

Quiet please

Careful selection of soundproofing building materials can add long-term value to a building. **Susanna Nelson** looks at some new market offerings.

Protection against noise is an important consideration when planning and constructing a building, particularly in high-density areas where the sounds of traffic and neighbours can be invasive.

Ultrafonic director Andrew Steel is an acoustics consultant. He says low-frequency noise is harder to muffle than the higher frequencies.

“The technology for most soundproofing was initially calibrated to protect against voices and machinery rather than the loud, bass-heavy sound systems and home theatres common to modern homes. Rhythmic, low-frequency noise is about the most annoying you can get.”

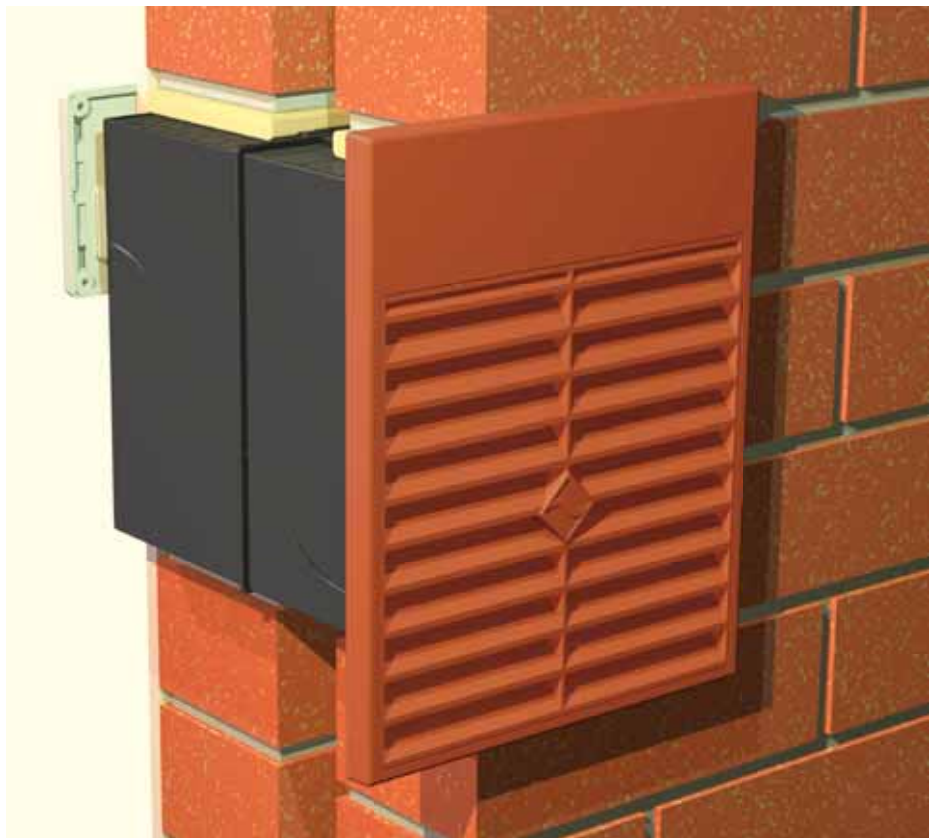
Green Glue is a viscous substance that is applied in a thin layer between plasterboards as they are installed to insulate against all noise, but particularly low-frequency noise and vibrations.

“It is somewhere between a solid and a liquid, and the effect it has on noise is like putting a piece of chewing gum on a guitar string,” Andrew says.

Andrew believes the product is cost-effective – about \$25 per square metre – because it will reduce the layers of plasterboard, labour and complex construction required to soundproof a wall.

“Imagine the weight this product can remove from tall buildings, and the savings on materials.”

Environmental and lifestyle considerations have brought a shift from sealed, artificially ventilated buildings to a more natural approach that recognises fresh air is essential for a liveable, ‘healthy’ building. For obvious reasons an open window is not an option in city buildings and high-rises,



Top: The fully installed Silenceair vent, which can be matched to any project's colour scheme. Bottom left: The vent is the size of two standard bricks and is designed to allow retrofitting in older homes. Bottom right: Inside the Silenceair is a series of resonators, which allow ventilation.





Chief executive Chris Matthews believes the Silenceair is the sustainable answer to ventilation problems in noise-affected areas.

and the problem with vents and grills is their inability to muffle noise pollution – a growing concern in high-density building.

The Silenceair passive acoustic ventilator was designed to overcome this problem.

Dr Chris Field studied the effects of sound wavelengths on rocks in water as part of his PhD in acoustics at the School of Architecture, Design Science and Planning at the University of Sydney in the mid-1990s. Chris was interested in developing green, sustainable building materials to tackle noise pollution, which he saw as degrading our living environment.

As a result of this project, Chris and Dr Fergus Fricke developed the prototype for a vent designed to allow air into a building while shutting out external noise.

In 2001 Silenceair licensed the technology and chief executive Chris Matthews began an extensive research and development process to develop the vent.

The product has gone on to win industry awards including the grand final prize on ABC TV's *The New Inventors* in 2004, silver medal at the Geneva International Exhibition 2006 and Best New Product at DesignBuild 2007. It also featured as one of the top 10 green building products in the US online journal *Sustainable Industries* in 2007.

The Silenceair is the size of two house bricks and is made from a heavy-duty, recyclable and partly recycled polycarbonate that contains flame inhibitors. It is UV-resistant and comes in a range of colours including a translucent model that doubles as a skylight.

It is a passive device, meaning it does not require any power to operate, and it has no

moving parts, so wear and tear is negligible. The only maintenance needed is some soapy water from time to time. Its manufacturers say it has an 'indefinite' life, unlike other ventilation products made of foam or fibres that are likely to degrade over time.

The Silenceair is easily installed without skilled labour or special tools and is compatible with most existing building systems. A typical two-bedroom apartment needs about five units. It is possible to retrofit the Silenceair in older buildings because of its standard size, but it is also a modular unit that can be worked into the design of larger office buildings as part of an acoustically controlled mechanical ventilation system.

So how does it work? Inside the device is a series of tubes of varying length, called resonators, which are tuned to different frequencies – much like a pipe organ. These resonators diffuse sound waves while allowing air from outside to pass into the building. The system works by making soundwaves of differing lengths neutralise each other.

The tubes can be adjusted to allow for different frequencies, so they deal with the particular noise at the location of the building. For example, if the building is near busy roads, the length of the resonators can be adjusted so that they diffuse soundwaves at the pitch generated by traffic.

Other products have used a form of polystyrene, which successfully baffles external noise but does not permit sufficient airflow. The ventilation technology behind the Silenceair allows for air in the building to be recycled every 35 minutes, depending on the number of units installed, with ➤



Green Glue insulates walls against low-frequency sound, says Ultrafonic director and acoustics consultant Andrew Steel.

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A viscous substance that is applied between sheets of plasterboard, Green Glue is a lightweight soundproofing solution.

similar noise reduction to that provided by a sealed plate-glass window.

The Silenceair vent will earn a building green star credits for natural, passive ventilation.

Chris summarises its benefits: "There are savings on installation and operating costs, and with basic maintenance the product will operate at peak performance for the life of the building. The Silenceair allows a new way of understanding environmentally responsible ventilation issues in noise-affected buildings, and its solutions are good for everybody – and the environment."

Another market offering is a new take on an established thermal insulation product – the Pink Batts Silencer and Pink SonoBatts, designed for acoustic insulation of internal framed walls and

upper floors to create a barrier between quiet and noisy rooms.

Easily installed in standard timber or metal-framed constructions, the products provide the added benefit of thermal insulation for reduced greenhouse gas emissions, lower energy consumption, savings on energy bills and increased comfort levels. ■

CONTACT

Silenceair International	02 9555 7215 www.silenceair.com
Ultrafonic	07 3856 6181 www.ultrafonic.com.au
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