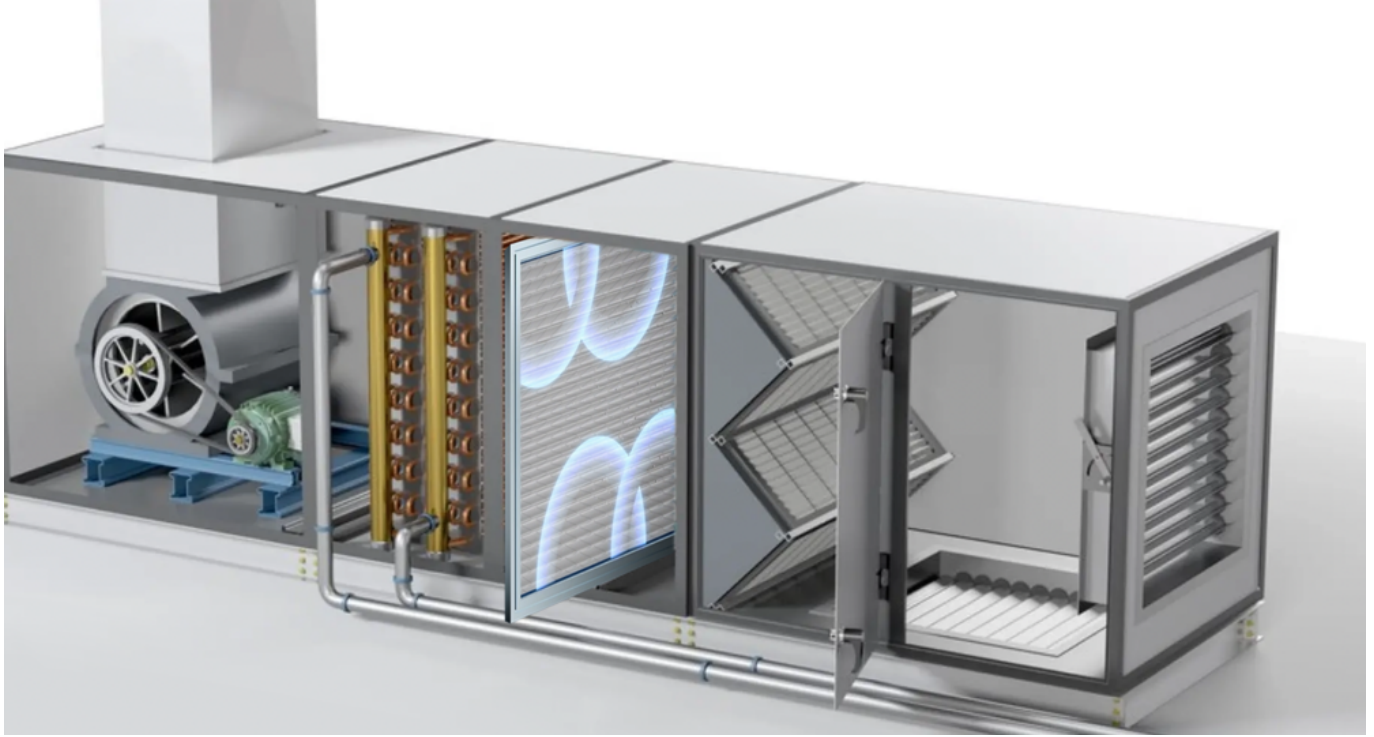


TECH OFFER

Sound Wave Filtration: Enhancing HVAC Efficiency and Air Quality



KEY INFORMATION

TECHNOLOGY CATEGORY:

Sustainability - Sustainable Living

Environment, Clean Air & Water - Filter Membrane & Absorption Material

TECHNOLOGY READINESS LEVEL (TRL): **TRL9**

COUNTRY: **HONG KONG**

ID NUMBER: **TO175329**

OVERVIEW

Facing the dual challenge of high energy consumption and the need for effective air purification in urban environments, this solution optimizes air filtration in HVAC systems. By employing advanced sound wave technology, the specialized emitter agglomerates fine airborne particles, making them easier to capture and significantly reducing the pressure drop across air handling units. This method not only lowers energy usage but also extends filter lifespan, cutting operational costs and maintenance needs. Ideal for building operators and industries that prioritize energy efficiency and superior indoor air quality, such as commercial real estate, hospitals, and manufacturing facilities, this system meets stringent G4 filtration standards and achieves performance levels equivalent to MERV 13 and MERV 14 filters.

The technology presents a cost-effective solution that significantly enhances HVAC performance and air quality, positioning itself as a sustainable investment for facilities dedicated to optimizing operational efficiency and environmental health. It improves motor energy consumption by up to 45%, while also enhancing air quality and reducing operational costs in HVAC

systems.

The technology owner is actively seeking collaboration partners for research and development, as well as opportunities for test-bedding within the HVAC systems field to enhance indoor air quality.

TECHNOLOGY FEATURES & SPECIFICATIONS

- **Patented Emitters:** Positioned along the edges of the system's frame, these emitters work in tandem with the filter core to reduce pressure drop and enhance filtration efficiency. By altering the path of particulate matter (PM) using sound waves, the system requires less fan power to deliver the same volume of clean air, resulting in significant energy savings.
- **Filter Media:** High-quality synthetic media designed with environmental sustainability in mind.
- **Efficiency:** G4-rated performance, with MERV 13/14 efficiency validated through rigorous testing.

POTENTIAL APPLICATIONS

- **Healthcare:** Ensure sterile environments with advanced air purification and energy saving capabilities
- **Entertainment, Hospitality, and Education:** Reduce energy consumption and improve air quality for public spaces.
- **Construction and Real Estate:** Improved HVAC performance in commercial buildings.
- **Data Centre:** Demanding Eco-energy solutions to enhance CRAC, Fan Wall, HVAC system energy reduction.
- **Manufacturing:** Efficient air filtration in industrial settings.

MARKET TRENDS & OPPORTUNITIES

The global market for advanced air filtration systems is robust, valued at approximately USD 4 billion and experiencing rapid growth. These systems enhance filtration efficiency by 50% and reduce pressure drops by up to 70%, significantly improving HVAC performance and energy savings. They also allow fan motors to lower energy consumption by up to 50%, maintaining optimal air quality. With an 80% increase in filtration efficiency, these technologies effectively capture more airborne pollutants, offering superior air purification compared to similar market solutions.

UNIQUE VALUE PROPOSITION

This advanced air filtration technology significantly outperforms traditional systems by utilizing sonic vibration to extend the travel distance of airborne particles, enhancing their capture by filter fibres for a 50% boost in filtration efficiency. Additionally, it reduces pressure drops across air handling units, enabling up to 50% energy savings and lowering operational costs while supporting sustainability goals.

The UVP lies in its patented sound wave technology that uniquely alters the path of particulate matter, delivering unmatched performance and energy efficiency. This makes the system versatile for use in diverse settings like hospitals, data centres, and commercial buildings.