

Overview of Hybrid Deodorizing System

1. Development framework

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2. Specifications of newly developed product (with rated air flow of 6,000 m³/hour)

Table 1: Specifications of newly developed product

Product name	Deomeister
Power supply	Single phase, 100 V, 50-60 Hz, 3 kW
External dimensions	(W) 2,300 mm × (D) 1,700 mm × (H) 2,100 mm
Weight	1,280 kg
Deodorizing system	Zeolite honeycomb deodorization + titania photocatalyst deodorization
Zeolite honeycomb units	Units: 100 mm × 100 mm × 200 mm 6 stages × 12 rows × 1 layer (72 units)
Photocatalyst filter units	Units: 300 × 300 × 20 mm (thickness) × 8 4 faces × 4 tiers (16 units)
Recommended temperature range for usage	5°C - 40°C (avoid condensation)
Manufacturer's list price	16,000,000 yen (without consumption tax)

3. Structure of newly developed product

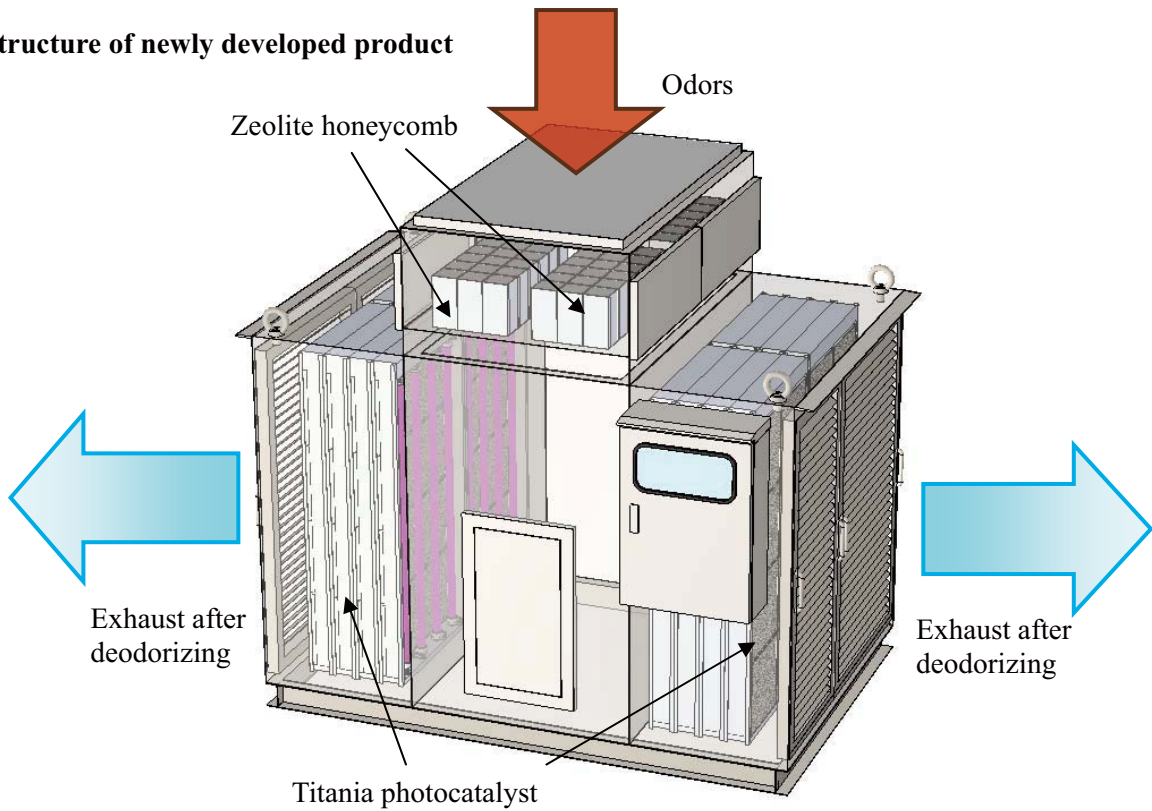


Figure 1: Structure of newly developed product

4. Hybrid deodorizing mechanism

[Adsorption process] The zeolite honeycomb filter actively adsorbs highly concentrated odors, leveling out odor peaks. The titania photocatalyst then breaks down the odors and renders them harmless.

[Release process] After mitigating odors, the system brings in fresh air from the inlet, which gradually releases adsorbed odors while keeping their concentration low. The photocatalyst breaks down the odors and renders them harmless. In addition, releasing the adsorbed odors refreshes the filter and extends its life.

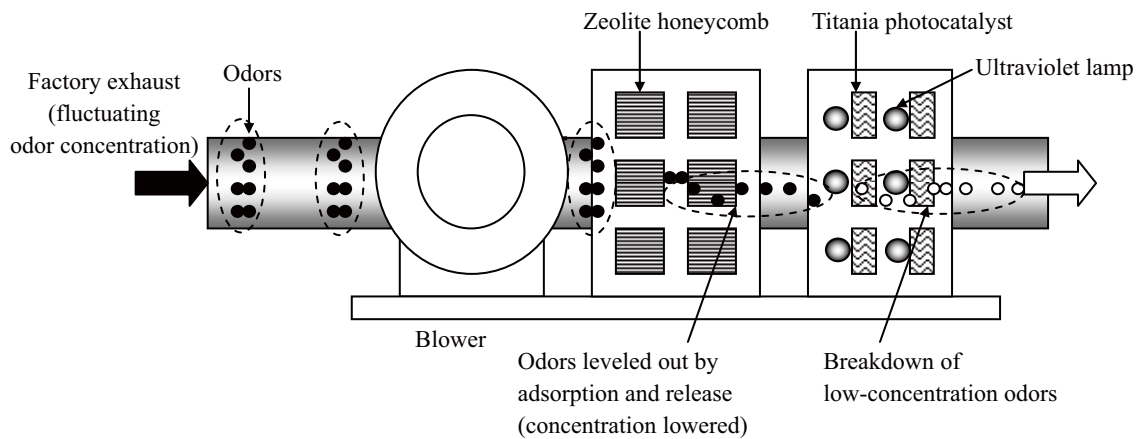


Figure 2: Overview of hybrid deodorizing system

5. Odor elimination effectiveness

<Odor concentration* measurement example>

(Type of odors measured: oily odors from kitchen exhaust)

The use of hybrid technology achieved high odor elimination effectiveness of 90%.

Inlet odors: 0% odor elimination
(concentration 5,000)

Intermediate odors: 50% odor elimination
(concentration 2,500)

Outlet odors: 90% odor elimination
(concentration 500)

*Odor concentration is a dilution factor, i.e., the ratio of fresh air to odorous gas when fresh air is used to dilute odorous gas until the odor cannot be smelled.

<Confirming odor elimination effect with odor sensor>

Comparison of intermediate odors (odors after passing through zeolite honeycomb) to inlet odors shows that the odor peak was cut and odors leveled out. In addition, comparison of outlet odors (odors after passing through the photocatalyst) to leveled out odors shows that the odors have been effectively broken down.

In the evening, after the odors have been trapped, a process causes the zeolite honeycomb to release the odors it has adsorbed. The results show that intermediate and outlet odors increase somewhat, but even outlet odors have been effectively treated with the subsequent photocatalyst.

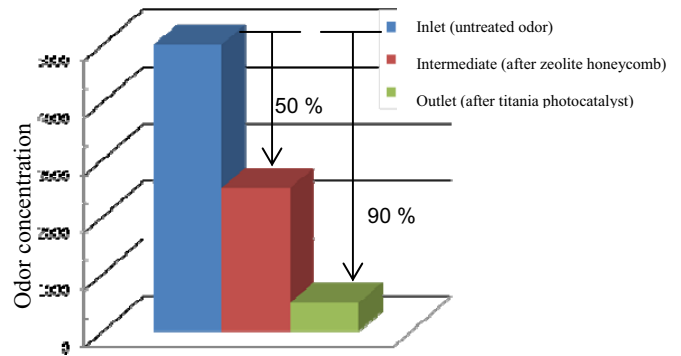


Figure 3: Odor elimination effectiveness

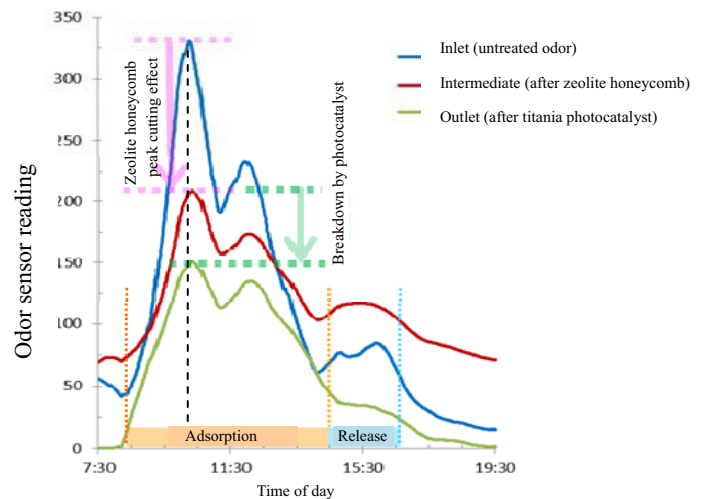


Figure 4: Change over time