

INDOOR COMFORT

March 2011

THE VOICE OF THE INDUSTRY
NEWS

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THE WEST'S LEADING MONTHLY NEWSMAGAZINE FOR THE AIR CONDITIONING, HEATING, REFRIGERATION, SHEET METAL AND VENTILATING INDUSTRIES

Industry Insider

Silentium Offers Technology That Quiets HVAC Systems

By Peter Landau, Editor,
Indoor Comfort News

Silentium means silence in Latin. "That is our business," said Yossi Barath, vice-chairman and CEO of the Israel-based Silentium. "We create silence or drive away noise."

Noise is an issue in the heating, ventilation and air conditioning (HVAC) industry. Most HVAC systems use fans and blowers, which move air and make noise. "People don't pay for the noise, but they get it," Barath said.

For many years, HVAC manufacturers and installers have tried to resolve the problem of noise with passive solutions, *i.e.*, barriers and bulky passive silencers. "Not only is this ineffective at reducing noise," Barath said, "it makes the unit less efficient."

Silentium offers a technology called Active Noise Conservation (ANC) that blocks noise using destructive interference of sound waves. "By producing a mirror image of the sound wave emanating from the HVAC unit, the two waves cancel each other out," Barath said.

According to Barath, Silentium's technology is an ideal fit for HVAC systems. The air-moving devices inherent in HVAC systems make noise pollution, low frequency noise, which cannot be reduced with passive solutions available today. Passive solutions are good for high-frequency noises, but are not effective at reducing low-frequency noises.

ANC does not block or vent the air, it merely introduces opposite sound waves to cancel that sound, making it ideal for air-moving devices, such as HVAC systems. One way for measuring the acoustic performance of an HVAC system is the Noise Criterion (NC), established in the U.S. for rating indoor noise, noise from air-conditioning equipment, etc. In Europe, it is common to use Noise Rating Curves. According to NC, even a small tone in the low frequency may rate the

product unusable in certain spaces, such as hospitals, hotels, schools, etc. Problems with noise that most of the HVAC manufacturers are facing now can be easily resolved by using Silentium ANC, according to Barath.

"Unfortunately, we have no competitors offering a practical and commercial solution like ours," Barath said. "I say unfortunately because I would have preferred others to have helped us carry the burden of explaining what we are doing. Once the awareness of our product and its value is entrenched in the market, other manufacturers will likely offer their own version of our noise-reducing solution.

However, since we concentrate on research and

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development of the ANC technology, which can be applied to many industries, I'm certain Silentium will maintain its leadership in this sector. As a business, though, we need industrial partners to introduce our unique and disruptive technology to their customers in the form of quiet commercial application of the technology rather than manufacturing products under our name."

Silentium has developed a chip that goes into HVAC systems and generates the counter-waves to silence the equipment. "If manufacturers use our chip in designing their product their equipment will emit less noise," Barath said. "It enables manufacturers to deliver to their customers a quieter product."

Silentium's offering was initially designed for manufacturers to build into their next-generation products, which is the ideal situation. However, Barath acknowledges that retrofit and replacement of HVAC systems are a large segment of the

industry. "To tap that market," he said, "our product can be introduced as an active silencer. Instead of installing complex and bulky ventilation silencers/mufflers, such as used today, we offer an add-on unit for contractors."

The aim of Silentium is to become the Intel of acoustics. "We've developed a chip that allows companies to build a quieter product," Barath said. "I hope in less than 10 years every HVAC unit will have a Silentium chip inside to insure a quieter product. And consumers will look for the Silentium brand when purchasing HVAC equipment."

The company is based in Israel, but supplies its product to U.S. manufacturers. Silentium is not contractually allowed to reveal the identity of its HVAC partners, but among IT OEMs, it has worked with the computer manufacturer, Cray, the super-computer company, which is incorporating Silentium's ANC modules for noise reduction.

"We are just starting efforts to distribute our solutions in North America," Barath said. "We have the S-Cube Development kit, which allows system designers to come up with a custom noise reduction solution for loud electronic equipment. We train Silentium experts to help introduce the idea to the market."

The kit sells for \$3,000 and comes with a manual ("cook-book") on how to incorporate the product into existing equipment for noise reduction. Silentium will provide guidance and training with the initial application, but expects the purchasing companies to have little problem moving forward independently to develop or retrofit equipment utilizing its technology.

"We are looking for manufacturers and contractors to take our technology into the marketplace they are serving," Barath said. "We will provide all the supplies to integrate the technology into their solutions and they will build and deliver the solutions to the customers."