



German Technology, Precision Installation.

Founded in 2019 through a strategic brand and technology transfer from Germany's KALM (www.kalm.de), AKALM (www.akalm.com) leverages this strong heritage to locally engineer and manufacture advanced building solutions in China.

Marking an evolution from professional manufacturing to a dedicated focus on the AKALM brand, our products consistently meet the highest German standards for quality, reliability, and safet. Our field engineers and sales team partner with you throughout every project phase – from conceptual planning to final implementation – co-creating optimized, customized solutions.

AKALM. Making Installation Better.

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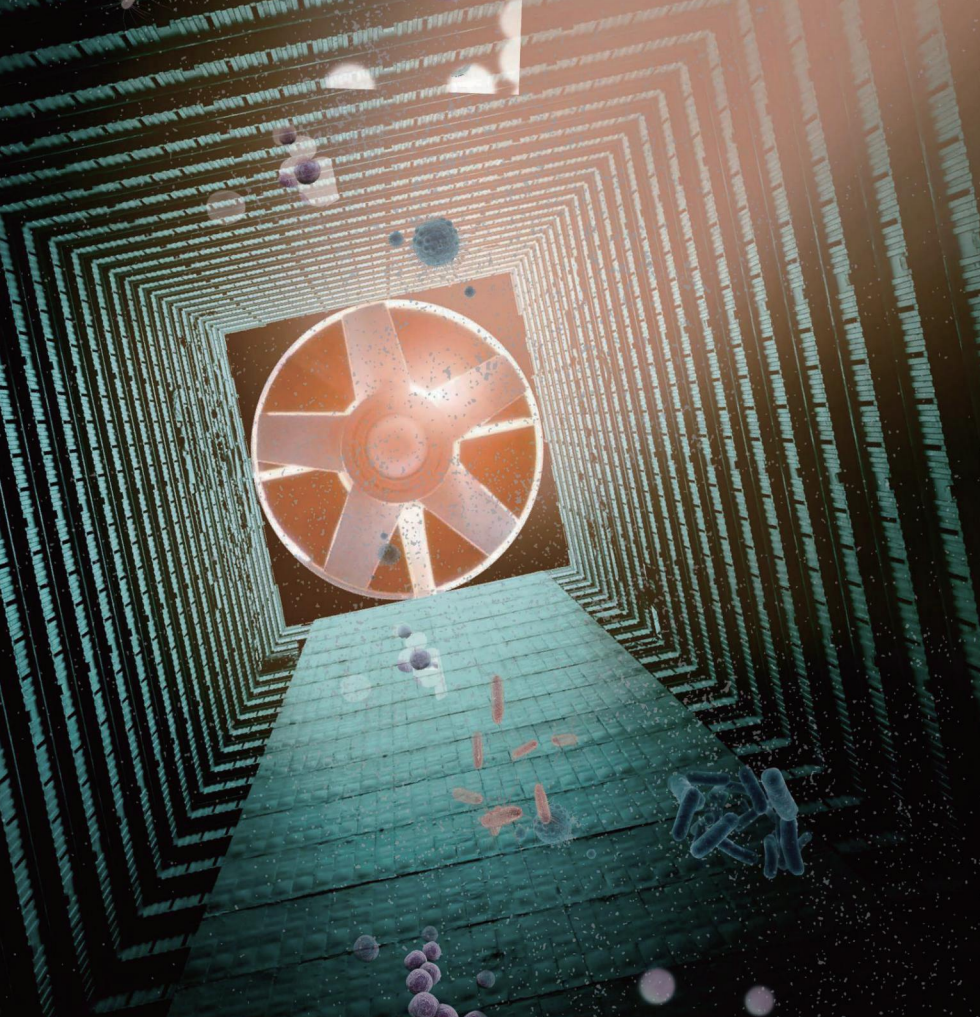


German Technology

Making Installation Better

Airopan AE Pre-insulated Antimicrobial Duct Systems

What we are breathing?



Introduction to antimicrobial panels

Application Scenarios

- Specific locations with stringent air quality requirements
- Densely populated areas demanding high air cleanliness

- Antimicrobial-treated smooth aluminum foil: 80/200 μm
- Self-cleaning-treated embossed/smooth aluminum foil: 80/200/500 μm

- PIR Polyisocyanurate
- Density: 48 kg/m³
- Thickness: 20 / 30 / 50 mm
- CFC & HCFC Free
- HFC Free

A safe anti-microbial technology

Antimicrobial system= A system able to reduce microorganisms over 99.9999%

- Continuous antimicrobial protection throughout the entire duct system ensures consistent performance.
- Eliminates over 600 categories of microorganisms, including bacteria, molds, and virus strains.
- Provides air purification and prevents infection risks for a minimum of 20 years.

Anti-microbial Mechanism

- It interrupts cell metabolism, inhibiting its respiration and enzymatic activities, or causes the death of the micro-organism due to lack of energy;
- It inhibits cell multiplication, or germ reproduction;
- It inhibits the transport processes of the cell's membrane

Bacterial

- Bacillus cereus
- Bacillus thuringiensis
- Legionella pneumophila
- Escherichia coli
- Klebsiella pneumoniae
- Salmonella Typhi
- Salmonella Murium
- Staphylococcus aureus
- Streptococcus faecalis
- Pseudomonas aeruginosa
- Proteus species
- Vibrio parahaemolyticus
- Enterobacter aerogenes
- Enterobacter sakazakii
- Listeria monocytogenes
- Campylobacter jejuni

Molds and Fungi

- Candida albicans
- Aspergillus niger
- Penicillium funiculosum
- Saccharomyces cerevisiae
- Stachybotrys chartarum

Abatement 99.9999%

Candida albicans

Abatement 99.9999%

Staphylococcus aureus

Abatement 99.9999%

Escherichia coli

Abatement 99.9999%

Salmonella Typhi

Abatement 99.9999%

Legionella pneumophila

Abatement 99.9999%

Aspergillus

Abatement 99.9999%

Listeria monocytogenes

Abatement 99.9999%

Pseudomonas aeruginosa

Antimicrobial technology

Economic

- Airopan AE duct allows for up to 90% savings on duct maintenance, cleaning and sanitizing
- Lightweight material effectively reduces transportation costs
- Quick to assemble, easy to install, and significantly boosts construction efficiency
- Deriving from the spread of micro-organisms harmful to humans

Air quality

- The triple antimicrobial, self-sanitising and self-cleaning action of the Airopan AE ducts guarantees the elimination of bacteria, mould and viruses transported inside the ducts.
- These actions prevent the risk of building contamination, ensuring air quality and quality of life for the people who live there every day

Features Antimicrobial

- Antimicrobial action is able to eradicate the pathogens that are deposited inside ducts by 99.9999%, preventing the risk of contagion
- SGS test report confirms that the antibacterial performance exhibits no attenuation following UV aging
- The mold inhibition performance is classified as Class 0, signifying complete prevention of mold growth

More efficient and performing

- Airopan AE ducts make the latter the best solution on the market
- Duct insulation is 2 times more efficient than normal insulation
- The junction systems guarantee airtightness class C
- At least two times lighter than a traditional duct
- Very high mechanical rigidity: Up to 1500 Pa of pressure in continuous operation

Safe and Certified

- EN 43545-2:2020 Railway applications. Fire protection on railway vehicles. Requirements for fire behaviour of materials and components
- The combustion performance rating is Class B1

Environmentally friendly

- Airopan AE duct components are 100% recyclable and zero impact materials
- Aluminium is totally recyclable, glass and silicones are water-based without VOCs
- The insulation is free from CFCs, HCFCs and enjoys a second life through reuse in the construction industry

Comparison of Air Ducts

	AIROPAN Air Duct System	Traditional air duct (Iron+insulation)	Phenolic Composite Air Duct
Thermal Insulation / 10 °C	0.022W/m·K	0.034W/m·K	0.027W/m·K
Weight	1.16kg/m²	8.99kg/m²	1.4kg/m²
Service Life	Theoretical service life exceeds 40 years, and the actual project case has exceeded 25 years	20 Years	10~15 years
Air Quality and Cleanliness Degree	Antimicrobial treatment on the aluminum foil layer, no mold growth, antibacterial performance-99.9999%, and the pipeline is hygienically clean	Non-antimicrobial, prone to dust accumulation and bacteria breeding	Non-antimicrobial, prone to mildew spots under humid weather conditions
Air Tightness	The air tightness effect is 8 times that of traditional air ducts	Easy to produce condensation in insulation gaps, and poor air tightness	Relatively poor plate bonding degree, aluminum foil facing is easy to fall off from the material, and the material is prone to pulverization
Friction Loss	Smooth inner wall ensures low linear friction coefficient and reduces operating costs	No internal sound - absorbing material lining, and the friction coefficient is relatively low	High friction coefficient
Water Absorption	Non - hygroscopic, can be used directly outdoors	Performance decreases after long - term use and is prone to breeding bacteria and even mosquitoes	Has certain water absorption, and phenolic foam becomes weakly acidic after water absorption
Aesthetics	The outer surface of the pipeline is flat, and the whole air duct system looks noble and elegant	Average (depending on the quality of manual work)	Relatively beautiful
Fire Resistance Rating	Outer layer aluminum foil A1, inner layer PIR polyisocyanurate B1	Class B1	Class B1



Airopan AE Pre-insulated Antimicrobial Duct Systems



Antimicrobial Panels

E=Embossed S=Smooth

Antimicrobial Panel 4000x1200x21		Antimicrobial Panel 4000x1200x21		Antimicrobial Panel 4000x1200x30		Antimicrobial Panel 4000x1200x30		Antimicrobial Panel 4000x1200x50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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