

Wayne State University Department of Music
Pre-Product Research Installation 2005
“Golden Acoustics”
Revolutionary audio-diffusion.
 (“EQ panels”)

Doug Magyari, inventor / Thomas Court, research author
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- Publication Release -

***FYI... for those in the studio control room and or musician spaces...
World premier information of the Golden Acoustics™ Equalization Panels***

Three years in the making, these Acoustic-EQ Panels have met and exceeded our expectations. Built off the ubiquity-mathematics documented in the 13th century by mathematician Leonardo Pisano (a.k.a. Fibonacci), the Golden Acoustics panels work in an additive organic way to achieve full-audio-spectrum diffraction of sound! The bottom line reality is a phase- accurate live space with uncanny properties equating efficiency and articulation of sound.

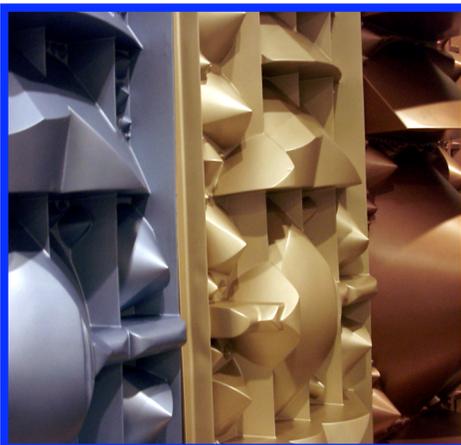
“These panels totally eliminated all modal issues we had in our control room”

The first striking element is the appearance of each panel. At 7' by 3' these extruded fractals have an alien yet warm appearance of artwork (2' x 2' ceiling panel variations are in development). Currently made from reinforced hybrid-gypsum, which enables the desired density needed for altering the paths of sound waves. They're designed to be mounted on walls and ceilings in an openly variety of ways and can be painted or photo-fabric covered without degrading the intended effect.

The second and most relevant striking element is when you first speak. OK. Here's where the uncanny properties of these panels become evident. The room feels larger than it is, in a non-reverberant spatial way. You can have several conversations occurring without the additive volume increase you may experience in say a restaurant or conference room. *Visitors to our studio control room (Our first working installation) have repeatedly commented how easily it is to hear clearly when multiple conversations are going on all while music is being played in the background.*

At this point I hope you have a general idea of this entirely new product that addresses an age-old issue of clarity and room articulation. Imagine, airports, restaurants, offices, musical / theatrical venues and yes the recording studio, all without reflective echoes and buildups yet remaining bright, devoid of the deadening effect created by the absorption method.

Sound interesting? Let's continue with the testing and findings from our Wayne State University Department of Music's world premier installation of the Golden Acoustics Equalization Panels.



Goal: Acoustically equalize an inaccurate recording studio.

This research utilized the Golden Acoustics EQ panels exclusively. Our intent has been to assist inventor Doug Magyari in documenting installation procedures and panel specifications.

Location: Detroit, Michigan. Wayne State University Department of Music

The Student Recording Studio #1 is a major part of our Music Technology program.

This facility as mentioned above proved to be an excellent testing ground.

GA EQ Panel Installation A: Studio Control room, completed March 2005.

GA EQ Panel Installation B: Main Studio space, in progress. Estimated completion, June 2005

Room calibration, determining a baseline:

Using W.S.U. Pro Tools HD system for prepped-tone file playback and Mackie HD428's in their normal configuration without additional room equalization or coupled sub cabinets. Factory Matched, DPA 4006 Omni-Microphones for recapturing the tones for analysis. All analog level calibrations utilized a Fluke DV Meter referencing at 1 KHz 0 VU = -18 dBfs = +4 dBu.

Sound Technology's Spectra series RTA analyzer was our primary software tool with Mac-the-Scope and Waves PAZ plug-in used for redundant viewpoints. SPL readings of 80 dBspl-mid room sine wave and 87 dBspl with pink noise (C-weighted). Laser set microphone positioning at the mix position and back right 4 feet, which was my ears perception of the worst area in the room for frequency buildup. We also grabbed at 24" left and right of the mix position.

First, rear wall diffusion:

Dual GA-9 EQ panels mounted horizontally and center on the rear wall. This first sectional install test proved to be hugely audibly and visually (Scopes) at removing major cancellation modals in this control room. Now we are able to hear a very defined front flutter echo that previously was only a smear of audio confusion and not identifiably apparent.

Second, ceiling and sidewall panels:

The most difficult (Logistically) panels went up and the flutter echo that was huge yesterday is all but gone! Using two GA-18 EQ panels pitched 45* running center front to back on the ceiling, with single side wall, GA-9 EQ panels. Thus turning a completely inaccurate room toward the light in becomes accurate!

Note:

At this point I pulled up some drums I recorded using a triple mic set up I had recorded. WOW, Huge difference! I could now hear the detailed background ambiance that I chased last fall. (I had to mix in another studio) ...

Third, front wall quad-panel and side ceiling 1/3rd panels:

As our install testing shrunk the peak-to-peak to the 10-12 dB range (*started at 28 dB un-weighted with many phase modal anomalies*). Inventor Doug Magyari and his brothers set off to build a multi-triangle frame to hold 4 GA-9 panels in the front of the room. These mounted 30-degrees out at the top center flaring left and right in such a way to create an almost mini concert-shell front of room diffuser. Here is another WOW. (Cover photo)

Final test and tweaks:

With the control room mostly finished we began testing with steady tones and pink noise. We now were moving the microphone on a boom and investigating behind the panels that had openings such as the ceiling dual 45-degree array, the front quad panel and the wall to ceiling panels. We were noticing how big the rooms' sound was becoming (Although even and phase coherent). We soon discovered a couple of locations had a bass build up inside between panels and wall. Seeing as a secondary specification was for back filling the panels with absorption materials this gave us perfect opportunity. After a bit of fiberglass packing the back of two of the panels the room smoothed right out once again. Our mixing sweet spot opened up to include the producers seating area and in all places except the front of console down by the floor music became even in image, volume and fidelity.

While concluding our first test installation, we discovered that graphs and data did not generate nor capture the elusive areas of acoustical diffusion. The audible night-and-day results were difficult to document using a variety of sine-sweep patterns, noise bursts and multiple analyzing methods. However. Our ears (and all who have visited) could hear the story with dramatic detail.

Yours in Music and Sound, *Thomas Court*

Additional information, photos and graphs can be found at <http://goldenacoustics.com>

