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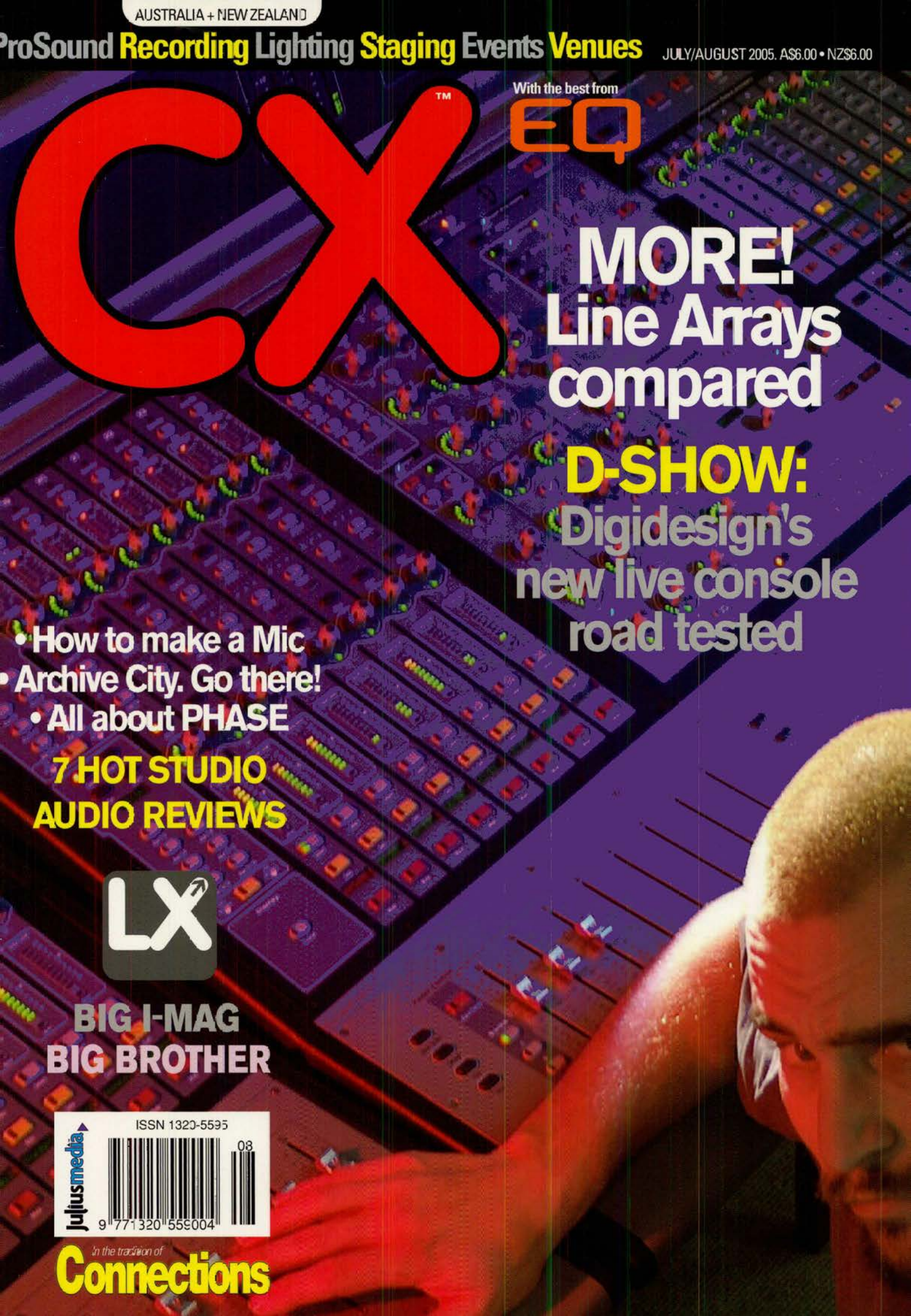
BIG I-MAG BIG BROTHER

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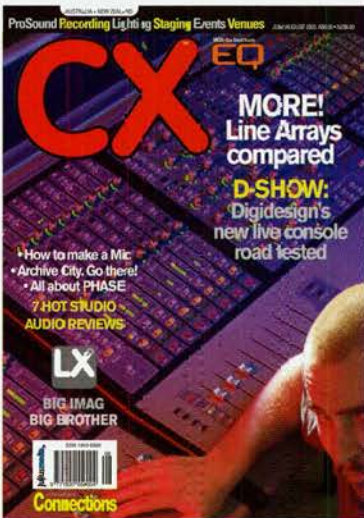
PHILIPS

sense and simplicity

CX



EQ



It was supposed to be a Kylie cover, but then she got ill. So we went for our Audio Gollem shot, and put Andy Mackenzie and the D-SHOW console together.

Winner!

COLIN LANDSMEER

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FROM THE PEOPLE WHO
ONCE PUBLISHED
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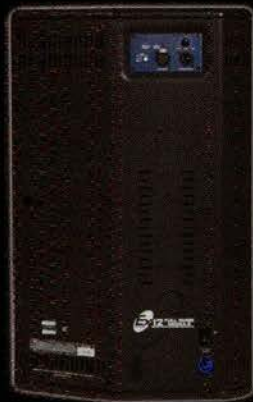
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Inside this issue

I love the way this mag takes form, and I even love the last minute nature of it. Honestly, a week out from deadline and we are really stressed, not seeing the end product. I'm sure other magazines come together in a more considered, structured way. This one is cut from ten thousand parts, edited and assembled, rehearsed and mastered, and then the curtain rises at bang on 8 o'clock.

A big story this issue is the rise and rise of Rodé Microphones. I'm guilty of badly underestimating Peter Freedman, who faced some massive struggles when I last knew him, more than 10 years ago.

To his enormous credit, he has built a 100% Australian manufacturing powerhouse, and he is showing others across the world how to be successful: making high quantities of audio products. He is an inspiration, and deserves credit where credit is due.

Join us as we celebrate his success in this issue - let us be encouraged!

This issue the theme is I-MAG, which is our name (for now) for the revolution which is bringing big screen visualisation into every lighting designers' dreams.

We have some LIVE reports from theatre land and music, and I encourage YOU to review the next show you attend. Look at our reports to see the format, or email me at mail@juliusmedia.com if you need help.

In EQ land the theme is archive (and backup) and boy - studio land is moving FAST! We report inside on the amazing changes at Neve and at SSL. Our old sparring partner Dr. Tom Misner was gracious enough to grant us an interview, despite what I said right here last issue.

Out in live land, we spent some serious time this issue looking at installations and at the new Digidesign Venue concept. I hope you enjoy reading all this!

Bank 0, punter 1

I had to share this. Commonwealth Bank and I don't get along, so I decided to shift. I have a fixed rate mortgage on a contract with another year to run, but I was so fed up I was prepared to break it. So I asked the bank how much the penalty would be.

Can you believe it, they are paying me \$983 to break the contract!

In November 2004 legislation changes forced the banks to apply credit where the rates had changed in favour of the client.

So if you have a fixed rate contract that was created prior to November 2004, it may pay to call the bank to find out what your position would be to break it!

APRA 0, punter 1

A mate told me about his dilemma in protecting copyright: on his music clips which

he writes for people. If he registers the clip with APRA (one of a confusing, cash rich bunch of collection societies) then he loses control. Instead, he has come up with an alternate system.

He burns the clip onto a CD, mails it to himself registered mail. Then he signs for the mail, and puts the unopened package containing the CD into the safe. Then if there is ever a case where someone copies his clip, he can produce the dated package in court, and prove the existence of the clip at a date that presumably (crucially for the case) pre-dates the copy.

The discussion then turned to how APRA, AMRA, AMCOS, PPCA and the rest of them actually work and how they divvy the money. We couldn't decide. It's just so confusing.

\$1.6 million dollar accident

It wasn't that bad, the lighting guy fell after getting a shock from a Par can. (Par cans that shock people - that's another issue altogether - and one which is unfinished business with us at CX. More on this as we go). The lightie had some recoverable injuries. But once the safety authorities got involved, a review of procedures at the site showed that people were working at height without a harness. There was no catwalk.

So a system of catenary wires was devised, and any fall arrest system needs to be able to handle several tonnes of load. Reinforcement needed to be installed, and an asbestos roof got broken. All the asbestos was replaced.

The tail end of all the compliance cost the organisation \$1.6 million. Plus the organisation threw away all the Par cans.

Crapastic

Two things occurred to me while having a soothing drink or five the other night at the local with some ancient tech types. We were watching the cover band set up their van show. The guy dutifully hung 4 Par 64's at each corner of the stage, and gelled them in deep colours like Red, Blue, Green and Amber.

Sure enough, when the band started (which was our cue to leave) we hung back for a few numbers to observe and sure enough, flash flash flash went the Par's. In most cases no one has transmitted some basic lighting principles to the technical population, who are just doing what they assume is correct.

Faced with a stage and just 16 lights, I'd choose 2 washes or states, and change them sparingly. I mean, who cares? It is more interesting to watch the band perform than to see some cans flashing.

The second thing that occurred to me, was that we are almost over that other assumed practice which was in fact a commonly inflicted blunder. This was neatly articulated recently by the editor of Live Sound International. Keith Clark remembers when everyone first discovered the digital reverb, and we nearly drowned in it. He suggests it has always been better to try a skilful, tasteful blend of effects. What a concept!

- Julius Grafton

TAG takes on Digital Projection

Digital Projection Limited (DP) have appointed TAG their exclusive distributor for the Australian market.

Manufacturers of some of the largest digital projectors currently available, DP are at the forefront of projection technology for large scale concerts, post production, churches, theatres, cinemas, and events.

Established in 1989 DP products are regularly used on the highest of high profile of events such as The Academy Awards, The Grammy's, Sundance Film Festival, Microsoft corporate conference and most recently Hillsong Church in Sydney.

Commenting on the distribution move Carmelo Tripolone (TAG's vision specialist) said "It's very exciting to be involved with companies at the leading edge of their technology field – DP is certainly one of these. We're

keen to establish a strong base for DP in Australia to support current DP customers and to introduce others to the DP experience."

•www.tag.com.au



Ropetime as college expands

Juliusmedia are expanding their Sydney technical college, with extra class room space being joined by a sizeable new studio. The college offers full time Diploma courses in theatre and event technical production, music technical production, and events and music management.

In July Juliusmedia ran short courses in four states, and several new short courses have recently been added. The college plan is to triple enrolments in 2006. •www.juliusmedia.com

Pictured below: Rope training is part of the new theatre counterweight course.



Tom Misner, with one of his SSL consoles

Turmoil in top end console land

The rarefied air in top end console land has been stirred with the fall of not one, but both leading English console firms.

First, Solid State Logic announced that the firm had been sold - to musician Peter Gabriel.

Then just days later, came the surprise announcement that AMS NEVE had been invaded and conquered by Dr. Tom Misner - head of SAE.

We called SAE headquarters at Byron Bay, but Tom was away. Our email, asking him if we could talk, drew this response: WHAT IS THAT YOU WANT TO KNOW?

We connected and Tom told us about his purchase

"Neve has a very healthy order book and product, however they got caught with various bank loans and finance exposures which caused them to get into trouble".

"Neve was owned by three people, one of which was Mark Crabbtree. I bought the company from the shareholders."

"Neve has lost its vision and direction in the last few years because management was so busy with trying to fix their finance issues. Discounting (by others) has been going on, however Neve was taking the 'we are Neve and you will pay whatever we want for our products' approach. This has already been changed. I am in the business of success - not owned an ivory tower."

"Neve has now been put on (a) totally solid footing without any form of finance or bank involvement which will make Neve amazingly competitive. Neve can finally buy parts in bulk and thereby reduce its manufacturing cost which will be passed on to

NEWS

the end user."

"I will release a new Neve product range in the music field - we will fully support and develop the post production range - the MMC console - (and) of course support and further develop the film range. (We have) already started creating Neve Plug In's."

"In general (we will) give them all a real run for their money, and you know me - I will!"

"Some people will be replaced and the overall management organisation will be more along the SAE lines of management."

"Here is an example of what we will do: Audio File software will be given away free on the PC within a few months!"

So we asked Tom the clincher question: what did you pay for Neve?

"It's a secret, but I am not known to pay too much for anything".

Tom Misner owns and operates more than 45 SAE colleges worldwide, plus he owns Studio 301. He owns more top end consoles - including now rival SSL - than anyone else.

• Meanwhile, Peter Gabriel & Dave Engelke (pictured below with XL 9000 K Series) have acquired SSL by a joint venture.

The company, which will trade as Solid State Logic, will continue to design and manufacture mixing consoles and related audio technology at its Begbroke, Oxford headquarters.

Peter Gabriel's background as an artist is well known, but he has had a long involvement with technology. Syco Systems, which he co-founded, developed the 'Tablet', one of the world's first purpose-built digital audio workstations.



Hills buy Audio Telex

Sydney based audio distribution company Audio Telex Communications has been purchased by Hills Group. Hills are an Australian publicly listed company, who have been expanding into technology.

The sale of Audio Telex allows Hills to further enhance their reach into CCTV and Security, and the contracting market in general.

Audio Telex general manager Stuart Craig (above) told CX that Hills became interested in Audio Telex after Hills evaluated the control solution market. According to Stuart, Hills had some contact with the importers of AMX, at that time Hills were seeking some solutions for technology control. From that involvement, Hills were drawn to look at the Crestron brand which Audio Telex started to distribute just one year ago.

Crestron is a control solution company, and when Audio Telex acquired the rights for distribution there was some negativity within the AV trade in Australia as to whether anything significant would come of the deal.

Three things have happened as a consequence - Audio Telex met the first full years sales targets at month six. They broke AMX's domination of the control

market in Australia. And now Audio Telex has found a new owner, who have probably paid an acceptable premium because they covet the Crestron business.

What a canny move. Audio Telex started in 1976 when Rod Craig (pictured below) and Allan Clarke left Philips to

mainly under the radar of most other audio distributors in Australia. They initially had the business that no one else wanted, which is selling a lot of smaller audio contracting products, to a lot of smaller installers. This kind of business hinges on very good backup service.

The firm stuck to a policy of national representation, with stock in each branch, and full support for the dealer network.

Then several years ago, Audio Telex surprised some people by taking on the upmarket Turbosound PA speaker system agency.

"When we took on Turbo, we didn't want to get into touring", Stuart Craig told CX. "The goal was to bring great sounding boxes into premium installations, - which people pay for."

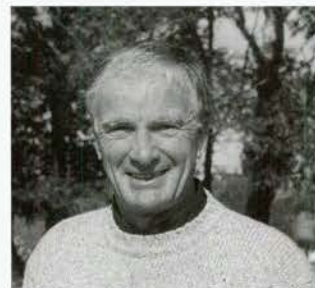
Hills say they will expand Audio Telex. This is one to watch.



start the business. In the 1970's, Philips had been an active audio contracting company. They even had Altec distribution at one point. Audio Telex was launched in Melbourne, after the pair mortgaged their homes.

The firm went national as soon as possible, and has been very conservatively managed by Roy Morgan ever since. Roy is a competent professional, and remains in charge of Audio Telex under Hills.

Audio Telex was sold because the founders were retired, and the right offer came along. The company had generated more than \$25 million in sales this year, and Hills paid an undisclosed price for the business. Based on average acquisition ratios they probably paid around a year's turnover, plus stock. Audio Telex have operated



Stop! Thief!

It's almost been 'Stop! Life!' but backline guy Jeremy Brown would probably do the same thing again

Jeremy Brown isn't complaining about anything. He was running the backline hire department at Billy Hydes in Sydney when he disturbed a thief who was attempting to drive away in the receptionists car.

Jeremy gave chase and ended up hanging onto the driver through the window - while the driver attempted to smear him along a wall. He let go, and rolled along the road.

He picked himself up, dusted himself off, and went back to work, like men do. They sent him to the medical centre, where they cleaned up his knee and dressed it.

When his train arrived home, he could barely walk, and the nightmare began. Several days in hospital were inconclusive - the knee was sort of OK, nothing broken, but the pain was intense.

A specialist did an invasive procedure into the knee, and from that second, the pain became intense. It is still intense, today, 11 years later. The pain has ruined and ruled Jeremy's life. But he still isn't complaining.

Jeremy told CX his story because he came to see us about getting a business going, and we wanted to find out where he had been. The guy was / is well regarded in the hire biz. He struggled on at Hydes for as long as he could, despite chronic pain.

Management there were really supportive, and he struggled with morphine capsules, which really messed up his memory and his mind. Eventually he had to quit working, and then life was a slow moving sequence of physio, pain management, specialists, and eventually a workers compensation lawyer.

Jeremy had done the wrong thing, the lawyer said, he should have gone to bed and stayed there until the hearing, even if it took years.

This became evident after the 5 year delay to get into court, when the insurance company rolled out videos of Jeremy back at work , lifting amps into car boots and trying to do all the things he did beforehand. The result was a minor payout, nothing like what he would have got if he had just given up. The lawyers kept most of it.

He is now 49 and he was married - until the accident. As he tells it, with the pain and the mental stress of the whole thing his wife ended up with another kid to join the one they already had. Jeremy became the second child, as he tells it.

Now there is some hope, but still the chronic and unending agony. Part of the problem with the pain appears to be that there are three



problems. Jeremy's back was twisted in the accident. Then his right hip felt like he was sitting on a bolt. - so he started sitting all out of shape. Each problem fed off each other.

"The pain signals are jammed in 'on' mode in my brain" says Jeremy. "It may not be the knee at all. I found that out when I begged them to just cut the leg off!"

A breakthrough came in the form of a morphine pump, which is implanted under the skin above the waistline. Every 6 weeks or so more morphine is injected through the skin, into the pump. The pump squirts the drug at a timed interval, direct into the spine. Direct delivery to the brain.

Then there is the Stimulator. It is inserted under the skin on the opposite waist. "It's like plugging your toe into the powerpoint", explains Jeremy. "It tricks the brain. It sends an electric pulse to my spine. It's the same idea as a pacemaker. It distracts the pain, by the brain receiving electrical impulses."

Jeremy Brown is a top guy, and we hope he can get something started for himself so he can return to work in the industry.

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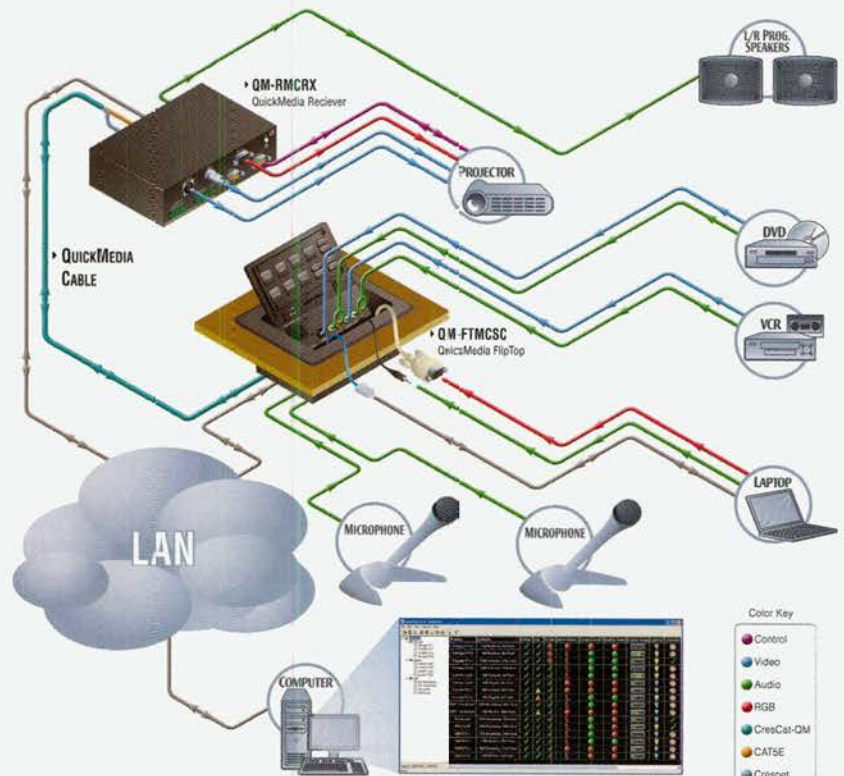
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Digam 4004 (quad) FOF Hi-freq
Digam 4004 (quad) monitors (lo)
Digam 3004 (quad) monitors (hi)

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hi-freq driver on OASR flair
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with Shure E5 ear pieces

A new PA system is now quite a complex choice. As soon as you let it be known you have money to spend the effect is likened to opening a packet of chips and attracting a flock of seagulls. The seagulls are the audio sales people.

Bill Millard at Burwood RSL decided to trial some different loudspeaker systems, and had no trouble finding vendors who were willing to put the system into the club. His requirement was a line array, a fairly conventional left / right system in the auditorium, which seats 350 people at tables. Without tables it would cater to 500 or more.

The system needed to provide an 'old fashioned' dispersion of 60° vertical, and 90° horizontal. Those are the magic numbers which many single loudspeaker systems produce. As most audio readers now understand it, we can't point multiple loudspeakers in the same direction, because the high frequencies clash. That's why one 60 x 90 loudspeaker isn't right for a job needing plenty of level.

Enter the line array, where each element can spread high frequencies 90° wide, but the vertical is a very narrow slice - like 5, or 10 degrees.

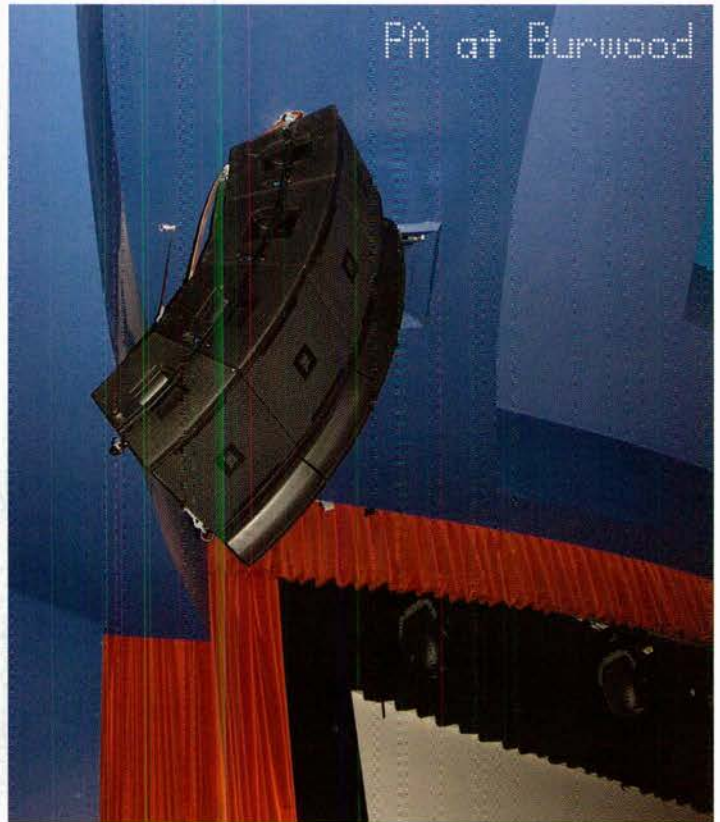
Different line array products offer different vertical dispersions. Some of the line array systems that Bill tested needed six elements (boxes) in a vertical array to reach 60° in vertical dispersion.

It needed to be a compact system.

After some months of trials, the new JBL VRX system was announced, and Bill took a punt that it worked as well as the specifications said it did. On paper it was the ideal system for the club. He ordered 4 per side, on the proviso that the vendor - TPAC - would take it back if it didn't.

The system went in and met every criteria. It





Vertical integral rigging flyware allows a vertical array of up to six boxes. In addition, one or two boxes can be stand (pole) mounted. Four boxes can be ground stacked and pointed upwards, to cover stadium seating from a playing field.

looks terrific, and sounds the same.

CX had a guided tour of the system, which Bill designed, and found some neat thinking in place.

We started in the bio box, which is (like many) built at the rear, up a ladder. This is an old club architect party trick, where they reasoned that one person could operate a follow spot and twiddle knobs on a valve mixer. So why are clubs still letting it happen? The only suitable use for these boxes is lighting control. Sound needs to be down at audience level, so the engineer can hear what the audience are hearing.

Unable to reinvent the auditorium, the bio box remains the place where the mixing console is located at Burwood. Bill has a fantastic solution, which is to remote control the Yamaha DM 2000 digital console using his Tablet (laptop) PC.

WIRELESS CONTROL

'I just use Windows Remote Desktop. There's no other software needed on the Tablet', Bill explains. Sure enough, the Tablet has a wireless ethernet card, and a PC in the bio box is loaded with Yamaha's DM 2000 software and hard linked to the desk. Bill can be anywhere within range and operate the desk.

'I can stand next to a muso on stage and EQ their foldback too', Bill says. There is another PC on the network which is connected to the two DBX drive racks which do EQ and loudspeaker management. That is just another screen on the Tablet, the same PC acts as Bill's media server. A third PC runs Martin Light Jockey software, so Bill can also control the lighting system the same way.

He can log on from home as well, which could be handy to reconfigure the outputs of the DBX drive rack which handles FOH. This can be set so that the

left and right feeds from the bio box are connected through to the amp and line arrays. Or the bio box can be isolated, and a Crown IQ system can be switched on to the amp and speaker chair.

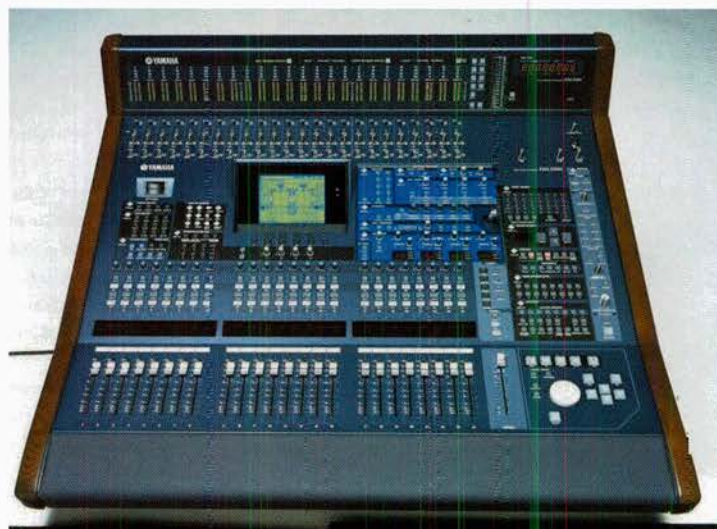
The Crown IQ 2 system is there so that simple on stage operation of the sound system can be done by non experienced staff, for Bingo or simple applications.

The way this works, a Crown Digital Mixer (USM 810) comes into play, with levels and presets accessed on a touch panel screen back stage. Hitting a given preset will make a wireless mic active, and that will be fed via the mixer to the Drive rack and into the speaker chain.

All that needs to happen is for the Drive rack to be told to go to this mode, which Bill can do from anywhere on the club network. Or from home. Anything is possible!

DESK AND FOLDBACK

The DM 2000 has become very popular in live sound circles, which initially caught Yamaha by surprise. It was designed for studio use, but because Yamaha were smart enough to make 'user defined functions', it is very much at home for live work.



By way of example, Bill can 'easily' generate eight foldback (monitor) mixes. He sends four of these to wedges, so each of these sends routes into a DBX drive rack, which has 4 inputs and 8 outputs. The drive rack handles third octave equalisation, and 2 way crossover functions, for each of the 4 wedge sends.

The wedges themselves are custom made, since there was nothing in the JBL catalogue at the time which was low profile enough.

Bill got together with Michael Orland from TPAC and designed a wedge that

is loaded with a 12" JBL woofer and a OASR flair.

These active wedges need 2 amplifier channels per send, so for 4 sends Bill specified 2 x quad amplifiers.

The more powerful amplifier, a Powersoft Digam 4004, powers the 12" drivers for each of the 4 sends. A less powerful amp, the Digam 3204, powers the high frequency drivers for the 4 sends.

Amplification for the main PA is similarly specified.

The FOH Drive Rack feeds the three way PA. 2 subwoofers sit on the floor under each line array position, 1 on each side of stage. These are JBL SP128S boxes - each with 2 x model 2242 18" woofers loaded. Each woofer has an amplifier channel driving it.

2 Powersoft Digam 7000 amps drive the 2 subs - a massive amount of power - 1000 watts - is available for each 8 ohm 18" speaker.

Then each line array of 4 elements is similarly powered. 1 Digam 7000 amplifier drives 2 x 12" speakers per channel, the bottom 2 VRX cabinets on each side are powered by 1 amplifier, while the top 2 cabinets are powered by another. Each 7000 amplifier drives 2 x 12" speakers per channel.

The high frequency drivers in each VRX are powered by one 4 channel Digam 4004 quad amp, with 2 VRX elements connected to each channel.

In this way, the top 2 cabinets and the bottom 2 cabinets can be controlled separately, and Bill turns down the volume for the bottom 2. This sends more sound to the top pair, which are pointed further back down the room.

Make sense?

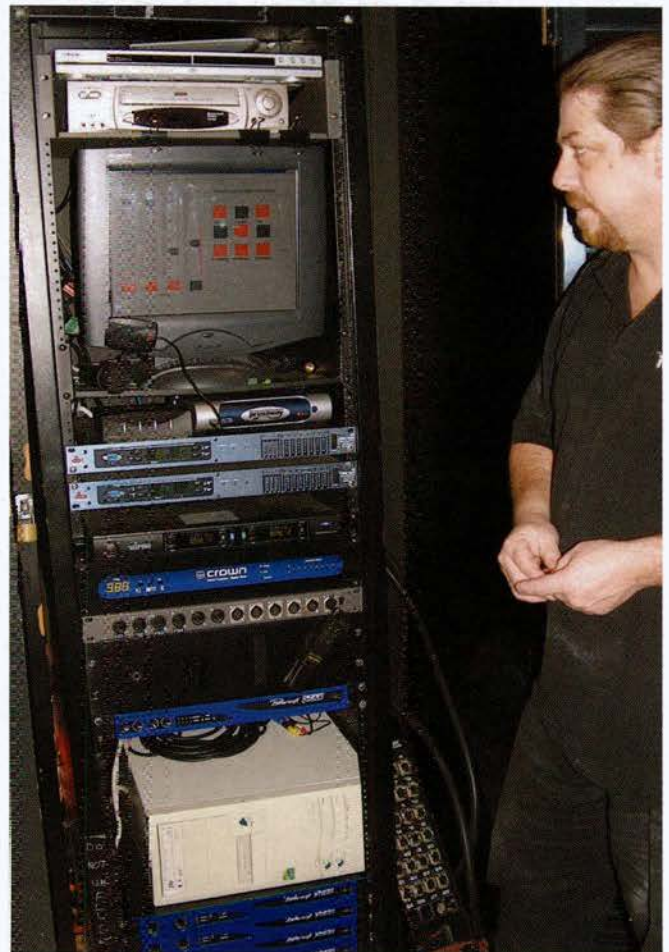
IN EAR MONITORS

With four lots of wedges on stage, the other foldback component of the system is the 4 Shure PSM 600 in-ear monitor systems, mated to dual driver E5 ear pieces. These 4 systems are set for mix mode, which is the Shure answer for when stereo isn't needed but the performer still wants to have choices.

Mix Mode means that the in ear receiver acts as a two channel device (which it is, because stereo = 2 channels). Instead of a left and right mix being sent, Bill sends one mix which is a matrix of everything in the front of house, minus effects and with the vocals mixed down by 6dB. This 'FOH DRY' mix, originated from the matrix send area of the DM 2000, is send to all four in-ear systems. The matrix mix allows each subgroup to be mixed to a matrix output.

Then an individual mix for each in ear recipient is generated from an auxiliary send of each channel on the DM 2000. These individual mixes are not unlike what you would send to each of the wedge sends.

A performer can dial up more, or less, of the matrix, and more, or



Rack back stage, with Crown IQ 2, DBX Drive Racks, and Digam amplifiers.

less, of the individual mix - and they appear as one mono source in both ears. It's a method many people use, since anyone using in-ears needs a whole band mix. But they wouldn't like a main PA mix, since it would be heavy on vocals and it would also have reverb and things.

In closing, this is a very nice installation. One of the few good ones we have seen where in-house skills have been used for design.

- Julius Grafton



FOH racks with some analog to digital (a-d) converters, Sony MD and CD decks, and Shure PSM transmitters at top.

Roadie? Or highly specialised tech?

Bill Millard thinks of himself as a roadie, which he once was. Five years ago he came in off the road and got the house gig at Burwood RSL club in Sydney, where the club followed convention and hired someone who they thought might know enough to keep the auditorium working and the entertainers happy.

A while later, Bill had become deeply involved in other technical areas of the club - overseeing a lighting installation in the gaming area. The club would shut for the night, and Bill would work on until 5am. Then he would turn up again at 10am to reset for Bingo.

The management of the club didn't realise that their tech guy was burning the candle at both ends. Bill wasn't complaining. It isn't his way. It was a little later still when things came to a head. By that time Bill had started doing I.T. support for the club, which had been contracted out. They could immediately see that he was saving them more than 40 grand a year - straight up, as soon as he started doing it.

Plus Bills partner had a baby, and she was quite understandably keen to see him more than one hour a day. So he went to the club management and struck a more equitable deal regarding his hours.

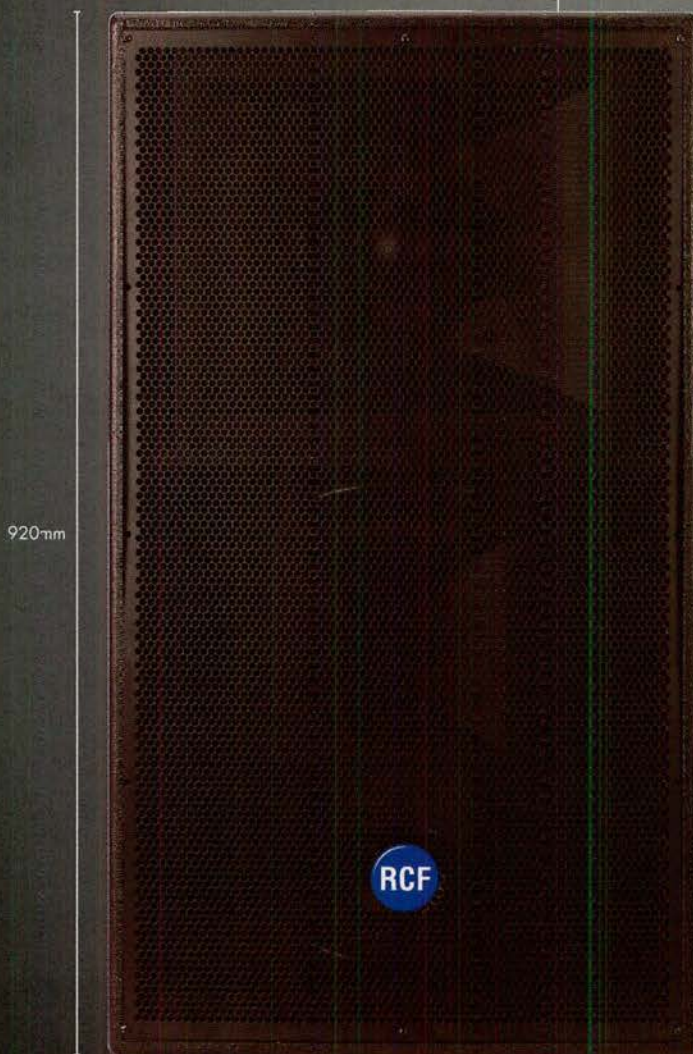
He still thinks of himself as a roadie, but he is clearly selling himself short. Burwood RSL is the winner, but Bill is also happy.

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Peter's long and winding Rode

One of the world's largest microphone factories is in Sydney. It took a lot of blood, sweat and tears to get started.

by Julius Grafton

Imagine you joined the family business from school, and then your dad dies suddenly and you are thrown into the deep end. The business is a pioneer in Australian pro audio, very successful, and has no debt. You decide to expand, and borrow big from the bank. Suddenly you've blown it, and they take your house and you still end up owing a fortune..

That's what happened to Peter Freedmar, owner of Rode Microphones. The family business was Freedmar Electronics, a Sydney importer, retailer and installer of audio equipment. Their installations are all over the eastern states. Freedmar Electronics was a fine business.

"I expanded the business by borrowing money without making the appropriate calculations first. I didn't have any real business training. I just knew how to build sound systems. If you asked me how much profit we were making then, or what our real costs were, or if the interest rates we were committed to were manageable, I would have said 'I don't know, but we are turning over lots, so we must be OK. I didn't understand business at all!

While we did have a retail outlet, our company was geared towards contracting, and there was no money in it then, I am not sure if it has changed? I'd get a job for half a million but it would end up costing me four hundred and ninety grand to do it. Then the late 80's recession hit, work dried up, key staff left me, and we were hit with interest rates beyond 20%. I ended up being in debt for over \$1,000,000.00 and was probably making \$30K net pa. To pay back the debt felt like trying to fill in the Grand Canyon with a shovel!

So what does it feel like to have a near (business) death experience?

"I wanted to die, literally. I wanted to kill myself. It was so hard to get out of bed in the morning day after day. I had Lou (his wife) and two little kids, so no choice, get on with it. The bank took our house. I sold my wife's car (a

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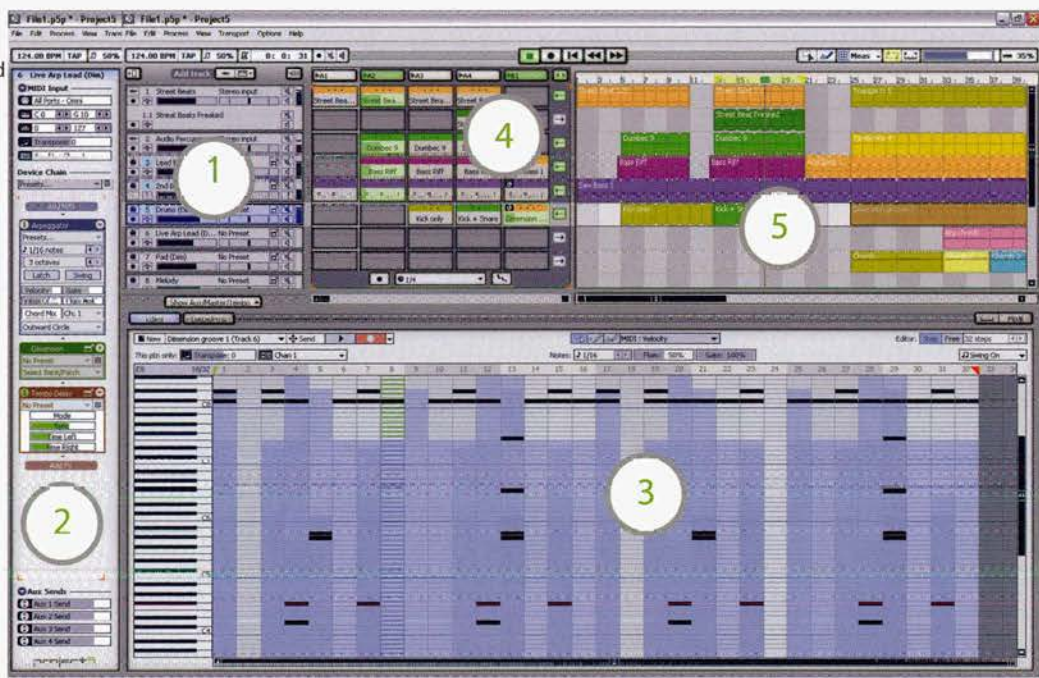
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The trading floor at Rode - exchange rates, gold bullion rates, times, sales....

birthday present from better times) once to pay wages. The Bank would regularly ring up and say 'you must put 10 grand in the account by midday'. Where would you get that kind of money?" This went on for a long time, a few years of torture.

"It wasn't just the money, the guilt I felt was immense, it was my father's business, and if you knew Henry, that company was his life, he built it from nothing starting in the sixties, and I had screwed it. It twisted my head. But I am philosophical about that time now, because I think it made me a better person. It certainly taught me how to run a business! I was also a little arrogant before, no, a lot arrogant!"

"Nothing bad had happened to me in life and I was not very empathic. I think everyone needs to fall on their arse to see how easy it is, and to make you realize that it can happen to anyone, so don't believe your own bullshit. I don't judge people as much any more."

"I now feel like the luckiest man in the world, because I have achieved success in business well beyond what I could ever have dreamt of. The future for RODE is incredible and I am now living my dream. I also know my wife really does love me for who I am. Talk about being broke, lots of women would have taken off!"

"I now have security, which allows my wife and I to enjoy our lives together. It also allows us focus on our children - the boy is 15 and my daughter is 17."

From those very dark days at the start of the last decade Rode has risen like a proud volcanic island from a deep sea, and is now one of the world's most successful

manufacturers of microphones. It is located in a large new ten million dollar factory in Sydney where they make virtually everything in very large volumes.

Peter Freedman and his family are now very wealthy.

It started with what Peter calls a desperate search for things to sell. He was traveling to China and Taiwan to source things, and he found a cheap Chinese condenser microphone. It needed tidying up, screws tightened, and some quality control.

"Colin said: I can sell this! We were in the right place, at the right time, with that product, the beginning of the home studio revolution."

Colin Hill had arrived at Freedman Electronics when the company was at its lowest point. He was working with a UK firm called Ohm at the time. Peter decided to import him.

The quest continued.

"I still owed a lot of money."

"We sold anything that was not tied down, and this Chinese mic was saleable so I imported them. We changed transistors,

modified a few bits and pieces to improve on things, and called the brand Rode. We were selling a couple of hundred mics a year in Australia, and had started to make more of the mic in Australia. We were still heavily in debt and so I thought, 'I wonder if I can sell this mic in the United States?'

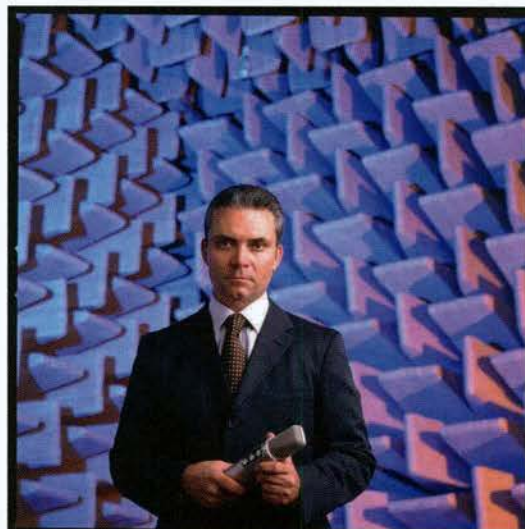
I went into the legendary West LA Music, and sold them 100! I was so excited because I knew we must have something unique! To sell anything in the US is very hard, they 'have it all' at amazing prices, the competition is huge."

"I then booked a very small booth at NAMM (the LA trade show) on credit cards - by the first day we picked up distributors for England, Germany, France - all with one modified Chinese mic!"

"This went on for a while but, I thought I could make better mics. The quality out of China is a pain in the arse and you can not trust them to honor any agreements. Over the years I was telling the people in China

that we needed to change the diaphragm materials, incorporate better back plate technology etc. I was working with them, teaching them 'so they could sell my ideas to others'. In the end, I just thought I could make it better - and surprisingly, cheaper and not be 'ripped off!'"

"The turning point for RODE was in 1994 when I met the Alesis management guys. They had just split with Alesis and




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Plenty of Australian staff, but also state of the art automation. These are circuit boards.

had set up Event Electronics. With the 'States', you go there for years as a buyer or whatever, and you're not involved. You are seeing it from the outside. Once you're in though, it's a completely different world. That's the difference, to know the people, to be part of their industry."

Event really pushed Rode, and introduced it to some big names who probably would not have been interested.

"We now have 700 dealers in the US alone and are now considered a big part of the industry there."

The RODE NT2 became a world brand.

"We opened RODE US in 2001, and it is now a strong local wholesaler (warehouse and service) employing 6 full time staff. We are now rated amongst the top three mic companies in the world, number 1 in sales volume in Japan and ironically in Germany and of course the US for the categories we address. We export to 52 countries and that keeps growing."

"We had a huge surge from 1995 on, and won exporter of the year here in 1999. Then we plateau'd." I have spent the last 5 years planning this new factory, and the next 5 years will be very interesting!"

"What we've done along side legendary audio companies such as Lake and Fairlight is show the world there are some very interesting pro audio products coming out of Australia."

"Rode is now regarded world wide as this country's most famous music product export, and have proven there's some long term, real money to be made. It makes it easier for the next guy to be taken seriously, and we are very proud of that"

"We've done it totally against the model. We export large volumes to China, engineers there don't want or trust cheap Chinese mics! We are vertically integrated. We have shown that Australian manufacturing is far from dead, you just have to use the latest manufacturing technology, employ the best people and spend serious money on R&D."

"We're now investigating nanotechnology – making microphones on wafers. Blowing our own chips."

Rode has strong relationships with research facilities such as the C.S.I.R.O, NAL and with some of the most respect scientists in Australia.

It also attracts the interest of like minded people. Australian pro audio genius David McGrath, who co-founded Lake Technologies before selling it to Dolby, visited recently. Fellow Lake worker Bruce Jackson was with him. Jackson is the greatest sound engineer that Australia has produced, and is also an audio genius. The Lake/Dolby duo called on Rode to see some developments Peter had made with a 16 head microphone array. He shared some information with them. They were impressed.

"I was amazed and impressed", says Bruce Jackson.

"Quite blown away at the neatness, the cleanliness, and the fantastic machinery, He has turned a total pain in the arse business (manufacturing) into something good. I tip my hat to him! He's succeeded in the M.I. market, which is vicious. He is kicking arse!"

The brand has enormous customer loyalty, I picked up a weekend newspaper and saw a guy profiled in his home studio raving about how he loved his Rode microphone. That doesn't happen in audio terribly much.

Rode microphones today is a colossus in pro audio terms, occupying a substantial plant at Silverwater in Sydney's west. It has 50 staff. As Peter Freedman walks around, he banter and trades insults with some of them. They all appear to love him. Evidence of that is Richard Wilson, who is about to retire after 36 years working first for Henry, then for Peter. That's loyalty.

There are some other wise heads at Rode as well, David Green was a leading sales manager in the UK for SSL before moving to Australia. He once sold 3 SSL consoles to Fidel Castro in Cuba. His studio and

music industry knowledge add considerably to Rode since he came on board a few years ago.

Rode could apply their brand to other audio equipment, and seemingly build things at ultra competitive prices. There is no real reason why Rode could not do a Behringer, except that Peter, at this stage at least, wants to stick to what he does best.

Which is to build microphones that people love.



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TASCAM's new X-48 is the world's first standalone 48-track hybrid Hard Disk Workstation. It integrates the best of both worlds: the stability and ease-of-use of a purposebuilt hard disk recorder, with the GUI, editing features and plug-in compatibility of a computer-based digital audio workstation.

boasts 96kHz/24-bit recording across all 48 tracks and 192kHz across 24 tracks. Its file compatibility and synchronization surpass even the TEC Award-winning MX-2424, Broadcast WAVE and OMF import and export for compatibility with workstations like ProTools®. Support for FireWire hard drives and Gigabit Ethernet allows simple transfer between systems, making it the ultimate multitrack solution for high-quality music, post and live recording applications.

But the X-48 goes beyond mere standalone recorders – its built-in, automated 48-channel digital mixer, VGA display output, powerful editing functions and DVD+RW backup drive transform it into a complete integrated workstation.

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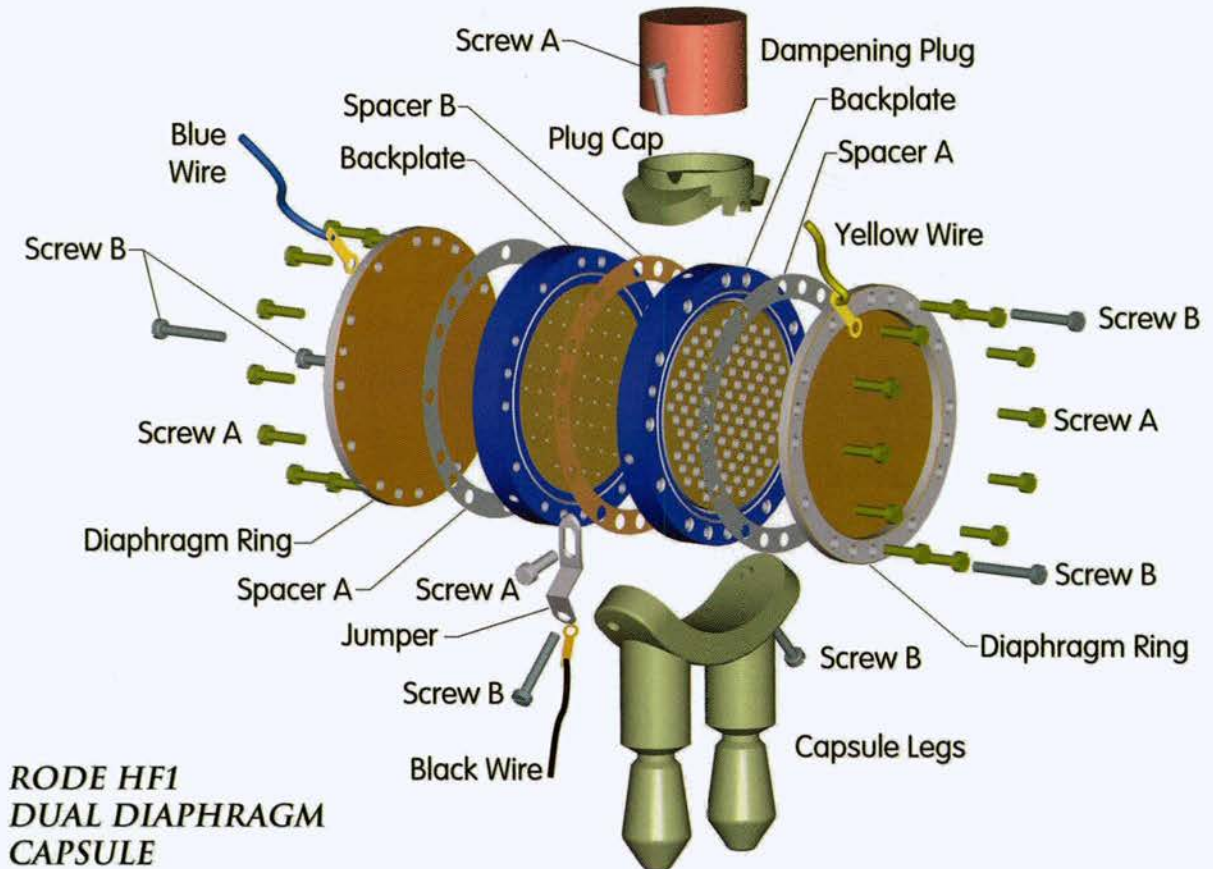


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How to make a Microphone

Peter Freedman - owner of Rode Microphones - explains how they work and how he makes them

A famous man once said, "Everything is easy when you know how." Bastard!

It's true however, and I have spent the last ten years with my team here at RODE 'learning how'!

The 'it' was becoming masters of condenser transducer design, and manufacturing.

The biggest hurdle we had at the start was there were no books on the subject other than those explaining how a finished mic worked. No schools to attend; and those who knew kept their secrets closely guarded.

What that meant was we had to start with a clean sheet of paper. While it has been costly, we have made some discoveries that the established names had missed. After all, they 'knew how' so why investigate further!

Along the way we have developed some interesting manufacturing techniques as well that have allowed precision volume manufacturing of what was once a small run, hand made process.

So how do you make a condenser mic?



While there are many parts that make up a studio microphone, I will focus on its heart and soul: the capsule. I won't bore you with maths or deep physics, the following is a rough overview of what's going on.

The capsule converts sound energy into electrical energy which is then passed through an electronic circuiting making it suitable for amplification. While there are many styles of microphone in the world, currently the condenser microphone is the most accurate available.

There are effectively two parts to a condenser microphone. The fixed back plate and the movable front plate or diaphragm.

The back plate is made of pure brass and the front plate or diaphragm is made of a very thin film (Mylar). The thickness of the brass plate on a RODE HF-1 is 4mm and the thickness of the front diaphragm is 6 micron (6/1000th of 1 millimeter).

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Røde story



The effective diameter of the transducer is 25mm. We then coat this 6 micron thin film with 24 K pure gold to make it conductive. The coating is around 500 Angstroms or 1/20th of a micron or 1/20,000th of a millimeter.....Phew, too many zeros!

To make a back plate we start with a machined brass disk (above).

These are precision turned on our ultra accurate CNC lathes. We then mold insulating polysulphane around the brass. (top, right)

The next stage is to mill the face of the plates incorporating various holes both drilled and blind. These provide the correct acoustic loading of the diaphragm once the capsule is assembled.

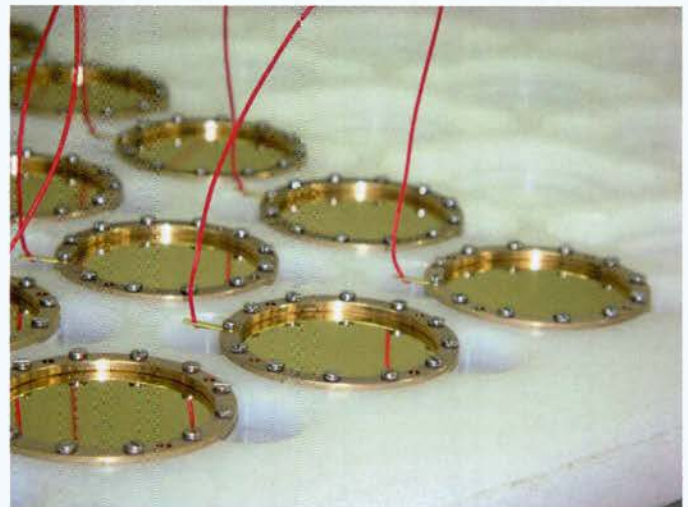
Then we do the lapping of the back plates and diaphragm rings. Lapping is a surface polishing process which makes the back plate and top rings flat to within a few microns (1/1000th of a millimeter). Once that process is complete the plates and rings are ultrasonically cleaned.

The next stage includes gold deposition onto thin film and bonding of the diaphragm material to the front ring. This requires a special tension process to achieve even tension and the correct diaphragm resonance. We then 'age' the complete diagrams so that the response and sensitivity of the capsule will remain constant over many years use.

So now we effectively have two conductive plates that we 'bolt' together in our clean rooms using very thin spacers between them so that we have an air gap of 40 micron between them. They are isolated electrically from each other because of the molded polysulphane and are evenly tensioned as one would a precision miniature engine clock. We then connect wires to each 'plate', and we have a condenser capsule ready for first stage of performance evaluation.

This capsule is basically a variable capacitor, hence the name capacitor or condenser microphone. The capacitor will increase or decrease in value depending on how close the plates move to each other. As the 'front plate' is very thin, when sound waves hit it the diaphragm will move in and out. There is a DC voltage applied to the capsule which is known as the bias. In our 1" mics, we use 70V DC.

Having a constant DC voltage applied across a variable capacitor will provide an AC voltage across the plates when the plates move. This very small change (10 nanometer @140dB) is analogous to the sound



waves and so you have an accurate signal representing the sound waves. You have converted sound waves to electrical energy which can then be amplified, recorded or ignored. All depends on how bad you sing

In our multi pattern mics such as the K2 or NT2A we use a dual diaphragm system which is effectively two mics back to back.

There are some very complex interactions between these two transducers and changes of a few 1/1000th of a millimeter can change a great sounding mic into a dud. That is why you need to use highly accurate CNC machines that can hold these very tight tolerances. Don't let photos of old men in dust coats drilling back plates on a pedestal drill fool you; it can't be done if you want it to work!

So there you have it, just like a step by step instruction guide on how to build a jet engine..... easy huh?

Test bench for a day's microphone batch (left). Valves are soak tested (right). Rode make almost everything in Sydney.



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Line Array Comparison 2

Four midsized line arrays lined up (again) with one point source system



Last issue we detailed a comparison between four Line Array systems, arranged by Hillsong church in Sydney. The comparison was run so that the church – Australia's largest – could better understand which small to midsize line array works best for some of their needs.

Hillsong runs events in major venues, and have become very familiar with large format line arrays that they hire. They have used Milo, V-Dosc and Vertec systems in venues seating up to 18,000 people.

At home, Hillsong operates a 3,500 seat arena, plus a 1400 seat venue at Baulkham Hills in Sydney. They own an adjacent skating rink, and have just turned soil to build a performing arts training complex next door. In the Sydney inner city suburb of Waterloo they have a 1500 seat church, which was scheduled for a major renovation when this audio design project commenced. That renovation is subject to a rethink at presstime.

Events have moved fast, as is often the way with Hillsong, and the church is now searching for land in the inner city, to possibly build a new church. All this is due to growth in members as more people are drawn to Hillsong.

Aside from Sydney, the church has outreach and satellite arrangements, and is a foundation member of the underlying affiliation of Pentecostal churches known as AOG (Assemblies of God). AOG aspire to build many churches, and have been described as the fastest growing church group in Australia.

The reason for all this is simple, but from a CX point of view, it is all about technical excellence and high production values. Hillsong members, and those attending many 'youth' churches simply expect great sound, and big screen vision. Many churches are amalgamating TV and video into their technical departments.

So on we go, this comparison was again conducted by audio consultant Scott Willsallen, and what follows are his words.....

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LINE ARRAY

Geo-T and sub ready to go (right)
dv-DOSC (below)



Last Issue:
d+b Audiotechnik Q1
EAW KF730
L-Acoustics Kudo
Nexo Geo T
This Issue:
JBL VRX
L-Acoustics dv-DOSC
EV XLD
Turbosound Aspect
Nexo Geo T

Between 0830 and 1030 the five systems were delivered, all accompanied by representatives.

Scott had assistance from Mathew Fordham and David Watson from Hillsong. In the absence of Michael Cuthbertson Scott employed Ian Cooper, freelance audio engineer, to assist in the logistics, technical evaluation and subjective listening.

THE SYSTEMS

Four systems were selected for evaluation along with the most successful participant from the first evaluation. The five systems were as follows:

1. JBL VRX932LA – an array of 4 elements with dual 18" subs
2. L-Acoustics dVDOSC – an array of 7 elements with two dV-Subs
3. EV XLD – Indicative evaluation only
4. Turbosound Aspect – the only non-linearray approach evaluated, a cluster of 3 TA-880 cabinets with a TQ-315 down-fill
5. Nexo Geo T – an array of 2 T44805 with 3 T2815 elements. This is the same array configuration that was used in the first evaluation.

All processing and amplification was provided by each supplier, tuning of each system for room correction was done with a Lake Mesa EQ processor.

The process of measurement and evaluation undertaken was exactly the same for this group of loudspeaker as the first group.

WHAT'S IN THESE SYSTEMS

JBL's VRX932LA loudspeakers are a two way passive/biamp switchable with a single 12" bass driver and an arrangement of 3 1" compression drivers each coupled to a 5" waveguide that together provides a 100° x 15° HF pattern.

dV-DOSC is a 2 way active box with 2 x 8" woofers and a 1.4" ext throat high frequency driver. It offers a 120° horizontal pattern.

The EV XLD is the smallest addition to the X-Line family. There are two versions available; one with a pair of bass drivers per element and the second has only a single bass driver per element. The dual bass driver version was evaluated. The evaluation of this product was only an indicative appraisal of the systems capabilities as the product had only just been released and the processor settings were described as Beta and not yet released. In short the evaluation date was a bit too early for a true evaluation of the product. The XLD array was accompanied by a single X-Sub.

The only point source style loudspeaker solution evaluated was the Turbosound Aspect system. Each Aspect cabinet has a pair of 10" low-mid drivers, a single 10" high-mid driver and two HF drivers on a waveguide device called a 'Pollyhorn' which looks a bit like a cheese grater. Each Aspect TA-880 loudspeaker has a 25° horizontal by 15° vertical dispersion. The TQ315 down-fill element has a 15" bass driver and a 3" HF device with a dispersion of 80° by 50° (HxV). The system was supplied with 4 dual 15" bass cabinets.

The Geo T 4E05 offers 5° vertical by 90° horizontal dispersion and is loaded with 4 x 8" Neodymium LF Drivers (two forward-facing LF/MF, and two rear-facing for cardioid LF) with one 3" voice coil, 1.4" Throat HF driver. The T 2805 has a greater dispersion of 15° vertical by 120° horizontal. The Geo T system was supplied with a single CD18 cardioid sub-bass loudspeaker.

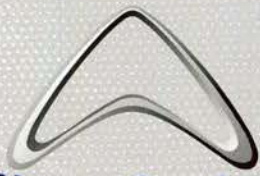
PHYSICAL

The Geo-T was once again one of the smallest options evaluated, however the VRX was smaller still. The VRX was a very small system with very clean rigging that cannot be seen from the front and would be the architect's choice in this evaluation.

The dVDOSC system also has a very discrete rigging system. The array was quite narrow in width but a bit longer than either the JBL or the Geo-T. Both the dVDOSC and the XLD281 are very similar in size and with the arrays built to suit the room they would occupy the same area with a similar appearance.

The Aspect system was at some disadvantage as the flybar for the product was not available so the guys from AudioTelex put a lot

Details of each Array	JBL VRX932	dVDOSC	XLD281	Geo-T	Aspect
Qty of Elements	4	7	3	5	3
Horizontal Coverage	100°	~20°	120°	90°-120°	25°
Vertical Coverage (approx)	60°	45°	45°	43°	15°
Array Weight	88 kg	223 kg	245 kg	191 kg	201 kg
Array Width	600 mm	700 mm	730 mm	750 mm	1800 mm
Array Length	1100 mm	1550 mm	1800 mm	1100 mm	1800 mm
Array Max SPL (approx)	136 dB @1m	140 dB @1m	140 dB @1m	145 dB @1m	142 dB @1m
Array Bandwidth (approx)	75Hz-20kHz	100Hz-18kHz	75Hz-13kHz	75Hz-19kHz	95Hz-20kHz
Bandwidth with Sub-bass	35Hz-20kHz	40Hz-15kHz	40Hz-18kHz	32Hz-19kHz	45Hz-20kHz



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LINE ARRAY

of effort into building their own with truss, chain and anything else they could get their hands on. The look of the cluster was somewhat agricultural but a fine effort given the circumstances.

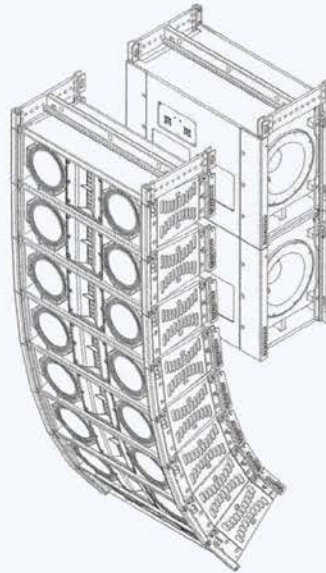
MEASURED AND SUBJECTIVE PERFORMANCE EVALUATION

As with the last evaluation; the challenge for the arrays is which of them provides the same or the most similar response at any location within the coverage area. This was not about which system sounded the best, its about consistency within the coverage area.

The Aspect system sounded superb when directly on axis but unfortunately the interaction between elements made for the least consistent performance within the coverage area. Its is fair to say that the high frequency interactions between loudspeakers may have been slightly reduced given the correct flying hardware, but the inconsistencies were broadband and not just up high.

The bass cabinets were excellent and complemented the TA-880h very well. The multiple bass cabinets coupled very effectively producing one of the most enveloping bass elements on the day. The line-source style systems have the advantage of only a single element in the horizontal plane. This makes horizontal consistency less of a challenge unlike point-source style system which have the added complication of integration between multiple elements in the horizontal plane.

The XLD281 system, whilst included in this evaluation, was premature in its processor settings, flying hardware and APAC Audio's experience with the product. The guys put the effort in and it was a very interesting system to evaluate. The processor settings are not correct yet, but they are getting there. The array configuration was not quite right for the dimensions of the space. The rear of the seating and the front row missed out on HF coverage. The HF consistency within the HF coverage area was good and let down by the



consistency of the MF energy.

JBL's VRX932 system was a pleasant surprise given the size of the array. It is quite a capable system in terms of frequency response and power output. The system suffered from a lack of consistency within the pass-band of the HF device. A combination of beaming on axis and interference between devices caused the lack of consistency. In the horizontal plane the HF device was a very consistent performer. It is doubtful that the array evaluated would have had the power for this project, however, with the addition of a directly adjacent array with only the bass drivers connected the system output would likely meet the requirements. There was lots of MF and LF spill beneath and behind the array.

The two best performers were Nexo Geo-T and L'Acoustics dVDOSC. They both sounded very different, but most importantly they provided the most consistent response both vertically and horizontally. The Nexo CD18 sub was the most remarkable sub I have ever evaluated, and the cardioid pattern control is something that must be witnessed to be believed.

PRICE LADDER

The systems evaluated range in cost from \$150k to \$250k.

CONCLUSION

The next step is to evaluate both the Geo-T and the dVDOSC systems with the Hillsong band to understand which system has the most appropriate voicing to suit the unique musical style of Hillsong but still deliver the speech content as coherently as possible.

So after all that we are yet to reach a final conclusion in this epic struggle. The final conclusion will come from the system tests with the Hillsong band which are due to take place within the next few months.

Top - EV XLD. Middle: JBL. Bottom: Aspect.
Below: equipment schedule for the hypothetical venue.

System Elements	JBL VRX932	dVDOSC	XLD281	Geo-T	Aspect
Left Array	4	7	7	2 x T4805	3
Left Down Fill	-	-	-	3 x T2815	1 x TQ315
Right Array	4	7	7	2 x T4805	3
Right Down Fill	-	-	-	3 x T2815	1 x TQ315
Centre Fill	2 x VRX932	1 x MTD112	Not selected	1 x PS15	1 x TQ315
PA Left Fill	2 x VRX932	1x 115XTHiQ	Not selected	1 x PS15	1 x TQ315
PA Right Fill	2 x VRX932	1x 115XTHiQ	Not selected	-	1 x TQ315
PA Right Side Fill	2 x VRX932	1x 115XTHiQ	Not selected	1 x PS15	1 x TQ315
Subs	4 x VT4881	4 x dV-Sub	Not selected	2 x CD18	4 x TA-880L
Amplifiers A	4 x iTech 6000	8x MA5002	Not selected	6 x Camco V6	1x fP6400
Amplifiers B	4 x iTech 4000	4x MA2402	Not selected	2x Techton38.4	6x fP3400
Processor A	Lake Contour	Lake Contour	Not selected	3 x NXi242	Lake Contour
Processor B	Lake MESA	Lake MESA	Not selected	1 x TD15	Lake Contour
Processor C	Lake MESA	Lake MESA	Not selected	Lake MESA	Lake MESA

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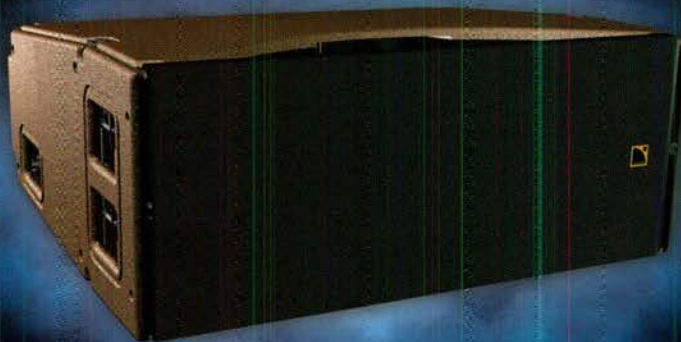
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Live

The Producers

Lyric Theatre, Sydney

This was a pretty exhausting show to watch, because Max Bialystock is in almost every scene - and he is hyperactive. Or Reg Livermore (who plays him) is hyper. Go decide.

Max is a conman. He convives to run a massive Broadway flop so it will close on opening night, and he can pocket the invested funds. He finds a stinker of a script, called Spingtime For Hitler, and sets about staging a real craptacular. It has it all, chorus lines of Nazis, goosestepping, tanks, paratroopers and best of all, he makes sure at least half the open night audience are Jewish.

Max and his henchman Leopold Bloom (Tom Burlinson) throw everything they have at the show, and are extremely confident it will feature a standing ovation of boeing. And be the opening and closing night, all in one. Then they can depart with the \$2 million they have convived from little old ladies who supposedly invest in shows in New York.

Reg Livermore is unbelievably energetic for a guy in his 60's. He really entertains, and this is a relatively straight comedy role for him. Reg made a bucket load of money in the early 1980s with his Balmain Bijou shows, or at least he made a lot of money for Eric Dare, the producer.

Now he is The Producer, in this Mel Brooks musical, which is a comedy about bent theatrical producers. It must have caused some laughs when the unbent heavies at SEL first saw it - James Erskine and Tony Cochrane; plus their partner (also unbent) John Frost.



Peter Kaczorowski and implemented in Australia by associate, Trudy Dalglish. There is just one place where the design falls over, and it is a small aspect in a massive scene. This is where the Springtime for Hitler reveal takes place. The set has a flight of stairs stage centre, leading up to a short circular opening

tunnel where various showgirls appear dressed in incredible costumes designed by William Long. These are themed accordingly, think of a showgirl adorned with sausages, and another with giant pretzels.

The climatic reveal is Hitler himself, in the gay and bashful form of Tony Sheldon. He appears in the circular opening, which is surrounded by gold piping with globes on a chaser. The back of the opening is a white screen. At the point of reveal, the only light that can reach the performer appears to be followspots, and the reveal looks shallow and stark - while everything else on stage is lit for depth and mood. Once the performer steps out of the reveal, they become properly lit, and it is an awkward transition.

I would imagine that the lighting team simply couldn't find a way to get light into the reveal, but perhaps some MR16s built into the set would help things. A minor quibble.

There's nothing to quibble about in soundland, with a most excellent design and execution by System Sound. John Scandrett and Nick Reich make the show seem easy, the orchestra of 20 and the cast are all where they need to be, when they need to be, in mix terms.

Levels, intelligibility, and sonic quality were all first rate.

As to the sound system itself, it was well blended and hard to discern, but appeared to feature dv-DOSC loudspeakers.

It's really satisfying to see a big show where everything works so well together. That's the magic of theatre, isn't it?

- Julius Grafton



This is no family show, it has plenty of sexual references and Max (or Reg) manages to let loose the F word in an opening scene. So the tour is more of a financial risk than a Lion King, or a Mama Mia - but costs a lot less to stage. But the show appears to have travelled well on its overseas success, and the Australian production is a fine one.

The staging is relatively straight forward, with sets and drapes flying in and out. The scenery was designed by Robin Wagner, and there is nothing particularly magic that is required.

Act One builds to the debut of the Neo Nazi Musical, with rehearsals and casting of unlikely stars. At interval there's no doubt that Act 2 will be hysterical, and sure enough it is.

Through the show the lighting is excellent, designed by

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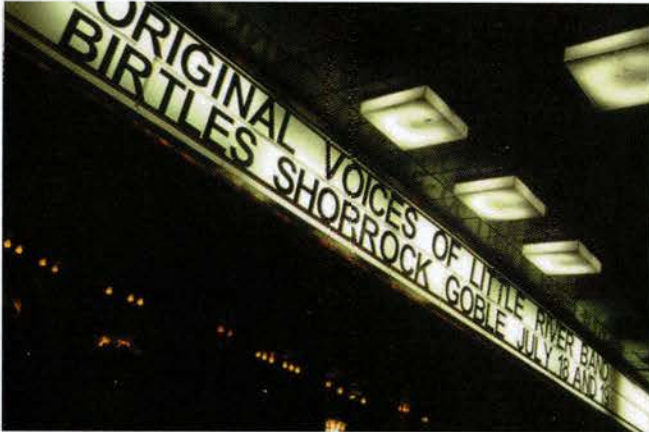
SENNHEISER



Live

Birtles Shorrock Goble

Star City Showroom, Sydney



Have you heard about the lonesome loser?

LRB are back in force, minus the name

Bands come and go, but Little River Band were always known for Most Excellent Audio and Vocal Harmonies. They were called the best singing band in the world by Glen Frey from the Eagles, who should also carry that title. LRB was built on the extraordinary vocal harmonies of the three founders, Bob Birtles, Glen Shorrock and Graeham Goble. They came back together three years ago, but can't use the name.

CX caught up with Birtles Shorrock Goble, or BSG, at the Star City Casino Showroom. It was a full house, and from first chord it was an exceptionally musical concert. The harmonies were working better than twenty five years ago, augmented by extra voices from the five young backing musicians.

BSG is a big effort by the founding members of the band, backed by Paul Rodger from Stream AV in Melbourne. They reformed in

2002. The band has released a DVD and live CD, called Full Circle, recorded in Melbourne. Now Full Circle has been released in the USA, and the next step is a tour there.

So why the delay?

The problem is The Little River Band still tours the USA, but it isn't the band we are talking about, rather it is a legal entity. In effect it is a cover band, although the owner and sole shareholder is guitarist Stephen Housden, who joined the band in 1980. He didn't write any of the band's many hit songs.

Housden had become one of five shareholders when the band was reorganized in 1987. Then in 1995 he and founding drummer Derek Pellicci fell out with Glen Shorrock, who left. Pellicci in turn departed in 1997, and Housden settled with Shorrock for a reported \$83,500. Stephen Housden now owned 100% of We Two Pty Ltd, which in turn owned the Little River Band trademark.

Are you confused yet? Little River Band are on tour in the USA as you read this, working venues like Horny Toad Amphitheatre and Cactus Pete's Casino Resort. Housden has recruited bass player Wayne Nelson, who also played with LRB in the 1980's and '90's, along with Melbourne based Glenn Reither. There are two recent American additions. It's a five piece band.

Meanwhile, the 8 member BSG possibly along with veteran sound engineer Ernie Rose are ready to tour in the USA. The scene is set for some real get down and get dirty action, especially if the events of last October are any indicator. This was when ARIA, the Australian Record Industry Association, announced they would induct the 'classic lineup' of LRB into their hall of fame. Housden threatened legal action, and withheld the rights to use the LRB name. He relented at the last minute, and the members (minus Housden and Nelson) played under the LRB name once only.

The saga continues, the BSG band is fresh and confident and looking very much like LRB at its classic best. Once they hit

(continued on next page)

Renee Geyer

York Theatre, Sydney

It was one of those winter nights you dread, not just cold and windy but strangely wet as well.

The 788 seat York Theatre in the Seymour Centre is a semi-circular amphitheatre. Renee's six piece band sat easily on the stage, and then she worked at getting some warmth and mood happening. She had about 500 people in the house.

The sound was good, but the lights were dim - probably due to the vintage of the house rig. There was even a 2000 watt Pattern 793 followspot in use, which is cutshone by a Dolphin torch. Maybe today's audiences are used to mega lumens?

It was a musical show, devoid of any devices and it would have been good to see it somewhere else.

- Selira Carter



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BSG

(continued from previous page)

American venues there should be some interesting reports.

For some final words, we draw on a great story by Chuck Millar. Read it at www.chuckthewriter.com/lrb.html. Chuck collected the following 3 quotes.

"We're trying to look at this as a positive point of view," said Birtles. "Little River Band, that's history, that's something we've been a part of, but we are 29 years later and the three of us are getting back together, and it's not for a shortage of material that we can put out. We're viewing BSG under a new name, it will give us a brand new start."

"We have great respect for BSG as songwriters and musicians," said Housden. "But it's very difficult to respect the attitude of Glenn Shorrock, their mouthpiece. He is constantly in the media, bemoaning the fact that BSG can't use the name Little River Band. Why can't he just face the consequences of his actions from February 1997? He signed an agreement that for his receiving \$83,500 (Australian), We Two Pty. Ltd. is the sole and absolute owner of the name Little River Band. I should also note that Derek sold his share in 1999, and we've remained very close friends."

"It's our music," said Shorrock, "we're the ones that wrote it and sang it, and Stephen Housden's the one that's performing it. It keeps the music alive, but one should not deny the originators the right to do that as well. Unfortunately legally we have to desist from saying we're the Little River Band. In the few concerts that we've done with our new band, BSG, singing the old classics, I've said, 'We're not the Little River Band ... but we bloody well sound like it.'"

Star City Showroom due for new sound system

It sounded great in 1997, but now it's time for a new system. Since then, the advent of the line array has changed how we perceive sound. It hasn't meant that traditional point source systems like the one hung in the Showroom are all obsolete, but it has raised our expectations.

So what is wrong with the Showroom system?

It hasn't got enough headroom, for one. There is inadequate bottom end. And it just doesn't sound as good as a well installed line array.

Originally the Show Rooms was specified for a French cabaret concept which was cancelled late. So there are extra lifts and features which are specific to that show. The sound system is also kind of cabaret specific, and has a non mainstream analogue console – an Amek Recall.

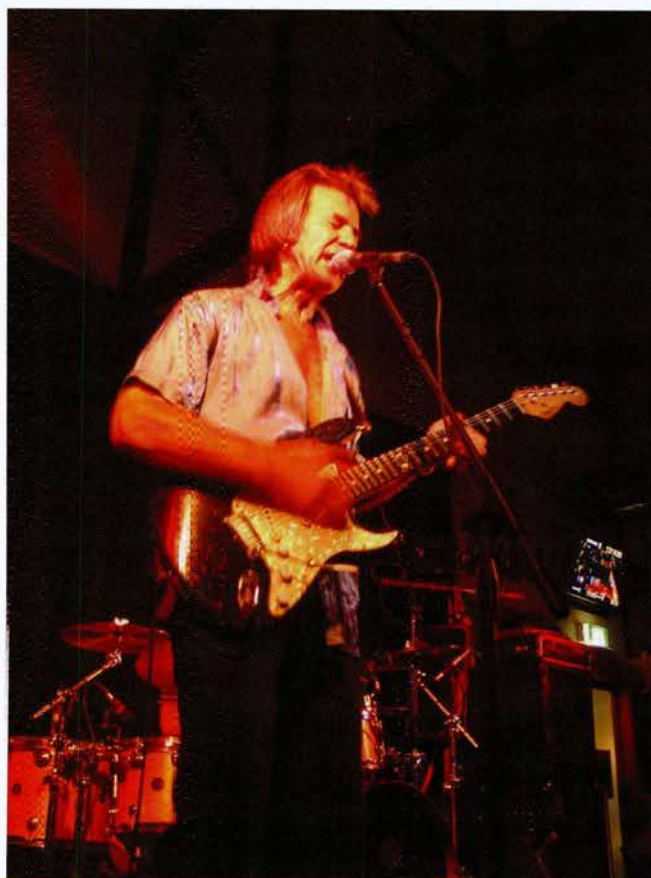
When Star City installs a new system, they will be able to attract more musical acts. The place needs a line array with extra side cabinets; plus a digital console like a D1 or a PM5D.

\$750,000 should cover it, and then the venue can expect around 8 years of use before the next upgrade.

- Julius Grafton

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Email words and high resolution pictures to: mail@juliusmedia.com and we will pay you if we use it! No pix? Email us anyway.



Kevin Borich

Etamogah Pub, Kellyville

I wonder how many of you know who Kevin Borich is? He was in a band called La De Das in the 1970's, and has worked his own trio ever since. KB (as he is known) is a truly excellent rock and blues guitarist, for many he is the best in Australia. He looks young.

KB lives in the hills behind the Sunshine Coast on 80 acres with his wife and 3 kids. He also has 3 adult children, his son Lucius Borich played drums the night we caught the act.

A Kevin Borich concert starts with steel blues guitar, and ends with screaming rock Stratocaster. He has written a solid body of work, and had some hits in the 70's and 80's. He featured on the first Long Way To The Top tour, and was scheduled for the regional tour which followed. As he tells it, he was on the way to rehearsals when he was fired by phone as he broke through Ballina. "I looked up at the big prawn. It looked at me. I thought, 'I know how you feel'" The sacking left him 3 months out of work. Along with several others who were similarly fired, he won a case in the NSW Industrial Court against the promoters.

KB's reputation spans the planet, last October Joe Walsh took leave from the Eagles tour and flew down to play with KB at a party on Luke Everingham's farm. That's serious cred!

Uncle and I went to the Etamogah Pub, which has a landmark

fake facade made to look like the cartoon. Inside it is a massive beer barn, full of smoking pissed gronks and bogans. Just like us.

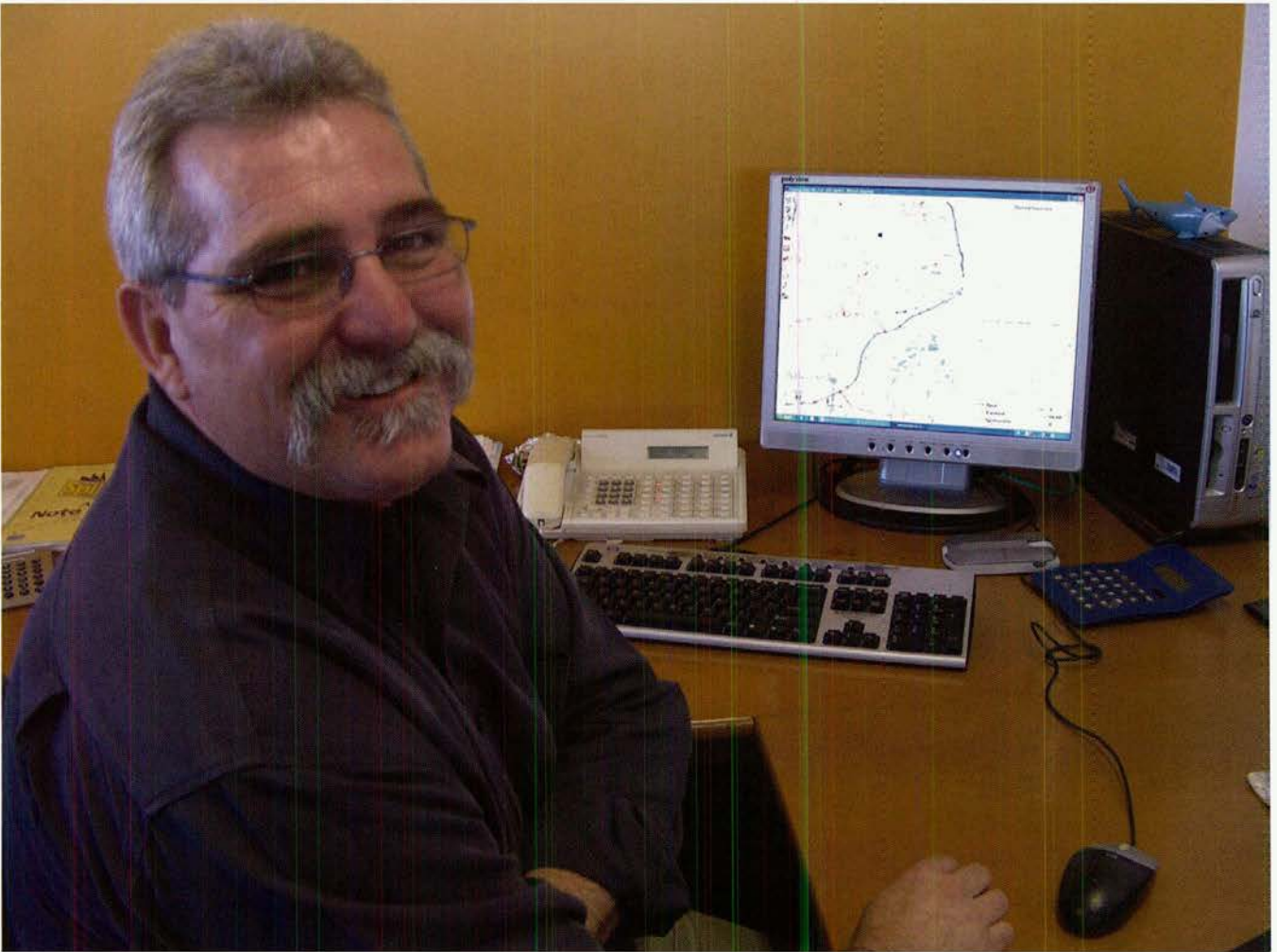
It was a trip down memory lane, and the only thing missing was the fight in the carpark afterwards.

The Borich pair had long time collaborator Harry Brus on bass, and the trio rocked off on a tight journey that spanned 2 hours. The crowd went off.

The sound was just OK, but the lighting was truly horrible, some old guy had set up 20 cans but decided to flash 4 of them on and off. It was dingy and dark.

- Julius Grafton





Any Time Sunday? ATS deliver

ATS stands for Australian Touring Services (Logistics), not AnyTime Sunday. But this is a transport company who work around the clock, including those back of the clock hours that most people use for fun and sleep.

Now this Sydney based firm have added new truck tracker software, as an extra enhancement for worried production managers who will be able to log onto the web, and see where their trucks are. The system uses a Mobile Tracking and Data unit installed in each prime mover, which reports a range of truck operations in almost real time.

ATS partner Phil Duncan demonstrated the system for CX, and it is clearly a terrific innovation. It uses mobile phone technology, so when the truck leaves the coverage area it obviously can't be tracked. But that is foreseeable, and when it reenters a cell somewhere the telemetry is uploaded to cover the ground missed. I saw the progression of the trip over the Nullabor, on a map, with the time intervals. You can drill in and find out how fast the truck was going, and get a whole bunch of engine and drivetrain info too, even things like 'hard cornering'.

(continued on page 40)

Entertainment transport logistics firm introduce new GPS tracking and reporting system.



ATS operate 48 foot equipment like this par

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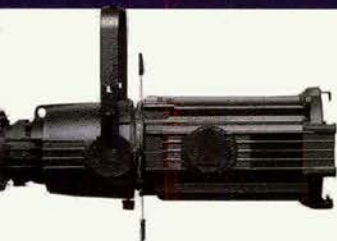
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Source Four Zoom, another lighting innovation from ETC.





Terry Turner, Chris Nicholson and Phil Duncan

ATS (continued from page 37)

So how do the drivers feel about it?

"I think it adds safety," says Michelle Martin (pictured below). "I like to talk to the folks at home every day in any case." Michelle has been driving big rigs for 13 years, her dad did the same thing before her. "I love to drive," she added.

ATS reason that good drivers don't mind the system, and that drivers have had to become very professional in recent years. New legislation requires drivers to do a fatigue management course, which in turn rewards them with slightly longer shift times. Without the extra hours allowed by doing the course, it becomes impossible to drive from Sydney to Brisbane in one shift. There's a lot of enforcement in the pipeline to make the roads safer, and ATS are not unhappy about it.

While ATS are most visible via their trucks, they also do a lot of the forwarding parts of a show or film shoot. This involves import and export, and brokerage for FAK and LCL. I didn't know what there were either; FAK is Freight All Kind, and LCL is Less than Container Load. They recently added a Real Freight Solutions arm for film, and can move sets or even rush the rushes to LA every day.

People in entertainment know there is another carrier who shift shows, and the guys at ATS came from that company when it collapsed in the Ansett disaster. For those who have been on long term assignment for five years, (or on another planet), Ansett was Australia's second largest airline. It went broke without warning – after Air New Zealand took control and made some huge

mistakes. The only thing that was a larger story that year was September 11, and it was a crazy coincidence that Ansett was ashed within days of that cataclysmic event.

Showgroup got going again within days of the collapse, and was consold to Avis, the American car rental firm. Showgroup founder Graham Fear remained (and remains) in charge, but the guys in the entertainment trucking division decided it was time to strike out.

Today there is ATS and there is Show Group, and they are locked in a titanic battle to win the market. They appear to be roughly

matched at the moment, with between 10 and 14 trucks each.

ATS is owned three guys - Phil Duncan, Terry Turner, and Chris Nicholson. They also employ veteran tour manager Jon Pope.

ATS have friends with trucks who help out, most significantly Bill Gibson, who owns Gibson Freight. He made his name doing motor sport logistics, and seems to move most cars and freight associated with most major car races in the region.

Gibson Freight is a big business, and it provides the backbone for ATS. It appears to be a really good match.

The other strategic partner for ATS is REHE and Sons Transport. They provide additional linehaul as required.

• www.atslogistics.com



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Stage Monitors for The X Factor

Alar Mourat tells how he executed his latest gig in TV world. So you thought mixing monitors was easy, huh?

Mixing sound for any live music television event is daunting. For ten weeks I worked as a monitor engineer on a show called X-factor - an Australian Idol type event. From the outset the mission was to provide the best possible stage sound for the performer - after all they are being judged on their live performance. Stage sound can dominate the audience mix so a line was drawn early as to how loud the sound could get.

I did my part to keep the stage sound near without feedback - the bogey man, the curse of any monitor or front of house engineer. My mission (and I chose to accept it) was to complete the full run without any feedback. The key to

doing monitor sound for events like this is to be on top of things. Once you plant the seeds of doubt in anyone's mind things start to slowly unravel. From the outset I tried to pre-set the mixes as best that I could given enough time and information. I had a Yamaha DM 2000 digital console with recallable scenes, moving faders, onboard dynamic processors and equalisation at my finger tips. This made life easy knowing the task at hand never would have been possible using an analog console.

At the start there were nine acts ranging from solo singers to five hip-hop acts. Each act was assigned a recall number (scene) which they kept throughout the whole show. The show was heavily rehearsed. The day before the live show each act would 'block' their performance (step out their act to show the event producer where they planned to enter the stage and move throughout the song) at

the same time rehearse the song up to three times.

Before each act hit the stage I would get an 'edge check' - a short preview of their track to check level into my console; to listen in my 'pfl' monitor confirming that the track was ready and how it sounded in mono. It was not strictly a live band format - music tracks recorded in a studio were used supplemented with live musicians, an ensemble of instruments and choirs. In a way I am glad we there wasn't a typical 'house band'. It would have made things much more complicated and besides, the set was so big I am not sure where they would have squeezed them.

The playback tracks were delivered as a ProTools session. Studio recordings do not always translate well into a live arena or to a mono stage mix. Performers, or the producers, would sometimes request part of the mix be altered. Mix stems, individual mix components split out to multiple tracks, allowed the broadcast mix engineer easier access to and control over last-minute changes to a song. Once the ProTools session had been rehearsed and the performer was happy, the final mix was converted to a digital - a digital hard drive playback unit. Two of the same were employed, one acting as a slave, in case the primary unit failed. Oddly enough, some performers had not even heard the final mix of the song they were meant to be singing.

The performers used radio microphones - 14 x Shure 58A Beta and U4D receivers.

All performers were assigned a radio, which was numbered, and they would be given the same one each time, when they came past 'RF World' before going to stage. This all made life easy when checking signal, identifying each

I knew from experience however that the difference between rehearsal and performance vocal levels could be enough to create problems on stage so I hesitated giving too much level knowing on the night they would come out firing, adrenalin pumping, with loud monitors.

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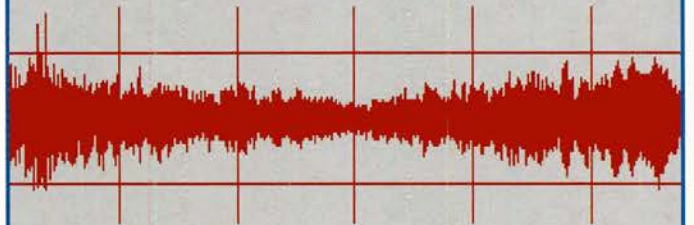
PMD660

The new PMD660 from Marantz is a scaled down version in size and functionality of the popular PMD670, portable digital recorder. Features include non-stop recording with 4 hours battery life and EDL marking system for creating new files-on-the fly during recording for easy file selection during playback.

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microphone before they went to stage for rehearsals and the show. As is customary, the radio microphones have new batteries for the full dress rehearsal and the show, with the old batteries recycled for rehearsals. The radios were powered up prior to use and checked in the broadcast van and at monitors for continuity and quality. RF reception was always strong with a distribution amplifier, and two directional paddle antennae placed close to the stage. The only time drop-outs occurred someone had placed their hand at the bottom of the microphone over the transmitters' aerial.

I knew what the basic requirement would be for each act – i.e. how many radio microphones and other instruments would be on stage. The same level was coming from the music truck each time so I knew that if I pushed the fader up to the same preset level this would be a good starting point for the beginning of each new performer rehearsal. I stored mix scenes during and directly after rehearsal for later recall. On show day prior to the live show, the acts would block another three more times for the TV Director, followed by a full dress rehearsal.

As each act arrived on stage I created stage mixes on the fly. I monitored the stage sends, listening with two of the same monitors used on stage. And I listened reasonably loud so I was hearing what they were hearing. Occasionally I would hear things in the music tracks, like guitars feeding back that would sound like they were coming off stage. The audio director would be onto me straight away and I would have to tell him it wasn't me, 'it is in the recording'.

If they started in the down stage centre position I would send vocals to that mix and as they moved around the stage I would follow them with vocal mixes to stage. I blended the music tracks and vocals to all sends to start with and as the rehearsal progressed I would adjust levels, and mute sends not required. I like to keep the sound traveling in one direction to provide clarity and a point source.

With the mid stage monitors placed on opposing sides in the centre of the 'X', there was the possibility that a performer standing down stage would have his back to the monitors. If they were not required, I would mute the send to keep the stage sound cohesive and feedback free.

If a performer requested more vocal level I would often suggest I turned something down for them rather than turn vocals up. Granted they had to compete with the FOH sound and the audience, I knew from experience however that the difference between rehearsal and performance vocal levels could be enough to create problems on stage so I hesitated giving too much level knowing on the night they would come out firing, adrenalin pumping, with loud monitors.

HEADROOM. THE ENGINEER'S FRIEND!

I had a lot of headroom available before things would start to feedback and I would rather the performer take this up than me provide it. Somewhere in between I found a happy medium. After all there was the audio director in the mix truck, isolated in the carpark at the rear of the arena monitoring the broadcast mix and the last thing he wants to hear is the stage sound.

I adopted a certain approach for the radio microphone level to stage. All the radio transmitters were set with the same output going to the console - all radios had the same input gain and could be interchanged if necessary. One radio microphone was designated a 'hot spare' which was carried by an audio assistant on the floor close to the action so if something went wrong with a radio microphone this was ready to go. The level of gain before feedback using the EAW s200 stage monitors was quite high.

(continued over the page)

Stage Monitors for TV

(Continued from previous page)

With the radio microphones they required little EQ. All sends were tuned for the radio microphones. As each scene is recalled so are the EQ, compression, channel input names and mix send graphic EQ settings in relation to the stored scene.

As with most digital consoles, each action to affect multiple mixes has to be done serially – in other words one after the other.

In order to make changes on three different mix sends I had to select one mix - make a change, then select the next mix send - make a change, and so on. On an analog console, changes can be made in parallel using both hands affecting multiple mixes. Making serial changes tends to be slower. The only way to make global changes across all sends was to go

to the Master layer and adjust an input channel which would adjust the output to all mix sends.

However in order to send input channels to any mix output, each channels' output had to be set - much like setting an analog console rotary knob mix send to 'unity' gain and using the fader to supply level to the send, post fade. The auxilliary sends on the DM2000 use faders instead of rotary knobs for everything. The onboard 31 band graphic EQ's could be inserted over any input or output. With only six available I chose to use them over the six monitor sends. I also had six sets of RF in-ear monitors on two sends at my disposal, however I avoided using them for vocalists.

With in ear monitors, the performer can hear themselves well enough that they sing off the microphone usually with less vocal intensity. This is great for them but not for the broadcast mix engineer who is unable to get a decent vocal level. The only time I used the in-ears was with a Flamenco guitar player, without a pickup, using a condenser microphone.

The monitors were placed on the ground, off the set, and at least three metres from head height - so they needed a little extra power to throw the distance. Although there were 10 monitors placed around the stage, the performers could walk into the effective dispersion of the monitors so it was imperative that they stood in a 'sweet spot'.

With no side fill, it was possible that the stage set could shadow the monitors as only the upstage pair was on the set.

The downstage set riser was over 1 metre high, with a wide gridded ledge half way up. Initially the monitors were to be placed on the grilles but for aesthetic reasons they were placed on the floor. Cameras moving around the floor placed limitations on where

we could place them, hence the performers could stand centre stage and not see the monitors. As it was they had to fire through the grilles. With four distinct sends on the 'X', two pair downstage, two pair mid-stage and one pair upstage, depending on where they were performing I would use only the sends they were in front of.

Acoustically the stage was a mess. A huge 'X' flown upstage would reflect sound downstage and vice-versa. If a performer started in the upstage position and moved to the downstage centre position I would mute the upstage mix to avoid reflection.

I would always try to set myself up for the next act when I had time. An electronic piano was frequently used and had the same output level each time so I knew when I pushed the fader up to a predetermined level this would be a sufficient start. I would preset the piano level in a scene coming up. I knew a good starting point so it was only a matter of recalling the scene selecting the mix send and then pushing up the fader, followed by storing to the respective scene. The piano level was preset each time using the same DI's. The only variants were the sound the performer selected - the output level did differ according to the sound, how they played and how hard they played.

As often as I could during rehearsals I would save the current scene and in between takes, to keep the stage sound to a minimum while the TV people worked out blocking, I would recall to a 'default scene' that had all inputs muted. On the night, and immediately after each act performed, I shut down the stage sound to reduce the likelihood of feedback. I relied on the default scene also for a 'judges' mix sent only to centre stage monitors so their comments could be heard on stage. The judges mix signal came from the broadcast van and was open only when needed.

Two sound trucks were employed for the show - one each for music, using two DM2000's and one for broadcast which used a Yamaha PM4000 (large format analogue console).

(continued over the page)



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Dragway Sound

Quality Sound and Dragway aren't phrases you often see used in the same sentence, but Western Sydney International Dragway, Australia's newest international-grade drag racing facility have made an impressive exception to this rule thanks to JBL and Crown.

VCS Group – electrical, lighting, timing and audio consultants for the project contacted Australian JB – Pro distributor JANDS to talk loudspeakers. Audio designer Jeff Shoesmith recommended a distributed, self-powered mobile cart concept suggesting it would offer far superior intelligibility, bandwidth and SPL than the typical 100V line pole based systems found at similar venues. VOS, along with Sydney based installation contractor, The PA People then brought the concept to life using fourteen JBL AM6340 loudspeakers from the Application Engineer (AE) range.

"The AM6340 is an incredibly versatile loudspeaker," says Chris Dodds, PA People Managing Director. "Its three-way design and clever quad-10" LF section make it a good card date for long throw, high output: speech and music applications such as this."

The speakers are mounted horizontally with MF/HF section rotated so as not to compromise spectator sightlines. Each cart is bi-amplified

with a single (on-board) Crown CE2000 amplifier fitted with SST series plug-in crossover card.

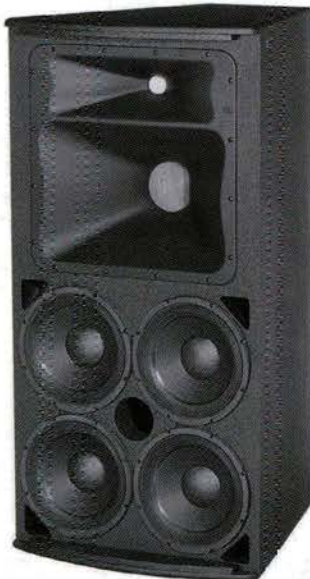
"We reconfigured the wiring of the 10" drivers as a 2 Ohm load, this allowed us to make the most of the near 2000 Watts of power available from the CE2000" said Chris.

"One of the big benefits of the system is that it can be towed into place behind a tractor or utility vehicle by our track maintenance staff" said WSID CEO Jim Read (a world-renowned top fuel drag racer himself).

"We have power and audio patch points along the length of the track, so all our staff need to do is tow a 'train' of carts along the service road and drop one off at each location. The whole thing can be up and running in under 20 minutes"

Front-end equipment includes Clear-Com AB100 announcer boxes, Shure UHF radio microphone and PSM In-Ear Monitor systems and a Crown IQ USM810 DSP matrix processor.

The Shure PSM is worn by WSID's roving trackside announcer, allowing him to comfortably and safely hear the commentary mix over the roar of dragster engines whilst moving freely around the start line area. Presets stored in the Crown DSP also allow private full-duplex communication with control tower staff during race breaks.



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Digidesign Venue

live sound environment



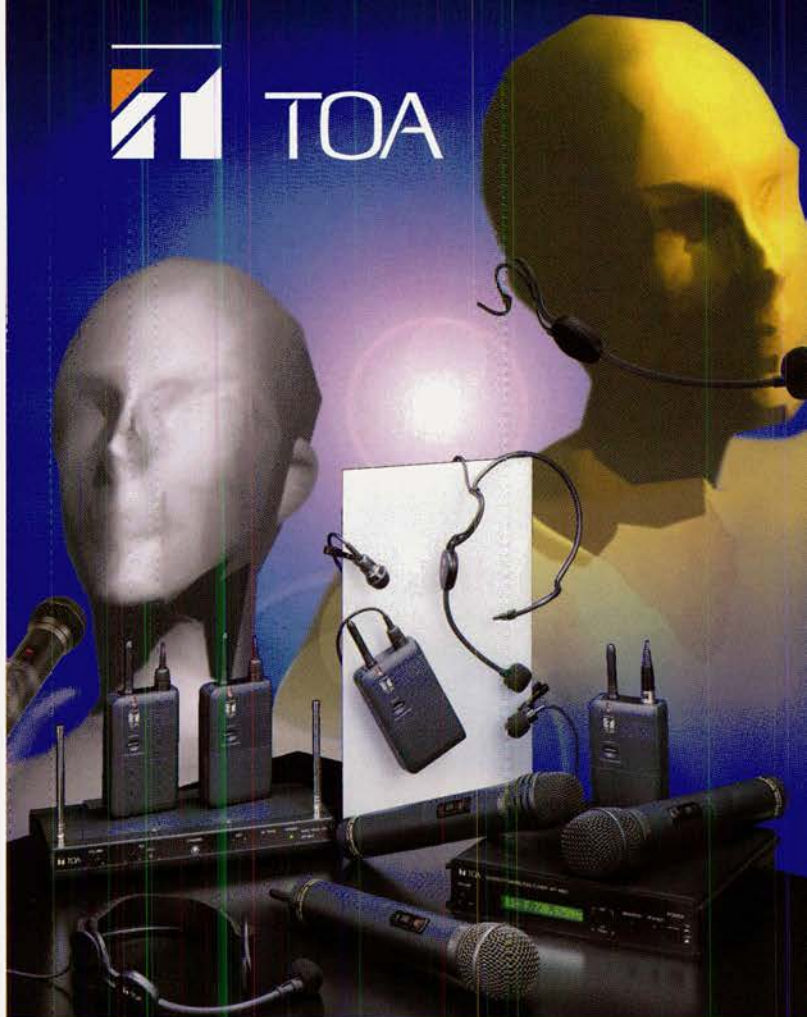
12 months ago CX were briefed on a new development from digidesign. It was big news - the firm were entering the live console market. And they were very confident, they wanted our readers to know that digidesign would have a console that competed head on with Yamaha and DiGiCo.

They shipped us the first production system from the Venue range, called D-SHOW, and left it with us, unsupervised.

We issued an open invitation for sound professionals to come and tell us what they thought. Read on to discover....



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Digidesign Venue : D Show System

Out of the box, onto the bench, and make audio. Fast.

That's the test procedure at Juliusmedia. Our test rig includes the Mackie SDR 24 hard disk recorder which is loaded with a live 24 track project. We plugged it all in, hit GO on the Mackie, and raced to see if we could make sound. We refuse to refer to the owner's manual in every case.

Andy Mackenzie was system engineer for a day, and he got the vocals blurring out of the monitors in a minute or so.

The D-SHOW is a system which is the first release from the VENUE product line. This is what Digidesign, the masters of ProTools, have called their surprise entry into live sound. The firm had spent years and plenty of funds developing the ICON range of studio work surfaces. It wasn't a massive stretch to work up a live console, or so they say.

D-SHOW sits at around \$100,000 in Australia, for the system we have reviewed. That puts it up against a Yamaha PM5C-RH, which is a somewhat different system, but a system which would work the same kind of show as the D-SHOW.

D-SHOW is also up against the Yamaha DM 2000, which sells at around 35 grand.

FORM AND FUNCTION

D-SHOW comes as a console and a sidecar; plus a FOH rack with processing inside it, and a stage rack with all the inputs and outputs. You join the stage rack to the FOH rack using a standard video cable. 80 metres is no problem, you may go as far as 150 metres using Belden's best.

Straight away, kudos for lightweight, inexpensive, and easy multicore connectivity. A big tick!

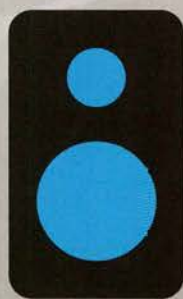
The console, the sidecar, the FOH rack, and the stage rack, all have dual redundant power supplies. You need 8 x IEC cables to connect it all up. If any power supply runs up the distress flag, the D-SHOW automatically switches in the other one. Another tick!

Our friend the sidecar connects to the main console (workspace, but we call it a console) via a digital 3 pin XLR cable.

(please turn the page)



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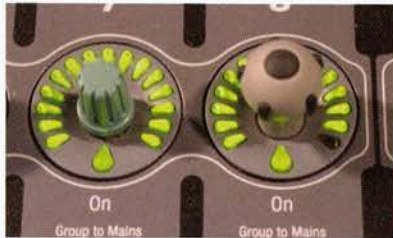
We like that.

The console connects to the FOH rack using a military spec Cannon multi pin connector. Digi have identified a weak link (a vital multipin connector) and specified the John Wayne of connectors. Big tick!

Now we turn our overall attention to the D-SHOW, and what we see is a console and sidecar that soak up 2 metres of bench space. This is not good. Furthermore, the console has a pretty imposing metrebridge that is not serving any real purpose. Our first impression is going to remain at the forefront as we show to console to various visiting sound types.

The second impression that all our visitors shared was the knob issue. "Is it a joystick" more than one asked. "It'll get broken off in no time", was another comment. "The halo is hidden" was also common.

The picture at right shows the D-SHOW knob at right, hiding the top of the halo, while a standard knob keeps



the operators sightline open. The picture above shows the scale of the mushroom (or whatever Digi call it) against a standard Yamaha knob. While at it, the encoder feel is wrong, it needs more weight.

Notice how straight away we have left the important issues, and



focused on stuff that must make the design guys at Digi gnash teeth and reach for a gun? Let's get down to it.....

FEATURE SET

There are 96 possible inputs, and 27 possible outputs. The stagebox comes loaded with at least 48 inputs and 16 outputs, and in that configuration there is space for more - you could option up to 72 in, and 24 out, before needing another physical stage rack.

The FOH rack is a bland box with some connectivity on the back. It comes with 8 analogue in and 8 out, plus AES/EBU and a bunch of monitor connections. There's option slots, more on that soon.

On the desk, there is no screen. An attribute of D-SHOW is you can use the thing without reference to a screen. Digi give you a bracket so you can sling a screen over in front of the metrebridge wasteland. Use the screen to do any setup function, or to figure out which Plug In you are using.

The console has 8 input faders, and 8 output faders plus main. The sidecar has 16 faders. You could do a show without the sidecar, but you would need to use 4 layers to find 32 inputs. Which would be hard. The sidecar is virtually mandatory. You can add extra cars.

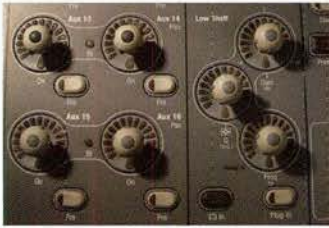
Digi decided to emulate an analogue console, so the useability ranks high. Any analogue driver can jump onto D-SHOW. But D-SHOW also emulates the size of a 48 channel analogue console, and so negates a major reason for digital, which is to cut the real estate. Look at the knob picture at left; there is a clear 5mm space between the halos. There is heaps more surface space wasted at the master module.

Speaking of space, there is a massive, lonely trackball that looks the size of Jupiter down the front.

Seriously, without even changing too much you could slice 250mm off the width of the sidecar and main console. And even then it would still be too big.



Road Tested



IN USE

You can grab a channel fader on the main layer (channels 1 - 24) or layer 2 (25 - 48); layer 3 (49 - 72) or layer 4 (73 - 96). You can set the fader so it is touch sensitive, in which case the channel last touched is the selected channel, at the middle master section.

This is a well endowed area, pictured below left.

It lets you do almost anything you like with your selected channel, including send auxiliary signal to one of 16 aux sends.

This is another area where Digi are sailing solo in the pond of live console design. There are 27 buses in the D-SHOW, but only 16 of them can be sent from a selected channel.

Why would you need more, they would ask? Stage monitors is the answer, and to their credit Digi have a partial answer, called Personal Q, or PQ for short.

This is an Aviom styled submix system where up to 8 performers can have their own little mixer to blend 12 channels of stuff. It's a valid way of stretching the bus capability of the console. However many users enjoy the flexibility offered by Yamaha and DiGiCo, where you can choose what you want the internal buses to do.

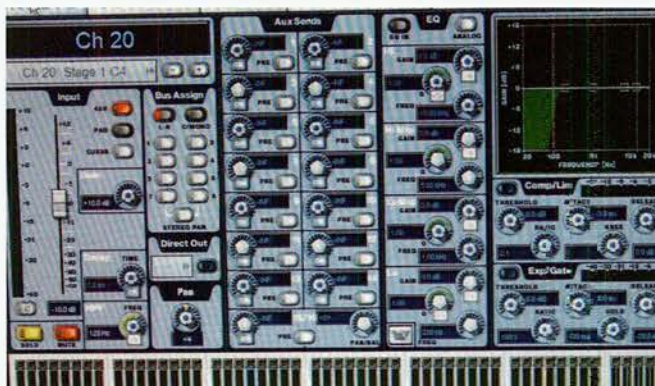
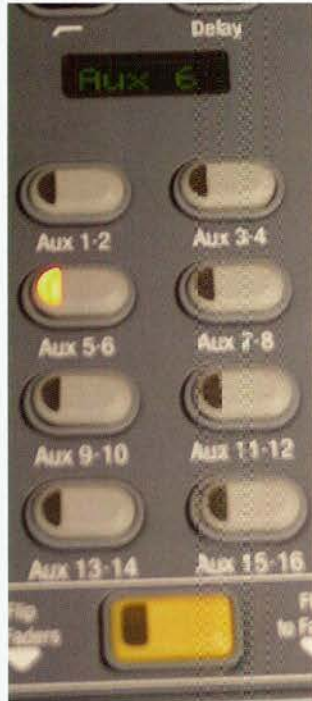
D-SHOW tells you what the bus deal will be. It is silk-screened on the front of the console, with no possibility of a software change. Bus 1 - 16 is auxiliary, and bus 17 - 24 is a group bus. Then there is left/centre/right or left/right/mono outputs.

There are Plug Ins galore coming for D-SHOW, and this promises to be a scary development where people get sidetracked into trying to apply too many Pro Tools solutions to a live mix.

We enjoyed some of the Plug Ins, and managed to stack a couple on to one pesky vocal track. Most straight forward plug in functions are controlled from the master section, but some need a point and click using Jupiter and the two massive buttons.

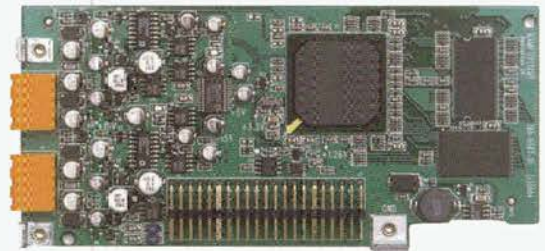
While everything on D-SHOW is massive and easy to handle, the screen detail for much of the software and some of the Plug Ins is pathetically hard to read. See picture below of the 'Input' screen.

I'm sure Digi will say 'get a bigger monitor', but they should look



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Road Tested



around and see how much easier it is to read screens offered by others. And my eyesight is 20/20!

Another really interesting feature is when you stereo couple 2 channels. You do this if you have a stereo keyboard or effect, and you want one, not two, channel faders. Plus you want to apply one set of EQ and dynamics, and not do it all twice.

On most analogue consoles there are usually some stereo input channels for this purpose.

D-SHOW allows you to do a stereo coupling of two channels onto one fader via the setup screen. However it then needs to reset the system, which stops audio for a massive 25 seconds while it does this. Part of the reason appears to be that the entire fader patch then moves down one, to occupy the now vacated fader which has been consolidated into a stereo pair. The system needs to reload all the settings and the plug ins for everything downstream of the coupled pair.

Example if my main vocal is located at fader 24, and I decide to stereo couple channels 22 and 23, once the system resets my stereo pair are on fader 22, and my main vocal has departed fader 24 and gone to fader 23. I don't want this!

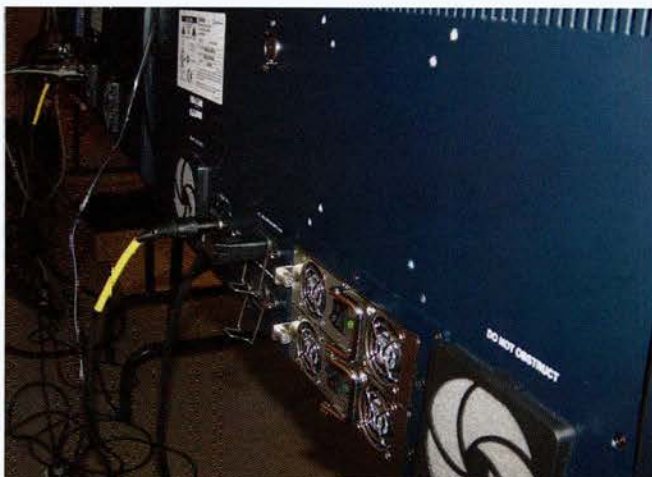
Other operating features worth discussion:

There is a six character label for each channel, which glows red when the channel is selected. We like this!

To figure out the patching source, a button on each bank of faders lets you see, on the label, which channel the fader is patched to, on which stage box.

2 stage boxes can be connected, via an extra snake and an extra card. Extra dsp would be required as an optional card, to enable the engine room to do the maximum of 96 in and 24 out.

At top left is something that the theatre dudes will hate, and that is the location of the Next button for scene recall. It is not in a place where the hand can rest, and anyone firing a bunch of scenes in a hurry will detest this. It is also possible to hit the selected channel



mute, which is where your palm would logically rest. Bad idea!

THE ENGINE ROOM

Digi have done a mighty job on the processing. If the FOH rack is reset, the desk keeps going! The audio that was passing at the moment of the failure continues, and you can still operate faders and mutes on the desk.

You can't do EQ, but this is still the most failure friendly system we have seen. With the exception noted above, which is when you decide you need to make a stereo fader -- and the system resets!

The bootup is a l-o-n-g one, we timed it at 90 seconds - which is because the underlying operating system is based on Windows XP. It was a little hard to figure out the exact curation of the bootup, because the system kept loading Plug In's, and asking us if we wanted to buy them. It's worth repeating that there is a Windows box inside this system, some people are thinking Digidesign, and thinking the Venue system needs an outboard Apple Mac and a slew of Pro Tools cards. Eeek! Thankfully not required!

If you do see a D-SHOW with a Powerbook or a G5 in close proximity, that's because you can plug ProTools directly into the FOH rack via Firewire or even a TDM optical card. The direct connectivity of Pro Tools is a major bonus. You are not limited to



Road Tested

Apple Pro Tools either, the VENUE system will talk to Windows NT Pro Tools much the same way.

CONCLUSIONS

I think what will happen is that Digi will sell the first run of D-SHOW hardware, and change the console architecture. They will also more than certainly release more variants under the VENUE flag. There are plenty of Pro Tools users who have not used digital consoles, and who will accept D-SHOW as it is.

It is a good underlying system, hamstrung by flawed console design. Many people will not be worried about some or all of the points we raise, and indeed you can create and control quality audio on D-SHOW. Whether you can justify the money when the console will almost certainly be obsolete quite soon is another matter.

- By Julius Grafton.

- Thanks to Scott Willsallen, Tony Moffat and Andy Mackenzie for input.



D-SHOW also boasts up to 16 3rd octave graphic equalisers, and a seemingly endless number of dsp effects plug ins. You may option on another Stage Rack, where you have more inputs or maybe an alternate stage, like at a festival. The Stage Rack (middle, below) has very noisy fans. Digidesign may need to review that.

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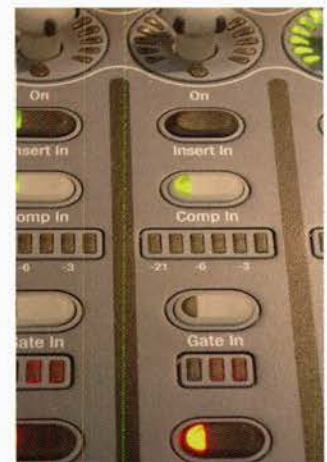
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e-Lab Foundation 2.0

by Craig Anderton

Build your hip-hop house on a strong . . . foundation

Type: Virtual instrument/sample library plug-in
Price: A\$598 (est)
Contact: e-Lab, www.e-lab.se; dist. by Big Fish Audio, www.bigfishaudio.com
Platforms: Windows XP, Mac OS X
Formats: VST, RTAS (XP, OS X); AU (OS X only); no standalone mode
Number of virtual outs: 8 stereo
Demo available: Yes
Copy protection: Serial number included in package. Registration required for commercial use.
Manual: 23 pages, softcover
Sound library size: 3.7GB
Compatible formats: REX2, SLI (Ignition series libraries)

Foundation is a “construction kit” loop library, cleverly disguised as an eight-track REX file playback instrument plug-in (VST/RTAS for XP, VST/AU/RTAS for OS X). Like Obsession (reviewed 9/04), the first member of e-Lab’s Ignition series, its sound library hits hard on hip-hop. But it augments drum loops with melodic elements: bass, electric piano, chords, flute, scratches, etc.

You can load “multi-track” presets (these are like sample library construction kits), separate breaks/beats tracks, and even mix ‘n’ match tracks from different presets. Even better, for individual tracks you can load any REX2 file or other

individual slices, not the whole file, to play back sounds in the correct order), VCA with envelope, and mod matrix. Mod sources are LFO, a separate modulation envelope, velocity, and mod wheel; the twelve destinations include the usual suspects (filter cutoff, etc.) but also envelope attack, decay, and release parameters. Tweakologists, rejoice.

Style-wise, this rude boy is loaded with lo-fi, crackly vinyl effects, noisy stuff, and big-ass beats . . . it’s not for purists, unless of course you’re a purist about impurity.

Playback is flexible: For each track, loop in sync with the host, trigger loops with MIDI notes, or import a MIDI file (included) into your host to

trigger individual loop slices — yes, edit the MIDI data to warp the preset beyond recognition. And, save edited presets/tracks.

Just before this review was completed, e-Lab updated the engine behind their Ignition series to Version 2.0. One of the coolest features is

same time.

The file selector has also had a makeover. It now treats library files and REX2 files equally, rather than subjecting REX2 files to a separate “import” function. This speeds up file selection, which makes Ignition series instruments even more of an “open” system. Furthermore, clicking on the browser’s Library button provides an immediate shortcut back to the Foundation library — helpful if you’re wandering around your drives looking for additional loops. Another cool feature: When selecting an individual REX2 file, the browser shows its tempo, number of slices, and channels (stereo/mono).

True to its name, this instrument provides a solid foundation for your hip-hop masterpiece. But what makes Foundation rock is the open-ended REX format for great stretching, and extreme editability. (Note: e-Lab says some PC hosts implement song pointer improperly, leading to inconsistent timing; download the demo to check for compatibility with your host. I encountered no problems with Sonar 4 and Cubase SX3.) **EQ**



FOUNDATION PLAYS BACK ONE REX2 FILE PER TRACK, CAN LOAD MULTI-TRACK PRESETS, AND SYNC TO YOUR HOST SEQUENCER. TRACK FILES CAN COME FROM THE INCLUDED SOUND LIBRARY OR ANY OTHER REX2-COMPATIBLE SOURCE.

Ignition series library files.

Files are organized according to tempo (90, 100, and 110 BPM), but that’s just to give you an idea of the intent — the quality of the “rexification” is outstanding. Tracks can stretch over a very wide range; for example, I tested a variety of files from 60 to 180 BPM. They not only were just useable, but sounded fine.

Each track also has a full complement of processors: Multi-mode resonant filter, drive, reverse (which reverses

that it adds even more comprehensive MIDI controller functions. You can apply MIDI continuous controller messages to all knobs and sliders, as well as the Solo, Mute, and Reverse buttons — great for playing Foundation with more of a “live” feel. My only remaining wish list item is the ability to choose between “additive” and “radio button” solo buttons. Currently, soloing any track automatically mutes other tracks; you can’t enable multiple solo buttons at the

Strengths:

- Fun, lo-fi, funky loops
- You can edit the hell out of them
- Extensive automation options
- Compatible with REX2 files
- Improved browser
- Gets your juices going

Limitations:

- No additive solo function

BIAS SoundSoap Pro

Audio detergent meets plug-in

by Craig Ancerton

EQ reviewed the original SoundSoap, a quick 'n' dirty — uh, I mean, quick 'n' *clean* — noise reducer. SoundSoap Pro (SSP) is what you'd expect: A more sophisticated, evolved, and costly version of SoundScap. Budget-wise, it fits in the midrange of noise reduction tools, but its feature set is more high end.

There are two Big Deals. First, like SoundSoap, SSP works in real time. Second, it's a plug-in that plays nice with a variety of formats and applications.

SSP has four integrated "modules": noise reducers for hum/rumble, clicks/crackles, and broadband noise, followed by an output noise gate. They all benefit from a simple interface, and a useful spectrogram to monitor the signal. There are global controls for compare, "noise only" (to make sure you're not removing important parts of the signal — particularly meaningful because it represents the processing of all four tools), and a series of tabs, set to an intelligent default position, for selecting the four modules. Broadband is particularly adjustable; SSP provides good default settings, but a little tweaking can turn "goc" into "wow."

TESTING, TESTING

SSP is not immune from the Noise Reduction paradox: Noise reduction works best on signals without much noise. For slightly grimy signals, SSP removes the dirt without bleach or causing colors to fade. The broadband noise reducer is particularly effective, and I found some bonus features: The rumble filter doubles as a kick drum remover for DJs, the noise gate let me keep just the kick and snare from a drum loop while

removing the closed hi-hat, and the "wrong" broadband settings gave good alien voices. Okay, that's not what SSP is about, but yes, it has hidden talents.

For the acid test, I added unrealistic amounts of clicks and noise to a drum loop, then tested it with SSP, Adobe Audition's noise reduction tools, and Diamond Cut 5 (there's a new version of DC that works as a plug-in, but I wasn't able to set it up in time for this review).

I knew none of these would be able to clean the sound completely; I just wanted to see how they affected the sound when stressed to the max. However, it was impossible to do an A/B comparison because changing one parameter could make one better in one aspect, but worse in another. Each one had a "sweet spot," however, that sweet spot involved varying tradeoffs, which were different among the different programs. SSP nailed the broadband, hum, and noise gate, but getting good click reduction was tricky — I wanted more resolution at the low settings (apparently so did BIAS; they're adding this to the next update).

COST VS. COST-EFFECTIVENESS

SoundSoap Pro is more expensive than, say, Audition, but considerably less than Waves Restoration X. Either way, people will value what they get in return: The ability to work with multiple hosts on Mac or Windows as a plug-in (and with the HASP dongle, it will work wherever you want it to), and perhaps more important, real time operation. It's a *huge* time-saver to be able to tweak while a track is



playing rather than having to preview, adjust, preview, etc. — however, like any plugins that do extensive realtime processing, SoundSoap Pro likes CPU power. It's best used on a track or two at a time, the rendered before moving on.

As an effective, general-purpose signal cleaner, SSP is hard to beat. The combination of four important tools, and the speed with which you can use them, makes SSP a pleasure to use. When deadlines loom, it won't let you down. **EQ**

Type: Noise reduction plug-in

Price: A\$1198 (est)

Contact: www.bias-inc.com

Platforms/formats: Mac OS X 10.2 (AU, RTAS, AudioSuite, VST), G4 CPU; Windows XP (DirectX, RTAS, AudioSuite, VST), PIII CPU

Copy protection: USB dongle plus certification via web, mail, or fax

Manual: 76 pages, softcover

Supported sample rates: Up to 96kHz

Strengths:

- Realtime operation
- Four useful noise reduction functions
- Supports multiple hosts
- Easy but effective interface
- Very good manual

Limitations:

- Click settings finicky
- Requires significant CPU power

Don't Fear The Phase

Phix it....Phast!

by Craig Anderton

Phases of the moon. Going through a phase. And of course, the reason why we're all here: phase in the studio. Can you really hear the difference if a signal is out of phase? Or can you do so only if it's referenced to other signals? Besides, how do you check if your studio's phase relationships are correct?

Thought you'd never ask . . . but you did, so let's GO.

PHASE VS. POLARITY

When most people refer to an "out-of-phase" condition, they really mean a reversal in *polarity* (i.e., positive-going waveforms go negative and vice-versa), which is independent of frequency. True phase shift can be frequency-dependent, where the amount of shift varies at different frequencies. But we'll use the term "out of phase" because it has a common, understood meaning: Flipping a signal's polarity.

OUCH! PHASE PROBLEMS

Phase problems are, unfortunately, not uncommon. Balanced cables can be

The rationale is that if it doesn't mix this out of phase signal with a dry signal, no one will hear the difference anyway, and adding another stage to correct the phase would add noise.

miswired, and some older gear had XLR connectors wired with pin 3 hot instead of pin 2 (the existing standard). Furthermore, some "vintage" effects weren't careful about phase (e.g., having the delayed signal in a digital delay out-of-phase compared to the straight signal), and I've even tested some recently designed processors that flip polarity. The rationale is that if it doesn't mix this out of phase signal with a dry signal, no one will hear the difference anyway, and

with a kick drum, the first rush of air pushes out at you. If this signal goes through a properly phased system, the speaker will push air out to re-create the kick sound. But if the system flips in to move the required amount of air. The result will still sound like a kick drum, but some people claim the one with the proper phase "feels" better, and that the positive effects of proper phase are cumulative with multiple tracks.

My take? I think people can hear a difference with some sounds; on the other hand, trying to detect a phase flip on a vocal seems impossible.

Some engineers make sure that absolute phase is preserved throughout the entire signal chain. You can test for this with phase meters, but a less expensive option is to fire up a two-track digital audio editor and probe around.

TESTING, TESTING

Figure 1 shows a "test setup" for checking phase. Split the input signal, and send it to the input of the device being tested *and* a digital audio editor's left channel via its audio interface. This is your reference. Then, feed the output signal of the device (or chain of devices) being tested to the digital audio editor's right channel. This setup will also show up if there's a time delay between the two signals.

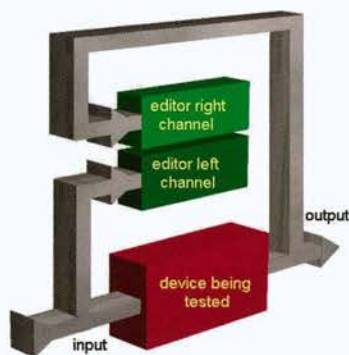


Fig. 1: Test setup for checking phase.

adding another stage to correct the phase would add noise. But *does* it matter?

WHAT ABOUT ABSOLUTE PHASE?

Try this experiment: Put a signal through a single mixer channel (hardware or virtual), then flip the channel's phase switch. Hear a difference?

Maybe, maybe not. For example,

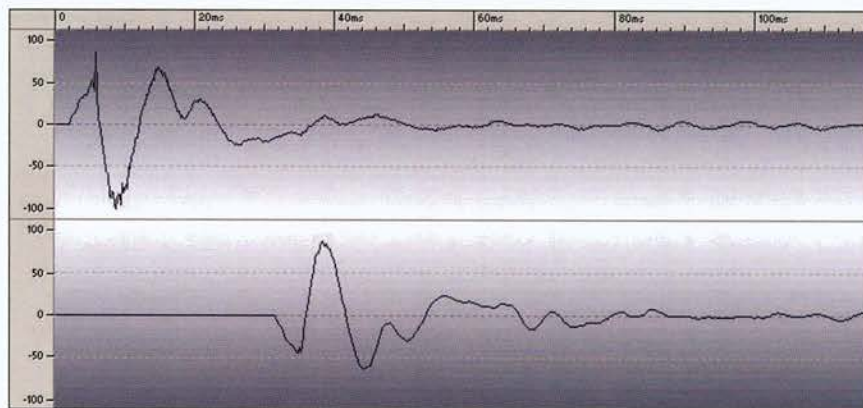


Fig. 2: The upper waveform is a kick drum sound. The lower waveform shows it after going through an old analog delay. Not only is the polarity reversed, but high-frequency response is down a bit (note the "rounder" edges).

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The Art of Recording:

Use a test sound source with an asymmetrical waveform (e.g., kick drum), then record a bit of sound into the editor. Vintage guitar effects are notorious for phase problems, and are well worth testing (Figure 2). Also check all hardware mixer outs — master out, submaster out, monitor out, sends out, direct out, and so on. Sometimes you'll uncover something like an out-of-phase headphone or aux out.

Also, test the entire input-to-speaker chain to make sure nothing's amiss, and if you use XLR cables, check those to make sure they're wired correctly.

THE FIX IS IN

Once you've identified any problems, fix them. Some fixes are easy: If a piece of gear's balanced output is out of phase, just reverse the "hot" and "neutral" leads going to the out. With cables, mark them and repair them when you get a chance. For old effects boxes, send the output into a mixer channel, and flip the channel-phase to compensate. As to how that process works . . . keep reading.

HOW HOSTS GO THROUGH A PHASE

While polarity issues are pretty cut-and-dried — either the polarity is correct, or it's not — phase, as it can change at different frequencies, is a whole other matter.

The classic example of a phase difference occurs when using multiple mics on a source. For example, let's assume you're miking an acoustic guitar with two mics: One pointed toward the sound hole to emphasize the bass, and one capturing more of the overall sound. When you combine these in mono, some frequencies will reinforce each other, while others will cancel. That's because the mics are a fixed distance from the instrument, so different audio wavelengths will hit the mics at different points along their curves.

Does mono really matter any more? Yes. We're not just talking sounds coming over your TV; the only way you're going to get true stereo is with headphones. Sound waves coming from two speakers will tend to mingle on the way to your ears in an acoustic space, thus "monoizing" the sound at least a little bit.

Getting back to our acoustic guitar example, as you set up your mics, periodically check the resulting sound in mono. You will likely find that certain mic



Fig. 3: Cubase's phase switch options.

positions will provide a more realistic sound than others when combined in mono. However, also try flipping a mixer's phase switch (also called reverse, invert, or identified with a \emptyset symbol) before you change positions because that may give better results — and it's a lot less hassle than moving mics.

Usually, one switch position will sound clearly better than the other. However, sometimes neither will be quite satisfactory. At that point, it's time to experiment again with mic positioning.

FLIPPING OUT

When it's time to flip phase with a hardware mixer, look for a switch in each channel strip to change phase, usually located near the preamp section. Software hosts handle phase switching in various ways. For example, with Pro Tools, you insert a channel gain plug-in that includes a phase switch.

Steinberg Cubase SX's mixer (Figure 3), which models a conventional hardware mixer, includes phase switches in both the mixer view and individual channel strips. Takevark's Sonar also follows the hardware paradigm, including phase switches in the mixer view, inspector, and track view. Sony's video-oriented Vegas nonetheless recognizes the phase switch's importance by including one within each audio track.

Using a phase switch is a non-destructive process, so you can revert to the opposite setting at any time. But if you want to lock in a phase change, most hosts also allow for destructive, DSP-based changes. For example, in Apple Logic's Sequencer Editor (Figure 4), an Invert process located under the Functions menu can invert the polarity of what's being edited.

Finally, note that sometimes the point of flipping phase is cancellation. In one mix I encountered, the stereo drum and

The Art of Recording:

percussion tracks were premixed. However, the kick and snare were annoyingly loud compared to the delicate, and rather well recorded, percussion. Fortunately, the kick and snare were panned dead center, and the percussion was spread to the left and right of the stereo image. I patched the stereo track into two more mixer channels, flipped their phase, and brought up the channel levels just enough to provide a bit of center cancellation. Bingo — the kick and snare went down a few dB, which made the percussion seem more prominent.

PHASING OUT

And that pretty much does it for our discussion of phase. Some day, when you have a few minutes, take the time to boot up your digital audio editor of choice, and check out your system's phase integrity — you never know exactly what kinds of ghosts are lurking in your machines. Then, once you know everything is properly phased, explore your mixer or software host for its phase-switching options. You may find they have more uses than you originally thought. **EQ**

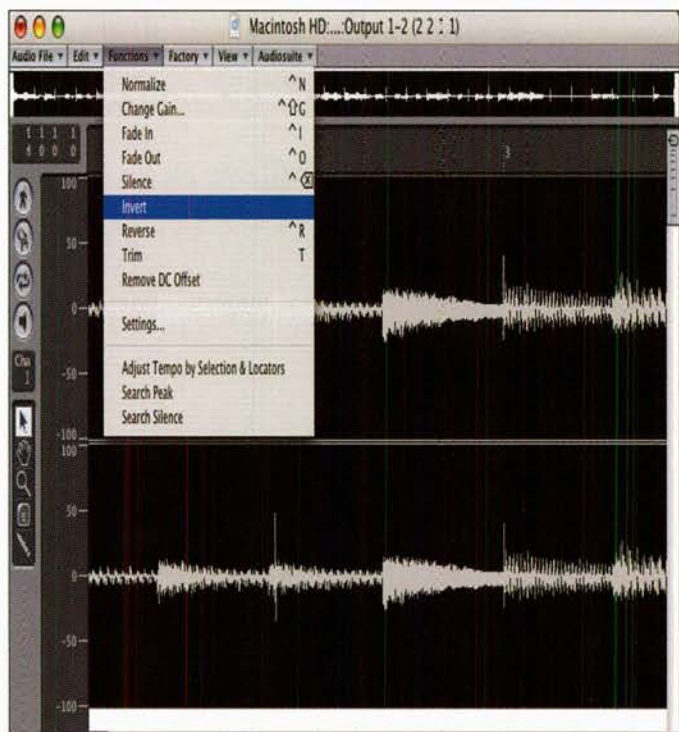
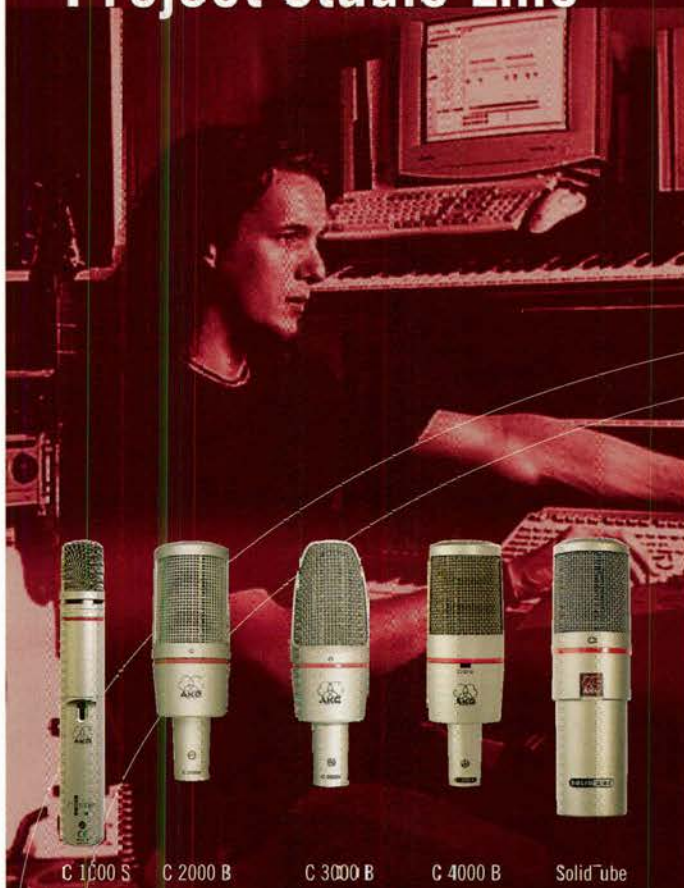


Fig. 4: Logic is one example of a program that allows destructive polarity inversion.

AKG.STUDIO

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Until now, producing high quality recordings with high quality microphones was the privilege of large studios. The Project Studio Line now offers high quality microphones for excellent studio-type audio at a fraction of the cost.

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FEAR and LOATHING in ARCHIVE CITY

by Mitch Gallagher

WHO'LL REMEMBER YOU WHEN YOU'RE GONE?

You die. I mean heaven forbid, but say you die. And you leave behind? Bills, a few t-shirts and daresay a legacy of somewhat significant musical art? Yup, a rich treasure trove of great musical art. Well, yeah, either this or a worthless pile of drop-out riddled tapes, corrupted CDs, and crashed hard drives.

You see, ultimately, there are two primary questions when considering how to backup and archive:

- 1) media and
- 2) compatibility.

With regard to the first, the issue of backup has become easier to deal with as hard drive prices — particularly external FireWire hard drive prices — have dropped. Many engineers simply copy data to a second drive for a quick and easy backup. And it's common to put the backup drive on the shelf for long-term archival as well, although it remains to be seen how long those drives will last.

So while data tape backups, AIT, DLT, and others of that ilk, remain common, CD-R and DVD-R are definitely the leaders in the backup and archive media races. Writeable optical discs are cheap, plentiful, durable, and reasonably fast. Again, the long-term viability of the media

remains to be seen, but some engineers are partially hedging their bets by making duplicates to discs manufactured by different companies in hopes that one company's disc might last longer than the other.

For safest archiving though, the best bet is to make multiple copies of anything you don't want to have to re-create on multiple media, and store the backups in different locations as protection against fire, flood or other disaster.

FUTURE SHOCK

A bigger issue though is future compatibility. What happens if the program you need to open a file no longer exists in the future? What if a file format is no longer supported? What if your operating system can't run older soft synths, preventing you from playing back virtual MIDI tracks? What will you do with all those ADAT tapes if you don't keep an ADAT around to play them?

One solution is to "archive" the old machines and programs — and computers that can run them — along with the data. But there are problems here too: Space becomes an issue, and you must maintain the old machines and programs in working

order if you want to access your work.

Check out my Art of Recording article in the August 2004 issue for one solution to limited gear/software longevity: rendering all files — with effects, processing, automation, and virtual MIDI tracks — to full-length audio tracks stored in a "standard" file format such as AIFF or Broadcast WAV. While there are no guarantees, odds are there will be *something* in the future that can access those file formats.

THE REAL WORLD

So how are engineers and producers approaching backup and archiving in the real world? I checked with seven busy pros to find out how each handles preserving their work for the future.

CRAIG ANDERTON — EQ Editor At Large, engineer/producer/musician/sound designer

I have a 3-tier back-up strategy. For small projects, I back up to CD-R. I create two copies using media from different companies. For large projects, I take a similar approach: two copies to DVD-R, using media from different manufacturers. The final tier is long-term archival

storage/general computer backup in case things die. For this I copy to a large, removable hard drive.

DUANE DECKER – game composer, **DDMusic**

There are a couple of ways that I back up files. Each time a music cue is completed, I transfer the finished WAV file from the Mac G5 audio drive to Mac G4 and PC hard drives (via in-house network) so they can be uploaded to various FTP sites. The files remain on those drives so there are now three copies of the finished file on three separate computers.

Once a week, I copy my current Digital Performer project folder to a FireWire drive and the G5 root drive for quick backups. Once a month I burn an archive DVD (or CD) of all current files. Archive discs are then logged into Disk List, boxed up, and put in a big plastic storage container that sits in the studio for protection from extreme temperature, light, and moisture.

Once a small project is complete, it gets burned to disc and also stays on the hard drive until I know the client won't come back and ask for changes or additional cues or edits.

On big projects, there are usually multiple drives that contain DP and Pro Tools files, audio files, project documents, and so on. All files get burned to DVD, and, if possible, copied onto a FireWire drive for archival.

While it may sound like I have it all together, I have been caught by corrupted archive discs and software/hardware changes in the studio. If you are in the business long enough, this is inevitable. MOTU's MachFive sampler — and hearing old gear — has helped in some situations. But the tedious job of rendering audio stems of MIDI/virtual tracks is a better way to go as the audio format is more likely to outlive your software/hardware.

TAL HERZBERG – engineer/**producer**

I always have two hard drives mounted while I work — a master and a clone. I record/edit/mix using the master, and a few times a day I update the clone using data backup software (QDEA Synchronize! Pro). It mirrors the clone with the exact data that's on the master, only copying files created since the last backup.

As an additional safety net I have a data tape drive connected to my computer (Sony

AIT), and following the same procedure I do with the clone drive; I mirror the master drive onto a digital data tape using Dantz Retrospect backup software.

At the end of the project I submit everything to the client for them to store/archive.

PHIL O'KEEFE – EQ contributor, engineer, **Sound Sanctuary Recording**

I record to internal IDE drives. Every day, at the completion of the session, I back up the day's work to external FireWire drives so I have two copies of the work in progress. Because I'm running Pro Tools on Windows, I always click on "enforce Mac/PC-compatibility" when creating new sessions. The FireWire drives are formatted FAT32, so transferring to a Mac-based Pro Tools system is simple, should the need arise.

I use Broadcast WAV files, which means anyone who can handle time-stamped BWFs on any DAW platform should be able to import the raw files. I also save a copy of my plug-in settings to the backup disks.

At the completion of the project, I do backups — including the board layout and setting data from my Yamaha digital mixers — to DVD-Rs before wiping it from my internal drive. When the client walks away, they have two copies on two media types — DVD-R and FireWire drive. I think dual-format backups offer the best compatibility and insurance that the data can be retrieved at a later date.

MIKE COATES – engineer, **Raptor Studios/Barking Dog Records**

All my stereo mixes are archived to Apogee gold CDs with one or two cheaper backups. I still do some mixing to DAT so I have a closet full of hundreds of DAT masters from the last decade, and gold master CDs from the last three or four years.

As for tracking, I basically use a 20 or 30GB IDE hard drive for one or two projects on our Mackie HDR 24/96. So I now have a closet full of hundreds of Hi-8 tapes (I keep every track) from the MDM days, and have started a new closet for the IDE drives. Having an onboard internal drive and an external drive provides me an additional working backup.

As I see it, the archiving dilemma is simply one of having to keep equipment online to play the older media. To that end, I still have two working DA-88s, two DA-78s,

three DAT decks, and a quality cassette deck. Clearly, I will have to maintain the HDR 24/96 as well when that unit is obsolete — or make the incredible effort to transfer those tracks to a new medium. I feel much more secure about the CD and hard drive masters surviving over time than I do about the DAT and Hi-8 masters.

LYNN FUSTON – EQ CONTRIBUTOR, ENGINEER

I used data DATs for backups for years, then AIT data tapes for several years, but the proliferation of DVD drives has made that format my backup option of choice now. AIT is easier to use because of its single-volume storage capacity, which means I don't have to segment the data. But the affordability of DVD media makes it cheaper to make duplicate backups. And the client can have their archive in a standard format they can open most anywhere. It's still slower and requires 4.4GB partitions, but that's a tradeoff I'm willing to make.

GARY MRAZ – STUDIO VOODOO

In my opinion, digital doesn't really exist unless you have three copies in three separate places. My recording medium is FireWire drives. That's Copy 1, Place 1. When I'm done with projects, I transfer the data to another FireWire drive. When it's full, I place it in a safety deposit box at my local bank: Copy 2, Place 2. Finally, I back up the projects on DVD. These are stored in a fireproof safe that was built into the floor of my house: Copy 3, Place 3.

It may sound as if the value of these digital bricks and shiny discs warranted the protection of Fort Knox, but I've learned the hard way. There are digital voodoo demons lurking at each mouse-click, waiting diabolically to delete. There's a reason we're called Studio Voodoo!

I have to tell you about the time I assisted in archiving Barbara Streisand's library on Synclavier 12" optical disks, which claimed a 300-year shelf life. When we were finished, she needed a safe place to put them. Eureka — an abandoned nuclear missile silo! But wait, after Armageddon and the alien arrival, how will anyone listen to them? Solution: Put a Synclavier playback system in the silo, too! "People Who Need People" paying on every stop on the hitchhiker's guide to the galactic jukebox. . . . **EQ**



ed in huge and
temperature control... These
video... CBS

THE MEN ON THE IRON MOUNTAIN

Ken Cailat, Edwin Outwater, and Claus Trelby stock, store, and secure just about anything heard by anybody just about anywhere in the world in their mighty mountain redoubt. The ultimate back-up option? Maybe.

by Garrett Haines



Audio engineer Claus Tremby (standing) and audio engineer Heath Conditte in one of the 2" transfer rooms.

With Johnny Carson's passing this past year, you might have noticed something missing from the tributes bombarding the airwaves: footage of Carson's first shows from NBC studios in New York. Before the value of archival tapes was recognized, NBC destroyed most of these *Tonight Show* tapes, opting to recycle reels rather than confront the awesome task of storing thousands of hours of television. It was, they thought, just a TV show.

The problem of archival storage isn't TV's alone though; if you're having trouble managing all of the recordings you've done over the years what the hell's happening at Sony BMG, Universal, and CBS? With hundreds of thousands of recordings in their catalogues, the job of housing, organizing, preserving, and gaining easy access to stored material is nothing short of monumental. Historically, the big studios had to choose between expensive local storage and more affordable but hard-to-reach archives.

Enter: Ken Caillat, Edwin Outwater, Claus Tremby, and the creation of Xepa Digita.

About an hour north of Pittsburgh, Pennsylvania, the three founders, with more than 80 years' worth of total technical and studio know-how, are giving the people what they want: immediate access and stable long-term storage.

Outwater, who worked for Polygram and Warner Brothers, specializes in the archiving. Caillat cut his teeth recording landmark albums, including Fleetwood Mac's *Rumors* and *Tusk*. And, in addition to session engineering, Tremby had been doing archival and 5.1 mixes for Warner, EMI, Rhino, Interscope and Sanctuary Records. Not only are they well acquainted with the ins and outs

of the biz, they're also sensitive to the awesome task of not just preserving recordings, but our audio-cultural history.

THE EARLY SOLUTION: NEAR LINE STORAGE

Originally record (and film) companies stored source materials in local warehouses or backlot buildings. When a copy was required, the master tape was couriered back to the studio for transfer. This is called Near Line Storage.

There are several concerns with this approach. First, it's expensive to maintain. Backlot buildings sit on prime real estate that could be sold, developed, or used for additional production space. Many metropolitan warehouses are pricey, and few are climate controlled, putting humidity and temperature sensitive materials like film and tape at risk for permanent damage. Second, the policy of moving tapes via courier or common carrier (e.g., major shipping vendors) is neither secure nor reliable (remember, we're talking about the ONLY copy of irreplaceable masters). Finally, as years passed, the sheer quantity of source tapes began to outpace the storage and catalogue capacity.

GOING DEEP, DEEP, DEEP

As the sheer volume of tapes and other media increased, large organizations could no longer afford to keep every media asset in expensive local storage. As with the case of the remaining *Tonight Show* footage, deep archive storage became the answer. Following the lead of the public sector and financial industries, assets were shipped to rural storage houses, which often had significantly lower costs. From a

stability standpoint, deep archives are usually located underground in secure facilities with state-of-the-art humidity and temperature control. While the tapes are much safer in deep storage, getting access to a copy is a hassle. Locating the tapes takes time and once they're found, they have to be sent back to a studio via courier or common carrier, once again exposing irreplaceable materials to shipping risks.

Meanwhile, in 2002, Caillat and

Tremby were working on a re-mix for a major DVD release and requested that the master tapes be sent to them. Coming back to their studio the pair found an uncomfortable reminder about the vulnerability of their work: having found no one onsite, the courier had left the tapes sitting outside on their front porch. Even more distressing, this probably wasn't the first time this had happened to a master tape. After talking to Edwin Outwater, the three decided to start an archival company that could help studios protect their assets during the storage process and beyond.

The first task was to choose a location. The trio considered options in LA, Nashville, and New York, sites that seemed reasonable given the volume of recordings generated in these cities. But it was Outwater who first suggested a place north of Pittsburgh called Iron Mountain. Located hundreds of feet below the earth's surface, the facility had been providing environmentally stable archival storage since 1951 and offered the highest level of security available at any non-governmental facility. Some major studios were already keeping assets at Iron Mountain, so the location seemed ideal.

Of course, there was still one problem: getting the source materials back to the studios without having to place the original masters at risk. The solution came with the advent of high-speed networks. Using a secure private network, they figured they could send data over dedicated, secure, super wide-band networks to remote locations. Presently, they can send one gigabyte of data every 45 to 55 minutes. Since a 24-track 2" reel takes up about 9 gigabytes when converted to 24-bit 96k PCM audio, they can get a high-res copy to a studio

THE MEN ON THE IRON MOUNTAIN

faster than a same-day courier. Depending on program length, once they have tape in hand, it can be anywhere in the world in five hours.

ALL IN THIS TOGETHER

The recording and film industries are not the only ones facing preservation issues. There are literally hundreds of thousands of hours of spoken word, oral history, and other important recordings from institutions, religious organizations, and private collections. And few have been archived.

Philadelphia-based Safe Sound Archive (SSA) has been helping such groups for years. Often strapped by limited budgets, most groups can't afford deep storage or comprehensive restoration projects. SSA owner George Blood notes, "A key thing for these institutions is to identify the assets that are most important to them, and work on archiving them first." When presented with the issue of shipping master tapes to Philadelphia for processing, Blood explains, "These groups have to evaluate the importance of each recording, and assume risk accordingly."

For example, SSA archived some treasured recordings from the archives of the Church of Latter Day Saints. Because of the irreplaceable nature of these recordings, the church opted to have an elder drive the tapes to Pennsylvania. Although it took 10 trips, the project was completed without incident. Of course, other options remain. FedEx offers Custom Critical Service, which is a door-to-door courier. Likewise, various dedicated antique and art moving companies can be retained to move treasured items.

MAXIMUM ARCHIVING

Of course, it does you no good to have a state-of-the-art solution to the transmission problem if you can't get your hands on a recording to begin with. When an asset is received, it's processed at Xepa in a number of ways. When a tape is received, it's logged and the original ID, if any, is noted. Likewise, the item is assigned a new internal ID, which makes retrieval quick and easy. The media data department creates high-res scans of all sides of the box, documentation, engineer's notes, track sheets, and absolutely anything else included with the materials. Not only do these scans preserve important information, but they allow Xepa to make publication-ready reproductions without having to handle the original documents. The image files are archived in the metadata to a secure wrap-



A spare for the spare. Technician Heath Conditte transfers material from one of Xepa's three Studer A827 machines.

around database that also stores preliminary physical information and final technical information such as the number of tracks on a recording.

Currently they're using a high-speed hardware secure line. This method is fine as long as the recipient has access to a secure line and an appropriate decoding server. However, Xepa is in the process of implementing a highly encrypted software solution, which would allow download from anywhere in the world and would quintuple the rate of transfer. That means you'd be able to move a whopping four gigabytes of encrypted data per hour. In addition to expanding bandwidth, live streaming of video and audio simultaneously in uncompressed, DV50 and WMV files will soon be possible. With the knowledge that their tape assets are within real-time reach, broadcasting stations may be able to realistically consider all-digital, tape-less transmissions, which would be more stable, archive-wise, and could greatly reduce the burden on storage facilities in the future.

As the entertainment industry grows and branches out into new mediums, the need to manage media assets grows daily. With respect to Iron Mountain, Sony BMG currently has many of its assets onsite, and is looking to add additional items. Universal already stores between 30 and 40 percent of its archives there but is looking to expand. Likewise, CES keeps a significant log onsite.

"Face it, these guys would be major players in any city if they chose to open up shop as a

recording studio," says Senior Director of North American Vault Services at Universal Randy Aronson. "But instead, they opted to devote their expertise to resourcing media assets for future generations. They truly are my eyes, ears, and hands in Iron Mountain, and I'm thankful for that." At Xepa audio engineer Heath Conditte adds, when asked about their so-called "mission" of saving our sounds, "every call touch history. Not many people can say that about their jobs."

While the impact is already evident in their efforts to preserve our recent history, the true value of groups like Xepa Digital and Safe Sound Archive won't be felt until future generations get the chance to experience a wealth of material that might otherwise have been lost to unstable media, environmentally unsound storage facilities, and the sort of human logic that sees a historic moment in recording, television, or film as just another tape. **EQ**

Garrett Harnes, Chief Mastering Engineer and co-owner of Treble Studios in Pittsburgh, Pennsylvania, would like to thank Jim Filges (for the tour of the CBS Broadcasting vault), Kathy Miller (Hires of the Carter for American Music) for archival statistics, and all of the little people who made his meteoric rise to the top possible.

ARCHIVING FOR THE REST OF US

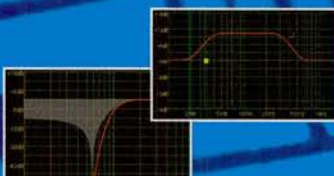
Protecting recorded assets isn't limited to the recording industry giants. The sessions we work on in our home, project, and pro studios require the same attention and diligence. Here are 10 tips for applying preservation best practices for the hoi polloi:

- 1. Do No Harm.** If you're unsure about a type of media, seek advice before you begin. In particular, be mindful before you put an older tape on a machine. You might only have one chance to get it right.
- 2. Movin' Out.** Many of us have drawers of 4-track cassettes. The good news is these little creatures are pretty robust. Nonetheless, playback can be difficult on older tapes. According to George Blood, changing the shell can solve a majority of cassette playback issues. First, purchase a quality cassette (try to get one that uses screws to hold the shell together). Carefully open the new cassette, noting the tape path. Remove the tape. Open the shell of the old tape, carefully remove and migrate the tape to the new shell. This method has been known to resolve numerous issues, including tapes that are prone to being eaten.
- 3. Variety is the Spice.** Try to have back-ups of each back up, making sure to use different formats. If you use CDs, make sure you have a hard drive copy, too. Never rely on one format exclusively.
- 4. Get Physical.** One way to extend the life of a hard drive is to make sure the internal mechanisms are exercised with regularity. Claus Trelby notes, "Booting up a drive every two to three months should be adequate."
- 5. Keep Me in Line.** Recording industry organizations have invested a good deal of time developing helpful standards. The Audio Engineering Society (AES) keeps a repository online at: www.aes.org/publications/standards/. The Grammy folks (a.k.a. NARAS) have a Producers and Engineers' section on their website. Two key papers cover Pro Tools project exchange and the delivery formats for master recordings. www.grammy.com/pe_wing/guidelines/index.aspx
- 6. Write it Down.** It doesn't take too much time to write down some information about a session on a track sheet or project folder. Remember, notes saved inside a software package might not be readable in the future. It never hurts to have an extra hard copy.
- 7. Climate Control.** While you don't need a remote mountain vault, you can keep media healthy by keeping it in a cool, dry place. When in doubt, make sure to avoid keeping tapes and media in: your car, attic, basement, outside shed, cigar lounge, or other area where extremes are common.
- 8. Consider Off-site.** Keep a set of back ups in an off-site location such as an safe deposit box, a relative's house, or band mate's home. Of course, the concerns about climate control still apply.
- 9. Conveyor Belt.** If you keep data on hard drives, label them according to age. Then, purchase a new one to replace the oldest. Use the retired drive for something less critical or sell it on eBay. Continue this process every three to six months and you will be constantly regenerating your hard drive farm. (This is a simplified version of what the Data Systems Groups in large organizations do. So, learn from their experiences).
- 10. Don't Fool Yourself.** There is a saying in the IT field: There are two types of people: those who have had a hard drive fail, and those who will. Don't think you're immune. With falling media prices, there should be no excuse to avoid backing up. After all, if it's important enough to record, it should be important enough to protect.

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 AES/EBU Digital I/O standard
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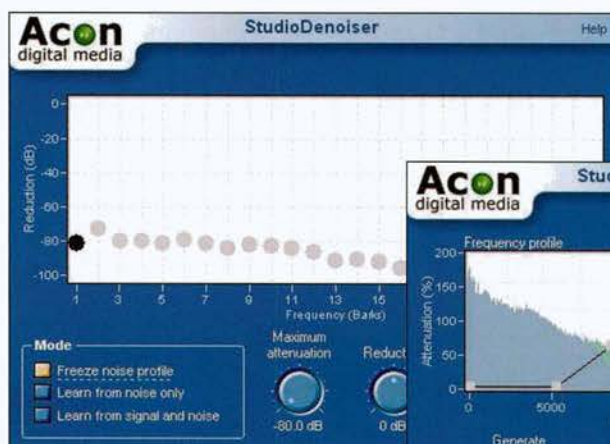
Production Audio Services
 17 King Street, Blackburn Victoria 3130
 Ph: 03 9878 1444 Fax: 03 9878 1455

Tool Box

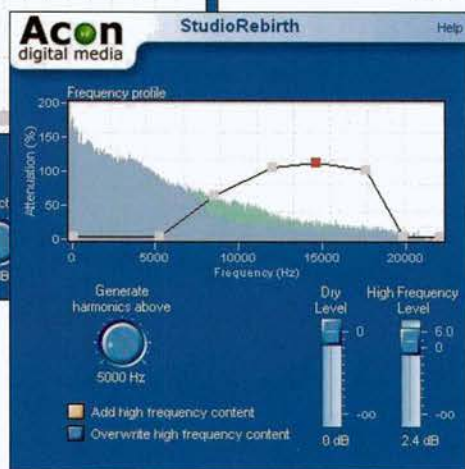
BY KEVIN OWENS



01



02



04



03



01 SECRETS OF THE PROS PRO TOOLS DVD: VOLUME 1 (A\$80 est)

In addition to covering the basics of how software and hardware work together, this 2-DVD instructional set shows the uninitiated how to use Pro Tools LE and TDM systems to record, edit, and mix audio. Includes a chapter dedicated to Beat Detective.

Secrets of the Pros,
www.secretsofthepros.com

02 ACON STUDIO CLEAN (A\$138 est)

Consisting of StudioDenoiser, StudioDeclicker, StudioDeclipper, and StudioRebirth, Studio Clean is a Direct-X plug-in bundle for PC that lets you reduce noise, eliminate clicks, and add harmonics to your audio. Audio you create in your, um, studio, we're guessing.

Acon,
www.acondigital.com

03 MUXLAB MONOPRO XLR (A\$70 each est)

The MonoPro XLR adapts a single AES/EBU balanced analog or digital audio signal to Category 5 copper twisted-pair cable in a point-to-point configuration. The MonoPro supports line audio, passive and phantom-powered mics, and distances of up to 5,000 feet in analog environments and 1,500 feet in digital settings.

MuxLab,
www.muxlab.com

04 TASCAM DV-RA 1000 (A\$2,998 est)

A high-resolution master recorder that supports digital recording formats ranging from CD audio resolution to 192kHz/24-bit to Sony's DSD (the basis for Super Audio CDs). Features include balanced XLR and AES/EBU I/O, word sync I/O/thru, USB 2.0 support, and Mac and PC compatibility.

TASCAM,
www.tascam.com



05



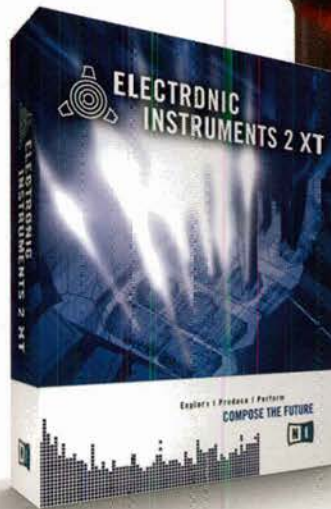
06



07



08



05 STEINBERG HALION 3.1 (Free download for registered users)

New features to version 3.1 of Steinberg's virtual sampler include advanced disk streaming, ReWire compatibility as a standalone app, MIDI Learn mode, and Q-Controls, user-definable controls that offer access to up to eight parameters on the Macro-page. Thank you, HAL. **Steinberg, www.steinberg.net**

06 SPINAUDIO ROOM VERB M2 V 2.2 (A\$290 est; free upgrade)

This updated plug-in (Mac and PC) boasts an improved engine that claims to deliver more realistic reverb and better stereo image spatialization. Features include Plate and Outdoor simulation modes, control of early and late reflections, and 250 factory presets. Free demo available at the company's website. **SpinAudio, www.spinaudio.com**

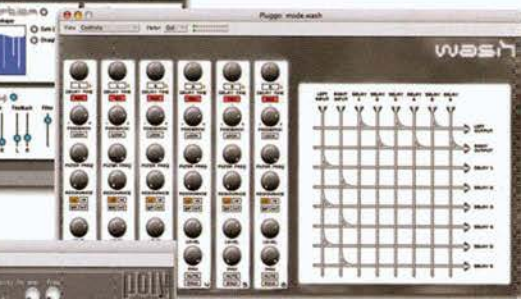
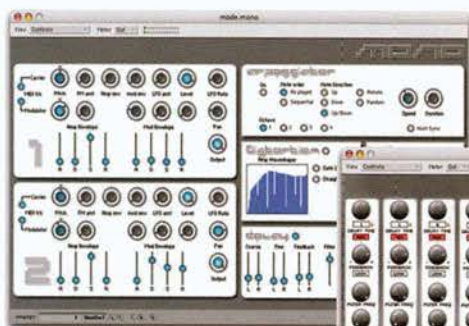
07 AUDIX FIREBALL (A\$598 est)

CNC machined out of aircraft-grade aluminum, this palm-sized cardioid pattern mic was designed to capture the best qualities of both chromatic and diatonic harmonics, even when cupped. It features a full-sized dynamic capsule, and can handle SPLs up to 140db without distorting. **Audix, www.audixusa.com**

08 NATIVE INSTRUMENTS ELECTRONIC INSTRUMENTS 2 XT (A\$338 est)

Eight advanced crumkits, synths, sequencers, and effects that take advantage of Reaktor's engine technology but can run independently, too. Includes presets created by such artists as B.T., Photek, Machinhead, Telefon Tel Aviv, and the super-dope Junkie XL. (Mac & PC). **Native Instruments, www.nativeinstruments.com**

Tool Box



10



09

11



12



09 CYCLING '74 MODE FOR WINDOWS (A\$198 est)

Cycling '74's popular plug-in package is now available for Windows XP host apps that support VST and RTAS formats. Mode features three instruments (Bang, Mono, and Poly) and two effects processors (Spin and Wash), as well as an additional 18 plug-in "submodules."

Cycling 74,
www.cycling74.com

10 M-AUDIO KEY RIG AND DRUM & BASS RIG (A\$260 ea est)

M-Audio ventured into the virtual instruments market with a pair of new titles. Both feature four highly tweakable modules covering a variety of keyboard and drum and bass styles (ahem), and operate in standalone and hosted mode (AU, VST, RTAS) on Mac and PC platforms.

M-Audio,
www.m-audio.com

11 EDIROL MA-7A (A\$270 pair est)

These affordable desktop reference monitors feature both RCA and mini-stereo inputs, a "sub out" jack for sending audio to an external subwoofer, and a built-in Bass Enhancer. Front-panel controls include volume, treble, and bass knobs, plus a mini headphone out.

Edirol,
www.edirol.com

12 EVENTIDE VERSION 4.5 SOFTWARE

(Free download to registered users; A\$398 est) on Compact Flash card)

Version 4.5 adds Eventide's "Custom Scale" pitch shifting, MIDI Virtual Racks, loads of new effects, and a stable of 5.1 algorithms to the 1,600-plus presets already included with the company's flagship H8000 (pictured) and HE000A Ultra-Harmonizer effects processors

Eventide,
www.eventide.com

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by Craig Anderton

PreSonus FirePod

FireWire I/O for the masses

Type: Computer audio interface
Price: A\$1,600 (est)
Contact: www.presonus.com

Minimum system requirements:

400mbps FireWire port, (Mac) OS X 10.3.5, G4 800MHz, (Windows) XP SP1, Pentium/Athlon 900MHz

Analog ins: Two mic+instrument (1M instrument input impedance), six mic+line; all Neutrik combo 1/4" + XLR

Phantom power: +48V, two switches for ins 1-4 and 5-8

Analog outs (rear panel): Eight TRS balanced 1/4" outs, two main control room 1/4" line outs, two cue mix 1/4" line outs, headphone out

Effects loop: Rear panel balanced send/return jacks for channels 1 and 2 (usable as preamp outs/rear panel line ins)

Digital I/O: Coaxial S/PDIF I/O

MIDI I/O: In and out

FireWire I/O: Two parallel IEEE-1394 ports

Preamp gain: 54dB

Front panel controls: Eight stepped preamp trim controls, main level control, headphone amp level, and mixer (varies balance of ins 1-8 with outs 1-2)

Overload indicators: Eight LEDs (one per preamp)

A/D converters: 24-bit, 44.1/48/88.2/96kHz

D/A converters: 24-bit, up to 96kHz

Power supply: External AC transformer, internal switching supply

Bundled software: Steinberg Cubase LE

THE FIREPOD PUTS THE INPUT JACKS, GAIN CONTROLS, AND MONITORING ON THE FRONT PANEL. OUTS, SENDS, AND MIDI ARE ON THE BACK.

Strat vs. Les Paul. Mac vs. PC. Analog vs. digital.

Great taste vs. less filling. And now, add USB vs. FireWire to these classic matchups.

That debate used to fall along religious lines. The Cult of the Macintosh prayed to the FireWire gods, as Macs were early adopters of FireWire. Meanwhile, the Order of the Microsoft tended to believe in USB. But those days are pretty much gone. PCs, if they don't already come with FireWire, can be outfitted with it for under A\$50 (est). And modern Macs and PCs both come with USB ports.

So it's not surprising that the PreSonus FirePod is a cross-platform FireWire interface that's equally at home with Mac or Windows, and even ships with cross-platform sequencing software — Cubase LE. (Note that unlike the mLAN-friendly PreSonus FireStation, PreSonus has rolled their own ASIO/WDM/Core Audio FireWire drivers.)

So why the extended intro? Because I'm doing a one-page review, and when everything works like it's supposed to, there's just not much to say. I loaded the supplied drivers from the CD, clicked on the FirePod system tray icon to optimize performance for my CPU, plugged in the FireWire cable to a FireWire card, and every program I loaded recognized the ins and outs. With Sonar 4 using WDM, my system coped fine with 3ms of latency; ASIO didn't fare as well, though, yielding 6ms with

Sonar and Cubase SX3. (Trying to run below 6ms with Cubase gave clicks and pops, but froze Sonar.)

So I plugged in a mic, and it sounded good. *Really* good, actually; nice headroom, good definition, and no significant noise. And, there are front-panel gain controls (although no pad or low-cut switches). I then plugged a guitar into the instrument input . . . clean and clear. How about line outs from synth? Yup, that worked too. Now this is the kind of boredom I like: No system crashes, no "Device not recognized," no time spent having to find and download new drivers.

There are some nice touches. The send/return connections for channels 1 and 2 are balanced, not unbalanced TRS. The gain controls are click-detented. Construction is metal and rugged. And, a mix control can dial in a blend of the main outs and the eight ins for zero-latency monitoring. It's a bummer that you can monitor only the first two of the eight outs, although personally, I tend to run everything in my DAW down to two outs anyway. Clearly, the other outs are for when you're using the FirePod as more than a self-contained system.

SO WHAT'S WRONG?

Well, not a whole lot. But let's try this: No ADAT out. I mean, wouldn't it be kinda cool to have this if you wanted to go into an ADAT-compatible hard disk recorder or a digital mixer instead

of a computer? Okay, it's a FireWire interface, but a little extra functionality wouldn't hurt. Besides, you could also use the same optical out to provide optical S/PDIF. In any event, the FirePod can also serve as a 10 x 2 mixer (8 analog + S/PDIF), even without a computer, so that's a plus. I also wish that the latency under ASIO was as low as with WDM, but hey, that's what driver updates on the Web are for . . . right?

THE VERDICT

What makes the FirePod interesting is that yes, it's a computer interface, but it also has enough mixing options — from serving as an analog mixer to being able to handle your DAW ins, outs, and monitoring — that it's well suited for mobile, or at least portable, recording. And there's no denying that it sounds very good. In that niche between simple USB interfaces with limited I/O and do-all FireWire interfaces that are overkill for many situations, PreSonus has found a sweet spot. **EQ**

Strengths:

- Effortless to install and use
- Great-sounding preamps at this price point
- Cross-platform
- MIDI and S/PDIF I/O

Limitations:

- No ADAT digital I/O or optical S/PDIF
- Can't monitor all 8 outs with internal monitoring



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by Craig Anderton

Reason 3.0

More evidence of intelligent life on earth

Type: Virtual studio software
Platform: Windows XP/2K, Mac OS X
Price: A\$998 (est). Upgrades: A\$260 (est) from previous full version, A\$798 (est) from Reason Adapted
Contact: www.propellerheads.se

Minimum system requirements:
G3/PIII, 256MB RAM, 2GB free hard disk space
Copy protection: License number
Version reviewed: 3.0
Driver support: ASIO, CoreAudio, MME, DirectX
ReWire mode: Client
Audio export formats: WAV, AIFF
Sound library: Orchestral and Factory sound bank CDs

FIG. 1: A NEW BROWSER MAY NOT SEEM GLAMOROUS, BUT IT TURBOCHARGES THE PROCESS OF AUDITIONING AND SELECTING BOTH SOUNDS AND PATCHES.



When Reason first came out, people thought it was brilliant — and rightfully so. But now it's been around a few years, some competitors have sprung up, we've all had our expectations raised, and as a result . . .

It's still brilliant. Just more so.

Reason 1.0 was one of those programs that got it right the first time. Reason 2.0 and 2.5 didn't do any radical makeovers, because frankly, they weren't needed. Updates included a nice sampler, some more effects, a groovy gaintable synth, improved routing, and a detachable sequencer window, all at reasonable upgrade prices. What you *didn't* get: Bug fixes and crashes. Reason's reliability is legendary.

Admittedly, you do have to subscribe to the "Reason Way of Life" to dig the program. That means no recording digital audio, no inserting plug-ins, no acidized loop import, no adding additional virtual instruments: What you see is what you get, and by the way,

all you'll get. Like an electronic music version of the Sims, Reason creates its own world (which is probably a major reason why it works so reliably and efficiently). Reason truly is a virtual studio — instruments, processors, mixers, and audio interface.

But is it really so limited? Not exactly, because let's remember that Propellerheads is the company behind the ReWire protocol. You can rewire Reason into Live, Sonar, Logic, Cubase, Acid, Digital Performer, Adobe Audition, Pro Tools . . . whatever adds the capabilities you want that Reason doesn't have.

Which brings us to Version 3.0. As with previous updates, Reason's core remains intact — which just proves again that yes, they did get things right the first time. But they've added three killer features (and a bunch of little extras) that I predict will not only have Reasoners eager to upgrade, but also maintain the program's currency.

THE BROWSER

Everyone's talking about the Combinator and the MClass effects. We'll get to those, but trust me, *this* is 3.0's killer feature (Figure 1). Now you can audition patches, drum kits, samples — even effects presets — in context, while Reason is playing.

Got a drum pattern going? Forget the find, load, listen, find, load routine to audition kits. Just go to the browser and click. Don't like the sound? Click again. Like it? Click OK. Done.

This is the single biggest improvement for tapping

Reason's enormous potential. Not only does it help you find sounds you want, it also lets you know when to give up. For example, I was looking for a sorta Miles Davis trumpet sample for the NN-XT. I typed "Trumpet" into search, didn't like what I heard, and moved on. How about sax instead? Within seconds, I found a Wayne Shorter-type sound that fit perfectly. Mission accomplished.

The browser is not limited to the sounds that ship with Reason, and for the final touch, you can create Favorites lists. It's almost like hiring an assistant to take care of your sounds.

COMBINATOR 3: RISE OF THE MACHINES

You like a particular Reason sound, so you load in a Matrix Pattern Sequencer feeding your favorite SubTractor bass patch, followed by a spacey delay and a little distortion. Fine, but then you create another Reason project and you want that same signature sound, so you start all over again.

Those days are now officially gone, because you can combine any number of Reason machines — synths, drums, signal processors, splitters, you name it — into a Combinator (Figure 2), which is essentially a Reason rack within a Reason rack. You can then save the combi for later recall.

It has no particular limitations: You'll find the same patch cord jacks on the back, the ability to fold instruments to take up less space, ins and outs for connecting with the rest of the

world, and internal ins and outs for combi devices. (They call the display that shows splits and such a "Touch Sensitive Display Unit," so I guess they couldn't resist throwing a bit of humor into the mix.)

The obvious use is splits and layers for instruments, although you could also create multieffects chains. Or splits and layers with multieffects — whatever. Modulation routing adds another level of coolness, as there are four assignable knobs and buttons that can control any number of parameters in the combi. For example, if you have several instruments, one knob could control the filter cutoff and level on one, the filter resonance on another, the decay time on a third . . . you get the idea. It's really convenient to be able to call up these kinds of submodules.

MASTERING . . . SWEET

There are four "mastering class effects" (Equalizer, Stereo Imager, Compressor, and Maximizer). While I don't think WAVES is losing any sleep over these, they fill in one of Reason's few gaps: the lack of good equalization and dynamics control. And of course, bowing to popular demand from the new breed of Listerers Without Ears, there's a maximizing device so that people can slam levels and not complain any more about how Reason sounds "wimpy." (No, it didn't sound wimpy; it just had a thing called "dynamic range.")

The effects are actually quite nice, and I found the Stereo Imager surprisingly effective. The Maximizer didn't respond well to being pushed really hard, but this is probably a good thing because then people won't be tempted to do it. In any event, you're no longer stuck with patching the old COMP-01 module in the mixer's master outs to get a little bit of a dynamic boost. Oh, and as if to prove the value of the Combinator, all four effects are available in a "Mastering Suite" combi.

CONTROL SURFACE SUPPORT

Reason just begs to be fed with MIDI continuous controllers from hardware interfaces. It's always been very good



FIG. 2: IT'S A RACK WITHIN A RACK, A GREAT LIVE PERFORMANCE TOOL, AND A WAY TO SAVE YOUR "GREATEST HITS" CONFIGURATIONS: MEET THE COMBINATOR.

about that, and it was fairly easy to assign controllers to parameters. But Reason 3 takes the concept a step further by offering what appears to be a plug-in architecture for control surface support. It already supports surfaces from: Alesis, Behringer, Dcepfcr, Edirol, Evolution, Kenton, Keyfax, Korg, Mackie, M-Audio, Novation, and Peavey; more are claimed to be on the way (hey, how about the Radical Technologies SAC 2.2?).

How does it work in practice? I hooked up an M-Audio Oxygen8, whereupon the program wanted to know if it was an "old" one or a "new" one. I assumed old, and lo and behold, whenever I changed the MIDI focus, its knobs controlled something of interest in that particular instrument. And, there are several pages of controller mappings for each device, so even a basic controller can map just about all parameters of interest. Furthermore, you can hook up multiple control surfaces, and there's support for some surfaces with MIDI feedback . . . yes, motorized faders are now a possibility. The architecture also supports controller display feedback, so you can see the names of the parameters being tweaked on compatible controllers (e.g., Korg Kontrol49, Mackie Control, etc.).

Those are the big features, but you'll also find new sequencer goodies (mute, solo, and the ability to record automation on multiple tracks), dithering for audio exports, an improved (but also backward compatible) sound bank . . . and it sure

seems samples load a lot faster. Granted, with more instruments and options the rack paradigm is getting a little unwieldy, but much less so than dealing with the hardware equivalent.

THE WISH LIST

So what's left to do? You can open multiple songs at once, and stop and play independently, but there's no way to switch seamlessly between them except by using a combination of a remote command and mouse click to start one sequence while stopping another. It works, but sure isn't like beat matching. I'm still not thrilled with some of the Orkester CD samples, although the new Factory Sound Bank is steps ahead of the original one. And while the NN-XT does velocity crossfading, it can't do positional crossfading, where a sample fades out as you play higher or lower in pitch while a different sample fades in.

And I sure wish Reason, which is a laptop jockey's delight, would support using the QWERTY keyboard for triggering keyboard notes. You can find accessories to do that on their website, but why not just build it in?

Admittedly, that's a short wish list. Then again, it's a brilliant program. I'm still amazed by the ease and fluidity with which you can make music on Reason. When it comes to virtual studios, Reason remains at the top of the heap — and the program to beat. **EQ**

Strengths:

- Highly cost-effective
- Kind to your computer — efficient and reliable
- Wide selection of instruments and processors
- Full-featured sequencer
- Great new browser and remote control functionality
- Combinator is a great feature
- V3 is much better suited to live performance

Limitations:

- No "playlist"-style song chaining
- No positional sample crossfade in NN-XT and NN-19 samplers



Garbage: Guitars!

“T

his is a really huge guitar record for us,” says Butch Vig, producer, drummer and songwriter for Garbage. Vig put his name on the map when he produced Nirvana’s ground-breaking *Nevermind* and Smashing Pumpkins’ *Siamese Dream*.

The new Garbage record — released in April 2005 — is called *Bleed Like Me*.

This release varies from the band’s past as an electronica-heavy act, but better represents what they’ve always sounded like live.

DATE: March 2003-
December 2004

STUDIO: Smart Studios

LOCATION: Madison, WI

ARTIST: Garbage

PROJECT: Recording
guitars

ALBUM: *Bleed Like Me*

PRODUCER: Butch Vig and
Garbage

ENGINEER: Billy Bush

SIGNAL PATH

“This time around, we made a conscious decision to get in the room and turn the amps on so we could get some feedback, so that it resonates,” says Vig. “When the sound comes into the pickups, it just rings differently than if you’re sitting in a chair in the studio. We would run some of our guitar tracks into the Line 6 XT Pro Pod, and some into Matchless, Mesa Boogie, Marshall

or Fender amps. We also used a German amp called the Diezel—they are *great* for the crunchy stuff.”

“We used the Littlelabs PCP Distro to split the guitar signals to the different heads and Pod,” explains engineer Billy Bush. “All of the amps were routed to the same old Marshall 4x12 slant that we have at the studio.”

“But if there was a secret weapon on the guitars, it was the Palmer Speaker Simulator that we used,” says Vig. “It’s designed so you can record in your house without an amp, but it sounds better than even a DI. It’s got some tonal controls and it sounds very much like the amp is right in your face.” They also used some

Chandler TG-2 and Channel pre amps, and the Groove Tubes ViPRE, Focusrite 430, and Manley SLAM as preamps for guitar tracking.

MIC POSITION

The guitar tracks for *Bleed Like Me* were recorded using an assortment of mics — positioned carefully to satisfy Vig’s ears. “We tried to use good microphones: a Neumann FET47, the RODE NT2, and a Shure FM57,” he says. “We also used the Royer 121 ribbon mics and Coles ribbon microphones. We moved them back from the amp maybe six inches or so, and would line them up so we could get them all in phase.” They also used a Brauner KHE-VM1 as a room-ambience mic.

“I like to turn it up, put some headphones on, but then *not* have anyone play the guitar or any other signal coming through,” he says. “Then I’ll just listen to the different tones of the background hiss and move it around, so I can kind of balance the low with the high, bright, clear sound. And once we get those set up on a session, we’ll make sure they’re in phase so we can mix or match—or pick one—and that can take a while.”

They usually end up with four mics, plus the Pod and the Palmer. “Then we split between those and figure out what is best for the recording,” he adds.

PROCESSING

“Now, as we work on a song, it kind of starts getting mixed as the song gets farther along,” says Vig. This process is enabled by the twin Pro Tools HD rigs that Vig has set up at Smart Studios and at his home studio.

“I’ll start putting in automation, EQing and balancing and panning things,” explains Vig. “I like the Massenberg EQ because it’s got a great high and low pass filter. When you’re recording a lot of big guitar tracks, sometimes you want to put in a high pass at 60 Hz or 80 Hz. That way, you still get the fundamental body, but it doesn’t have all the sub stuff making the song sound muddy.”

TRACK NOTES

Some songs on *Bleed Like Me* have 60 or 70 tracks — but not all playing at the same time. “It might just be an extra texture on the chorus,” he says. “But most of them boil down to a riff or a chord progression that Duke and Steve would play. Then we would layer the electronic things underneath the guitars. But the electronic elements are still way secondary to the core of the record.”

“We wanted to turn the amps on”, says Vig, “and crank it up, versus just plugging in and doing the same four bars over and over a hundred times.” **EQ**



Butch Vig in the absolutely palatial Casa EQ

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by Mitch Gallagher

TASCAM GigaStudio 3

GigaStudio: 8 miles high . . . and counting

Type: Windows-based software sampler

Price: GigaStudio 3 Orchestra, A\$1195 (est); GigaStudio 3 Ensemble, A\$698 (est); GigaStudio 3 Solo, A\$398 (est). Upgrade and competitive upgrade pricing available.

Contact: TASCAM, www.tascamgiga.com

Platform: Windows

Formats: Standalone

Polyphony: unlimited; depends on computer system

Plug-in hosting: NFX (Giga format), VST

Sample Resolution: up to 24-bit/96kHz

Mixer: 128 channels with 4-band EQ and compression per channel, 32 fader groups, 8 aux sends/8 stereo aux returns, 32 "external" input channels, 64 output channels

MINIMUM SYS REQS

Orchestra: Windows XP with Service Pack 1, Pentium 4 1.7GHz or AMD 2100 XP, 512MB RAM, GSIF-compatible soundcard or ReWire-compatible host, SSE-compatible processor required for GigaPulse

Ensemble or Solo: Windows XP with Service Pack 1, Pentium III 1GHz or AMD 1500 XP, 512MB RAM, GSIF-compatible soundcard or ReWire-compatible host, SSE-compatible processor required for GigaPulse

Once upon a time, I relied on hardware samplers for all my sampling and sample playback needs — I was perfectly happy with my Akai S1000 and Kurzweil K2000. Software samplers just weren't reliable enough for serious production work and they offered far less performance than you could get with a dedicated hardware sampler. But times have changed, and software samplers have come a long way.

The first release of GigaSampler struck a major blow for software sampler acceptance by offering something hardware units really couldn't provide: the ability to stream samples from hard drive rather than strictly from RAM. This innovative concept allowed sound designers to work with extremely long samples, which provided much more realistic results than short looped samples. GigaSampler enjoyed reign as the only real software sampler option for several years.

Now, of course, there are several very powerful competing software samplers on the market. But GigaSampler — now known as "GigaStudio," certainly hasn't rested on its laurels. Version 3, on review

here, offers a ton of powerful features — the capabilities have surpassed what most of us will ever use, with one important caveat: Everything depends on your computer. The new version features unlimited polyphony. So if you have a stout-hearted, heavily muscled PC to power GigaStudio, you'll get more notes of polyphony than you can probably use — although voices can be used up very quickly if you have long release times and if you're stacking instruments together, so you can never have too much polyphony on tap. As a benchmark, I ran GigaStudio 3 on a Sweetwater Creation Station CS Rack; a 3.2GHz Pentium 4 loaded with 2GB of RAM and dual SATA hard drives. That machine had no problem cranking out 420 voices of 24-bit polyphony; pretty darn amazing.

There's another aspect of GigaStudio 3 that will tax your long-suffering CPU: GigaPulse, the new convolution reverb/ambience/resonance simulator (see sidebar). Suffice it to say, GigaStudio will run on a pretty basic machine. But if you load it up on a firebreathing computer, you'll be amazed at what you can do.

WHAT'S NEW

There are three versions of GigaStudio 3; Orchestra, Ensemble, and Solo. With Orchestra, you get unlimited polyphony, eight MIDI ports, 17 gigs of sounds including custom Vienna Symphony sounds and two versions of GigaPiano II as well as MegaPiano II, and GigaPulse Pro. Ensemble is the same, but with 160 voices of polyphony, four MIDI ports, 11 gigs of sounds, and GigaPulse

SP. Solo has 96 voices of polyphony, two MIDI ports, three gigs of sounds, and GigaPulse SP.

There are a lot of new features in Version 3. Two we've already mentioned: unlimited polyphony and GigaPulse. (See sidebar for more on GigaPulse.) The GigaStudio mixer has been greatly expanded. It can now handle 128 channels, 32 fader groups, eight aux sends/eight stereo aux returns, 32 "external" input channels, and 64 output channels. Each channel now has a 4-band EQ and built-in dynamics processing.

Also new in GigaStudio 3 is QuickEdit, which gives you instant access to instrument parameters. There are four main aspects to QuickEdit: Articulation, Dimensions, Wave, and Keyboard. Articulation contains "synthesis"-type parameters such as envelopes, filters, and LFOs. Dimensions provides access to MIDI controller programming such as cross-switching. Wave lets you click and drag envelope, filter, and LFO curves right on the sample waveform. Keyboard lets you view different properties of the loaded instrument.

You can now Stack instruments — load as many as you want on a single MIDI channel. When you stack instruments, you retain control over each instrument's parameters, and each can be sent to its own mixer channel. Or you can layer so that the entire stack feeds the same mixer channel.

ReWire and VST plug-in support make GigaStudio 3 much more compatible with the



outside world. There's more powerful "Capture to Wave," which can now capture up to 64 audio streams simultaneously. And there's even more, such as GSIF 2 kernel-level MIDI and support for 32 channels of audio input and 64 channels of audio output. Plus, samples as large as 512GB — 1/2-terabyte — are now supported... big enough for most applications.

LIBRARIES

Depending on which version of GigaStudio 3 you purchase, you're supplied with varying quantities of samples to get you started. "Orchestra" comes with 17 gigabytes of samples, including three large pianos, custom Vienna Symphonic Orchestra instruments, and usable demos drawn from a variety of Giga libraries from sound designers such as Larry Seyers, SampleTekk >

Sonic Implants, Scarbee, and many others.

THE LAST WORD

GigaStudio 3 performed flawlessly for me. It was completely stable, and provided all the horsepower I needed — although I could see needing all that polyphony for stacking instruments, and so on. Remember you're going to need a powerful computer with fast hard drives to get the most from it.

Star among the new features, GigaPulse is a powerful tool that can add an even greater degree of realism to your sounds. The reverb impulses sound great, and being able to apply mic models and resonance is a great bonus. And QuickEdit makes tweaking instruments into exactly the shape you need much faster and easier; the parameters required are all right there, close at hand. Very nice.

All in all, GigaStudio 3 is a worthy

upgrade to an already-powerful studio tool. If you're already a GigaStudio user, you'll definitely want to upgrade. If you're looking for a new software sampler, GigaStudio offers a lot of power in an easy-to-use package. GigaStudio 3 is a mature, solid program. Definitely a winner for TASCAM.

EQ

Strengths:

- Unlimited polyphony (as much as your computer can deliver)
- GigaPulse
- QuickEdit control
- ReWire support
- Great sound quality

Limitations:

- Windows XP-only
- Power-hungry



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by Mitch Gallagher

Rode NT2-A

Rode cranks the NT2 up a notch. Or three.

Type: Large capsule studio microphone
Price: A\$1,398 (est)
Contact: Rode, www.rodemic.com

Capsule type: Externally polarized 1" dual-diaphragm condenser
Pickup pattern: Omni, cardioid, or figure-8
Frequency response: 20Hz to 20kHz
Output impedance: 200 ohm
Sensitivity: -36dB, ref 1V/Pa, ±2dB
Equivalent noise: 7dBA SPL
Maximum output: +16dBu at 1% THD into 1k-ohm
Dynamic range: 140dB
Maximum SPL: 147dB (157dB with pad) at 1% THD into 1k-ohm
Signal-to-noise: 87dB
Highpass filter: flat, 40Hz, 80Hz
Pad: 0, -5dB, -10dB
Included accessories: zip pouch, stand mount



One of Rode's recent ads claims that there are 150,000 NT2 mics in use around the world — give or take a few thou and you're still talking lots of microphones. So when the company decided to update this recent-vintage "classic," they weren't looking at an easy task.

WHAT CHANGED?

There are three primary areas where the NT2-A differs from the original NT2. When you open the box, you'll notice the first right away: there's way more control built-into the mic itself. Three 3-position slider switches select the polar pattern (omni, cardioid, or figure-8), highpass filter (flat, 40Hz, or 80Hz), and pad (0, -5, or -10dB). The NT2-A also follows in the footsteps of other recent Rode mics by posting a low self-noise spec: 7dBA.

Finally, the NT2-A is built around the Australian-designed and -manufactured Type HF-1 dual-diaphragm capsule, the same transducer that's used in Rode's wonderful K2 microphone (see my review in the December '03 issue).

The NT2-A is also substantially heavier than the NT2, because of its acoustically modeled solid cast-metal housing and heat-treated steel mesh grille. The NT2-A comes in at just A\$100 (est) more than the original.

THE SOUND

The most recent generation of Rode mics, with the advent of the TYPE HF-1 mics have all had a markedly different sound from their predecessors — they're smoother, more even,

and richer. That definitely describes the NT2-A. While there's a gentle high-frequency lift, this tends to open up the sound rather than make the tone harsh or hype-y.

On male vocals, the NT2-A has a fat tone with round mids and full low frequencies. The top is open and detailed, with plenty of presence but without the harshness and hyped treble some other mics exhibit.

I received a pair of NT2-As,

NT2000

What's the difference between the NT2-A and its slightly more expensive sibling, the NT2000 (A\$899 est)? The NT2000 has completely variable pad, pattern, and filter controls as opposed to the NT2-A's three settings for each parameter. Plus the NT2000 comes with a shockmount and a molded plastic case.

so I set to work stereo miking a variety of sources, including nylon- and steel-string acoustic guitars. The imaging was excellent. The sound was full, open, and detailed, and the dynamics followed the sound in the room nicely. I hate to repeatedly and redundantly repeat myself again and again, but I keep coming back to the word "smooth" — because it's an apt descriptor of the top end of the NT2-A. Another would be "natural."

On crunchy electric guitar, the NT2-A was chunky sounding, without top-end "fizz" but with plenty of low-end thump and thick midrange presence.

Metallic hand percussion rang true, without strident highs, and with smooth (there's that word again) decay. Other types of percussion

sounded real, with good attack transients and well maintained dynamics.

THE DEAL

I'm really enjoying the latest large-diaphragm mics from Rode — I was impressed with the K2, and have similar feelings about the NT2-A. The value offered by these mics is simply outstanding. While the list price of the NT2-A is around A\$1400 (est), you can pick one up at a substantially lower street price. But even at full list price, the NT2-A delivers excellent value. It would be nice if the package included a shockmount rather than a stand mount, but at this price, I'm not complaining too loudly.

Forget what you've heard from Rode mics in the past — not that the older models don't perform very well in their own right, mind you — the new generation of Rodes, including the NT2-A, are simply stellar performers that provide excellent, smooth, dynamic sound with lots of control capability, lots of flexibility, and literally no self-noise.

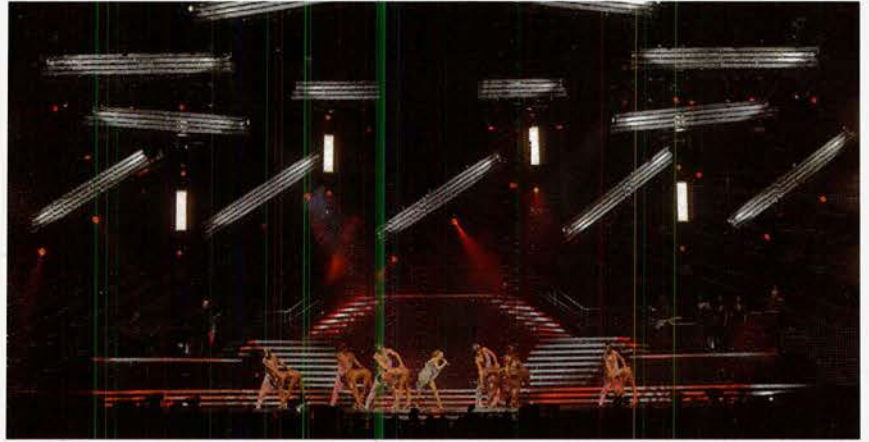
Whether you're looking for your first "pro" studio mic or searching for the best model to fill out a microphone locker, the NT2-A bears strong consideration as it excels in almost any application. A winner? Oh yes. **EQ**

Strengths:

- Smooth, rich tone
- Good dynamic response
- Quiet
- Useful for many applications
- Outstanding value

Limitations:

- No shockmount included



GO I-MAG!

Noticed how the bubble has burst in moving light land? Now every lighting designer is on the LED express, with the first company to make a cheap high resolution LED panel (as opposed to a Barco priced one) likely to be the first company to make a decent profit from show lighting.

We've seen Var *Lite, Martin, and High End Systems all lose a LOT of money making (subsidising) moving lights. Other firms in that biz have fared equally dismally.

The action is all about screens, the Kylie story shows just where this is all going.

- More on this theme inside....

Viva the Showgirl

Postponed, but we WILL see this show!

Kylie's concerts were to be a cover feature in this issue. Like everyone in the biz we were saddened to hear that The Showgirl was taken ill.

She is very well liked in the industry, and a large. Her crew speak very highly of her. Our airline contacts also report that Ms. Minogue is one of the best behaved, most pleasant people in first class.

So there - you can be famous, rich, talented and NICE to people!

We do have this preliminary report from the tour before it was postponed. The show is an epic, slick, pumping, hi-tech romp through the realms of kitsch, Vegas glitz and glamour, power-pop and the mixed-media extravaganza experiences of the Busby Berkeley era, with a visual surprise around every corner.

Video production is a big part of the "Showgirl" world tour. The show includes several elements of new video technology

including the first SoftLED LED curtain product to be toured in the UK, imported specially for "Showgirl" by XL Video as specified by lighting designer Vince Foster. There's a Barco I-12 high resolution video screen, also newly purchased and a new 32 input Thompson Kayak mixing console - a recent upgrade to XL's larger touring PPU's.

An essential part of the show's visuality is achieved with the

(continued over)

Showgirl Imag

innovative use of LED technology – including low res Barco MiPix panels and the new SoftLED drape products, which forms a 100 x 30 ft upstage backdrop, described by Foster as “a scene-changing backdrop” It’s the also largest piece of SoftLED to be toured to date.

The material displayed on this ranges from cityscapes to abstract patterns, fractals starfields, etc. It also gives Foster the latitude to use it as a colour wash effect and adds real animated movement and depth to the stage.

As a lighting and visual designer, Foster is very keen to fuse LED, video and lighting mediums together into a bigger optical canvas, rather than having all elements working separately. He collaborated closely on the look of the show with artistic director Will Baker and set designer Alan MacDonald.

The MiPix form a panel along the front of the set, giving a second low res surface downstage of the SoftLED. The portrait format hi res screen is upstage centre, and flies in when in use.

The IMAG is beamed onto two 20 x 15 ft side screens each fed by Barco R18 projectors, mixed from four Sony D50 cameras, two on track and dolly in the pit, one FOH and one hand-held on stage right.

Playback footage – a vibrant cocktail of animation and specially shot video – including scrolling flags, curtains, chasing light bulbs, chandeliers, rave fliers, etc - was produced by Blink TV’s production team led by Marcus Viner, working closely to a brief from Baker and MacDonald. Additional material for the low res surfaces was created by Vince Foster using a Catalyst digital media server.

All the low res sources – that go on the MiPix and SoftLED - are played back via the two Catalyst computers on the tour, where they are stored as Quicktime files and triggered by Foster running the WholeHog 3 lighting desk. Material was transferred from its various formats, edited and loaded into the Catalyst by Richard Turner.

The high res footage is stored on Doremi hard drives, daisy chained to time code from the keyboard player.

MOTION

A Kinesys Elevation motion control system is in action on the tour. The South London based automaton and movement specialists were also involved in devising a control system for the contra-rotating ‘wedding cake’ double revolve that concludes the spectacular Busby Berkeley section of the show, with Kylie



standing aloft: on its summit, flanked by dancers.

Ten Kinesys 500kg 400mm/s vari-speed motors and Kinesys’ proprietary vector control software is being used to suspend five lighting trusses, supplied as part of the lighting rental package from Neg Earth Lights.

The lighting trusses are also

flown throughout the show and utilised to make up dramatic, different and very striking architectural shapes across the stage – from arches to zig zags to staggered asymmetric looks. They are clad with scuffed metal fascias which pick up the light extremely well and accentuate their form.

LED BATTENS

LD Vince Foster is using 48 James Thomas Engineering PixelLine LED battens in his design.

The PixelLines are underpinning 13 over-stage sections of truss – five of which move – attached to the bottom downstage rail on each section, playing a dynamic, colour-changing architectural delineation role. The PixelLines make different shapes and patterns as the trussing shifts in structural appearance with the five moving sections shifting into different looks.

This off-beat broken-up trussing look was derived as the most versatile way of covering the stage with an interesting and diverse mix of lights, including moving lights, generic and assorted other LED video/light sources.



ROSCO

VORTEX 360 DUAL GOBO ROTATOR



Rosco's newest –and lowest priced – Gobo Rotator has two separate gear assemblies for double gobo effects, and simply pugs into a wall socket or dimmer outlet for adjustable speed. Suitable for Selecon Pacific*, Shakespeare, Source4 and Strand SL. Silent motor and stylish design make it ideal for architectural as well as theatrical use. Unit is complete with transformer and speed control. Takes up to two 'B' size gobos or glass.


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Media Servers and LED's lead lighting

What if you are the lighting operator for a band, and the designer wants a desert scene? With video, you can run rolling footage of clouds, and put yellow light on the act. Then a storm comes along, the LED screens and the moving lights all pulse together as lightning.

This is just one scenario which shows where lighting and visuals are now irreversibly joined. In the concert, it is now the quest for the complete look. The struggle is between the vision people and the lighting people. Who operates what? Who sends vision to what screens? Shows now can have video projection at the sides of the proscenium, with the real action coming from more and more LED screens on stage. Big shows aspire to have the whole backdrop dominated by an LED screen.

Cameras, video rolls, effects, lights. The whole thing is fast becoming one design concept, and the lighting designer is in the box seat to gain a lot of extra power.

Lighting designer and director Rohan Thornton knows the issues first hand. He does a lot of diverse work aside from his main gig at TV station GTV 9 in Melbourne. For TV he has recently implemented some LED screens into the set of a game show, where the screens were run at just 5% intensity. For GTV 9 to invest in the technology, they needed to acquire some media servers.

They chose Hippptizer, who offer servers that will play out video clips and graphics files, triggered by a variety of control protocols. In the GTV 9 case, the servers are triggered by dmx, with a bunch of clips appearing on a given channel of dmx.

"The term we use is imaging" says Rohan. "You're trying to create the total image. Complete the picture. The lighting guy is taking some of the video companies out the equation."

"There's a cultural divide - technical directors need to accept that lighting designers and operators can cut it with imag."

Rohan will host a half day conference on this exciting theme at ENTECH on February 14th.

"We'll talk about the logistics verses the philosophical. About products, and how to make it work - a discussion about what you can

do. Video graphics guys talk in terms of pixells. We talk in sizes and distances. They talk about resolution. You need to co-ordinate graphics being created. Then if you run the LED screens at low intensity for TV, you need to oversaturate the graphics to get rid of some of the pixellization. There are so many issues."

MEDIA SERVER LANDSCAPE

The latest entrant in this new market is Robe, who demonstrated a Media Hub at ProLight & Sound Frankfurt earlier this year, with production release slated for PLASA in September.

Robe MediaHub (pictured) is a media server with four parallel outputs to send the video content to plasma screens or projectors and display devices of any type. It combines two digital layers with a selection of up to 255 video clips or images per layer. Supported image and video file types are: MPEG1, MPEG2, PNG and BMP.

The MediaHub enclosure comes as a truss mounting housing (approximately 17cm x 39cm x 47cm)



• Other Media Servers: Green Hippo, Radlight, Martin, GrandMa and Catalyst from High End Systems. There are others.....

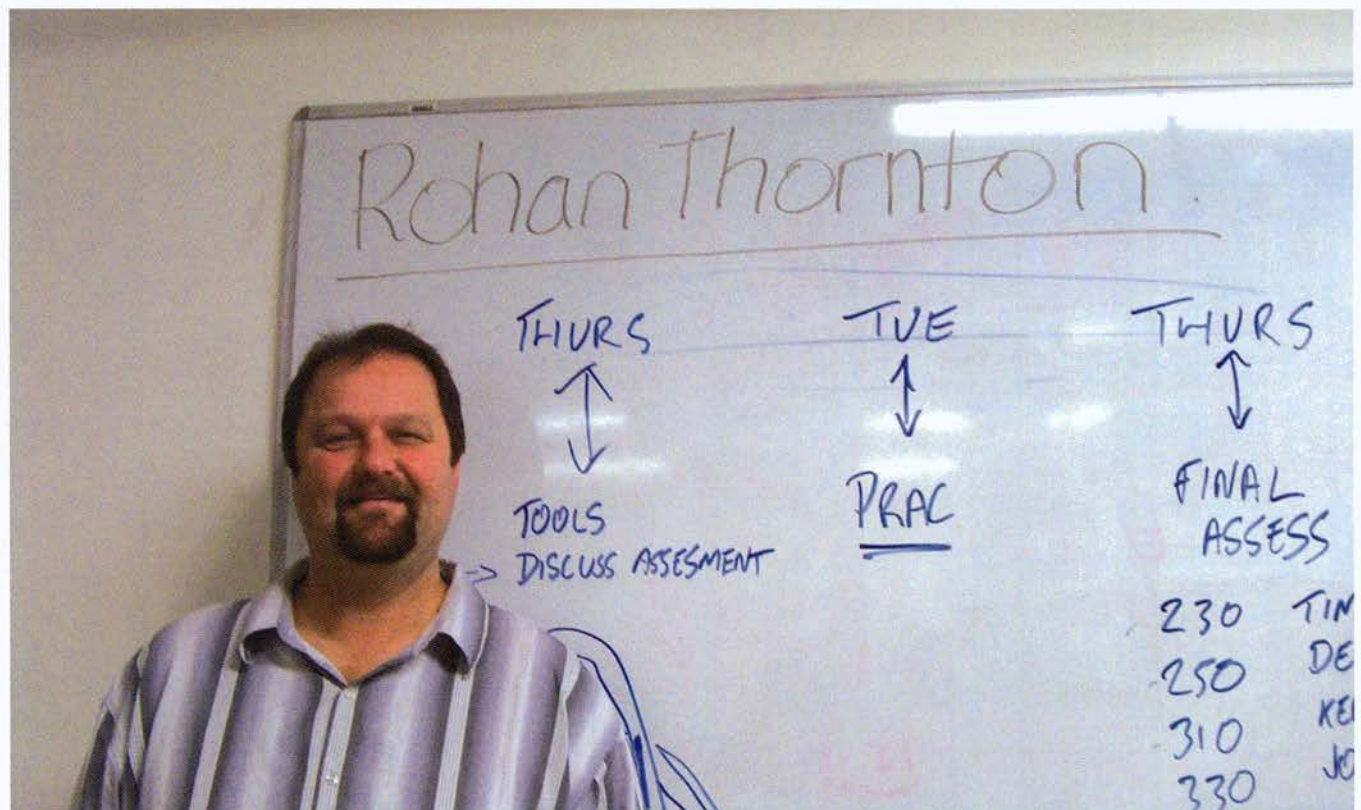
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Big Lighting inside Big Brother

By Richard Neville

To its viewing audience, the Big Brother formula is simple. Take an eclectic mix of young eccentrics, lock them up in a house for three months and film their every move with thirty seven cameras strategically positioned behind one way glass walls in a specially constructed 'house'.

A mixture of live and compiled shows are produced on site at the Australian franchise's base in Dreamworld on the Gold Coast. A live weekly eviction show is staged every Sunday night when one 'housemate' is removed from the house, followed by daily highlights shows every weekday evening, a live nominations show and adults-only 'Uncut' program on Mondays, and a weekly 'Friday Night Games' live event on Fridays, where the housemates compete for rewards in a series of themed games.

For those involved in the production, the BB formula is not so simple – it's a lifestyle lived by up to 260 crew members who work around the clock at the Dreamworld site, producing live television 24 hours a day for three months. For all intents and purposes, a fully functioning, multi studio television station operates from here – there are two studios – a 2000 seat auditorium and a smaller indoor studio, an enormous control room, the actual house, post production facilities and of course, the infrastructure to maintain an extensive website and live broadcasts on a regular basis.

The unusual mix of live shows of varying sizes, coupled with the demands of lighting a huge house from every angle has resulted in the employment of two lighting designers. Francesco Calvi is responsible for the live eviction and nomination shows in the main auditorium, while Ian Quatermass designs and oversees the house and smaller studio lighting rig.

The House

For anyone who has never seen the show, most of the action centres around the house – a purpose built complex containing living quarters

for the housemates which includes a bedroom, bathroom, sauna, outdoor garden and arena, swimming pool, spa, kitchen and the infamous 'diary room' where housemates can talk to Big Brother. Each wall contains sections of one way mirrors, behind which lie a camera crew and around 30 cameras, which record everything that goes on inside the house. The house is located in thick bush about 400 metres away from the production centre.

At first glance, the house lighting appears uncomplicated but effective, but upon visiting the house and speaking to LCD Ian Quatermass, it quickly became apparent that there is a lot more to the Big Brother house than just fluorescent tubes.

"We have about 1100 fixtures in the house, including fluoro tubes, metal halide floods, domestic tungsten fixtures, neon and even LEDs" said Ian. Who spends months prior to installation scouring through domestic, trade and television lighting product catalogues searching for appropriate fixtures.

Ian noted that "about 99 percent" of the fixtures were commercial, industrial or domestic fittings (not film or entertainment fittings) partly due to cost and their availability, but also because he recognized the fact that they would be constantly 'in shot' during filming. Aesthetically pleasing and suitable fixtures were needed throughout the house.

The fixture count rose this year from 700 in the 2004 season, as Ian finds more things to light inside the constantly evolving house, which is gutted and re-designed each year. This year, Ian has made extensive use of domestic MR16 halogen downlight fittings to light the main textured walls and features of the house, and has used a number of different fixtures to highlight certain locations – from a tangle of neon in the ceiling of the living room to tiny LED fittings on the eviction stairs.

The LCD's attention to detail is amazing – this year he designed and installed a series of small LED fittings that were installed under the corners of each bed when he noticed that it was incredibly dark in the windowless room at night and that the housemates would need to be



able to see to move around at night.

Ian is very proud of the house's disco setup (pictured bottom right), which is one of only a handful of elements that were kept from the last series of the show. After realizing that purchasing an existing illuminated dance floor product would have blown his budget, Ian designed and built his own, and then filled the roof above it with some 20 disco effects to create a miniature disco in a corner of the living room. The floor and effects were integrated into the house lighting control system, so it can be remotely and locally operated.

When the lights in the house go off for the night, so do the housemates. Big Brother has become notorious for its adult content in the bedroom, and the producers don't want to miss a second of it. Over the past few years, Ian and his company, Simply Brilliant, have developed a range of infra red fixtures that are purpose built for the Big Brother house. Ian's infra red flood fixtures ensure that no action in the dark is missed by the cameras, and have been so successful that his designs have attracted interest from Big Brother franchises all over the world.

Most of the fixtures around the house are designed to provide non-directional lighting to evenly light every part of the house. Only a handful of directional fixtures can be found, located in the diary room. Ian used fluorescent softlights of his own design and construction in the room to achieve the best effect and level of comfort – "A housemate can be in the diary room chair for hours crying their eyes out, so the last thing they want is to be blasted with light for a lot of time" said Ian. This example of customization is typical of Ian's work in the Big Brother house – if he couldn't find a fixture to suit his exact needs, he'd research and build his own.

The lighting installation is a complicated process at Big Brother. While he's working in a studio environment, Ian doesn't enjoy many of the luxuries of a normal television studio. There's no lighting grid to hang fixtures from, so every individual fitting is installed into the roof or walls as if it were being placed in a normal domestic or commercial installation. Contract electricians have to handle mains wiring to each light due to electrical laws, which added another time-consuming step to the installation process. Ian also notes that changing a focus or

position of a light during camera rehearsals is not an easy task, so rehearsals are deliberately broken into two sessions where the crew have a few days to correct any problems.

The reality of live television is always a consideration for Ian – he has limited time to work between construction finishing and the beginning of the season – a date which cannot be pushed back. When the show begins, the lighting system runs continuously for three months, so the reliability of fixtures and the control system is another thing for Ian to consider, especially given the fact that access to the house is difficult once the housemates are living inside. "We run most of the dimmable fixtures at between 85 and 90 per cent of capacity after we found that doing this can double or even treble their lifespan" said Ian.

The house lighting is controlled by a brand new, custom designed C-Bus2 system, which despite having some installation difficulties, allows Ian to present the lighting control system to operators in a logical fashion. The main control interface is installed in the CCU (camera control unit) position in the control room, with two restricted interfaces inside the actual house for the housemates to control some parts of the lighting. Ian designed a series of interactive screens that can control everything from the house's disco floor through to individual circuits in



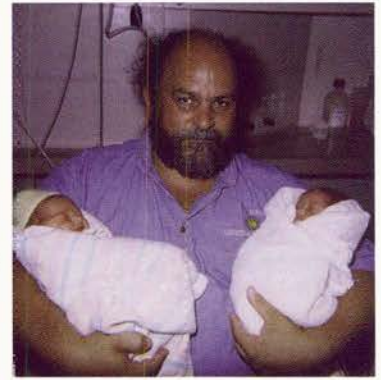
Big Lights, Big Bro

the garden. A number of preset settings run on a day to day basis, with control room personnel able to switch easily between day, night and sleep scenes. Sequences are also programmed for special procedures such as the evictions. The system is very intuitive and features a graphical display, which means that Ian can leave the day-to-day lighting operations to the CCU operators and technical directors. However, Ian's programming still relies on manual switching between scenes – there are no automatic 'cues' so that the technical director is able to make changes to lighting states when the cameras are not recording in a particular area.

Speaking of cameras, Ian has developed his house lighting designs over the last three years to be "more friendly to CCU." This year, Ian has increased the intensity of house lighting to help combat the problems the cameras face with shooting through tinted, mirrored glass which takes up to 3 f-stops of light away. Throughout the house lighting colour temperature is balanced to 4200K – which Ian describes as "perfect for the combination of outdoor and indoor shots... an exterior shot from the garden makes the house appear warm, while an interior shot looking out towards the garden doesn't make it look too cold outside."

Like Big Brother himself, Ian admits to using the lighting to confuse the housemates – "the new task backyard was installed this year," he said, referring to a new fenced compound built on the side of the house. "We deliberately lit it up every night, so the housemates saw the glow coming from next door, but were left to speculate what it was for the first week."

The Big Brother house lighting is no small undertaking, but is one that Ian attacks with amazing attention to detail, ingenuity and creativity. Next time you sit down to watch Big Brother, take a second to appreciate the complexity of the house lighting, and see if you can



Francesco Calvi pictured in 2000 with his twin girls.

notice the little things that make the lighting design really stand out.



The Studio

Emerging from the house briefly, Ian also designed the lighting for the smaller studio set where the weekly 'Friday Night Games,' controversial 'Uncut' and 'Up Late' shows are broadcast from. Ian describes the studio as "challenging," as it was initially only supposed to be used for one show, then only recently was also utilized for a further two each week, all with different set pieces and positions. While Ian has also used a number of domestic fixtures, such as MR16 halogen down lights around the Uncut set, most of the studio's lighting equipment has been sourced from Premier Lighting in Brisbane. A mixture of smaller fixtures – the most power-hungry fixture in the studio only has a 1k lamp – are used to light the small, low-roof studio. A number of basic presets exist on an Jands Event console for each show.

The Eviction and Nominations Shows

Four hundred metres away from the darkened camera runs and unsuspecting housemates, Francesco Calvi is sitting in his shed at the back of

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Big Lights, Big Bro

Ian Quartermass (right)

the Big Brother amphitheatre as the thousands of fans roll in for the Sunday night eviction show.

Francesco has been lighting the live Big Brother shows for the last four years, and approaches the shows with his trademark humour and enthusiasm. In the air above him, a substantial lighting rig of Mac600s, Mac250 Entours, Chromabanks and just over a dozen new Source 4 Revolutions are spread around the usual assortment of conventionals. Lighting for the main stage was supplied by Chameleon Touring Systems from their Brisbane office.

The Big Brother live shows are huge, bold and colourful, which Francesco lights with "lots of block colour and movement" to achieve the maximum impact for television. The results are nothing short of spectacular, especially as the most recent evictee parades down a narrow catwalk through the screaming crowd at the highpoint of the Sunday night show. A large proportion of the show's lighting rig extends out over the audience – with Mac 600s and 2k Fresnels spaced along long fingers of tri truss, and an impressive line of Chromabanks which pulse in a single line above the length of the catwalk.

On the stage, Francesco has used Mac250 Entours to light the chrome wire set, which while he admits were initially chosen due to budgetary constraints, are perfect for the job. "They've got some effects which are great for throwing a bit of texture onto the set" in Francesco's words. A number of Pulsar ChromaCubes are hung from steel cables around the stage, which add a certain element of class to the set with their gentle glowing throughout the night. They also help to maintain the set's colour scheme, which changes between the eviction and nomination shows on Sunday and Monday nights respectively.

A few dozen Source 4 pars are scattered across the floor of the stage to uplight parts of the set, which Francesco brought in to replace Mac300s which weren't quite bright enough for the application at the start of the series.

For the first time, Francesco is using the tungsten Revolutions for key light, with 13 of the moving fixtures surrounding the eviction stage. "They're great for this show" he remarks, "because every time they change or add a camera position I can follow them with the lights really easily." He's impressed by their brightness and a new frost system which allowed him to install standard frost gel into the fixture. The size of the set and limited roof access makes the Revolutions a welcome change from previous years, where key light was provided by conventional 2k Fresnels.

The amphitheatre lighting is controlled by two GrandMA consoles which are networked together, allowing Francesco to keep the full size console in his control room, while a GrandMA Lite sits closer to the stage. This serves as a kind of remote backup console for the Sunday night show, but is used as the main console for the nominations show on Monday night where the size of the venue is halved by drapes to create a more intimate space. Francesco describes the GrandMA as being perfect for the live shows with its ability to provide direct access to such a large number of cues and sequences, which is important in an environment where everything can, and does, change frequently.

Francesco, like Ian, faces a number of challenges when designing for the shows. "Budgets are always an issue... I've used QIs (floodlights) to light the audience before... but this year they wanted a bigger look" he said between updating cues during rehearsal. The old Dreamworld amphitheatre, which has been remodeled to fit the Big Brother shows in, was not



built to support a full studio lighting rig, so weight restrictions play an important part in equipment selection, with many of the trusses dead hung from points in the roof to minimize weight.

When the show kicks off on Sunday night, there's no denying that the lighting is as bold as the fans' costumes or host Gretel Killeen's hair-co. Francesco is well known for his television designs and his work on Big Brother looks as good on screen as it does to the crowd at the venue – even if he won't admit that he doesn't follow the country's most watched television series.

- Thanks to the crew at Big Brother for the assistance with this story, especially Ian Quartermass, Francesco Calvi and David Brown

The diary room (below)



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Kick start (my Career)

By Stuart Grant

For kids in Tasmania who want to be sound engineers or lighting designers there is just nothing around to give us a basic grasp of the industry. So when such an opportunity arises you just can not pass it up.

This opportunity was given to me in the form of the Newstead College Rock Music Summer School, held in January this year, which brings together not only the best young musicians aged from 8 to 15 in Tasmania but some of the best musicians from around Australia as tutors; I speak of Rob Corelli and Simon Paterson as well as The Dead Abigails, one of Tasmania's premier bands.

Frontline, the naming rights sponsor, (based in Launceston) supplied the P.A System and lights for this week of extensive tutoring provided by James Foster (production manager for Frontline). On the first day the Abigails played a gig and we had our first taste of how a sound engineer worked. Later that day we got to quiz James about the gig.

The next day the teaching started. We learnt about stage plans, patching and how to use the Soundcraft mixer and the Lighting board.

That night there was a concert and right at the end the Lighting board broke down. It wasn't found until the next day when it was powered up. There was a burning smell coming from it. James thought it was because of the light that was sitting on top of it. From then on it was a race to find a new light board; we ended up with an LSC one that was just lying around at Newstead College. After that we did more practical work with the boards.

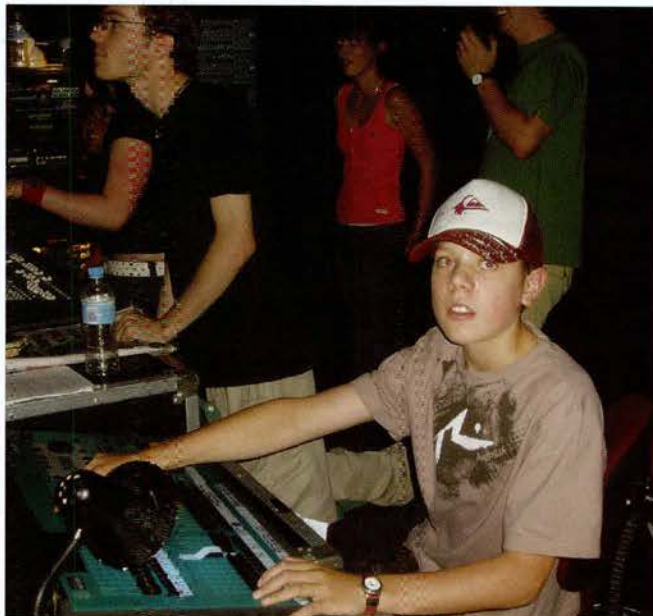
On Wednesday we had a mid week test concert which involved patching, sound check and the final show. There was a variety of music including acoustic and heavy rock. After the concert we learnt the differences between concert sound and corporate sound.

The next day we started to set up for the final concert. This was a big task as we had to mic about 20 drum kits. We also learnt about large vocal group sound and about rack gear eg. Graphic equalizers, effects and compressors. That took up all of Thursday.

Friday came: the day of the concert. It was full on from 9 o'clock with sound checks for about 25 or so bands which was a mammoth task in itself. The last band had just finished its sound check when the punters rolled in and the show started.

The drum ensemble went off without a hitch and so did the vocal group. The bands started.

Most of them went off with out any difficulty except for a couple where you couldn't hear the



lead singer because the guitar amps on stage were too loud so they drowned them out.

On the whole the week was a success because we learnt the basics in all areas of sound and lighting and we learnt some of the different applications for our new skills such as rock concerts, choirs, acoustic music, corporate functions and workshops.

• Great story! That's Stuart above, the face of the future. - Ed

Stuart has earned \$200 for this story!

Email your story, or your pictures to: mail@juliusmedia.com with 'Reader Story' in the subject line. If we use it, we pay up to \$200 a page.



HES Bankloan

Still no word on whether or when High End Systems will announce new support arrangements for Australian clients, who are currently supported direct from Austin, Texas. It is a difficult arrangement.

The firm has issued one press release in the last issue period, announcing a US\$9m bank loan, of which "only \$4m was drawn down at closing".

The loan will enable an aggressive product release schedule, they say.

Let's hope for some upbeat news.

Chauvet is really an iSpot

Last issue we reviewed the Chauvet Trackspot 250. The Chauvet name is only used in the US - everywhere else in the world the range is called iSolution. We should have known this!

The fixture is known as the iRock 7S. It features infinite combinations of colours and patterns, and is part of the iSolution family.

One of the best features is the builtin, pre-programmed light shows that are simply plu-n-play - multiple units can simply be linked together and simply work together.

It sells in Australia for RRP \$1499 including lamp and GST

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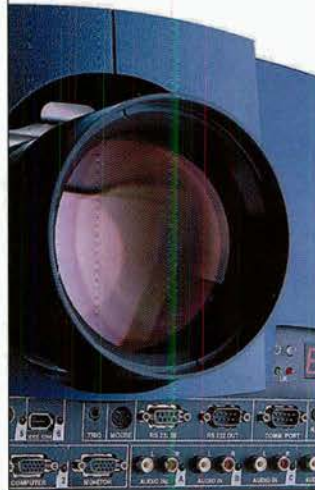
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Reviewed

Big Lite 4.5

By Richard Neville

With arguably the most logical product name in the lighting industry, the Big Lite 4.5 is a search light that's attracting the lighting industry like moths.

The 4.5k Xenon search light is built by Zap Technology, an arm of respected lighting manufacturer X & Y in France. The fixture was built from a touring and rental point of view, making it everything designers and maintenance technicians could ever want from a search light. CX Magazine ran the Big Lite through its paces thanks to Australian distributor, the Electric Canvas. From the moment we turned the fixture on, it was clear that this was an impressive piece of machinery.

The fixture features an incredibly smooth, mechanical dimmer that does an amazing job in keeping the beam field even through the full range of dimming, while a spectacular variable strobe effect of up to 10 flashes per second can also be achieved. Just in front of the dimmer, three Wybron-built colour scroller cartridges provide the operator with varying shades of cyan, magenta and yellow high temperature gel strings to achieve an excellent colour mixing system. At the end of each gel scroll, horizontal and vertical frost silks make it possible to frost the beam to light very tall, narrow objects such as a building, or long, wide objects, such as a bridge for instance. Colour speed is sacrificed slightly with the scroller system, but with the resulting wide range of colours that easily puts a Space Cannon to shame, it's a sacrifice most will be willing to make. Colour mixing is also consistently uniform and smooth.

Behind the douser, the Big Lite's 4.5k xenon lamp remains stationary as the fixture's reflector moves around the lamp, which effectively eliminates the 'donut' effect created by so many search lights. The reflector changes the beam angle of the fixture from a narrow pencil beam to wide flood in only 0.3 seconds, which open up a range of effect possibilities for the lighting designer.

All these features are contained in a smart, attractive outer shell, with the yoke connected to its base by a single arm. While it may appear to be a strange sight at first, the single arm design doesn't hinder the Big Lite's movement speed. The 16 bit pan and tilt controls are easily faster than any other search light, highly responsive and are reliably accurate, thanks to the use of strong DC motors with optical encoders as opposed to conventional stepper motors. Peter Milne, manager of The Electric Canvas, explained that the use of PID filtering technology developed for industrial robots keeps fixture movement accurate, smooth and places as little stress on the unit as possible.

The 124kg fixture can be hung from a truss using a unique 'monoclamp' which features four clamps similar in design to those found on many smaller moving lights.

While the Big Lite may seem impressive for its increased speed and range of features on offer to the designer, the fixture's mechanical construction is equally as impressive. Three phase power is delivered to the Big Lite from a remote ballast unit, which features a clear LCD screen and set of control buttons that can remotely control the fixture for testing purposes. The ballast uses IGBT sine wave technology to control the lamp, and connecting the ballast to the fixture is as simple as plugging in the three cable loom supplied with the unit. The fixture itself has a large LCD screen on its base, giving technicians a place to set DMX addresses, run pre-programmed shows and the light's various test functions.



Gen Williams installs the lamp. A 4.5k xenon lamp needs to be handled carefully

One circuit board is easily accessible in the base of the fixture, which controls the pan and tilt mechanisms, and distributes DMX and 24v power to the Big Lite's yoke. The three scroller cartridges and dimmer cassette are designed to 'plug and play' and easily slot in and out of the side of the fixture after removing an access panel. The cartridges all respond to standard DMX signals, and service technicians can simply plug DMX straight into them when away from the fixture for easy testing. Access to gel strings and the cartridge's moving parts is straightforward and quick once removed from the bays inside the Big Lite.

When the douser is closed, the Big Lite ballast enters a stand by mode which electronically dims the lamp which both increases lamp life, and dramatically reduces the amount of heat produced by the unit. In fact, no part of the Big Lite's exterior is ever too hot to put your hand on, hinting that the days of getting burnt and waiting for ages for a search light to cool down after a gig may be coming to an end! However,



Gel string access (above)

The flag near Juliusmedia is 600 metres away, and the pole is 15 stories high - the biggest in Australia. BigLite makes short work of lighting it - in the rain





UHP Lamp: Ultra Hype or Ultra Hip?

by Richard Cadena

“Chance favors the prepared mind.” – Louis Pasteur

Three years ago, there was an article about trends in automated lighting. I don't remember who wrote it – oh, yeah, it was me. It was a sort of statement of the obvious, that automated lighting is getting smaller, lighter, cheaper and brighter. The details are sketchy, but I do recall correctly it was in the February 2002 *Focus on Technology*, on page 42, entitled “The Technology Crystal Ball.” It had four charts showing an exponential drop in automated lighting weight and size, an exponential drop in cost and a linear decrease in cost over the last three decades from 1972 to 2002.

But there was a bump in the road on the way to smaller, lighter, cheaper and brighter automated lighting, and it was dubbed “digital lighting.” I remember sitting in my hotel room in the 14th floor of the Holiday Inn in San Diego writing the article. Out of my hotel window I could see downtown San Diego and I could get a small glimpse of the convention center where a lighting trade show was about to take place. I finished up the article one morning and made my way over to the convention center where I moderated a panel on automated lighting.

One of the panelists was Vickie Claiborne, who was working for High End Systems at the time as a programmer and Catalyst guru. I kicked off the discussion by showing my newly created slides of the charts I had just put together showing in glorious grey and white the findings of the article. And when the topic went to digital lighting, I pointed out that the 20K ANSI lumens projectors that had commonly been used with Catalyst up to that point were way behind the curve in terms of size, weight and cost.

BigLite

with the ability to control X and Y lamp positioning (alignment) via DMX from the lighting console, there may not ever be a reason to touch the Big Lite when it's turned on.

For any service tech who has had to repair a burnt out gel scroll, the Big Lite will seek to reduce your suffering by continually moving the gel scroll slightly when sitting in a static colour to avoid gel burn outs. If access to the gel cartridges is ever required, the position of the lamp douser means you can easily remove and replace them without being exposed to the lamp. The fixture is also service friendly in the way that it only requires three basic tools for all maintenance.

The Big Lite sets new standards for high-powered search lights with its design, features and ease of maintenance. In addition to the currently available 4.5kw xenon version, a larger 7kw “SuperBig Lite” and smaller 1k fixture will soon be released.

• www.theelectriccanvas.com.au

Vickie was very gracious about it, but if the truth be known, I'm sure she would have preferred that we discussed politics or religion, or anything else for that matter, rather than for me to point out how big, heavy and expensive a 20K ANSI lumens projector was at that time. But I followed up by saying that, despite the pothole in the road on the way to a smaller, lighter, cheaper and brighter fixture, the trend would continue and that digital lighting would follow suit and before they would be comparable to “conventional” automated lighting. At the time I wasn't sure how that would happen, but I knew that it would.

Lo and behold, it has started to happen even when I wasn't looking. The other day I visited the High End facilities for the first time since they occupied their new headquarters over a year ago. While I was there, I bumped into Richard Belliveau, who is their Chief Technology Officer. We had a five minute discussion about the new lamp technology that is being used in a lot of video projectors, including the one they use in the DL1 and the soon-to-be-released DL2.

The lamp manufacturer has been developing the lamp since the late '90s and they brought it to market a few years ago. I've seen it at a couple of trade shows and I've read marketing PR information about it, but I skimmed over it thinking it was typical PR hype. Until, that is, that Belliveau filled me in on it and I followed it up with some independent research.

Early projectors like the GE Lightvalve used a xenon lamp source because xenon lamps can be built with a very small arc gap, and an infinitesimally small arc gap is the holy grail of optics design. It makes it easier to gather all light flux coming from the lamp, thereby increasing the efficiency, and it produces a sharper image.

But xenon lamps require a large DC power supply capable of producing 20KV to 40KV to start the lamp. They are not the easiest or most compact components to deal with. Consequently, some projector manufacturers turned to metal halide lamps that enabled them to build smaller projectors. But metal halide technology is not without its own set of challenges. The additives that are used in metal halide lamps to produce the complete spectrum of wavelengths are salts, and they are corrosive. When they are introduced in the cocktail of gas and solids in a lamp, then the arc gap has to be increased in proportion to the wattage of the lamp. So there is a tradeoff between using xenon and using metal halides in regard to the size of the arc gap. That's why lamps like the MSR have a medium arc as opposed to a small arc.

In the '90s, a lamp manufacturer – who will remain nameless because Philips doesn't like to alert the competition (did I say that out loud?) – began experimenting with building discharge lamps with mercury and no other additives. The advantage is that mercury discharge lamps can be made with an arc gap in the range of 1 mm, a very small gap by lamp standards. But the challenge is that, by itself, mercury produces spectral lines in the blue and green regions, which means a plain vanilla mercury lamp produces a bluish light that is devoid of red. It isn't exactly the stuff of a high color rendering index.

As it turns out, if a mercury discharge lamp is pressurized to about 200 atmospheres, then it produces enough red light for a pretty decent color rendering index. The UHP was thusly born. The lamp was originally referred to as the “Ultra High Pressure” lamp, but it was subsequently changed to “Ultra High Performance” lamps. With the stroke of a pen, the manufacturer changed the name of the lamp from a warning label to a marketing campaign.

As with any lamp, the limiting factor is still heat management. The highest wattage UHP lamp is now 250 watts, but when new cooling techniques are perfected then the wattage ceiling will be raised, and the continuing cycle of smaller, lighter, cheaper and brighter will have jumped another hurdle.

There is an ancient Buddhist philosophy that says, “You can't step in the same stream twice.” When the waters of technological development are moving as fast as they are today, then it's just a matter of time before we reach a new stage of development on the road to smaller, lighter, cheaper and brighter digital lighting.

How's your light life? E-mail the author at rcadena@austin.rr.com.

The Legend of the ANSI Lumen

by Richard Cadena

If you've seen it once you've seen it a thousand times. The ANSI lumens rating so prominently displayed in video projector specifications are as common as Lindsay Lohan's catfights in public. But what exactly is an ANSI lumen? Has anyone ever seen one? Is there any documented evidence that they really exist? And why is it easier to find documented evidence that Bigfoot exists than it is to find evidence that an ANSI lumen really exists?

We've all heard the legends about the ANSI lumen and the nine equal zones of measurement, but curiously, it's always a friend of a friend who claims to have seen the documentation. It's not illogical to think that ANSI, the American National Standards Institute (www.ansi.org), might have something to do with it. After all, it is they who, according to their web site, administer U.S. voluntary standards and conformity assessments. One might go as far as to think that they might even sell the standard describing the ANSI lumen through their eStandards Store. Yet a search of said store turns up nothing. In their defense, searching their web site for the term "Bigfoot" yields the same. So far it's ANSI lumens - 0, Bigfoot - 0.

Not to be deterred, we turned to the World Wide Web. Surely there must be some sort of description of the ANSI lumen on the vast resources available online. Lo and behold, a Yahoo search of the term "ANSI lumens" turns up 319,000 results. Then again, a search for the term "Bigfoot" yields 2,780,000 results. Have you ever wondered why the legend of the ANSI lumen is not quite as popular as the legend of Bigfoot? Still we trudge on, determined to nail down the elusive ANSI lumen.

Searching through the listings, we can find lots of "definitions" of an ANSI lumen, all of which say about the same thing: "An ANSI lumen is a measure of brightness of a projector as put forth by the American National Standards Institute." Okay, but how does it work? Why isn't it available from the institute from which is purportedly put forth? Why can I find so many pictures of Bigfoot yet not a single one of an ANSI lumen?

After hours of searching in futility for the true definition of an ANSI lumen, our trail goes cold; no luck. So we go back to the ANSI organization. Surely there must be someone there who has seen an ANSI lumen and can prove it. After revisiting their web site we find a contact phone number. Aha! ANSI really does exist! We're hot on the trail of the ANSI lumen now. One quick phone call and we should have this sucker in the bag.

Alas, it seems that the person on the other end of the phone at the ANSI organization has never heard of nor seen an ANSI lumen. But he has a solution. Go to www.nssn.org, he says, and you can search for it by description. Now we've got it. Or do we?

After searching the NSSN site, once again we find a cold trail. Heck, we can't even find out what NSSN stands for, much less whether or not an ANSI lumen or Bigfoot really exists. What now?

We continue searching through the 319,000 leads on ANSI lumens in hopes of one day finding the true meaning of the ANSI lumen. If you'll get back to us next month, maybe we'll have had time to sort through them all. Then again...But wait! Here's something.

In the 318,999th listing on Yahoo, there's a reprint of an article from the January 2004 edition of Presentations magazine entitled "Goodbye ANSI Lumens?" In it, the author, Stephen Regenold, says that the ANSI lumen no longer exists. Much like "the king," it's gone but it's not forgotten. ANSI officially retired ANSI/NAPM IT7.228-1997 and ANSI/PIMA IT7.227-1998, the two specifications for measuring and documenting the performance criteria for video projectors, on July 25, 2003, he says. That would explain why it's easier to find information about Bigfoot than about the ANSI lumen. But if it's really been retired, how can we explain the popularity of the ANSI lumen in modern projector specs? Hey, hey, my, my - the ANSI lumen will never die.

It turns out that projector manufacturers are reluctant to change their old habits so they stubbornly cling to the ANSI lumen. But it turns out

that the IEC has taken over the standard for specifying the measurement and documentation of performance criteria for video projectors, part of which includes - you guessed it - the IEC lumen. So what's the difference between the ANSI lumen and the IEC lumen? Not so much as a candela. It's exactly the same.

Now that we've established all that, can we finally determine just exactly what an ANSI lumen is, or an IEC lumen for that matter? An IEC (ANSI) lumen is a measure of the brightness of a projector; that much we've established. How it's measured is the key to understanding it and it's really very simple. According to International Standard IEC 61947-1 First Edition 2002-8, "Electronic projection - Measurements and documentation of key performance criteria - Part 1: Fixed resolution projectors," the average of nine readings in lux (lumens per square meter) shall be multiplied by the number of square meters covered by the image at the plane of the meter readings. In other words, the projection area is divided into nine equal areas and the center of each area is measured in lux with a luminance meter such as a Minolta T-10. The average reading is found by adding all nine results and dividing by nine, giving you the average luminance in lux over nine equal areas of the projected image. But the rating is in lumens, so it has to be converted. The relationship between the luminance (lux) and the luminous flux (lumens) is that the luminance is the luminous flux divided by the area. So we multiply the average luminance reading by the number of square meters covered by the entire projection. The result is the ANSI lumens rating of the projector.

Now the question begs, "Why should the lighting industry care about ANSI lumens?" And the answer is that a lot of the innovation in the production industry is coming out of the convergence of lighting and video. It's where a lot of the excitement, creativity, and development in the industry is taking place, just as it was in automated lighting twenty-five years ago. Video and digital lighting is democratizing the art of design and bringing it closer to the designers.

What once was the domain of gobo manufacturers and high profile production designers like David Hershey and Patrick Woodroffe (e.g., the Woodroffe Gobo Collection) is opening up to anyone with access to digital design tools, like Photoshop and After Effects, and the desire to unleash their creativity.

Now, have you ever wondered how the Lochness monster is like the contrast ratio of a projector?...Well, I see we've run out of space. Maybe next time.

The author is rumored to exist at rcadena@austin.rr.com.

Why is it easier to find documented evidence that Bigfoot exists than it is to find evidence that an ANSI lumen really exists?



Ave. luminance = $(1+2+\dots+9)/9$ (lux)
IEC lumens = Ave. luminance (lux) x area of zone (square meters)

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Robe Fog 1500FT and Faze 1000FT

By Richard Neville

There's no doubt that Robe moving lights are making their mark around the world, and the company's new line of fog and haze machines are set to follow suit.

The Fog 1500FT and Faze 1000FT are professional machines that have been meticulously designed and constructed with ease of use, reliability and performance in mind. We got a chance to review the machines at ULA's offices – with the doors open on a freezing winter afternoon.

Robe's Fog 1500FT is a full featured smoke machine with an exceptional output comparable to any other fog machine in it's class. It's warm up time is also comparable to other models – so what makes the 1500FT special? Robe has put a considerable amount of effort into the design of the machine, making it stand out against other similar machines for a number of reasons.



The fogger's rear panel contains both 3 and 5 pin DMX connectors, a trend usually reserved for moving lights. A removable remote control is also found on the rear panel, which can be extended using an industry standard 5 pin cable. The control features a two line, backlit LCD screen which allows for simple addressing functions in addition to setting more complicated timing sequences and also the manual control of the fogger.

A substantial hanging point is supplied standard on the 1500FT, and two handles make the machine easily transportable. Also noteworthy is the solid construction of the fluid tubing between the fluid bottle and machine – often one of the first parts to break on a fog machine.

Other features include an illuminated fluid bottle to easily check the level of remaining fog juice and continuous output, which we had to stop testing upon realizing that unfortunately, the showroom did not have the ability to continuously output such a large volume of fog!

The Faze 1000FT is slightly larger than its fogging brother, but sports the same control panel and DMX



interface. Fluid consumption is fairly good for a large haze machine, and the strong fans ensure that haze will actually be spread away from the machine.

Both products originate from Antari fog machine designs, which Robe buys from the company during the early stages of production before using their own electronic systems for control. With this arrangement, the end user can be sure that the reliability of Antari designs coupled with the ingenuity of Robe's high-tech electronic systems will guarantee a good investment. ULA are also keen to mention that retail pricing is extremely competitive with other brands.

For more information, visit ULA's website at www.ula.com.au



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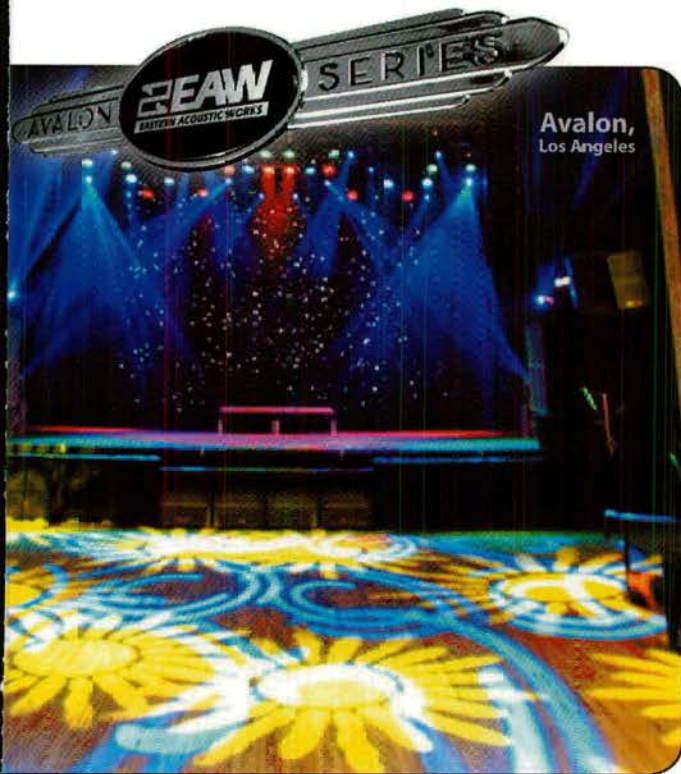
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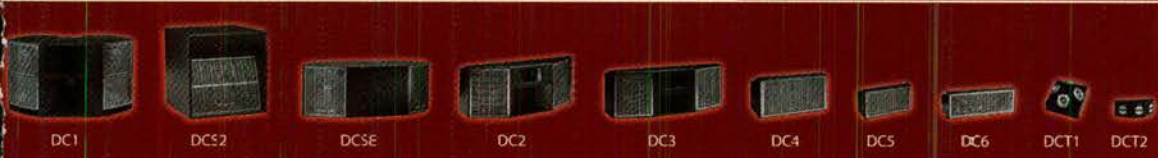


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