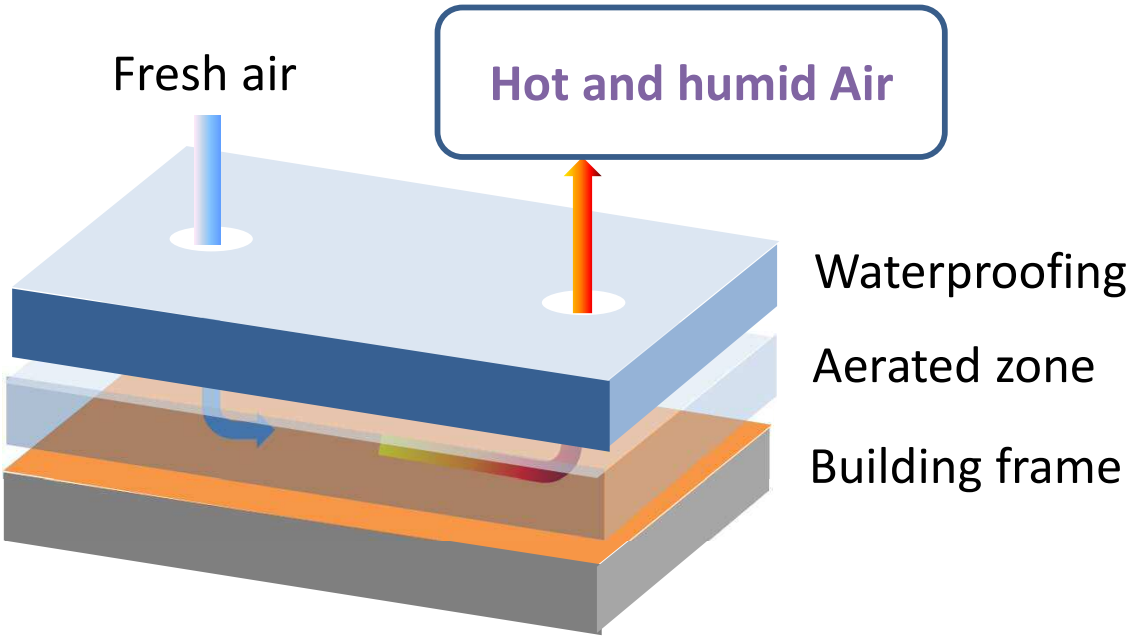
MLIT New Technology Information System (NETIS) Registered Product (Registration No. TH-120012-A)

Waterproofing that breathes

Rooftop Waterproofing Air Control

New waterproofing method helps extend the life of buildings and promotes conservation by removing moisture and heat from inside a roof's waterproofing layer



JCWR+D Japan Conference of Construction Works for Research and Development

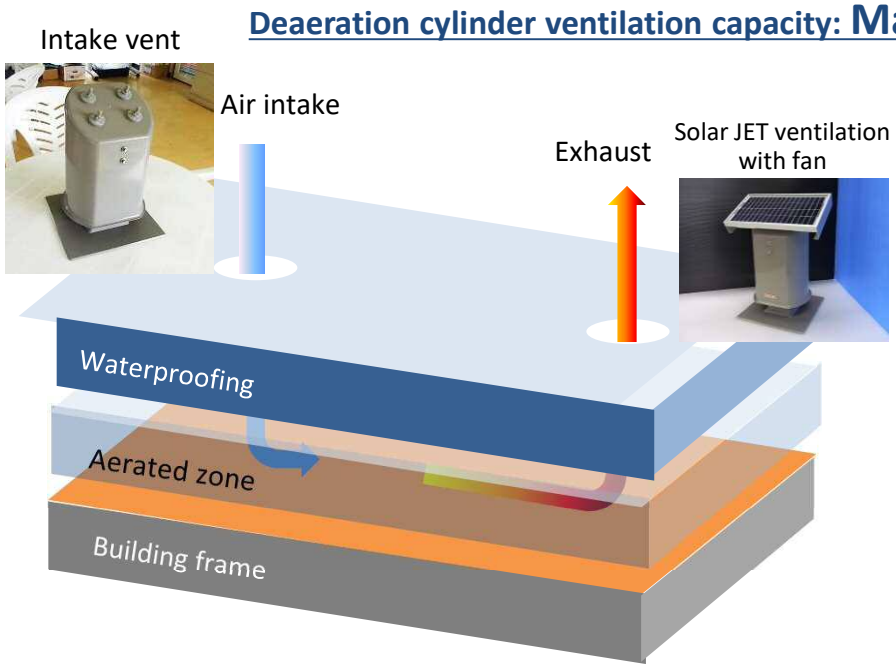
Fundamental Air Control (AC) Method

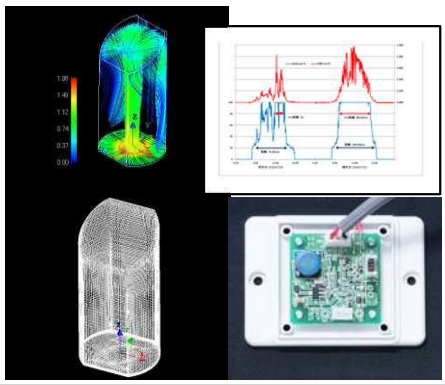
An Utsunomiya University/Oyama College/AIREC jointly developed product

To overcome the drawbacks of conventional methods focused on waterproofing properties, this collaborative project produced waterproofing that breathes, effectively discharging water accumulating inside the waterproofing layer by including a ventilation mechanism within the waterproofing layer. We have successfully created Air Control roof waterproofing that achieves excellent ventilation combinable with existing waterproofing methods.

Mechanism/Installation Standard

Deaeration cylinder ventilation capacity: Max 300 m²/1 unit





300 m² space installation
Exhaust vent: 1 unit; Air intake cylinder: 2 or more units
*Products with heat insulation specifications
Exhaust vent: 2 units; Air intake cylinder: 4 or more units

*When waterproofing layer is installed over insulation material, waterproofing layer may become hotter in summer compared to conventional methods, reaching around 80・C (Architectural Institute of Japan; Membrane Waterproofing Work, p. 125).

Benefits and Characteristics of the AC Method

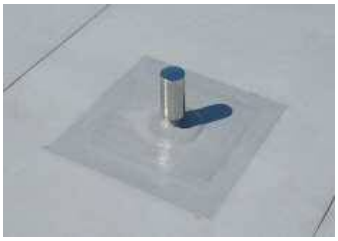
Improves soundness of the entire building including the waterproofing layer

- Autonomous forced supply of fresh air through the AC method
- Removes moisture / Removes heat
- Reduces water
- Suppresses mold and corrosion
- Prevents heat accumulation
- ● Restores soundness of waterproofing layer and frame ● Improves environment inside the layer ● Reduced air-conditioning costs, etc.
- ● Extended life ● Enhanced comfort ● Lower energy costs, etc.

Data

(*Measured in Utsunomiya, Tochigi)

Conventional exhaust method



Natural ventilation exhaust vent (stainless steel)

Conventional deaeration method	Max summer temperature	Humidity	Lowest winter temperature	Humidity
Waterproofing layer surface	60 to 70°C		-10 to -15°C	
Inside waterproofing layer	59 to 68°C		-10 to -15°C	
Difference between layer surface and inside	1 to 2°C		0°C	
Skeleton surface	58°C		-10 to -15°C	
Exhaust from exhaust vent	Unmeasurable	Unmeasurable	Unmeasurable	Unmeasurable

Air Control (AC) method

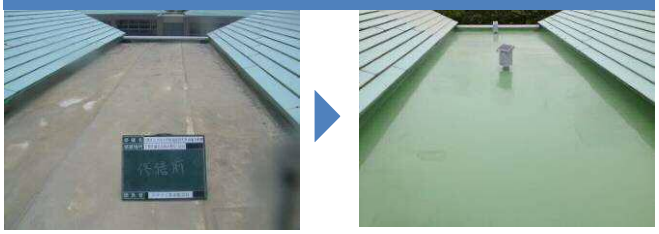
Solar JET ventilation with fan

AC method	Max summer temperature	Humidity	Lowest winter temperature	Humidity
Waterproofing layer surface	65°C		-8 to -13°C	
Inside waterproofing layer	40°C or lower		-2 to -7°C	
Difference between layer surface and inside	20°C or higher		6°C or higher	
Skeleton surface	40°C or lower		-2°C	
Exhaust from exhaust vent	40°C or lower	300 g to 800 g/day	-2°C	100 g to 300 g/day

*For humidity, exhaust changes by site.

Construction

Urethane coating method



Aqueous acrylic coating method

Vinyl chloride sheet method

Modified asphalt method

FRP sheet method

AC Method Equipment/Material Dimensions/Specifications

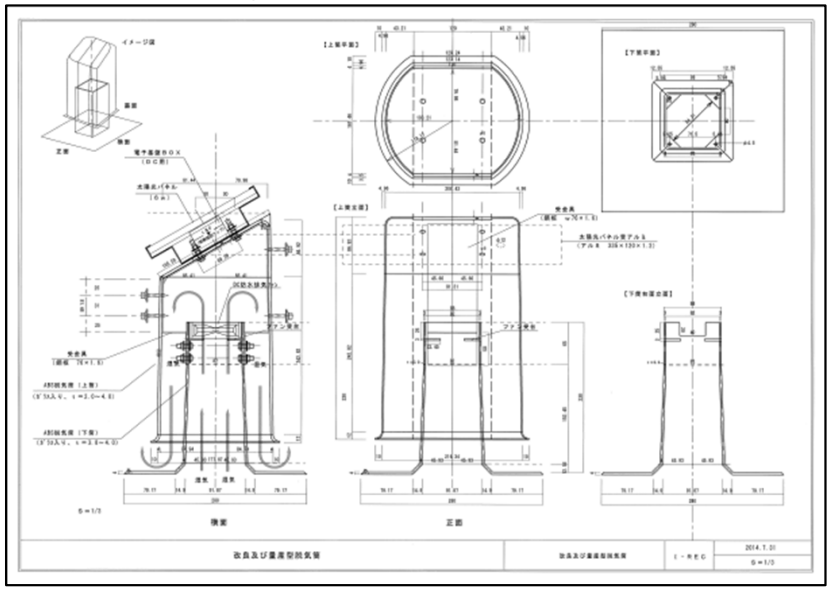
■ Solar JET ventilation

Name	Specifications	Size
Solar panel	Max. 17 V 6 W 0.35 A Newly designed electronic control circuit	335 mm × 188 × 16
Waterproof DC fan	12 V 1.2 W 0.1 A Max. air volume 0.65 m^3/min Expected life 40,000 h	80 mm × 80 × 25
Exhaust vent Intake vent	Made with AES (t = 2.0 to 4.0 mm)	See product drawing

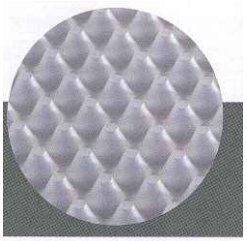
*AES plastic: Acrylonitrile Ethylene-propylene-diene Styrene

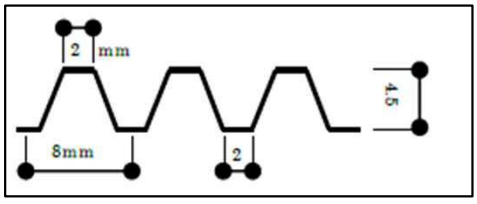
■ Intake vent

[Product Drawing]



■ CORE CONE air-permeable material





Name	Specifications	Size
CORE CONE air-permeable material	Polypropylene	H 4.5 mm × W 1,250 × 30 m
Surface pressure resistance	100 kg/10 cm^2	

Distributor