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May 2017

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Men can achieve in pro audio: they just need to be as good as the women... Mandy Parnell and friends explain all **P30**



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LET'S BE FRANKFURT
ALL THE TECH LAUNCHES
FROM EVERYONE'S FAVOURITE
TRADE FAIR



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DRUMMER STARTS AGAIN
WITH A NEVE GENESYS AND A
NEW STUDIO



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IN THE MOOG
NO LONG DISTANCE
RUNAROUND FROM RICK
WAKEMAN'S TECH GURU

DIGITAL MIXING SYSTEM

RIVAGE PM10

An evolution in digital mixing

Drawing on 30 years of digital mixing know-how, Yamaha's flagship RIVAGE PM10 system continues to evolve with a new compact control surface, support for 400-channel single-mode optical fiber and V1.5 firmware updates including Eventide H3000 Live Ultra-Harmonizer and Dan Dugan Automatic Mixing plug-ins.



NEW CS-R10-S
Compact Control Surface

30
YEARS OF
DIGITAL MIXING
SINCE 1987

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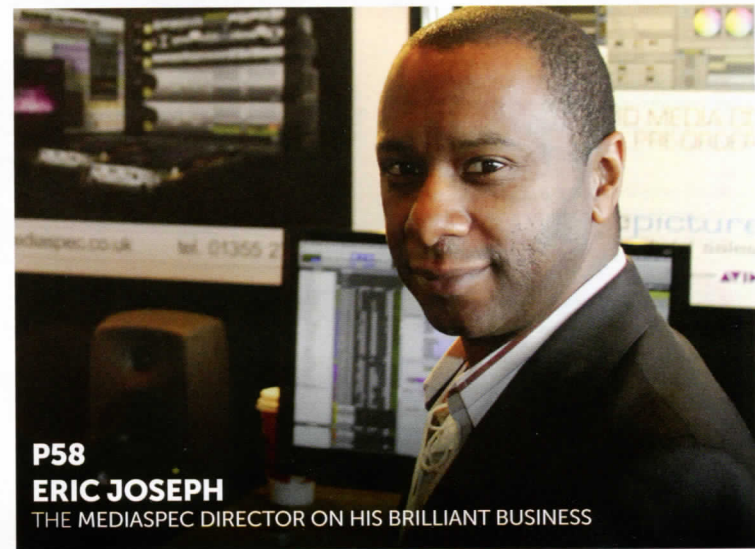
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WORLD

Panel discussions

Phil Ward wonders if acoustics are designed... or tamed



Acoustics: the black art of knitting fog. All the same, you'll soon know if you ignore this art and, to help, we can try to turn as much of it as possible into science. There is a lot of reliable measurement available, but in the competitive professional field there is still a certain amount of faith, some hope and a dwindling amount of charity.

Material world

Manufactured acoustic treatment is a booming sector, and the staple materials used in the typical products are gradually changing. "When we started out making our first acoustic panels, we used petroleum-based products such as urethane foam," recounts Peter Janis, CEO of Canada-based Primacoustic. "But over the years, several factors led us to changing to glass wool. The first was the performance: foam is very effective at absorbing high frequencies, but for low frequency bass absorption it simply doesn't have sufficient density. Typical foam is about 1lb per cubic foot. We use high-density glass wool in all of the Primacoustic absorptive panels: the density is six times greater – 6lb – which delivers uniform absorption across the audio spectrum."

New materials emerging seem to be driven by appearances, more than acoustics. "We recently developed a series called Paintables that enable the end user to colour-patch the room décor by spray painting the white panels on site," says Janis. "These are now available in a variety of sizes and formats to fit on wall surfaces or be suspended from the ceiling. The latest is called

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THE REVOLUTION HAS BEEN IN HOME STUDIOS, AND THAT CAN EXTEND FROM THE TYPICAL MUSIC SHOP CUSTOMER BUYING A DAW, MONITORS AND A COUPLE OF MICROPHONES RIGHT UP TO THE PRO STUDIO...
”
**TERRY HAYES,
AURALEX ACOUSTICS**

Element – a hexagonal design that can be used to create fun patterns on the wall.”

Terry Hayes, international sales manager at Indiana-based Auralex Acoustics, agrees that change is slow but new markets are forcing some revision. "It's a pretty conservative corner of the industry," he says. "Some parallels can be drawn with the guitar market, where the users have fixed ideas about how things should be made, although in acoustics it's not necessarily the customers keeping things traditional. Like us, all of our competitors are focused on acoustic foam and fibreglass: we tend to use fibreglass for our high-end solutions, and not just for aesthetics. Our fibreglass panels are fabric covered, offering a lot more colours and textures, but in the US at least they're also Class A fire-retardant. In a commercial space, such as restaurants, nightclubs, schools and

houses of worship, the regulations drive a lot of choice."

"Foam cannot be safely used in any commercial installation," points out Janis. "Once it ignites, it produces poisonous cyanide gas and will act as a driver for flames. Finally, the fire retardant that is used to slow the ignition has been proven to be a carcinogenic. Foam deteriorates due to UV exposure and oxidation and then produces fine dust particles that should not be ingested."

Nevertheless the percentage of sales to studios compared to 'commercial' spaces like restaurants,

Peter Janis, CEO of Primacoustic



Primacoustic was responsible for musician and rocker Tommy Lee's private studio



RE: NEWELL

Phil Croft, studio facilities manager at Summerfield Studios in Birmingham, is a disciple of renowned studio designer Philip Newell and proof that you don't have to be Philip Newell – or Richard Branson – to get results.

"Newell's theory regarding reflective surfaces says that at least 20 per cent of a wall's surface should be altered in order to hear any perceived difference," explains Croft, "so to spread direct reflections in the upper frequency band from the wall at Summerfield this principle was applied by placing convex panels of 5mm MDF raised from the wall with varying distances of between 40mm to 110mm from the flat wall surface depending on the shape and curvature of the figures.

"It's a very cost-effective way of diffusing the response of the room. The three panels cost around £10 each to make and I made a feature of them by illuminating the back with strips of LED to add depth to the wall's appearance. The five diffusers in the room cost less than £100 to make and they keep the room live, improve the reverb trail, reduce the audible potential of room chatter and are visually pleasing. These two simple steps can keep a live room 'live' without compromise. If you find you have to add room absorbers to tame a room, it's likely that the effect will be to kill off the room sound completely."

www.summerfieldstudios.co.uk

nightclubs, schools and houses of worship is adjusting. "At this time," says Janis, "due to the very high popularity of our London Room Kits, I would suggest that the split is probably 50-50 between studio and install. As awareness for acoustic treatment gains momentum, something we're now seeing, the installation business will take on a greater share over time."

"We really see no boundaries for the application of these products," adds Hayes. "We find ourselves in

commercial spaces, studios, education and even industrial spaces where noise has to be controlled."

Homebass

The studio business has moved into private homes as rentable studios have declined, and this has expanded the acoustic treatment footprint. "The studio business hasn't gone away, it's just changed," confirms Hayes. "The old style commercial studio business has moved away from new-build projects, with a small amount of re-modelling of existing premises. The revolution has been in home studios, and that can extend from the typical music shop customer buying a DAW, monitors and a couple of microphones right up to the pro studio – including the artists themselves – installed in a private space. We do a lot of business in Nashville, just to take one example, where this is exactly what's happened. With file sharing, producers, engineers and session players don't need to meet up in one place – and you can imagine the global demand for native Nashville guitarists. If they have the right acoustic environment, they can deliver a consistent contribution every time."

Auralex, founded in 1977, helped literally to build the project studio market. Even if it's all done 'in the box' for some producers today, this type of treatment still plays its part, as Hayes confirms. "Even electronic and dance music customers are embracing acoustics, because at the mix stage – or more accurately, monitoring and mixing as an ongoing process – you still need a good sounding room, or



João Vieira, CEO of Lisbon-based Jocavi Acoustic Panels

at least a room that you know and trust.

"Meanwhile sound isolation is a perennial issue. Even if you don't need total accuracy inside, you surely need to prevent sound getting out and outside sounds getting in. We spend a lot of time educating people on the difference between acoustic treatment and acoustic isolation."

As this sector moves beyond the studio, it must adapt its product ranges for new horizons. "Integrators are usually concerned with aesthetics," says Hayes, "so they go for the fabric covered panels and maybe wooden diffusers. In temporary or mobile sound reinforcement, we sell our ISO series that serves less to absorb ambient sound in a venue, than to control sound on stage. For example, we have an isolation platform series called SubDude for subwoofers, bass cabs and monitor wedges: it's common in nightclubs to find poorly made stages that will resonate and rumble, so we can help to combat those condition. We also have a range of portable baffles made of foam, some of them fabric covered, so we're still using a lot of the traditional studio materials in touring – although you wouldn't take the top-of-the-range panels out on tour to get kicked around..."

"There are several building blocks used in acoustics when 'fixing' an existing space," explains Janis. "The usual starting point will be the absorptive acoustic panels: these are used to essentially 'conceal' surfaces that will produce powerful first order reflections and eliminate excessive room reverberation. Whether this is a studio, restaurant or gymnasium, the same absorptive qualities are sought after. For hockey rinks and interrogation suites, more robust panels are usually employed.

"For the studio, the next challenge is bass absorption. The BBC developed bass traps using diaphragmatic resonators and we copied the technology in the MaxTrap. Proper bass management evens out the room modes and enables you to hear the music without as many peaks and valleys as you move around the space. Bass traps are rarely used in commercial installations. Managing ceiling reflections is usually the third process involving installed 'clouds' that spans the workspace. Clouds are often used in commercial spaces as putting up absorptive panels on the walls is not always convenient. Finally, if budget permits, diffusers are usually positioned behind the listening space to give you a greater sense of air or space. Again, these are mostly the domain of the recording studio."

"Yes, we've expanded from studios to concert arenas, nightclubs and even food courts – as well as our unique acoustic shell for theatres," agrees João Vieira, CEO of Lisbon-based Jocavi Acoustic Panels. "This is for diffusion; it's not an absorbent solution but the opposite, in order to increase the reverberation time from the stage to the audience."

The products may change as they export from studios into the real world, but one abiding principle at Jocavi is to avoid using fibreglass materials across the entire range. "There is a huge variety of shapes, sizes and raw materials," reveals Vieira, "all manufactured here in

Portugal, from cork to different foams and composites, but we don't use any form of fibreglass because it's not good for the environment. It's not a safe or healthy raw material – a lot of our business is replacing the fibreglass with new materials like BASF's Basotect. This is why we've developed what we call the ECO-iso system: it uses only coconut fibre and cork. We combine these materials to create acoustic treatment with ecological integrity."

Primary colours

Of course, you can always just get it right in the first place. In Birmingham, England sound engineer and music executive Phil Croft has masterminded a brand new recording studio called Summerfield, and grateful clients are flooding in. His inspiration was veteran studio builder Philip Newell.

"I'm not an acoustician, but studied the subject enough to apply it to my studio design and it worked," Croft says. "I simply accepted Newell's principles and applied them to my design. Regarding the live room at Summerfield, and sticking to the principles of Newell's book *Recording Studio Design*, the mechanics of acoustic control are built into and onto the walls to tame LF and scatter upper frequencies. The result is a very calm and controlled space with excellent LF response. LF increases near the sidewalls, as can be expected, as they're not treated for LF absorption other than the in-built tarred felt and Rockwool layer.

"No one listens critically from the side of the room and once the sound enters the rear wall waveguide system it's all over! Non-treatment of the side walls and upper ceiling has the advantage of keeping the room 'real' with regards to natural conversation in the control room area. All these treatments are essential if you intend to make professional recordings and they're all done with widely available standard building materials."

'Standard': now there's a word to set pulses racing in this caper. Is there any such thing in the universe of molecules?

"There are many fallacies that need to be understood," points out Janis. "Sound is made of air compressions with unlimited frequencies. And as sound hits and reflects off surfaces, these frequencies either combine or cancel out depending on their phase relationships and where you're positioned in the room. Artificially changing the phase or equalizing the response curve to 'fix' a problem in one position means you are introducing problems into others. There is no way around it.

"The best solution – whether you're setting up a recording studio or conference room – is to bring the room acoustics under reasonable control first. This means addressing all frequencies. Keep in mind: no room is perfect. You have to get used to the sound of your room. This is why the best engineers prefer to work in the same room all the time. They know what to expect."

Another eminence gris in studio design is Andy Munro, who avoids taking sides in the standards debate currently exercising the acoustics set. "I think our philosophy remains somewhere in the middle, between standard

design-and-build projects and a range of off-the shelf solutions that fit a number of situations," he says. "We have our own warehouse/workshops in Bicester and a fully-fledged building company so we do generally do a full service.

"We've been incredibly busy with Abbey Road and a dozen other projects: the ARS film room is interesting as it's for both Dolby ATMOS and general film music mixing in 7.1. It has three monitoring formats, two of which are a completely custom built, switchable soft-dome, horn-driven ATMOS system, designed and built by our team. The third is a typical ARS B&W set-up that rises up out of the floor, just like a Wurlitzer!

"It's less about what you use than the way you use it – you could use almost anything! It's a combination that creates a sound that translates elsewhere, a kind of standard. Lots of claims are made for various materials, but in the end it's down to getting a measurement of the room: checking the reverb and the reflections. One of the best studios I ever heard had mattresses on the wall..." ■

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www.primacoustic.com

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