

Finishing Touches

Having discussed the basic physical structure of his new facility in the last issue, **JIM BETTERIDGE** now turns his attention to kit, caboodle and the studio within in his room-at-a-price project.



The control room before the final finishes or final front speakers.

UNTIL RECENTLY, QUIET AIR conditioning has required a fully ducted system with vast airways and plenum chambers to reduce sound transmission, all rather impractical unless you have a large, industrial space and a matching budget. To my surprise there are now wall-mounted (split system) units that will produce a constant draft of chilled air at as low as 24dB which, with some careful mic placement, is fine for just about any practical application. We got a single Daikin roof-mounted condenser to power four wall-mounted units, and even the condenser is so quiet you have to strain to hear it above the general London hum. The experts at Purified Air persuaded me that with an opening roof light in the central kitchen area (we're on the top floor) and opened windows at either end of the building there would be sufficient air exchange when people opened and closed doors as they moved through. Thankfully they were right and it's a very pleasant working environment.

With regard to acoustic treatment, we did end up using quite a lot of Rockwool but only between the skins of stud walls where it would be sealed-in and not allow particles into the breathable air of the studio. Elsewhere Roger Quested used a combination of profiled acoustic foam, carpet under felt and lamb's wool batts for the general treatment. The lamb's wool is quite new to Roger's list of materials but he favours it because it's all-natural, non-irritating and provides excellent linear absorption.

To fix these materials to the walls and ceilings we used a pneumatic stapler. The treatment was installed within a 2-inch x 2-inch stud frame except on the rear wall of the control room where a 4-inch x 2-inch frame was erected either side of the window into which was built the bass trapping. Here a piece of under felt was hung 25mm from the wall and then 50mm in front of that we used a piece of 1060 Revac

barrier matt. The felt and the matt were cut so as to hang freely inside their frame. The booth was treated similarly but it was made more dead because when doing Foley or ADR work you really don't want any reflections or colouration.



Frames awaiting material.

To cover the treatment we made open frames of 9mm MDF over which we stretched acoustically transparent material. The frames were fixed to the studs using a system of plastic sockets (attached to the studs) and plungers (attached to the frames). These allow the frames to be removed and accurately replaced should we decide to change the treatment or someone throws some red wine up the wall. (*Your clients do that sort of thing regularly then? Ed*)

A system of three trunkings was built into the 2-inch x 2-inch studwork to allow cables to run freely and to allow mains cabling to be kept as separate as possible from signal cables. The lower run, holding exclusively mains cabling was sealed behind an upstand of carpet while the other two remain accessible behind dado rails.

I went for a Yamaha DM2000 console and a Pyramix DAW. After the 02R I believe the DM2000 offers another quantum leap in terms of production

power at a price. It's extremely flexible in terms of ins and outs and is capable of handling multiple 5.1 stems for film work. Using a combination of ADAT cards on the desk, an RME ADAT to MADI convertor and a MADI card in the computer, I can have 56 channels of Pyramix, plus amazing flexibility to connect any other digital equipment that may need to be incorporated. I've also got a couple of 16-channel AES cards for my existing 32-channels of Akai DD1500.

I chose Pyramix because I'd seen some very impressive demos and have heard nothing but good from the various big facilities houses that have taken it on over the past year or so: De Lane Lea, Shepperton, Twickenham and Videasonics to name but a few. It's an excellent system, very solid and comes with dedicated and attentive support. To house the desk I had built a 3m long modular metal



Desk frame.

framework that would be strong and rigid but offer flexibility for the future. Designer, Mike Stallion, came up with the idea of using recycled plastics for the cladding. In the event we used recycled CDs for the sides (the most astonishing translucent blue with specs of red, gold and silver) and recycled coffee cups for the tops. It looks beautiful and it's Right On.

Although DLP technology is newer and sexier than LCD especially in terms of contrast ratio, a combination of optical neutrality and operational flexibility led me to choose an LCD projector, the Sanyo PLV-Z2. We housed the projector in an 18mm MDF



Projector housing.

box, lined with under felt and acoustic foam and with a 10mm optically neutral glass front. This was connected to the machine room with a similarly lined 18mm MDF boxing containing a 110mm pipe which was connected using flexible trunking to the projector exhaust at one end and to a specially acoustically housed extractor fan inside the machine room. As the hot air is pulled out, cold air is pulled into the boxing and through a port at the back of the projector box into the projector's air intake. In practice it works like a dream with no noise and adequate cooling.

One of the great shocks of this project was the price of acoustically transparent projection screens. Where ever I looked in professional facilities around the world

I found Stewart screens are pre-eminent. They go to extraordinary lengths to fill their screen with tiny perforations that allow the sound through with minimal effect on the picture. However, for the size of screen I wanted, around the 80-inch mark, I was looking at about UK£4,500 — ouch. Of course you can put your speakers below the screen level or go for a phantom centre, but I just didn't want to settle for that.

Then I happened upon a new kind of projection screen called Clear Pix, from French company Screen Research, which had recently been awarded THX certification and was being installed in various West Coast American facilities. I quickly got a sample of the screen material to Roger and amazingly he found it to be considerably more transparent than the Stewart at about two-thirds the price. Okay, it's still not exactly cheap, but it's considerably cheaper and offers superior aural performance; so that's what we went for.

When last I used Quested speakers in the early 1990s I only needed a couple of them and so price was not such an issue. When I upgraded to a 5.1 system in the mid 1990s, though, unit cost had more of an impact and I'd opted for a less expensive option — a decision I regretted, but you've got to draw a line somewhere. It's worth remembering, incidentally, that it generally costs more than three times as much to install a 5.1 system compared to a similar one in stereo. Happily, when I phoned Roger I discovered that he was in the process of developing a less expensive, though no less high fidelity, range of powered monitors with a matching sub bass aimed at just my kind of set-up. It's unlikely that Quested will ever compete merely on price or be a really mass-market product and there's no doubt you can get cheaper systems that call themselves professional. But ask around and see if you find a single (unbiased) person with a bad word to say about them — I never have.

Roger supplied me with three Quested metal section speaker stands for the front three units. These had holes at the top matching the tapped mounting holes in the base of the speakers, and at the bottom to screw down to the floor. There were also holes through which to fill the stands with sand to kill them acoustically. Initially I tried three F5 Quested powered monitors containing a soft dome tweeter and a 5-inch cone driver in conjunction with a pair of 12-inch F19 Quested powered subwoofers. The F5 is the forerunner to the recently released S6, which features a new cabinet design and a superior HF driver. I'd always liked the sound of the F5 but after hearing the S6s I decided to use them for the four surround speakers and wait for the 6.5-inch versions, the S7s, for the front three.

When working in stereo the system works as a traditional 3-way left/right array, with the subs acting independently. Because the subs become progressively more directional at higher frequencies it's better to have two, one beneath each of the main speakers. Having two smaller subs, rather than one large, also makes it easier to get a balanced bass response in the room. When I switch the DM2000 to 5.1 its bass management comes into play and the bass from all five channels is monoed below 80Hz into the two subwoofers along with any actual sub bass sent from the sixth output. The crossover frequency can, of course, be altered to match different systems.

Roger spent some time with pink noise and a spectrum analyser making sure the main system was in phase with the subs, tweaking the levels, the various HPFs and LPFs and getting the angle of the surrounds right. The results sound excellent to my ears and I've had nothing but praise from clients and colleagues.

In the past I've seen several top professional engineers sit with a graphic EQ, noise generator and analyser pushing and pulling sliders trying to get a perfectly flat response and the results have been invariably horrible. The effects of phase shift thus introduced are generally as bad or worse than the original deficiencies of the room. Better by far to try and tackle the problem acoustically and allow some slight variation around an ideal curve.

Like so many other projects of any size, this one ran over time (more than seven months from lifting the first board to the first paying session) and over budget (well, if you amortise it over 28 years and blue sky the cashflow...) and it often felt like pulling a tiger backwards through a thorn bush. But that's

largely because we didn't allow anything shoddy to slip through: if it was wrong we'd redo it and we'd always go for the better quality ingredients. With an excellent acoustician, an excellent designer and a dedicated work force we've managed to produce a beautiful looking and sounding studio. My thanks to them all. ■

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