

Removes the NO_x in the atmosphere 100 times as efficiently as photocatalysts.

ACF Unit for Atmosphere Purification

Features

- Purifies roadside NO_x 100 times as efficiently as photocatalyst-coated sound insulation walls.
- Converts eliminated NO_x into nitric acid ions, thus recovering the purification performance of the unit washed in water.
- Uses the natural wind or air streams caused by cars to purify the atmosphere with no fans or other driving mechanisms required.

Overview

(Technical principles, actions, etc.)

- ① Unlike photocatalyst-coated sound insulation walls, the unit is of slit structure, which purifies a large quantity of air brought by the natural wind and does not require sunlight. It has been proved that the unit purifies the atmosphere night and day 100 times as efficiently as photocatalysts.
- ② The unit adsorbs NO_x directly and/or oxidizes and adsorbs NO_x as a result of catalysis, thus making it possible to adsorb nitric oxide (NO), the elimination of which from the atmosphere is difficult for conventional photocatalysts at normal temperatures.
- ③ The slit structure of the unit consists of activated carbon fiber (ACF) felt pieces and separators laminated in turn, which utilizes the natural wind or air streams caused by cars and functions with no electric power required.
- ④ By oxidizing and converts NO_x into nitric acid ions, the purification performance of the unit is restored by simply washing the unit. Therefore, the purification performance of the unit will last for approximately seven years if the unit is appropriately maintained.
- ⑤ ACF units that can be mounted to fences are standardized aluminum units weighing as light as 3 to 4 kg, which allows ease of installation on site.



ACF unit



Example

Introductory Track Record

In Japan

- Proof examination on National Highway Route 3 in Fukuoka (implemented by the Fukuoka Institute of Health and Environmental Sciences in a project commissioned by the Environmental Restoration and Conservation Agency).
- Installation on National Highway Route 43 in Osaka's Nishiyodogawa Ward on a trial basis (implemented by the Osaka National Highway Construction Work Office of the Ministry of Land, Infrastructure and Transport's Kinki Regional Development Bureau).
- Maintenance project for the intersection on National Highway Route 43 in Osaka's Minato Ward (implemented by the Osaka National Highway Construction Work Office of the Ministry of Land, Infrastructure and Transport's Kinki Regional Development Bureau).

In Asia

- Proof examination in China's Beijing (scheduled in the autumn of 2009).

Effects

- ◎ The Ministry of Land, Infrastructure and Transport's Kinki Regional Development Bureau on a trial basis mounted ACF units to fences in Osaka's Nishiyodogawa Ward and conducted a proof examination. According to the measurement data of the Ministry, the average purification rate of NO₂ passing the ACF units was 84% and that of NO passing the ACF units was 19%, which demonstrated the high purification performance of the units. With this purification rate and the quantity of passing winds, the rate of NO_x passing the ACF fences in the area recorded 1.4 g/m² per day, which is more than 100 times as high as that measured on photocatalysts (i.e., 0.009 gram).

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