

A Newsletter from *Stewart Acoustical Consultants*

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US Access Board to propose rules on classroom acoustics

The US Access Board that implements the Americans with Disabilities Act has announced its intention to undertake rulemaking addressing acoustics in new and remodeled classrooms based on ANSI S12.60, the American National Standard for acoustics in schools. The Board believes that poorly designed classrooms pose a barrier to students with hearing disabilities, young children, and those for whom English is a second language. This action follows the failure of their attempt to get the International Codes Council to incorporate S12.60 into the model building code. <http://www.access-board.gov/acoustic/index.htm>

Barnobi and Kilonzo complete graduate degrees

The first week of July was a big week for us as both Chris Barnobi and Obadiah Kilonzo finished their graduate degrees. Chris completed his MS in acoustics in the Department of Mechanical Engineering at Virginia Tech. Obadiah completed his PhD in Mechanical Engineering at NC State with a focus in automation and process control.

Sound and Vibration Magazine

Sound and Vibration magazine has for 43 years been a leader in publishing relevant and practical articles on noise and vibration control, architectural acoustics, and related technical areas. It was started and is still edited and published by Jack Mowry. Jack is facing a crisis as he considers whether he can continue publishing. The sound and vibration world has gone through a peak in the number of people involved in the profession, and thus readership of the magazine is decreasing. This of course impacts the advertising and economic viability. The content of the magazine varies widely from month to month, so some months you may find little of interest. However, if you are in any way involved in acoustics or vibration, at some time during the year you will find some articles of great practical interest. Look into it and consider subscribing. You cannot beat the price. It is FREE. <http://www.sandv.com/home.htm>

Stewart and Barnobi to present papers in Cancun

Noral Stewart and Chris Barnobi will be presenting papers at the 2nd Pan-American Iberian Meeting on Acoustics in Cancun in November. This will also be the fall meeting of the Acoustical Society of America at which Dr. Stewart will be formally presented with a certificate as a Fellow of ASA. Dr. Stewart will speak on an improved method of calculating the noise reduction between two adjacent rooms where the dominant path of sound transmission is through a ceiling plenum. Mr. Barnobi will present the results of his thesis research on the potential use of plasma synthetic jet actuators in the liners for turbofan jet engines for noise reduction.

Computer Stolen

A laptop computer was recently stolen from our office. It contained information on several projects over the past few years. Fortunately, we have seen no indication of any attempt by anyone to use the information contained within it.

Screw Chiller Enclosures

One of the common problems we encounter is the siren tone of a rotary screw chiller. Sometimes wraps on the compressor, and barrier walls are adequate, but sometimes these are so close to a boundary that stronger efforts are needed, including full enclosure. You may think you cannot enclose an air cooled chiller, but in fact you can. Several companies have done it. It does require careful attention to airflow in and out of the enclosure. The top has to be relatively open, so the noise reduction upward is on the order of 10 dB. However, to the side, reductions around 20 dB can be achieved. This is a reference to a well-documented case study by [Kinetics Noise Control](#).



ASTM Standards Revised

Two ASTM standards recently achieved approval for major revisions under the leadership of Dr. Stewart. ASTM E336 is the standard for measuring the isolation between interior spaces or the apparent STC transmission of interior partitions. Several changes were made, but the most important provided guidance on how to make measurements of the apparent transmission loss when coupled spaces are involved (such as a dining room open to a living room), and provisions for measuring noise reduction between spaces such as just the living room portion of a living-dining-kitchen space. ASTM E1686 is the Standard Guide for Applying Environmental Noise Measurement Methods and Criteria. This provides guidance on the proper use and application of the many different ways of measuring environmental noise. The 2010 revision is the first major update since initial approval of the guide in 1996. Earlier this year approval was obtained for a new revision of E1332 now titled Standard Classification for Rating Outdoor-Indoor Sound Attenuation. This revision expands the use of the methodology developed for the Outdoor-Indoor Transmission Class to use for additional ratings such as the outdoor-indoor noise isolation class based on outdoor-indoor noise reduction.

Energy Efficiency Drives Noise Reduction

While we see a lot of problems where the push for energy efficiency and Green construction can cause acoustical problems, we should recognize that the push for energy efficiency also has produced major noise reductions and will do so into the future. The major noise reduction success of the last 30 years has been a great reduction in the noise of jet aircraft. This was brought about primarily by the push for more energy-efficient engines. These more efficient engines are inherently much quieter. Think about it, noise is wasted energy. What does the future bring? We are beginning to see it with electric and hybrid automobiles. These are much quieter than gasoline vehicles especially at city speeds. The difference is less at highway speeds where tire noise becomes dominant. These quiet cars are already raising concerns from the blind community because when the quiet cars are mixed with noisier ones, the quiet ones are not easily noticed. This makes it difficult for the blind until the transition to the time most cars are quieter. There is thus a movement to add noise to electric and hybrid vehicles at low speed. Another area where we will likely see noise reduction is in power generation. Are you aware of the [Bloom](#) energy server? This is a promising new fuel cell technology that could revolutionize electricity generation and do it quietly.

New Acoustical Products

Health Zone Ultima Ceiling Panels – Armstrong has introduced a version of their Ultima ceiling panel that is washable and scrubbable, and is sealed well enough that it can often be used in kitchens and other areas with stringent sanitation requirements. The panel has a high percentage of recycled content, is fully recyclable, and is highly absorptive, NRC 70.

Adagio High CAC Ceiling Panels – Certainteed has introduced a second version of their Adagio composite fiberglass and mineral fiber panel. This gives two versions, one with NRC 90 and CAC 36-38, and the new version with NRC 80 and CAC 40-42. They differ in the amount of fiberglass and mineral fiber in each and provide options depending on whether absorption or sound blockage is the greater need. The company also offers their [Tufcore](#) product that is a composite of fiberglass and gypsum, NRC 65 and CAC 38-40.

Pliteq Products – We have previously introduced you to the Pliteq Genie Clip and treadmill isolator system. This company is now introducing a wider variety of products developed by Paul Downey. Paul was the inventor of the dimpled mat of recycled rubber for use under floated floors of concrete, gypsum concrete or rigid structures. Pliteq now offers a dimpled mat in various thicknesses as well as a flat mat for use directly under floor surfaces, a system for installing ceramic tile for recreational areas on rooftops over sensitive areas and a system for isolating the framing of a wall from floors or upper structure.



Marsh Mellow Rubber Springs – We have learned of an interesting alternative for vibration isolation offered by Firestone, a rubber spring element that can provide the equivalent of a few inches of static deflection comparable to a steel spring. The advantage of this is that it can provide better isolation than thin rubber pads without the problems of higher frequencies “surging” in steel springs. Because of these problems some isolation manufacturers have begun to recommend air-springs for rotary screw chillers in and on top of buildings. The rubber spring

provides a simpler and more economical solution. Firestone does not provide a complete spring assembly but just the rubber element. We have identified two companies with experience producing complete isolation system with these elements, [Novia Associates](#) and Kinetics Noise Control.

United Plastics Limp Barrier from Recycled Materials – United Plastics of Mt. Airy, NC has introduced a line of limp barrier products made from recycled automotive waste materials and is marketing them for architectural applications. While we have never been fans of limp barrier materials in architectural walls, review of recent test data and mathematical modeling has shown they do provide more benefit than would be expected based on their weight. Thus if there is a constraint on weight or thickness of a wall, adding such materials could be a useful way to improve the sound blockage. [dB-3](#) is used like other limp barrier materials inside walls. [dB2-4walls](#) is a unique product designed to be installed on the surface of an existing wall an covered with drywall mud to produce a paintable surface. This provides a way of improving a wall with minimal increase in thickness that may not require modifications to door and window frames.