

zoo



*Julius Grafton talks with possibly the most influential man in live touring sound today - about the sound that is U2. **Warning:** there is a lot of P.A. equipment talk herein!*

A REAL JOE.

U2's genial but grossly bearded sound engineer Joe O'Herlihy is possibly the most influential person in the live sound industry. "I was looking at the MT-4 (*Electro Voice Manifold technology speaker system*) before the Joshua Tree tour, and as soon as I indicated that, Clair Brothers got interested in flying the S4's outdoors!" Joe isn't having a war k either, this is one level headed Irishman whose been continually in the employ of U2 for fifteen (yup, 1-5) years. "I'm very comfortable on board while there is a ship there!" he jokes. Going back to the S4's, Joe takes up the story.

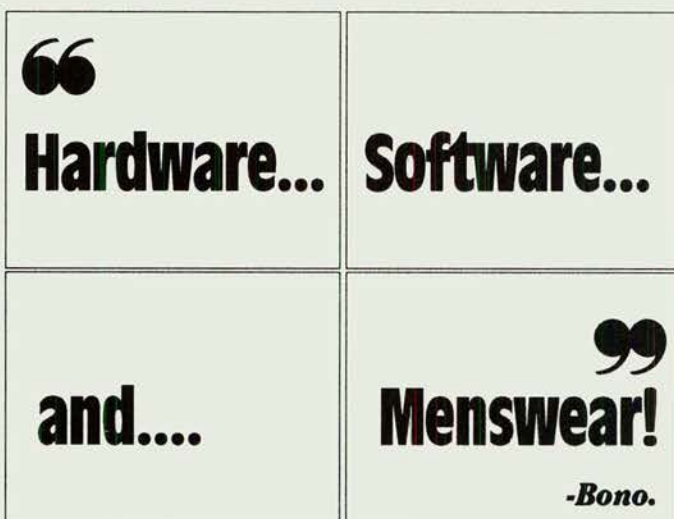
"Outdoor PA's were always stacked, and it took a lot of time and knocked your crew around. I wanted to fly the PA from each side of stage, but the S4 system couldn't be hung in huge columns". Clair Brothers redesigned to accommodate Joe, with structural changes to the box incorporated in the S4 Mark II version. "Now we can fly 144 S4's in two and a half hours", Joe says.

Given the ability to fly the system outdoors, Clair Brothers maintained the U2 account for another tour - and it's a coveted account indeed. Two years touring the largest PA system in stock equals big business! "After Joshua Tree,

bands would ring Clair and say; 'I'll have the U2 system, thanks!'"

While the S4 composite loudspeaker cabinet, on which Clair base their business, has been around for nearly 20 years or so, improvements in components have been made when JBL come up with newer technologies, like the current V.G.C. (Vented Gap Cooled) loudspeakers. This along with new crossover technology has kept the front loaded 200kg boxes sounding contemporary.

Here in Australia U2 hired the 144 S4's with amplification and flying for their shows from Jands, who also have updated their flying steel



in recent times. The tour went like clockwork, according to Production Manager Jake Kennedy, except for a semi falling over near the new rural residence of our Catriona Forcer on the northern outskirts of Sydney. "We lost nine S4's", said Jake, "the front of the trailer peeled back, there was aluminium everywhere. The most important thing was that there was no injury to the driver. Jands had to fly in another nine from Singapore, which arrived just in time for the shows". Jands have an S4 system based in Singapore, nine hours flying time north of Sydney.

On the subject of speakers, Joe was the first person to tour a new Clair Brothers cabinet, originally named the P4, but quickly renamed 'Piston' by Joe. These are almost totally trapezoidal, tapering to just an inch or so thick at the rear, and just wide enough at the front to accommodate three 12" speakers and a horn. "I walked in and the main thing was the incredible clarity and devastating bottom end", Joe enthused. 24 Pistons made the trip down under, along with everything else in the sound system. They were used as front fill along the ground.

PARAGON CONSOLE: Joe managed to entice Clair Brothers into purchasing a new console at the start of the tour, called the ATI Paragon. This is the console type on which ex-pat Shane Morris is now engaged in updating, and it features onboard dynamics. This means every input channel has a noise gate and compressor limiter, thus negating the need for a rack full of these outboard.

Each Paragon channel boasts 16 auxiliary sends, individually switchable pre or post fader, with on/off switching. EQ is four band fully parametric with adjustable Q and 16dB cut or



Joe O'Herlihy in work mode. The new ATI Paragon console with a noise gate and compressor on each channel is joined by the original Clair Bros. 'Classic' on Joe's left.

boost. "Very transparent EQ" says Joe.

The Paragon has forty mono inputs, plus sixteen subgroups double as 8 stereo or 16 mono inputs. Then there are eight stereo VCA masters with a Master, the first console to do this at the time. Some of the Paragon features have since turned up on Soundcraft's largest console, the Europa.

Four discrete stereo mix outputs, four mono mix outputs, and as many inserts and patching possibilities as you can think of round off the Paragon. "It's very sensible, that's my way to describe it, very user friendly. It's got a big, chunky old style look with broad channels. You don't have your fingers interfering (with adjacent channels) like on a Gamble". Amen.

ATTITUDE: The U2 crew are a long serving team, and no bullshit is tolerated. "I've strived my entire fucking working life to get rid of the bullshit which is part and parcel (of this industry)", said Joe. "We don't allow a chip on the shoulder attitude, and we get a lot more done".

This shows in the relaxed by efficient show

vibe on this tour, quite 100% opposed to the Madonna tour, to which Connections could not gain direct access because of the crew being contracted not to do interviews.

In another interview Joe told of how the band communicate with the crew, by appointing a spokesman. This followed some communication difficulties where Bono would punk out if his message didn't get across. This is part of the process of touring and getting to relax on a daily basis with an extended family of 228 people!

BAND IN FRONT OF THE PA! In fact, the whole show is way in front. Bono's mic stand is 42' in front, and the band 30' in front. "The sound on stage could be best described as 'weird'", says Joe, and it took the band some getting used to.

When the band perform from the 'B stage', they are a whopping 128' in front, where the time domain means that sound from the main speaker stacks hits them well after they've made or uttered the same sound! The delay here is as much as a half second or so, a virtual eternity in audio terms!

The front 'B' stage couldn't be used without 'In Ear' monitors from the Radio Station, which took a while for the band to get used to. "My biggest concern was feedback" states Joe, which shouldn't confuse you. Feedback from a microphone to a monitor planted firmly in your ear is virtually impossible, but feedback from an adjacent conventional send isn't. When feedback strikes your eardrum at a distance of about 2mm, it could cause huge damage. Thus the monitor system needed heavy protection by way of Dominator limiters on each send.

"You can't just arrive one day, take it (an in-ear, wireless monitor system) out of the box and just use it", Joe says.

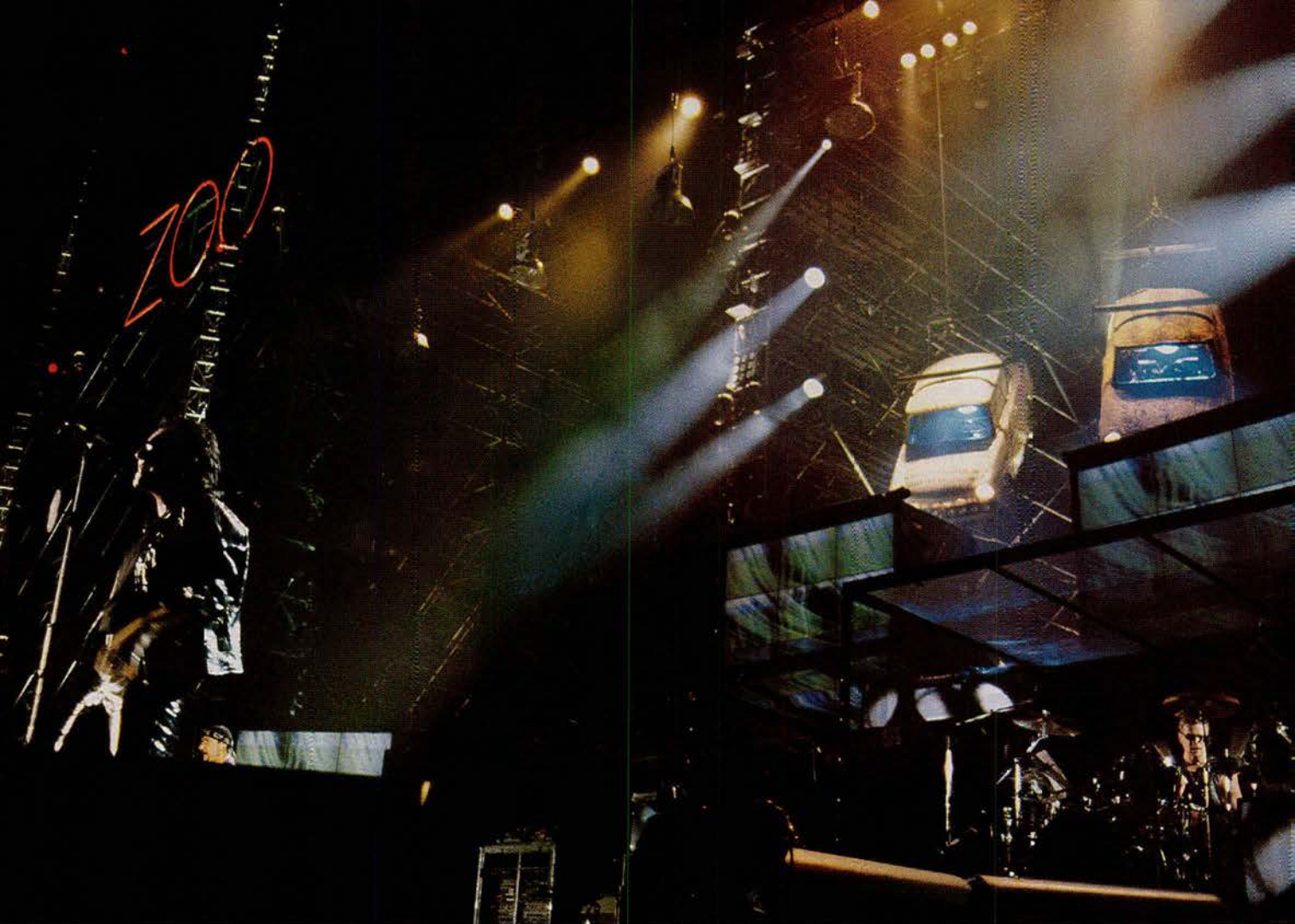
MONITORS. Under the U2 stage is The Underworld. Two unfortunate monitor engineers lurk down here, where the noise can be best described as 'post industrial meets battlefield'. Two engineers each work two Ramsa WRS 840 consoles, which amounts to serious foldback.

Each band member is sent a stereo mix 'direct' into the Radio Station wireless ear monitors, then there are monitor wedge positions everywhere - because the members move about a lot. Thus a complex joystick arrangement allows the two engineers Vish Wadi and Dave Skaff the ability to whizz each mix to a different position as needed.

With up to 32 mixes EACH, these two engineers each look after two band members who they cannot see because they are down there, in the Underworld. Video monitors are used, and the whole thing would have taken quite some time to get used to.

EFFECTS. (AND THE KITCHEN SINK). Two

(continued)



ZOO sound

Eventide H3000 Harmonisers, four Yamaha SMX 1000 and a Lexicon 480L are the main devices at Joe's fingertips. Then there are 3 PCM 70's, two with V. 2.0 and one with V 3.0 software.

Aside from the previously described Paragon console, there is also a Clair Classic console, for extra inputs like when the band play from the 'B' stage. This has just four auxiliary sends, feeding effects. There are also a multitude of BSS noise gates inserted into this ageing console, showing the space and cable saving idea of onboard gates and limiters, as used in the Paragon.

Some Rane processing and distribution are also used for distribution of various mixes and sources to the video team.

AIRPLANES. The last production semi departed Sydney Football Stadium at 3am on Sunday 28th November for the fifteen minute road trip to Sydney Airport. Two 747 freighters, each capable of uplifting 350 tonnes, were loaded for the flight to Christchurch, a process that took until midday.

Two crew from each department were rostered on at the airport to cross load the aircraft, which comprised supervising the unloading and palletising of each truck. Once departed Sydney, the aircraft tracked direct

for Christchurch, a three hour and 10 minute flight via the main oceanic airway. Upon arrival a fleet of semi's were then loaded by an army of loaders, again supervised by U2 crew, who identified each pallet and directed it to the correct semi pan.

The U2 crew and tour party, numbering 228 people, departed Sydney on Monday 29th November, aboard a charter flight for New Zealand. Two dates in Japan would conclude this tow year tour.

"After Tokyo the TV will be turned off. We'll have a sabbatical for at least six months. Then we'll start again!"

No rest for the wicked! ●

Sydney Football Stadium has the **worst acoustics** of almost any place on earth. The curved sweeping roof provides multiple slap echo's to the extent patrons seated anywhere except directly in front of the stage suffer almost nil intelligibility. It should never be used for live music again, and questions need to be answered about why U2 were presented there in the first place. It certainly was a *visual* treat, and TV viewers in the USA and Europe would appreciate the visuals and enjoy direct mixed sound. Shame about the other 45,000 paying punters however. Still, they enjoyed it **JG.**

U2 LX

Catriona Forcer revisits the U2 tour to see what has changed since she last saw it in the USA...

The U2 Zoomerang tour finally made it to Australia after 20 months touring the world in one form and another. With it came 31 trucks carrying 240 tonnes of production (30 tonnes alone of sound equipment) and 750 tonnes of steel.

Zoo TV is about humour and satire although I think this may have been lost on many of the audience. The idea for Zoo TV evolved when the band decided they needed a new approach to touring before they became a complete parody of themselves. It was a time when the band were beginning to see the rock'n'roll dream as ridiculous. Even American college students were writing their degree thesis on the politics of the band. The band that was once itself overblown and self important has, by way of Zoo TV, sent itself up and challenged the traditional rock show.

Lighting designer Peter Williams, or Willie as he prefers to be known, has worked with U2

on several tours and with Zoo TV he has striven to reflect humour in the lighting.

"The album Zoo TV is basically made up of tortured love songs but there's a lot more humour in it and it's lighter," said Willie. "The band's mood is completely different. It's a mixture of great emotional intensity and completely unhinged behaviour."

The tour began in the States, March 1993 playing indoor arenas. The lighting rig was fairly minimal with most of the backlight coming from the four 8sq ft Vidiwalls. In fact the first two numbers were really only lit by the Vidiwalls. The lighting rig had about 200 par cans and 17 followspots. Willie admits to having a passion for followspots achieving a massive 31 of them on the 'Rattle & Hum' tour. The stage was also littered with 36 28" television monitors. The show then moved to outdoor venues and the general theme continued although the show grew bigger.

Willie never uses Vari*lights although he thinks they are fantastic instruments. He believes that very few people really know how to use them and consequently shows all end up looking the same. Willie prefers to use the followspots in a big way which gives him the variability of moving lights. Also, by not using Vari*lights, he finds he is forced to be more creative hence the Trabants or 'communist Vari*lights' as they became known.

Willie attributes many of his influences to the Dada and Surrealist periods of modern art and he loves to 'make something into something else' after Marcel Duchamp.

"On previous tours I've always enjoyed making lights out of objects," explained Willie. "It started with the bucket lamp, progressed to the dustbins and then moved to the legendary handbag lamp. On Bowie's 'Sound & Vision' tour I got into collecting things like chairs and pieces of air-conditioning to hang from the truss. I thought of the cars because the album Zoo TV was recorded in Berlin which is now full of Trabants and the band got quite fond of them, even bringing a couple back to Dublin."

Willie figured out that if he took everything out of the car he would be left with an empty shell which would make an ideal lighting instrument. Although he was confident that the cars would look good as an item on the truss, he admits being surprised that they work really well as lighting fixture.

"I spent a year designing this thing and then a two years on the road with it," Willie said. "It has continually changed and grown, with new things arriving on a daily basis and old things going away. We just followed our instincts on how we should pitch the shows at different territories. The indoor shows were a question of feeling what this was about and

feeling the potential. As it was a brief and fast tour we just got a sense of what this could be. For the American outdoor shows we had a very ambitious and extraordinary stage set designed by Fisher Park. Some of the physical structure was colossal. We had a giant radio pylon 180ft high and masses of stuff. It one sense it proved to be too big and so for Europe and Australia we simplified the physical structure. The technological end is vastly more complex than it was, the video system we have this year makes last years look like something you could buy from a store. Here we are now in Sydney making a definitive document of what's been happening on this tour and what's interesting is that normally when a video crew come in to do a show it's a real intrusion and you have to rethink everything. But for us it's just been another

"There's a tension between trying to capture the cyberelectricity of the show as it is, letting the video provide the images and do the work, and letting the TV audience understand that you are in a big stadium show."

a good time but last night was really the rehearsal for tonight's live broadcast. There is a really interesting tension when you're doing a big shoot like this because there are three key people. Obviously there's the band themselves and the way they want to look as human beings, there's the director (Allen Branton) who wants to get the great picture

and the lighting people who want it to look a certain way. Everyone is trying to make as what they perceive as the best pictures but they have different perceptions. The difference in perceptions is where the interesting tension lies. There's a tension between trying to capture the cyberelectricity of the show as it is, letting the video provide the images and do the work, and letting the TV audience understand that you are in a big stadium show. In the rehearsal we were definitely leaning to-



step in the madness. We already have cameras, camera tracks, dollies and booms recording people so we've just got a lot more of it. It's wonderful to record it properly but very much true to the spirit of the thing. We have this cyberstadium contrast. Stadium struggle against the technology in a way and of course this show is more about abusing the technology than anything else. The result here is a tension between the crass stadium end of things, which in some ways is inevitable just because of the scale, but also trying to keep it within the ball park of where we started.

Last night was absolutely bizarre. I was seeing camera angles I'd never seen before and we had a lot more audience lighting. It just felt so big. And of course we had another bass player which just pushed things into the realm of the totally surreal. I know the audience had

wards the stadium size and if we're going to make a mistake, I'd rather err in the opposite direction because it might not look as great as we might like."

The original lighting system was almost entirely composed of the trabant cars, retrofitted with 2.5k HMIs, but most of them were gone by the time the show came to Sydney. This was mainly because most had fallen to pieces after being on the road for two years. Also, with more money to spend, the video technology was improved rather than the physical staging. Willie was prepared not to bring any trabants but the band wanted a couple as a token gesture. In one sense Willie has returned to a followspot heavy show (22 in all) which he believes works best for U2. The rest of the lighting is architectural lighting for lighting the structure.

(continued)

ZOO LX



joined U2 onstage, underneath the mirrorball trabant (unfortunately not seen in Sydney), to perform 'Dancing Queen'. U2 and Abba underneath a mirrorball trabant singing 'Dancing Queen' and being broadcast live to a living room in Nottingham - I knew this was the greatest moment of my career."

The controversial link up with Sarajevo was also a time Willie will never forget. For quite a long period in the tour, three minutes of each show was devoted to ordinary people from Sarajevo to say what they wanted. Some nights Willie found it almost impossible to function during the following song. Willie is looking forward to going home and 'getting a life'.

"I need to really digest all of this and see where to go from here," he said. "I'd like to do something small

and interesting. The big tours are great, to be in control of the Starship Enterprise is, to be honest, great for your ego. You can achieve so much in a small space with so little and it comes back to my minimalist roots really."

There are only three original members of the lighting crew left since the tour began including Firmin Moriarty, who has earned the title of 'Head Trabant Boy' in the itinerary. I asked Firmin what has been the most memorable show, for him, so far in the tour.

"Definitely last night's show (the first U2 show in Sydney)," he replied. "As far as I know it was the first time U2 have played without one of it's members (Adam Clayton had been apparently struck down by a mystery virus). At first we thought it was a wind up but it wasn't. The bass tech, Stuart, took his place and the crew loved it. I've never known such a cynical and blasé crew to be so impressed and forthright with praise and admiration for him going up there. Also we had the film crew here so there were at least six people operating lighting desks out front. Hence the technical channel on the intercom was chaotic not the usual calm, jovial talk.

The shows we played outdoors in America were vast, we had up to 14 Trabants at one point. We had a giant radio mast in front of the

stage and cherry-pickers with Trabants on them. The first couple of weeks are memorable just because of the long hours and getting over the logistical and technical challenges. After a couple of months we scaled things down a bit, losing the radio mast which was very expensive to put up. The crew were pretty relieved as it was a lot of work but it did look good. We lost the cherry-pickers when we got to Europe again an accountancy decision and they took up a lot of truck space. The theme continued but the show was stripped down so it was very clean and not so chaotic."

In the States projection screens were used outdoors which were later replaced by the Digiwalls.

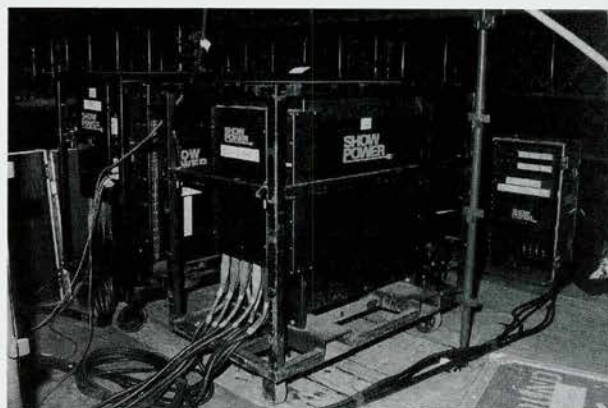
"I think that was a good move as the clarity really improved," said Firmin. "Mind you it was an expensive move. The show here is slightly different with the steel that is used to build the staging system being a little more simplified due to where we are and what is available. We do have the same amount of lights in roughly the same place though."

The shows we played outdoors in America were vast, we had up to 14 Trabants at one point. We had a giant radio mast in front of the stage and cherry-pickers with Trabants on them.

As the tour was finishing in Europe last August, the band released another album Zooropa and songs from that were incorporated into the show.

"The show's changed a bit because of that," said Firmin. "But that's good for the crew as we don't get bored with the same songs. A lot of people think I just put the Trabants up but I

don't even do that! I do operate their movement during the show but I also take care of other things. The worst gig we did was at the end of the indoor run of Europe which was in Manchester. We had a lot of problems that night including the cars motor movement which was computer controlled. It had been working really well up until then when it suddenly decided it had enough. But as it was the last show we didn't have to talk about it the



"I use a lot of outdoor fixtures because there is no roof - sodium fixtures, quartz fixtures and metal halo fixtures - just to give the staging a real presence," said Willie. "They've been good because they're made to be outdoors. The great thing about this tour is to put a show together where you're getting the bulk of the visuals from video rather than lighting. Most rock bands go out with a 'light show' and, for me, the concept of a light show is such a hilariously Victorian thing. It just seems peculiar to me that bands go out and their primary visual is a light show. Video is a much more contemporary thing and lighting wise I can just get on with making the band members look good and the structure interesting. There's a lot of light because it's a very big structure but it's very, very simple. Some of the most effective looks are from 100watt light bulbs. You have to be quite judicious about it but it's not complex."

The stage also housed 36 TV monitors, the three giant Digiwall screens, four Vidiwall screens, radio masts 34 metres high and a satellite dish. The Vidiwalls were actually purchased by the band at the beginning of the tour because no rental company could afford to own that sort of equipment.

The greatest moment of Willie's entire career was the show they played in Stockholm, Sweden which was again a live broadcast. In the UK a competition was run to win that live broadcast to your own television only.

"A guy who lived in Nottingham got it broadcast to his house and the entire street was in his house," laughed Willie. "We had a camera in his house sending back live pictures of this living room crammed with pissed people. Bono would talk to them and they would reply. It was deeply surreal. Being in Stockholm Benny and Bjorg from Abba showed up and they

next day!"

The lighting crew numbered seven for the indoors shows, thirteen for the outdoor American shows and twelve in Sydney. Through the tour there have been 33 different lighting technicians at some time or another. The main turnover has been because they've moved continents and not taken everyone with them but there have been a few who have been sacked, injured or left for personal reasons. In fact Firmin has a list of them written on the side of their lamp bar dolly! The overall crew numbered a massive 220 people.

"It's a good team and 'team' is the word," said Firmin. "I'm going to miss everyone when it's over as two years is a long time. It's been interesting seeing how people have lived during the two years, how they've changed and how they've coped with situations that have come up."

Originally the crew were scheduled for three days off in Sydney but because of the film shoot that was curtailed. The production was loaded in early so the film lights could come in the next day and the crew had to be on stand-by for the video director. Obviously the steel goes in first and that took nearly two days to set up in Sydney. Production usually comes in at noon, the day before the show and is usually finished by ten the next morning, although that's not working straight through. Lighting goes in about 4pm and is focused by

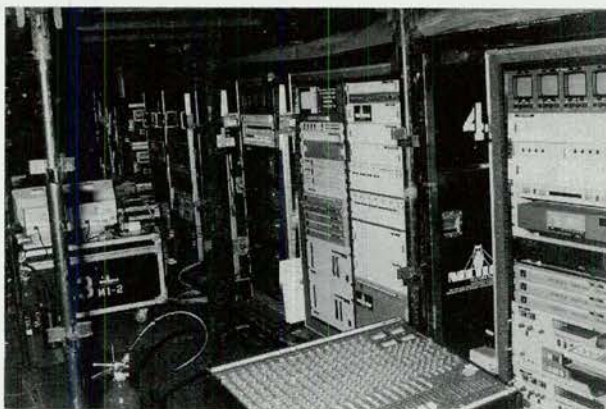
11pm.

"The toughest part is then rounding up the twelve lighting crew to get on the bus to go home!" said Firmin.

Willie and Firmin both agreed that I had picked the worst day of the tour (*Typical Cat Forcer, she always does this! -Ed*) to visit them as backstage was tense with the knowledge that the night's performance had to be spot on for the film crew.

"They're trying to put down what has been achieved with the live show on to film," Firmin told me. "They had a look at it on the Wednesday night and the Thursday night and during last night's show. Tonight is the last time as the continuity won't be there as we'll be in a different venue. I think they've got a lot of cameras so they should get what they need."

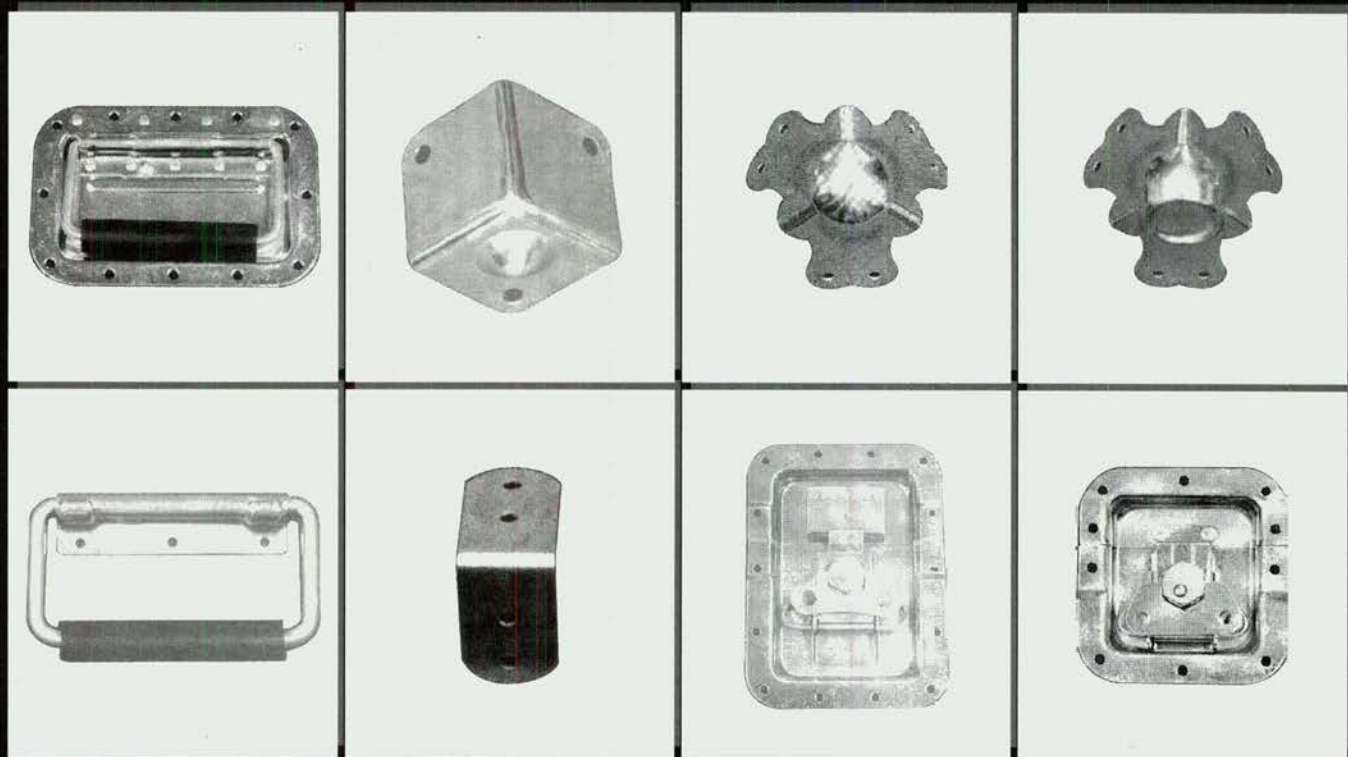
The show was due to finish at 11pm and the load out should be completed by 4am. The crew then had to travel to the airport to load the gear into the plane for New Zealand and a production circular stated that the cross-load into the two 747's could take ten hours. ●



in the 'Underworld' - video control gear. The *Digiwall* and *Vidiwalls* are driven by Philips *Digital Image Controllers*. (See story, next page for details).



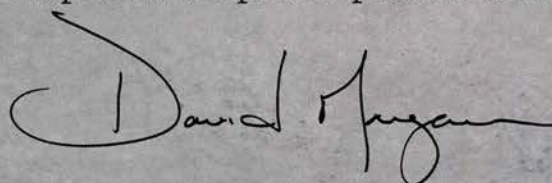
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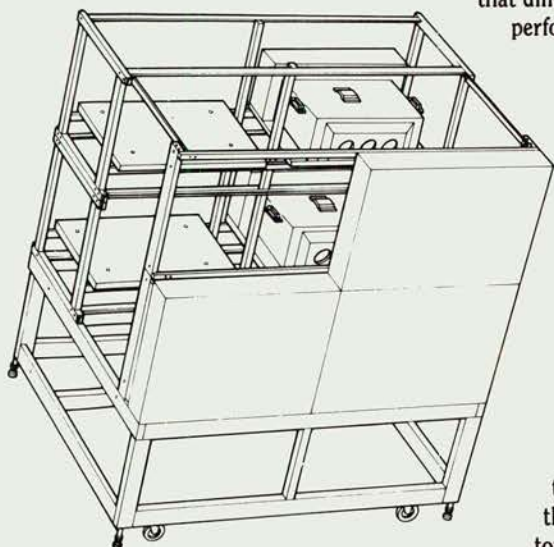


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ZOO WAS TV

U2 livened up the AV market with ZOOMERANG, these performances featured Digiwalls (typically 10 x 6 screens and 5 x 6 screens) and Vidiwalls (4 x 3 screens)- which are all essentially rear projection modules (see Vidiwall diagram below). As our main story



reveals, originally video projectors were toured, but the output of these is typically feeble. In addition to the potent imagery shown on the huge video walls, 20 or so 26" Barco monitors were placed around the stage.

You needed to be there to see how creatively these were used, but the technology is not all that difficult to achieve in a stripped down performance environment.

Feeding the video were 14 laser disc players, 4 Beta tape machines, live cameras and a satellite feed that allowed the video crew to snatch 'anything out there'. For this U2 pay cable TV provider rates to the suppliers.

A novel twist was the 'Video Confessional Booth' (see previous pages) which gave the crew recently recorded material of a titillating nature. According to the Jake, the crew tend to enjoy monitoring this one! Then there is a video unit roving about the town before the show, taping topical bits and pieces. This is multi media done to the max!

Video editing, overlay, text and image manipulation is done beneath the stage, and a lot of the technology is from Philips.

WHAT IS A VIDIWALL?

The Philips VidiWall combines a large number of projection monitors to create a large display facility. The projection monitors have internal projection tubes for RGB- red, blue, green, which shoot imagery via a lens onto a front flat screen.

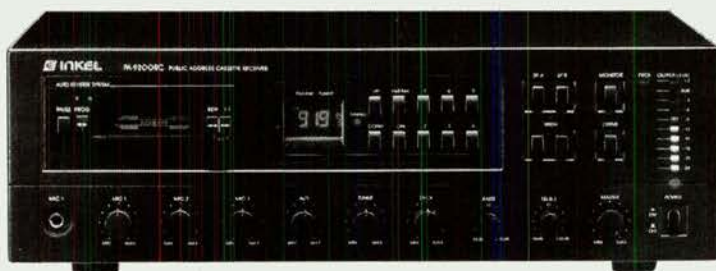
The Vidiwall modules measure 1499mm deep, 864mm wide and 772mm tall. A 4 x 4 configuration suits an ideal 16m viewing distance, while other combinations are easy.

Control of the monitors is by one or more Digital Image Controllers, each of which can support 4, 9, 12 or 16 projection monitors.

Computer controlled switching of several video and audio sources can be achieved from a PC with an IEC 625 card, and text display is made possible by using a Video Overlay card which can be synchronized with a video source, allowing text to be overlaid on a video signal.

Michael Punn at Philips Scientific & industrial is across all the technical details - call him on (02) 888-8222 for details.

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