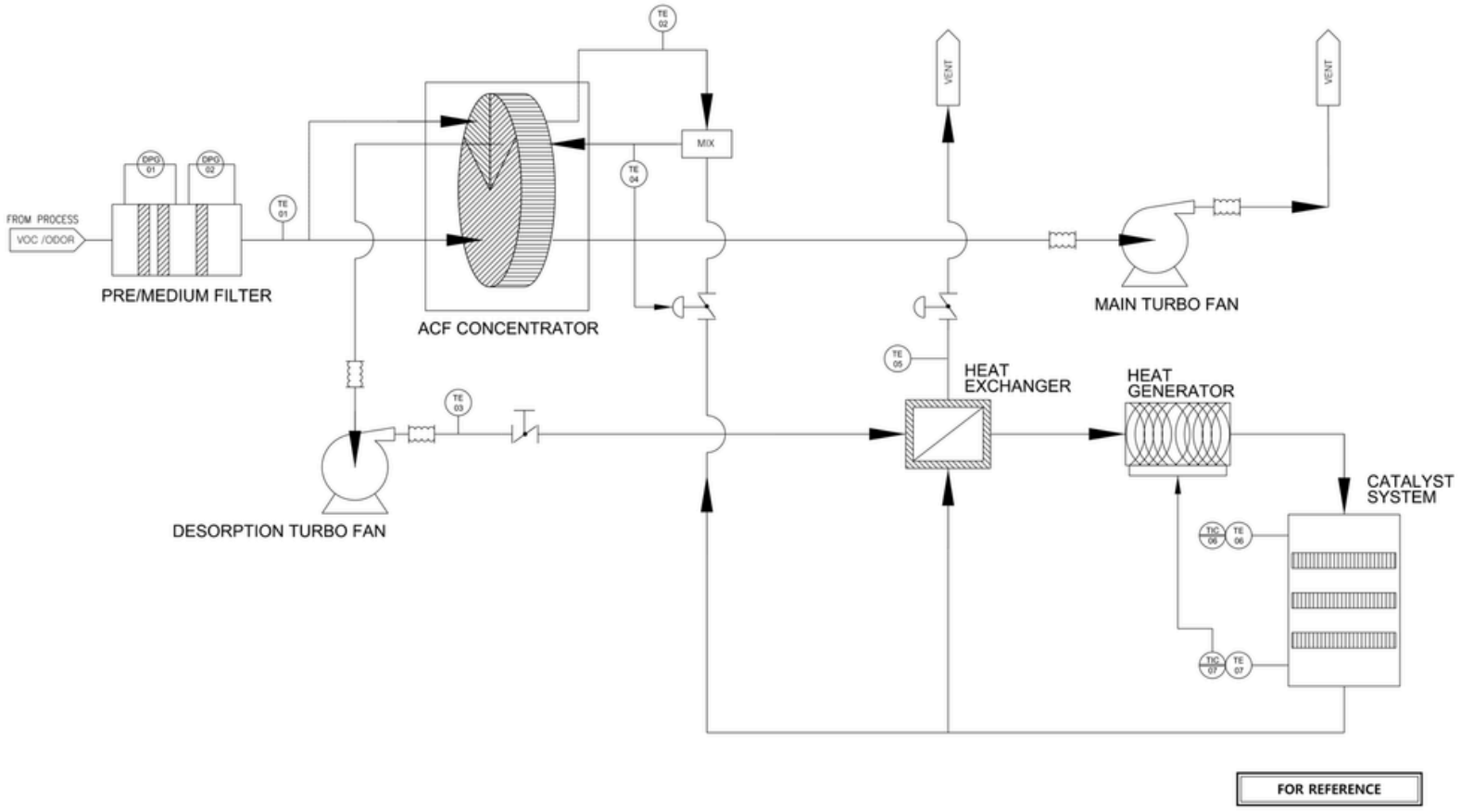
CCO - PROCESS FLOW DIAGRAM



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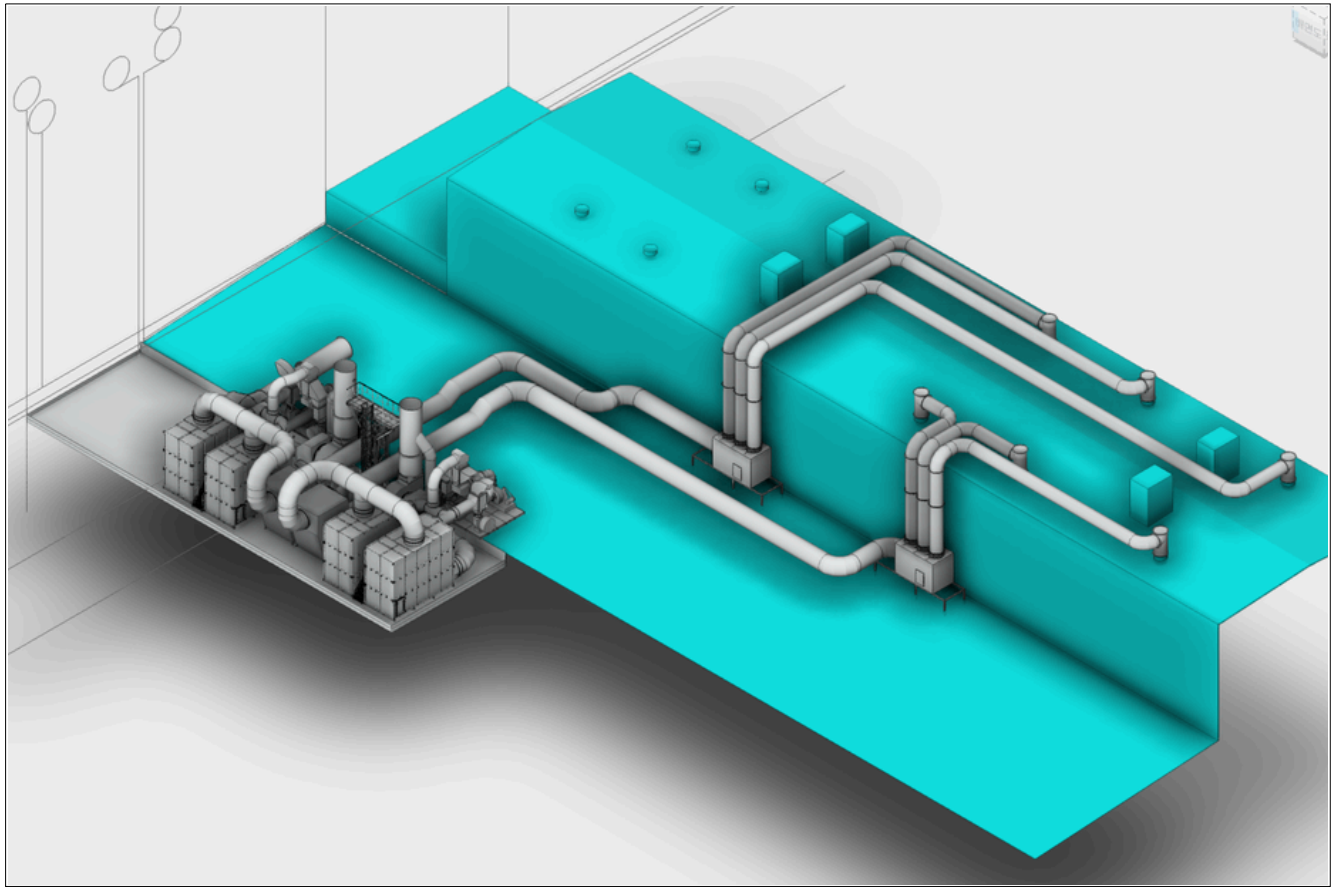
C.N.F + CO (LAYOUT DRAWING - 3D MODELING)



ECO Train 2 & 3 Layout Drawing (3D Modeling)

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VOCS RECYCLING SYSTEM

Core Technology & Applications

✦ Core Technology

- Steam desorption (regeneration) of VOCs adsorbed onto C.N.F
- Condensation and recovery via concentration condenser

✦ Applications

- Recovery and recycling of VOCs generated from petroleum refining, fuel storage terminals, and semiconductor manufacturing processes

VOCs Recycling System (Ref.)

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CENTRIFUGAL ROTOR SCRUBBER

Core Technology & Applications

✦ Core Technology

- Dual-function Wet Scrubber & Demister
- Duct in-line installation compatible
- Low pressure drop design
- Removal efficiency ≥ 95%

✦ Applications

- Indoor air purification (recirculation)
- Pre-treatment for VOCs abatement systems
- Pre-treatment for odor control systems
- Pre-treatment for dust collection systems

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RTO VS HYBRID AIRX SYSTEM

Technical Comparison

Category	RTO	HYBRID AIRX SYSTEM
Treatment Principle	Heat stored in ceramic bed; VOCs oxidized at 800~850℃	VOCs adsorbed onto C.N.F → Thermal desorption at 180~200℃ → Catalytic oxidation at 200~250℃
VOC & Odor Removal Efficiency	98~99%	98~99%
Energy Consumption	High-temp. operation (800℃) required / Approx. 1,200~1,800 Kcal/Nm^3 - VOC	Low-temp. operation (180~200℃) required / Approx. 200~350 Kcal/Nm^3-VOC / Up to 70~80% reduction vs RTO
Applicable Concentration Range	500~10,000 ppm or higher (supplemental fuel required at low concentration)	50~3,000 ppm (advantageous at low concentration)
Fire / Explosion Risk	Risk at sudden concentration surge	Excellent structural safety with low-temp. & closed-loop design
CO_2 Emissions	High	Low — up to 70% reduction vs RTO

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PROJECT REFERENCES

As of March 12, 2026

No	Applied Process	Air Flow Rate	Performance	Status
1	Pre-Coated Metal (PCM) Sheet Coating	100 CMM	THC ≤ 110 ppm	In Operation
2	Pre-Coated Metal (PCM) Sheet Coating	250 CMM	THC ≤ 110 ppm	In Operation
3	VOCs & Multi-Component Odor Pilot System	50 CMM	THC 40ppm	In Operation
4	VOCs Recycling System	50 CMM	THC ≤ 40 ppm Multi-Component Odor ≤ 300 Dilution Factor	In Operation
5	Automotive Parts Coating	2,800 CMM	VOCs Recovery Efficiency ≥ 95%	In Operation
6	Synthetic Resin Manufacturing	450 CMM	THC ≤ 40 ppm	In Operation
7	Automotive Parts Coating	2,100 CMM	THC ≤ 40 ppm	In Operation
8	Automotive Parts Coating	2,100 CMM	THC ≤ 40 ppm	In Operation

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PROJECT REFERENCES (PHOTO) - 1

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PROJECT REFERENCES (PHOTO) - 2

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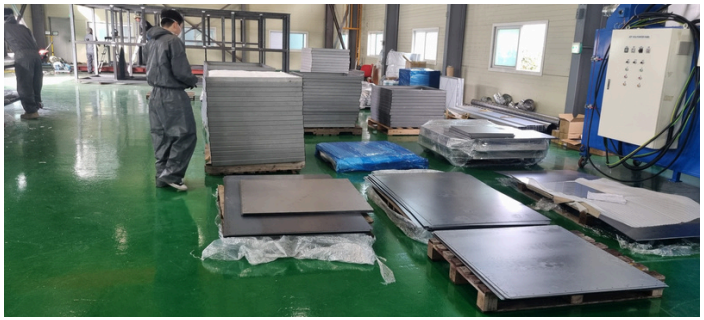
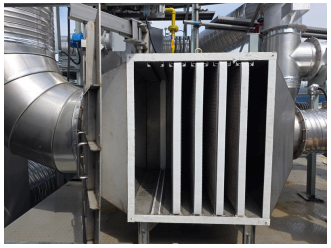
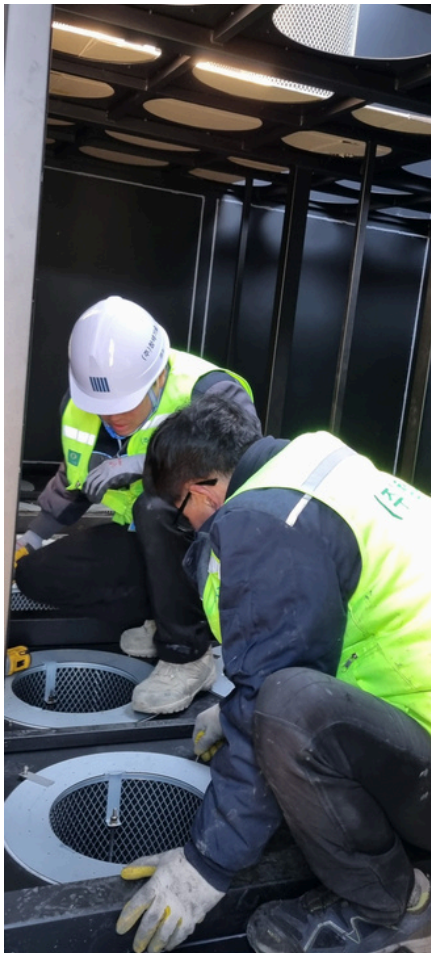
PROJECT REFERENCES (PHOTO) - 3









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C.N.F ? (1)

Carbonized Nano-Porours Fiber

✦ Fibrous Natural Adsorbent

- C.N.F is a new type of fibrous adsorbent — activated carbon fiber manufactured through carbonization and activation of natural fibers, synthetic organic materials, or chemical fibers.

✦ Fast Adsorption Rate

- With a specific surface area of 2,000 m^2/g and uniform micropore structure of 10~21 Å, C.N.F achieves an adsorption rate approximately 10 to 100 times faster than conventional activated carbon.

✦ Wide Range of Applications

- Applied in solvent recovery, wastewater treatment, air purification, adsorption/desorption of toxic gases and liquids, radioactive materials and microorganisms, fishy odor removal, heavy metal recovery, gas mask and protective clothing manufacturing, industrial pure water treatment, medical supplies, municipal waste odor control and dioxin removal.

✦ Excellent Regenerability

- C.N.F features a double-surface treatment that eliminates carbon dust abrasion during regeneration, enabling efficient regeneration with steam or hot air at 100~200℃, resulting in low maintenance costs.

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C.N.F ? (2)

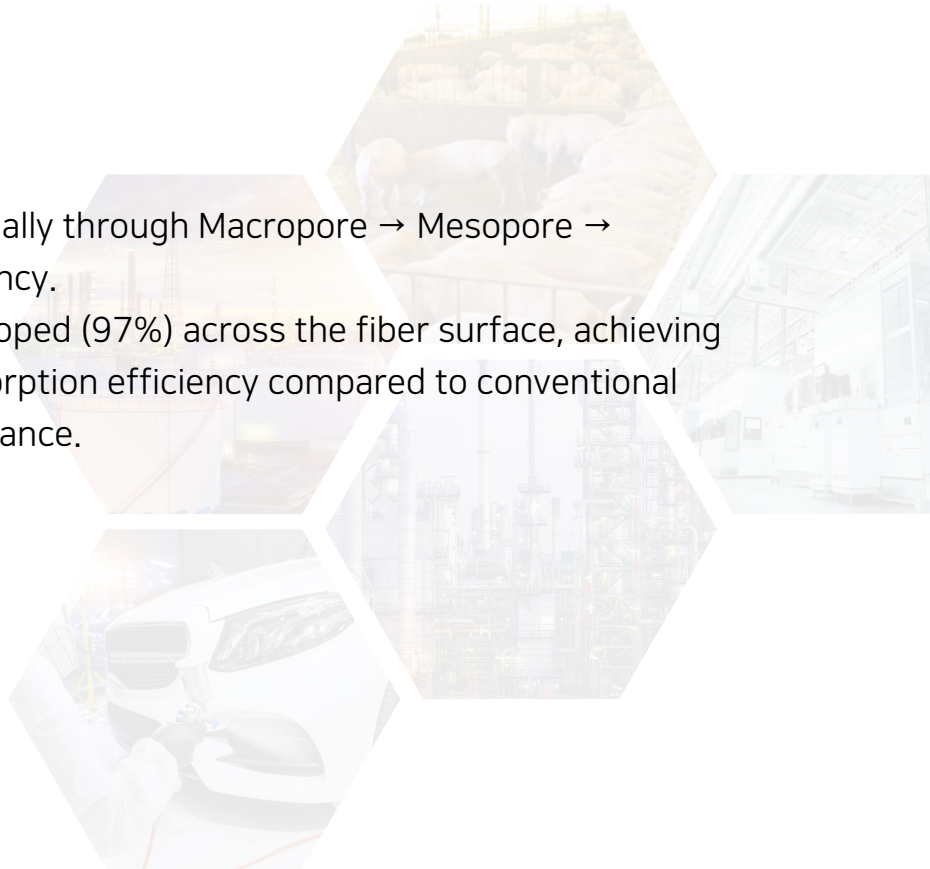
Adsorption & Desorption Characteristics of C.N.F

✦ Adsorption Phenomena

- Physical Adsorption ：Intermolecular cohesion and bonding forces are formed through Van der Waals forces and electrostatic interactions, playing a critical role in the adsorption process.
- Chemical Adsorption Chemical bonds are formed via electrostatic attraction between ions or electron sharing, providing strong adsorption capacity.

✦ Micropore Structure — Direct Influence on Adsorption Performance

- Activated Carbon (AC) : Mass transfer and diffusion occur sequentially through Macropore → Mesopore → Micropore, which may result in reduced adsorption rate and efficiency.
- Special Carbon Nano Filter (C.N.F) : Micropores are uniformly developed (97%) across the fiber surface, achieving 10 to 100 times faster adsorption rate and higher adsorption/desorption efficiency compared to conventional activated carbon — a key factor in superior air purification performance.



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C.N.F ? (3)

C.N.F Material Classification & Manufacturing Process

✦ Classification Table

Classicfication	Precursor	Developer	Main Application
Cell	Cellulose Fiber (Viscose Rayon)	Union Carbide / Toyobo	VOCs & Odor Abatement
PAN	Polyacrylonitrile (PAN)	Toho Belson	VOCs & Odor Abatement
Phenol	Phenolic Resin	Nippom Kynol	-
Pitch	Coal Tar Pitch	Otani	-

✦ Manufacturing Process

Step1	Step2	Step3	Step4
Stabilization	Carbonization	Activation	Fiberization
< 400℃ / Input : Precursor	< 1,500℃ / Carbon Fiber Formation	< 700℃ / Micropore Formation	Woven / Non-woven

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CATALYTIC OXIDATION (1)

Mechanism & Oxidation Temperature

✦ VOCs + O_2 → Catalytic Oxidation (200~400℃) → CO_2 + H_2O + Heat of Reaction

- By heating to 200~400℃ — significantly lower than direct combustion temperatures — and passing through a catalyst bed of platinum (Pt) and palladium (Pd), organic compounds are effectively decomposed into CO_2 and H_2O via catalytic oxidation. This process maximizes energy efficiency while minimizing environmental impact.

Compound	Ignition Temp. (℃)	Catalytic Complete Oxidation Temp. (℃)	Category
Toluene (C_7H_8)	555	260	Aromatic
Styrene (C_8H_8)	525	270	Aromatic
Ethyl Benzene (C_8H_{10})	605	250	Aromatic
Ethylene (C_2H_4)	450	150	Aliphatic
Acetone (C_3H_6O)	465	250	Ketone
Propyl Alcohol (C_3H_8O)	370	250	Alcohol

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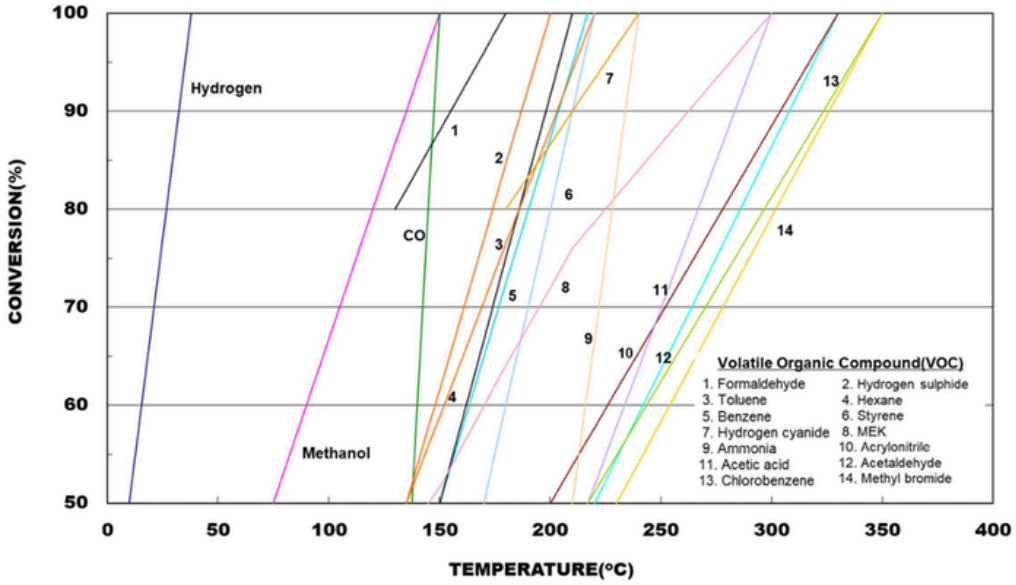
CATALYTIC OXIDATION (2)

Why Does Customized Catalyst Design Matter?



Light-off Characteristics of VOCs over Catalytic Systems

- Different VOCs exhibit significantly different oxidation temperatures, requiring tailored catalyst selection and process optimization for efficient treatment.
- Our expertise lies in engineering optimized catalyst systems based on VOC composition to achieve high conversion at the lowest possible temperature.

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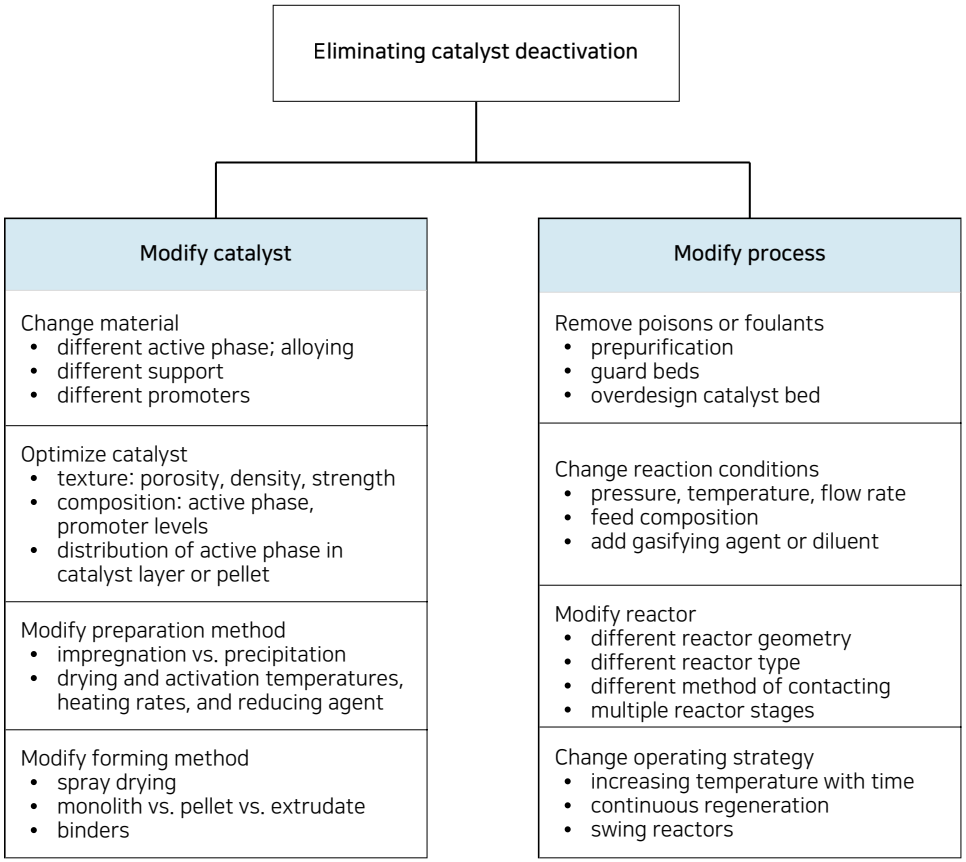
CATALYTIC OXIDATION (3)

Beyond Conventional Catalyst Management



- We understand and control deactivation at the fundamental level
- From deactivation understanding to lifecycle optimization — we go beyond conventional catalyst management.
- Unlike conventional systems, we proactively design catalyst protection and lifetime strategies based on actual VOC composition and operating conditions.

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THANK YOU