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News

audioXpress August 2021 Focus on Acoustics Issue Now Available

🕒 July 13 2021, 15:00

As tradition mandates, August is Acoustics Focus month for audioXpress. Since we refreshed audioXpress' contents in 2013, we have made acoustics an integral part of our mission, together with every other critical discipline in audio development and product design. This edition addresses the latest solutions, illustrated in the Acoustical Solutions Round-Up 2021 feature. Apart from the usual highlights of new cutting-edge acoustics products and solutions, the article addresses the need for products and designs that appeal to consumers and end-users, given our increasing personal connection with spaces, private and public, work or leisure. And for this 2021 update, we address another critical variable, which is the need for cleaning and disinfection of acoustic treatments, as well as surfaces featuring antimicrobial treatments. And because of its importance acoustics, this year's update also focuses on the latest measurement microphones and software tools.

The acoustics focus continues with a DIY perspective, first with Thomas Perazella detailing his personal journey on designing and configuring the treatments in his new listening room. In "Taming the Gorilla," Perazella addresses the "800-pound gorilla," which is the room itself and what needs to be considered for good sound reproduction in a home environment.

audioXpress

ADVANCING THE EVOLUTION OF AUDIO TECHNOLOGY

Focus on Acoustics Acoustical Solutions Round-Up 2021

By J. Martins

You Can DIY! An Introduction to Measuring Rooms

By Ethan Winer

Acoustic Room Treatments

By Thomas Perazella

Sound Control Zooming Toward Better Online Audio

By Richard Honeycutt

Fresh From the Bench Audio Precision APx517B Acoustic Audio Analyzer

By David Logvin

You Can DIY!
The DH-220C MOSFET
Power Amplifier (Part 2)
By Bob Cordell and Rick Savas

Speaker Builder
Parameter Estimation
and Box Simulation
with Speakerbench (Part 1)
By Claus Futtrup
and Jeff Candy

You Can DIY!
The VSCS Amplifier (Part 2)
By Paul Marchese



AUGUST 2021

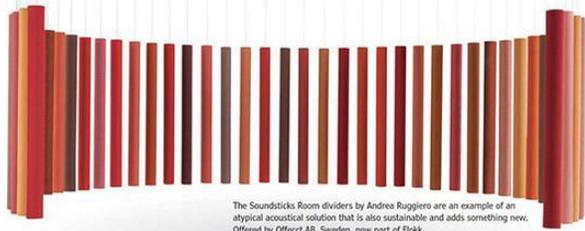
Next up, Ethan Winer, writes "An Introduction to Measuring Rooms," which was a topic he was inspired to address after reading a comment in our magazine about the need to "know your room." His article, written from a very practical perspective that can be attempted by everyone, explains the importance of understanding the acoustics of our own listening rooms and how a proper measurement will help us with that essential knowledge.

In his regular Sound Control column for *audioXpress*, Richard Honeycutt writes an interesting piece titled "Zooming Toward Better Online Audio." Like all of us, in the past year and a half, he was deeply committed to teleconferencing and using the available Zoom, Skype, and other online conferencing platforms. In this article, he addresses the acoustic conditions for those online meetings as well as real in-person meeting rooms, from his acoustician's perspective.

Market Update—Acoustics

Acoustical Solutions Round-Up 2021

A Growing Awareness of Acoustics!



The Soundsticks Room dividers by Andrea Ruggiero are an example of an atypical acoustical solution that is also sustainable and adds something new. Offered by Offect AB, Sweden, now part of Flökk.

By
J. Martins
(Editor-in-Chief)

This article highlights some new products and designs, while also discussing the progress made in new first-approach acoustical treatment products. Because they are essential in understanding acoustics, the article also discusses planning, simulation, and measurement tools

In 2021, acoustics research has continued to change and evolve. Not that the fundamental science has changed, it was just that the people in charge of designing buildings, rooms, and spaces in general actually were forced to think differently about it.

In 2020 and throughout 2021, most acoustical solution companies had to think outside their traditional comfort zones. Companies that had mainly focused on studios and listening rooms suddenly have launched products for home offices and realized that their work was actually highly appreciated—and sometimes the products are actually easier to sell. More importantly, home offices inspired users to further investigate acoustic solutions. Those companies that have always focused on architectural and large projects, suddenly have turned their attention to people, their personal spaces, and their needs, perhaps also discovering a new purpose.

A lot has changed and will continue to change in the next few years (at least as long as the effects of a global pandemic remain) and public spaces in general are being reimagined in much "healthier" ways.

An interesting evolution is also taking place in acoustic materials. Materials that previously were considered purely for their acoustics properties—and would quickly become hard to clean and serve as a breeding ground for dust mites—are now unthinkable for spaces where people actually have to live, work... and breathe.

Personally, I always had a difficult relationship with unhealthy enclosed environments. In the same way as I avoid returning to a place where conversation is impossible because of bad acoustics, feeling that a space is not ventilated or cleaned for some time, hardly inspires me to stay. Having struggled with asthma as a child, I could anticipate the effects of itchy nostrils evolving to a quickly swollen throat.

But the awareness of a deadly virus caused an even more important appreciation of air flow, exhaust ventilation systems, and consequently a shift in understanding the way acoustical treatment solutions are designed and installed, becoming impossible to ignore their impact in the overall indoor air quality

You Can DIY!

An Introduction to Measuring Rooms

By
Ethan Winer



Before you start measuring and playing around with your new speakers, maybe you should know your room. This article explains the importance of understanding the acoustics of our own listening rooms and how a proper measurement will help us with that essential knowledge.

I've noticed that many audio enthusiasts frequently upgrade their audio gear, never quite satisfied with the sound of their systems. They replace one perfectly good DAC with another, upgrade power amps, experiment with tube gear and tube rolling (the practice of replacing one tube with another of the same type, then attempting to judge by ear which sounds better), and even replace signal and power wires, hoping for the leap in clarity and realism they've read about in hi-fi magazines but never experienced. However, very few audiophiles consider the one aspect of audio quality that matters more than anything but the music source: the acoustics of their own listening rooms. Curtains and carpet are not effective acoustic treatment because they absorb only high frequencies, and a proper measurement will quickly prove that.

Every day I visit audio web forums and Facebook groups to offer help and guidance. And every day I see people proudly posting photos of their setups, hoping for an attaboy from their online friends. Unfortunately, almost every system I see is poorly set up. One common problem is a lack of symmetry, with the left speaker next to a wall while the right side is 10' from the other wall. This pulls the sound toward the side with the wall, because reflections from the wall make that side louder. The reflections also skew the frequency response on only that side.

Other poor setups have the tweeters higher or lower than ear height, which also skews the

response, or the listening seat has a leather or plastic back that extends above their ears. But the problem I see most often is a lack of acoustic treatment. Most people have no idea how badly their room damages the sound because they never measured their room's frequency response and other properties. Poor acoustics is the elephant in the room, and most people don't even know it. Measuring can also highlight other ills, such as excess ambience, early reflections, and modal ringing—extended decay times at specific bass frequencies related to the room's dimensions.

Why We Measure

One reason to measure your room is to find the best locations for your speakers and listening seat. I use the Room EQ Wizard program (REW), which can measure every aspect of a room's acoustics in about 10 seconds. Even better, REW is "donationware" and the full version can be downloaded for free. You put a measuring microphone where your head would be while listening, measure, move, and measure again. I've seen audiophiles experiment for years with speaker placement going by ear alone. With REW you can confirm the best locations in an afternoon.

One important reason programs such as REW are better than going by ear is that REW measures all frequencies. Trying to tweak your setup by playing music is doomed to failure because music contains mostly specific frequencies—those related to the key of the current music. A speaker placement that

And this edition of audioXpress also features the definitive review of Audio Precision's APx517B Acoustic Analyzer. The Beaverton, OR-based audio test-and-measurement specialist placed a strong emphasis on this new solution, which debuted at the end of 2020. Primarily targeted at production test applications, the APx517B supplements AP's powerful

product line of analyzers, which are considered the gold standard in audio measurement. In his review, David Logvin explores multiple audio measurements with this fully integrated hardware.

Another great article in this edition is "Parameter Estimation and Box Simulation with Speakerbench," written by Claus Futtrup and Jeff Candy. The two authors investigate leakage loss as identified with an advanced transducer model and verified with measurements. This is compared to classical Thiele-Small modeling with the intention to motivate the reader to further explore advanced parameter estimation and box simulation with the Speakerbench Speaker Design Calculations online tool. It is a great two-part article series that will conclude in the September edition of *audioXpress* - the Speaker Focus issue.

And this edition will certainly be appreciated by all the readers interested in audio electronics and DIY, as we conclude two very interesting articles from experts in the field. The first article is the final part of the DH-220C MOSFET Power Amplifier article by Bob Cordell and Rick Savas. Now detailing the construction and testing, this reference DIY project describes an upgrade construction project for the legendary Hafler DH-220 lateral MOSFET power amplifier, but it can also be used to upgrade other Hafler models or even inspire new designs.

In "A New Type of Amplifier for Direct Driving Loudspeakers," author Paul Marchese concludes his journey exploring an intriguing concept of an amplifier that behaves as a voltage source (VS) at low frequencies, then acts as a current source (CS) at higher frequencies. In the second and final part of the VSCS amplifier project, the author explores a practical feedback network on the voltage feedback side and examines the power delivered to a fairly accurate loudspeaker load and the non-ideal effects of a real-world power amplifier as well as variations of the design. A project for which audioXpress welcomes contributions from readers interested in building and evaluating its merits in actual loudspeakers. Speaker builders welcome!

With this August 2021 edition focused on Acoustics to the next edition focused on Speakers, *audioXpress* continues to lead the way as the leading publication for the audio development and DIY communities. audioXpress is published 12 times per year, and available in print and online. Subscribing to the digital online version allows immediate access and is available here:

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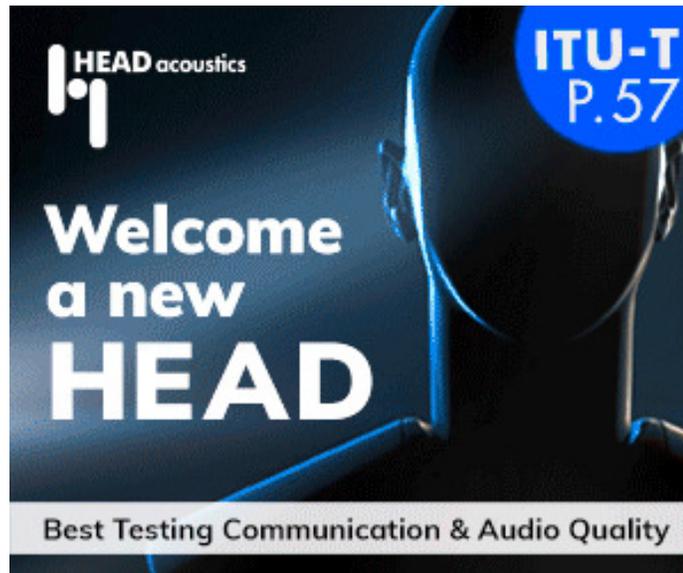
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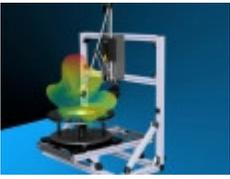
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