

the **EDGE**

Issue Four | September 2001

The Fabric Phenomenon

In this Issue:

The Refitting of Fabric
Engineering Mission
Blackline Range Extends
Vasco/Stereos on Tour
The Bethel Church Project
USA/China Bonanza



The Martin Experience

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Right at the Cutting Edge

The momentum being sustained by our distributors and resellers around the world can be seen in the fact that for every story that made it into this enlarged edition of *The Edge*, there were probably three that had to be remaindered and another two late breaking installations that have already provided the building blocks for *The Edge* #5, which will be launched at next year's *Musikmesse* in Germany.

But we're getting ahead of ourselves. This edition is a celebration, not only of being selected to replace the system in London's premier superclub, Fabric, but of the waves this has already created with other prospective buyers as word ripples through to the marketplace. From hard-driving dance sound to the more transparent vocal reinforcement required by actors and members of the clergy has meant another impressive quarter in both places of worship and theatre applications.

We also cover several impressive touring feats from some of our most loyal PA companies around the world — Capital Sound Hire, Adlib Audio, Delicate Productions and Fumasoli to name a few.

Meanwhile two of our High Wycombe technical stalwarts, Bill Webb and Jim Cousins, respectively explain the future engineering mission and the ways in which our Technical Support mechanism can be fully utilised by customers of Martin Audio.

As ever, we are indebted to both the internal and external contributions which have made production of *The Edge* #4 again very much a team effort. First and foremost we must thank *Night* magazine for the loan of Jim Ellam's stunning front cover shot of Fabric, closely followed by Simon Camper's depiction of Bethel Church. Martin Audio's Martin Kelly has once again been globetrotting, and the excellent photography which accompanies the reports from Slovenia and Czechoslovakia — as well as Vasco Rossi on tour in Italy — are all due to the magic eye of Mr. Kelly. At the production and reprographics end Red Square Interactive played their usual pivotal role, thanks to the sterling design work of the ever-patient Paul Cooper.

And that's about it. I know you'll give us your honest feedback on the new edition when you visit us at Earl's Court. But be warned — a positive response could make the difference between a tepid cup of tapwater or a sparkling glass of champagne!

Jerry Gilbert

Where to see us

Sept 9-12: **Plasa 2001**
London, UK

Sept 21-24: **AES Convention**
New York, N. America

Nov 2-4: **LDI**
Orlando, N. America

Nov 2-4: **Music Live**
Birmingham, UK

March 13-17: **Musikmesse**
Frankfurt, Germany

April 25-27: **NSCA**
Denver, N.America

New Products

New MA Amplifiers



Martin Audio has increased its range of MA power amplifiers with the addition of the MA900 (2 x 450W into 4 ohms), MA1400 (2 x 700W into 4 ohms) and the MA200Q (4 x 200W into 4 ohms). These models have been designed to meet the increasing demands of both the rental and installation markets.

By utilising a conventional power supply with a toroidal transformer, in conjunction with the latest semiconductor technology and proprietary copper cooling, these fully featured amplifiers offer excellent sonic performance in a compact 2U package. They are capable of delivering maximum power into all impedances, including a 2 ohm load.

The amplifiers have several new features specifically designed to make the products easier to use. These include a multiple position gain switch, to meet the demands for a flexible gain structure in the system; a removable front panel dust filter cover; multiple input connectors via the Neutrik Combo-jack, offering both XLR and TRS phono jack; a three pin Phoenix terminal block for permanent installations; and easy reading LED indicators showing the status of the amplifier.



Blackline Range Extended

Launching at the *PLASA Show* will be three additions to the increasingly popular Blackline Series, which has found its way into some of the most prestigious venues around the world.

The Blackline F8 is a versatile, 2-way passive system designed for applications where high output is required from an ultra-compact enclosure. It features a long-excursion 200mm (8ins) low frequency driver and a 25mm (1ins) HF compression driver mounted on a 90° x 50° horn. The horn is user-rotatable to allow the F8's multi-angled enclosure to be used in either its vertical or horizontal orientation.



Special attention has been given to the high excursion requirement of the LF driver. This enables the sound balance of the speaker to remain consistent throughout a range of power outputs. Where extra low frequency is required, sub-bass systems such as the Blackline S12 or S15 may be added.

The Blackline F10 is a 2-way passive system, designed to provide exceptional club sound and stage monitoring from a very compact enclosure. It features a powerful 250mm (10in) low frequency driver and a 25mm (1in) constant directivity, user rotatable, 90° x 50° horn.

The 2-way passive design of the F10 enables simple, high performance systems to be put together whilst minimising the number of amplifier channels required. Where extra low frequency

is required, sub-bass systems such as the Blackline S12, S15 or S18 may be added.

With both the F8 and F10, use of a controller is optional. For demanding applications, an M3 or DX1 controller, configured to perform EQ and limiter functions, is recommended.

Finally, the S12 is an extremely compact sub-bass system featuring a high power 300mm (12in)/75mm (3in) voice coil. It has been designed for use with the F8 and F10 loudspeakers in situations where extended low frequency output and increased system headroom are required. When used with the F8 or F10, it will extend the response of the complete system to below 50Hz. The F12 can operate in either passive add-on mode using its own switchable internal passive network or actively with an M3 or DX1 controller.

Taking Control at Fabric



If Fabric owner Keith Reilly and Most Technical's Dave Parry share a common dream for the new London underground it is to have their club DJs as studio engineers, sculpting three-dimensional sound up there in the club's oxygen.

In an attempt to move the operation forward inside the exposed brick and chrome subterranea, Keith Reilly recently decided to raise the stakes in his landmark club.

The outcome was that their two-year-old JBL sound reinforcement system was replaced by a Martin Audio system in its two main rooms (including the manic Room Two) and shortly the more intimate Room Three will fall into line. "We're looking at moving the sound in Fabric to the next dimension with the Martin Audio system," Keith Reilly commented after announcing his decision.

With an evolving Pro Tools production studio linked to the DJ station, as well as a Bodysonic dancefloor, it already had the means of inducing visceral pulses through its clientele. Add to that an Out Board Electronics TiMax spatializing effect, taking the output from the Martin Audio Blackline system on a zigzag excursion through space, and you have some idea why DJs like Sasha, Terry Francis and James Lavelle love this club as they strive to create sound from this processing resource rather than simply play music.

The Room One system has also been redesigned by Dave Parry, who is also

Fabric's resident technical manager, in conjunction with Martin Audio's product manager, Richie Rowley and the Fabric sound team. Eight Martin Audio W8C compact enclosures were specified, formatted in a quad array around the dancefloor and underpinned by eight of Martin's WSX monster sub bass units, which feature a single 18in drive unit on a 7ft S-shaped folded horn.

Earlier, the sound design for Room Two, which augments into a multi-channel spatial zoning arrangement with the TiMax system, had taken onboard the flagship products of Martin Audio's Blackline range — the H2's and H3's.

The Martin order was placed through south-of-England pro audio distributors, Marquee Audio.

Yet the whole remarkable adventure had been predicated on nothing greater than a demonstration of Martin Audio Blackline F12 DJ monitors, which were starting to become something of a reference monitor amongst a number of the country's finest DJs.

Rowley was starting to experience a ground-swell of positive feedback from leading club DJs such as Lisa Lashes, Judge Jules, Carl Cox and Anne Savage, who were finding it produced a more open inoffensive foldback sound used in conjunction with their subs. Rowley already had a relationship with Dave Parry and decided it was time to renew the acquaintance.

He set up a demonstration of the F12 monitors in Fabric's Room One and the quality of the produced sound — as well as the speakers themselves — was such that the monitoring system was immediately requisitioned for Fabric's flagship dance area.

Within ten minutes of giving the DJ monitors the thumbs-up, Keith Reilly was asking 'What do you suggest for Room 2?' But what encouraged Richie Rowley to bid, in particular, was the club's plans to incorporate a TiMax system.

While Room 1's dimensions are landscape, Room 2 is portrait shaped and ideal territory for TiMax's back-panning characteristics. Rowley advanced a design concept for Room 2 using Blackline. The four tri-amped horn-loaded H3's (15in/10in/1in) are placed in a quad array format around the dancefloor, supplemented by a further four bi-amped H2 cabinets (loaded with a single 10in driver and a 1in horn) providing satellite fill down the length of the dancefloor. Each box has its own individual amplification and control — processed initially by TiMax and then by a BSS 9088 Soundweb digital network device.

Providing the bass extension are eight Blackline S218's — four recessed under the stage (largely for the benefit of live acts), two at the rear and one at each side.

Blackline's high end H3, H2 and S218 enclosures were originally voiced for the late night entertainment and high end club installation, and Richie Rowley sensed that having Fabric onside would give the box extra credibility.

By the time Room 2 was completed in late February this year Fabric was beginning to smell like team spirit, and suddenly, out of the blue, Keith Reilly asked Richie Rowley if he fancied a crack at Room 1.



He eagerly submitted a specification based on an original design he had created more than three years earlier, and brought Dave Parry and Dave Fly, his sound engineer, to Martin HQ in High Wycombe, Bucks.

The Fabric Signature system was to comprise a pair of W8C's with the spacing wedge of the Fabric logo cut in. Rowley explains: "We had to create the optimum angle for the W8's because they are more generally hung on chains from their flypoints on a rock 'n' roll gig. 30°-35° is the optimum splay between acoustic centres so I was able to design a wedge to maximise this spacing." The Fabric logo was cut into the wedge, which the club is considering backlighting with birdies.

The W8 system is designed in a quad array — two boxes in each corner, with eight WSX's under the stage providing a single point source. When touring bands play, Fabric has the option of hiring in two further W8C's, (from Capital Sound Hire), which can be ground stacked on stage.

The previous JBL design had double 15's in the air and double 18's on the ground. Rowley rationalised that rather than

having bass firing from all directions — sounding muddled since it could not be time aligned correctly — a single row of 18in drivers mounted on 7ft horns under the complete width of the stage to create a single wavefront of sub bass was the better option.

"It's purely based on acoustic principles," says Rowley. "I could squeeze all the WSX's in perfectly. The dance floor stretches only 7m (from DJ box to the front of the stage) and it's 16m wide. I suppose it's excessive to have eight W8C's filling that space, but the rear boxes act as more of a fill and are turned down in level, otherwise you will have a lot of weird things happening in the time domain.

"We believe in true horn design which needs little in the way of external processing — there's no need for deconstructive EQ which destroys the amount of headroom in the system. If you put a huge boost of EQ in you are eating

up valuable headroom in the amplifiers."

He continued: "Martin Audio approaches things differently; we remove the typical 2in compression driver and replace this with a 6.5in cone driver and 1in compression driver, so splitting the frequencies usually handled by one driver across two. The 6.5in cone driver has its HPF (high pass filter) at 850Hz and this crosses into the 1in at 3.5K. The 1in takes care of the fairy dust while the 6.5in is almost the dedicated vocal driver." From this they were able to generate 127dB on the floor, with just the first show of red lights on the amps.

The ongoing operational success of Fabric has been down to its engineers — Dave Fly in Room 1, Sanj Bhardwar in Rooms Two and Three, as well as head of live sound Roberto Peroni (and Jai Hauchu in Room 2) who are constantly babysitting the DJs, and making adjustments from 10pm-6am three nights a week.

And Dave Parry emphasises: "No-one comes here just to play records anymore — the sounds DJs play here are unique to Fabric and the facilities we offer are now starting to really get used."

But let Roger Sanchez be the arbiter of the new sound system. The second time he played Fabric the top DJ played a five-hour set — and when he celebrated his birthday there later he insisted on playing right through the night.



Bill Webb – On the Engineering Challenge

The Challenge

Despite its apparent simplicity, a modern professional loudspeaker is a complex compromise between the laws of physics and continually shifting market requirements. Not only does a loudspeaker have to perform its primary function of reproducing sound in a particular environment, it increasingly helps if it comes clothed in a sexy marketing story.

Certainly, there is no escaping the fact that speakers have become part of the fashion industry — with this array or that array vying for the attention of the engineer and tour manager. As an industry, getting from A to B is no longer enough. We now seem to have to get from A to B via BS. Whatever the buzzwords of the day, it is important that good engineering principles prevail and that the engineering/marketing balance does not shift too much further into smoke and mirrors territory.

In presentational terms, there is a growing parallel trend for a loudspeaker to be accompanied by a vast quantity of measurement data. Though welcome, this data on its own cannot guarantee a good sound. It would be as difficult to describe the sound of a loudspeaker by measurements alone as it would be to describe the sound of a violin mathematically. There will be some correlation, but in the same way that it is difficult to relate how a car drives to its specification on paper, the specifications of a loudspeaker can give only a rough indication of how it will sound in use.

In the Martin Audio Engineering Department, our goal is first and foremost to provide a superlative subjective experience — blending hard-to-define qualities such as speed, impact, musicality, warmth, transparency, smoothness and refinement. We take it as read that we will meet the objective criteria such as maximum SPL or coverage pattern for any particular application.

The Team

The process of loudspeaker design and development at Martin Audio is a team effort. Starting from the design brief, we aim to optimise and refine each transducer, horn, enclosure and network and then bring them together in the optimum system configuration for the intended application — whether it be a cinema surround speaker or full touring rig.

Within the engineering team lies a wealth of experience in designing and using the various acoustic elements in the design palette to produce systems that fulfil our own demanding subjective and objective criteria. Each product that is developed is the result of cumulative engineering knowledge gained over the entire history of the company and we constantly strive to exceed our own benchmarks.

Bill Webb, Engineering Director

A B.Sc. in Physics, Bill is recognised as one of the most prolific and widely respected loudspeaker designers in the industry by Martin Audio's customers and competitors alike.

Following his early career years designing transducers and systems at Tannoy and HH, he first joined Martin Audio in the early 80's, working alongside Dave Martin.

He returned as Martin's Engineering Director in 1993, after a decade of consultancy work for a variety of well-known pro-audio companies.



Jason Baird, R & D Manager

In Jason's three years at Martin Audio, he has become exceptionally skilled in the art of professional loudspeaker design.

With particular involvement in the LE12J and Blackline Series, not much passes through R&D now without his input. Possessing an honours degree in Electronic Engineering, he worked previously as a design engineer for Wharfedale and Fane Acoustics. His expertise includes both transducer and system design as well as all-important CAD skills.



Rod Short, Senior R & D Engineer

Rod is Martin Audio's electronics specialist — closely involved in the design of the company's controllers and amplifiers. He also provides the important bridge between the Engineering, Applications and Sales divisions. Prior to joining the company, he worked in the UK touring sound industry, designing the Q system for Roadstar as well as undertaking design and installation work for a variety of clients. He has covered every avenue of sound engineering and has been with Martin for six years.



Ambrose Thompson, Acoustic Engineer

Martin Audio's most recent recruit, Ambrose is currently working on additions to the Blackline Series. With an honours degree in Electroacoustics, CAD skills and proficiency with the likes of Mathcad, the company expects him to be a rising star within the department and to devote time to the more esoteric areas of speaker research, modelling and prediction, as well as product development. He has previously worked on loudspeaker design for Tannoy, IAG and Ford.



Engineering Principles

Horn Loading

Wherever possible horn loading principles are used for their impact and efficiency at low frequencies and pattern control higher up. The company's expertise in horn design is the best in the industry. Low frequency horns offer 4-6dB greater efficiency than direct radiators and have the added benefits of fast transient performance. Over 30 years, horn loading has always been a strong feature in Martin Audio's products and continues to remain so.

Another Way

Wherever possible, Martin Audio utilises three-way or four-way designs, with cone driven midrange horns, rather than using traditional large format compression drivers. This approach leads to a more refined sound and eliminates the harshness associated with big compression drivers running at full tilt. In auto terms, six cylinders run smoother than four. A good example of this is the W3, a very compact system where a 6.5in high-mid horn is shoehorned in to make it three-way rather than two.

Pattern Control

Martin Audio believes that it is important to have consistent pattern control — not mid or HF horns that beam. This means paying great attention to the off-axis response at the design stage to ensure that coverage pattern is uniform and follows the same shape as the on-axis response right out to the edge of its specified coverage pattern. It is in this area of the design that the phase bung in front of a mid-horn cone driver plays such a key role. Martin Audio's innovative short phase bung designs are responsible for maintaining the off-axis pattern and avoiding beaming as the frequency rises.

Uniform Power Response

It is vital to match the coverage pattern of the mid horn to the HF horn at the crossover region. All too many designs are unable to achieve this simple aim and it is common to find a mid horn which is narrowing (i.e. beaming) being crossed over into a HF horn at a frequency where its polar pattern is still wide. This can give a flat response measured on-axis, but

will inevitably result in a big dip in the off-axis and hence power response at the crossover point.

More Refinement

The company's policy is to strive for a level of refinement that exceeds many of its competitors. That much is obvious from comparative measurements taken over the years. Refining gentle trends in frequency responses is as important as getting rid of peaks and dips. Similarly, changing the value of a component in a passive crossover network can change the sound of a speaker significantly without ringing alarm bells in the data acquisition department. The engineering team uses its ears a lot, making small changes iteratively and using the data as a tool to help understand the changes they are hearing.

A Clean Canvas

The Martin Audio philosophy is to perfect the design in the acoustic domain and iron out peaks and troughs by improving acoustic and horn design skills rather than with electronic tweaks or "processing". Any EQ is kept to no more than a gentle LF or HF lift, with no attempt to hide any corrective EQ in processors. That way, the engineer is not fighting something he is unaware of. The company stands by its belief that it is far better to design in a smooth response in the acoustic device itself rather than correcting things electronically.

The Future

How loudspeakers interact with each other in an array is the hot topic in the industry at present. Whatever the hype says, the line array is not the Holy Grail of loudspeaker design. It has always been around — it's only the current format that people are latching onto as "new". Unfortunately, this is a maximum BS area at present and simplistic claims are flying around.

What is certain is that much more research is needed on how the various acoustic elements in any type of array interact with each other. To this end the company is currently working on software that will predict how large arrays will behave and are undertaking the high resolution measurements necessary for this application.

Martin Audio is progressing towards a systems future, with more on-board control electronics and amplification. However, it will not lose sight of the simple truth that no amount of network electronics or marketing hyperbole can ever replace the need for well-designed acoustic elements.

Martin Audio's engineering team is second to none in our industry, and is set to expand in the near future. Complemented by the systems, applications and EASE provision within the Sales and Marketing department, the total technical resource available within the company is geared up to meet the increased technical demands of our industry and customers in the years ahead.



On Tour with Vasco Rossi

The *Stupido Hotel* tour takes its name from the latest chart-topping album by EMI recording artist Vasco Rossi, a unique phenomenon on the Italian rock scene, for his ability to pack stadiums and racetracks (one of the gigs on the 11-date tour, as headliner at the Heineken *Jammin'* festival on the legendary Imola track, drew a reported crowd of 200,000)... even at the ripe old age of 49!

Although based on the tracks from the new album, the show also drew from a recording career dating back to 1978, and fans at concerts from Udine and Turin in the north to Palermo in Sicily, invariably knew every word of the songs.

As befits an artist of his calibre, the Milano Concerti production which trekked round the peninsula was a well-oiled machine, offering Vasco's fans exactly what they wanted — a huge set with a breathtaking combination of real-time video shots and effects on mega video screens, highly original visual effects from a custom LED screen and an impressive lighting rig including 72 Coemar CF moving head fixtures, 100 Varilite VL5's and 32 3K strobes.

Following on the successful experience of the previous (1999) tour, the sound reinforcement system chosen for this high-profile event was once again Martin Audio, with a W8 set-up supplied by Fumasoli Service.

Owner Renato Fumasoli explains, "I decided to add to my stock of Wavefront Long Throws for the World Youth Day, with two million youngsters, and His Holiness the Pope, last summer at Rome's Tor Vergata campus. Buying them was obviously slightly more expensive than renting, but I wanted to ensure my firm had in-house what I'm convinced is the ideal solution for top-end coverage over long throws — a system which enables us to come up with some very interesting solutions for important events like this."

FOH engineer, Paolo "Red" Talami, explained, "The main W8 rig flown on this tour comprised eight W8CT plus eight W8CM longthrows, 16 W8C and four W8CS. We then had 26 W8 subs either side and four W8CS subs in the centre, all ground-stacked, plus four W8 tops on front fill either side and four W3's in the centre for near field.

"This speaker upgrade made a great difference and we set it up at Imola, with the addition of some delay towers, where all the other bands used it." On the remainder of the tour Fumasoli only used a delay set-up for the bottom curve at Rome's Olimpico soccer stadium, 300 yards from the stage — when they put in a central cluster comprising 16 W8 Compact systems at a distance of 140 yards.



Right: Klaus Hausherr and monitor engineer Alberto "Bob" Bobbera.

Below: Renato Fumasoli.



"But with so many long throws, the sound was well-defined and up-front as it was," confirmed Renato. "Since the various sections of the PA — front fills, flown subs, top units installed above the subs enclosures had to cover different distances, we had a lot more crossovers, and although the secondary units were on stage and the main ones at the FOH desk, they're all linked in a network and controlled from the FOH riser.

"We also used the XTA Seriously Intelligent Dynamic Device (SIDD) like a matrix on the system and as a limiter — it intervenes very delicately with a great deal of features you don't find on normal limiters."

Able assisted by tour veteran Klaus Hausherr (responsible for the monitor system), another regular member on Vasco's audio team was monitor engineer Alberto "Bob" Bobbera, who as well as enthusing about the sound quality of the Cadac M type desk, explained the changes in the monitor set-up since the last tour.

"As well as IEM's, we used a Lab Gruppen-powered all-Martin set-up for wedges and side-fills — this time we had all the new LE12JB enclosures, plus a side-fill set-up comprising four W8S subs, two W8Cs and two W8Ts on each side — a hefty 6kW just on the stage! I think Martin is the best kind of system that anybody could give me to work with — both

the 12in units and the W8s need nothing else to complement them."

Vasco's wedges consisted in a front group of four, with two more behind him, plus another couple up at the top of the ramps running up either side of the set, and two more down on the side parts of the stage where he went out into the crowd. Outboards included two channels of Summit's DCL100 tube pre/comp on Vasco's mics.

Out front, Nicola Venieri was on FOH mixing duty, manning a Cadac R-type desk, which he said was fantastic.

"I used a Summit MPC100A — a unit with tube preamp and compressor/limiter sections. As well as being a tube fiend, I'm also a Summit evangelist, and they're really magic, with incredibly full-bodied top quality sound. Once again I used a MIDI set-up to recall the 'scenes', and as far as pre-recorded stuff goes, we'd four tracks, three stereo and one mono with grooves, loops and string sections, controlled directly from here.

"Since I only do Vasco as far as live work is concerned, I'm not accustomed to regularly handling the specific problems involved, so having somebody like Red alongside is of fundamental importance for me.

"I must say I've always enjoyed working with Martin systems," he continued. "This year, with the new configuration and the mixer platform set up a good bit higher than the crowd, I had a slight problem with the long throw enclosures, since the first one reached me and I heard more mid/high frequencies than the crowd, but I checked sound at crowd level and overall coverage, and we reached the end of the stadiums loud and clear with no problems at all."

He explained that in Rome, for example, the rig was set up 6ft higher, so he was more at ease. "As far as volumes are concerned, I didn't push things at all — there was absolutely no need. We were working well within 'safety limits', but with Vasco, the crowds themselves generate 98dB, so quite often we had to crank things up just to overcome them.

"This we were able to do comfortably — and still leave plenty of headroom."



A Hanging at The Tower



Raper & Wayman have completed a contract to install a new conference centre at the Tower of London, using Martin Audio Contractor series components. The project comprised a refit of a 17th century section of the Tower known as the New Armouries, which is intended for use as a banquet, conference and presentation facility.

Raper & Wayman were contracted by the main building services contractor, RTT Engineering Services, who carried out the electrical works on behalf of Historic Royal Palaces (HRP).

The installers featured 21 Martin C115T surface mount units in seven rows of three — each row having its own amplifier channel and channel of delay and signal processing.

Said Peter Kenny: "I chose the Martin Audio speakers because I had experienced good results on previous jobs and crucially the size, charcoal colour and very adjustable mounting bracket found favour with the architect — which was vital, as the building is obviously an historic monument."

The loudspeakers formed the reinforcement end of a complete sound system,

supplied and installed by Raper & Wayman.

Every part of the rack building, patchbay design and build, cable infrastructure, speaker mounting, commissioning, client training and manuals was carried out in house by Raper & Wayman.

Colin Briggs, client project manager for Historic Royal Palaces said: "We asked our consultant to design and specify a sound system that would deliver the high quality performance and standards that our clients expect to find at the Tower. The installation has certainly achieved this."



Audiosales Flying the Flag in Italy



Audiosales, Martin Audio's distributor in Italy, started distributing professional audio products back in 1996, servicing rental companies, discotheques, pubs, theatres, recording studios, post production A/V, TV studios, auditoriums, shopping centres and meeting rooms.

The high quality of the product range is supported by ten years of sales and technical experience, according to product manager, Mauro Codeluppi.

They had already familiarised themselves with Martin Audio components when, prior to Audiosales,



Mauro Codeluppi – Product Manager

they had all worked for another company, Italcida.

"One of the main reasons we like Martin Audio is because of the good balance between price and quality — plus, of course, their incredible pedigree. Not many brands can boast a history like Martin Audio."

Audiosales reckon they have equal penetration of the installation and PA/rental markets with Martin systems.

Their principle Wavefront customers include Music

Service (Siena), Fumasoli Service (Aosta) and BSB di Buriani (Massimo). And installation companies who favour Martin Audio include Pick Up, Remix and Emporio on Stage.

Today, they also distribute for Lab Gruppen, XTA Electronics, Formula Sound, EMO Systems, Dateq, Audio Control Industrial, Telex Communications, Furman Sound, Gotham Cable, Total Fabrications, Verlinde, Cadac and Garwood.



Stefano Rocchi – Director

Dave Roden Speaks Out

Stereophonics' long-time FOH sound engineer Dave Roden, has given the Martin Audio Wavefront 8C system a severe workout on the Welsh band's current tour, which has seen them playing a wide range of shows in the UK and Europe — some with U2, some interfacing with theatre house systems and some, such as Donington and the Millennium Stadium, Cardiff, using vast stadium set-ups.

The unpredictability of the band from night to night makes the forgiving and versatile nature of the Wavefront system ideal.

"This is a very variable rock band we're talking about," says Dave. "One night they will be like a jazz band and the next night they will come on like AC/DC."

"With a system other than the Wavefront we could have problems as the processor would only be able to cope with one sound or the other. I don't like my control to be over-automated. I prefer to keep it simple and I run this off an Omnidrive, which I think sounds better than other loudspeaker management system. If you tune the system properly it sounds as good as anything with a computer running it. So this is basically down to me, my EQ and my tech — not a computer and processor."

He has been working through Martin Audio's primary PA hire company, Capital Sound Hire, since the first production tour — and since the days of the old Martin F2 two-box system.

"That was a good system in its day, but in hindsight it



wasn't as good as Wavefront. We've gone through a few different set-ups on this tour and I've now tried most PA systems."

When *The Edge* caught up with Dave he was preparing for the Donington and Cardiff Millennium Stadium shows, with the benefit of having experienced the new Wavefront LongThrow system during the Heineken Festival at the Imola Racetrack in Italy. "I managed to get a copy of the stack plan in Italy, which will be very useful. Although there were some standard W8C delay points the longthrows were doing most of the work and I'm looking forward to running them."

On this tour they are carrying 16 x WSX subs, 32 x W8C's, two W8CS compact subs, which are used to stand the infills on and four W2's, which are used as tiny infills on the front of stage — all Crown powered. "It's pretty standard fare and only a couple of boxes more than other bands would use — but why compromise if you can carry enough PA for any situation?"

However he would prefer to ground stack the system, which they normally do at medium-sized venues, with just a few boxes flown for balcony coverage.

"It sounds great ground-stacked because it's an old rock 'n' roll PA, and the more you have of it the better it sounds."

He adds: "The most difficult thing I've found is that, every time we've done a venue it's usually the first time we've been there, because each successive tour is usually bigger than the previous one. We started off in '96 doing pubs, and in '98 we were doing arenas and stadiums, even if it was as a support. So everywhere we've been it's been a new experience for the band and the crew as well."

"A lot of the reason I've stuck with Capital is because I like the people — they're just great. They're willing to listen to people like me, who haven't perhaps got 30 years' experience, and haven't engineered the Rolling Stones or whatever. They're very helpful, and with another company I might not get that support."

"I also like Capital because if I want something that they haven't got, they'll try and get it for me."

Mixing on the tour is done via a Midas XL4, while processors include a dbx 160SL for lead vocals in line with a DN360 graphic, and a mixture of Behringer, BSS and dbx 160 compressors and Drawmer gates.

Mics include Sennheisers, Shure vocal, AKG 414s on the overheads and racks full of DIs for the keyboards and samplers, with BSS DIs on the acoustics.

The final word comes from Dave Roden: "Live music is all about spontaneity. If something happens you need to react to it instantly."

"At every show, you've got to be a punter. If you're not listening to the show and enjoying it, you shouldn't be behind the desk anyway. If you've enjoyed the show, there's a good chance that everyone else has enjoyed it, too."

Cap Sound in Support at Amnesty International



Stereophonics

The 40th anniversary of Amnesty International was celebrated in style at Wembley Arena in a comic cavalcade starring Eddie Izzard, and featuring Paul Whitehouse, Harry Enfield, Phill Jupitus, Jeremy Hardy and many more. Alan Rickman also appeared on the bill, as did Badly Drawn Boy, the Stereophonics and Tom Jones — with a satellite-linked slot from U2 in Toronto.

Called *We Know Where You Live: Live!* the show was hosted by Eddie Izzard in the spirit of the classic *Secret Policeman's Balls* in the 70s, 80s and 90s.

Heading the audio production team was sound designer George Glossop from Dimension Audio, who supplied Trantec S5000 radio systems and in-ear monitors, as well as d&b E3 nearfield monitors, while Capital Sound Hire provided all other sound reinforcement.

Glossop had asked Capital Sound Hire to repeat the Martin Audio Wavefront 8 Compact rig they had supplied for the comedian at a Princes Trust Wembley show in 1999. "It was the comfort factor," he reasons. "Why come up with a new formula?"

"George could see no reason for changing that formula," responded Cap Sound's Paul Timmins, who took over the project from colleague, Martin Connolly. The design was

based around a main left and right stack, each comprising 18 Martin Audio Wavefront W8C's (flown six wide, three deep using a MAN flying system on three points). Reproducing the sub frequencies were six WSX enclosures each side.

Large by Wembley's rock n roll standards, there was solid reasoning and experience behind the speaker design. In particular, a good deal of thought had been given to the delay points running back through the auditorium and set in three blocks of three.

The same applied to the way in which the show was miked up, as George Glossop explained: "Having designed systems for Eddie over the past few years based on B&K lavaliers and Trantec S5000's, I know how much of the subtle throwaway adlibs can be lost unless the information can be delivered above the laughter. It is essential to create an accurate, high power system with generous headroom.

"However, again because of the particular circumstances of the hall and the sources, the energy delivered into the hall needed to be kept to a minimum in quiet sections to minimise reflections. Hence the dynamic range and distribution of the system had to be comprehensive."

"Between the cry of 'how much money?' from the promoter and 'you don't need all this equipment' (sound engineering

friends of the promoter) George was under huge pressure to deliver a flawless show,” observed Colin Duncan from Dimension. “One newspaper (*The Times*) said it was like sitting in the Comedy Store.”

The classic Monty Python ‘Four Yorkshiremen’ sketch, performed on Lavaliers, was also hailed as one of the highlights of the show. The comics, corpsing, adlibbing randomly, were nonetheless clearly heard, in luxury, by 23,000 unstraining ears.

Adds Duncan: “I think those two aspects emphasise how intelligently the show had been designed.” He also paid tribute to John Farquhar-Smith for his ‘impeccable handling’ of the show given the scale of the production and the minimum time to prep it.

Aside from the performance of the wireless system much credit is also due to Capital Sound Hire’s XTA-controlled delay system. “The reason there were nine delay points is because since it was very much speech-oriented it was important we delivered it to all points in the room,” stated Paul Timmins. “And so three blocks of three delays were placed down the auditorium facing the seats.”

All the system management and delay times were consigned to an XTA network accessed by laptop — which is now Cap Sound’s preferred means of control. A laptop is driven from XTA’s proprietary AudioCore system, running eight DP226 digital devices (two in, six out). “We could process each cab separately, enabling us to get a stereo

pair out of each unit — all linked to the AudioCore on the laptop,” said Timmins. “This ran the whole PA and was operated by Ross Anderson, who has done all the programming.

“We also used some Klark Teknik DN360’s — nine at front-of-house — but most of the EQ was done with the XTA because of the parametrics.”

The entire system was powered by Crown Macro-Tech MA-2400’s on the mid-highs and MA-3600s on the bass. At the stage end Cap Sound providing a swathe of Martin Audio’s classic LE700 floor monitors, driven from dedicated MX5 crossovers, and W2/WS2A drum fills. In fact to lend the monitor mix much needed gravitas Cap Sound drafted in at the 11th hour the legendary John (JJ) James.



George Glossop

For Dimension, Pete McGlynn led their manically busy stage crew, who, in phase on a largely improvised evening, were patch perfect. Capital Sound Hire fielded a crew of seven under crew chief Ross Anderson. With Mick Perrin handling production, the event was promoted by Phil McIntyre, with Mark Henderson designing the lighting, and Unusual’s Ollie Green in charge of the rigging.

And as for George Glossop, he took up residence behind a 60-channel PM4000 — mixing the sound for any act that didn’t provide its own sound engineer.

The show itself was the result of Amnesty International’s desire to celebrate 40 years of helping to secure the release of thousands of individual ‘prisoners of conscience’, and the international defence of human rights — as well as to raise awareness. Meanwhile, the event website (www.weknowwhereyoulive.net) has been promoting six key current individual cases around the world being exposed by Amnesty International.

Filed by Initial TV, the show was provisionally set for Channel 4 transmission on June 16. It will be distributed internationally by the commercial arm of Initial’s parent company, Endemol Entertainment UK.



Eddie Izzard

Wavefront Boost McCartney/Simon Benefit

Any charitable organisation would be fortunate to have either Paul McCartney or Paul Simon perform at their benefit gala. But when both legendary superstars take the stage on the same evening, it's bound to be an evening to remember.

The evening was June 14, and the event was the *First Annual Adopt-a-Minefield Benefit Dinner*, held at the Regent Beverly Wilshire Hotel ballroom in Los Angeles. Spearheaded by McCartney fiancée Heather Mills, the star-studded event benefited — to the tune of \$500,000 — a programme sponsored by the United Nations Association that aids innocent victims of minefield explosions. The evening's programme was produced by Keith Edwards of Johnson-Edwards Entertainment, with Steve Lehman of LA Sound coordinating sound, lighting and backline equipment.

For the 600-capacity ballroom, Richard Ralke, owner of LA Sound, specified a main FOH system comprising eight Martin Audio Wavefront cabinets. Two Martin Wavefront 8 3-way systems supplied low-mid to high frequencies on each side, with two Martin Wavefront W8CS per side filling in the low bass. Sub-bass frequencies were augmented by a pair of LA Sound's own proprietary subwoofers.



"We always get compliments on the sound of our Wavefront systems," notes Lehman, "but just a passing mention from Paul McCartney is something to remember. During rehearsals, Paul was off mic, but just close enough so we could hear him, and he said, 'We haven't played on a system this good in a long time.' We all looked at each other and went, 'Wow!'"

For the evening's musical fare, Paul Simon first played four songs (*Bridge Over Troubled Water*, *Graceland*, *Boy in Bubble* and *Mrs. Robinson*) followed by McCartney's set (*Yesterday*, *The Long and Winding Road*, *Driving in the Rain* and *Let It Be*). The music closed with a duet by the two Pauls on *I've Just Seen a Face*. The benefit event, hosted by Jay Leno, also featured two films dealing with the worldwide tragedy of land mines.

The balance of the LA Sound-supplied system included Yamaha PM4000 house and monitor consoles, amplifiers from QSC and Crest and a bevy of microphones including Shure Beta 87 as the main vocal microphones. Both Simon and McCartney had their own bands, Simon's with seven pieces and McCartney's a basic quartet with Paul on Hofner bass. Dave Morgan mixed house and Glenn Collett mixed monitors for both artists. The two mix engineers, along with most of the stage crew, were with Simon's tour, which had played to sellouts at the Greek Theater on the previous two evenings.

Fitting out the Hyatt in Arizona



The Hyatt Regency Scottsdale is one of the premier destination resorts of America's desert south-west. Situated on the 560-acre Gainey Ranch north of Phoenix, the sprawling resort offers 493 luxurious rooms, a 2.5-acre water playground with ten pools, and 27 holes of golf.

The resort is also a prime location for corporate meetings and banquets, and to serve their clientele the Hyatt Regency Scottsdale recently completed several new additions to the meeting facilities.

Sunbelt Scenic Studios of Tempe, Arizona, was contracted to install sound systems for the extensions, and for the chandeliered 7600 sq. ft. pre-function area, earmarking 66 Martin Audio C516 ceiling speakers.

"We selected the Martin speakers mainly because of the quality of the sound," says Mike Riordan, installation manager for Sunbelt. "But they are also very cost effective, and easy to install because they come as a complete unit with integrated baffle and back can."

The speakers were spaced around a U-shaped area, with a ceiling height ranging from 10 to 14 feet.



Ceiling-mounted C516's in situ

The Hyatt Regency Scottsdale exterior



"It sounds wonderful throughout, and the hotel is very happy with it," adds Riordan. "Very little EQ was needed. The Martins provide a nice broad range, whether for background music or foreground voice reinforcement."

The biggest challenge overcome by Riordan was blending the sound in an area where the new construction joins up with the old, with each ceiling taking half the space. "The old part had some inferior speakers," says Riordan, "and we had to concentrate on making it as seamless as possible. By using separate EQ's for each side, we were able to get basic response fairly close. But if you listen carefully when walking from one side to the other, you can tell the Martins have a cleaner, fuller sound."

The hotel was so pleased with the result that they asked Sunbelt to retrofit one of the small ballrooms with another 20 Martin C516 units. "This was our largest installation with the Martin speakers so far," says Riordan, "but we definitely expect to be using more in future installations of this type."

The Bethel Church Phenomenon



Bethel United Church of Jesus Christ (Apostolic) UK recently completed the building of its new church facility in West Bromwich, Birmingham. In order to finance such a project this entrepreneurial organisation decided to offer the facility for hire as one of the UK's premium conference and meeting facilities, and chose Martin Audio loudspeakers for its primary sound reinforcement.

Bethel is a Pentecostal movement founded in the UK. A spirit-led church with a charismatic worship culture, it boasts branches all over the world, with congregations up to 4,000 people.

Sound and vision play a large part in the services, which normally involve a 200-strong choir, bishop's sermon and readings, and a full worship band set-up.

The site, formerly the headquarters of the West Midlands Electricity Board, was purchased in 1985 for development. In early 2000 building work commenced, and during February 2001 Bethel opened its doors for its first service. The architects were Tim Cooper Associates and Adonis Construction carried out all building works.

With a capacity of 3,500, the facility boasts an auditorium with state of the art sound, visual and lighting systems. The complex also contains a 1,000-seat restaurant, coffee



bar, several meeting and training rooms, which are all available for hire for conferences, meetings and events. Redcliff Conference Facilities Management has been appointed to operate the facility on a day-to-day basis and to co-ordinate room hire and associated bookings.

Most of the people who work at Bethel are volunteers. One of these is Simon Blissett, who works full-time at Christian Voice — West Midlands-based Christian radio station which broadcasts to Africa — and he acts as audio consultant for Bethel in his spare time.

At the beginning of the project, Simon received a vague brief for sound and lighting with a budget of £100K. Since then, the venue's requirements have

changed significantly into a church facility, which includes a state of the art conference venue. Simon worked alongside Mark Bromfield from the Birmingham branch of LMC Audio Systems, to ensure that all of Bethel's ever-changing requirements were fulfilled.

Simon Bissett explained: "With 3500 seats this is half as big again as the Hammersmith Labatts Apollo. Sound coverage and premium audio quality were critical to achieving my vision in a venue of such size and calibre."

After many design consultations with the board, Bethel's budget increased to £175K for sound, lighting and vision (originally, there had been no budget for lighting whatsoever).

Simon required FOH and monitor mixing consoles that could be linked with 48 channels and could be used easily by visiting engineers. The quality analogue console which fitted the budget and featureset was Allen & Heath's GL3300, and two identical boards were purchased for the FOH and monitor positions respectively.

Following an extensive consultative process Simon and Mark decided to build the audio system around Martin Audio loudspeakers as they met all-round performance specifications. The speakers consisted of Martin W3's, Martin EM76's, Martin EM251, Martin EM201 and Martin C516T's, and were also specified in complementary white. Jim Cousins from Martin Audio checked and advised position of

loudspeakers due to complexity of the room shape.

Power to the Martin loudspeakers is provided by QSC PLX amplifiers, which are situated in the control room, which has an interesting access point, via the roof. These particular lightweight amps were chosen as they pair up so well with Martin speakers and give an abundance of full-range sound, including great low end.

The stage monitors consist of 10 Yamaha monitors powered by four QSC PLX amps and BSS Opel EQs giving a total 8-way monitor mix; the installed wiring is arranged so that, for smaller events, the monitors can be controlled from the FOH position.

Mark had previously demonstrated Soundweb to Simon and as a result it became the main system processor. For the hard of hearing and visually impaired, a Sennheiser Infrared system was utilised in the main hall area, plus there was a portable infra system for rest of the building. A selection of microphones, from Sennheiser, Shure, Crown and Audio Technica, were used as a full band set-up was required. Playback was provided by a Tascam CDA-500 Combination CD/cassette and a Tascam MD501 mini disc player, while effects are generated from Drawmer DL441 and DS404, Behringer MDX2200 and XR2000 plus a Yamaha SPX990.

A full lighting and vision spec was also detailed by Mark Bromfield to ensure that all the audience had a clear view of the service no matter where they were seated.

The UK's first Enviro Zone paging system was installed in the reception area, while the coffee-bar area has its own independent BGM system which includes a Denon DN-H800 CD changer and FM/AM tuner for playback, a Yamaha 100V line amp and three Martin C516T ceiling speakers. The coffee bar can also take a feed from the service if required and has its own independent volume control.

Induction loops have been installed into four rooms within the complex, which can be plugged into portable equipment racks fitted with Allen & Heath MixWizards and loop amplifiers, so that a small meeting or service can be held in any of the four rooms for the hard of hearing. A further induction loop has also been permanently installed in the main hall, and is fed by Sennheiser K6 shotgun mics.

Simon summarised, "I went to LMC for this project in order to get the personal attention and service that I required. Mark Bromfield understood my requirements and helped me every step of the way."



Jim Cousins on How To Use the Technical Support Facilities

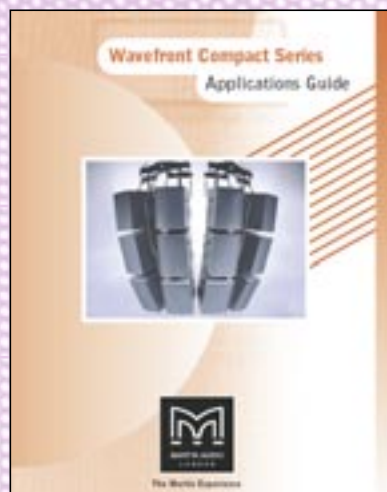
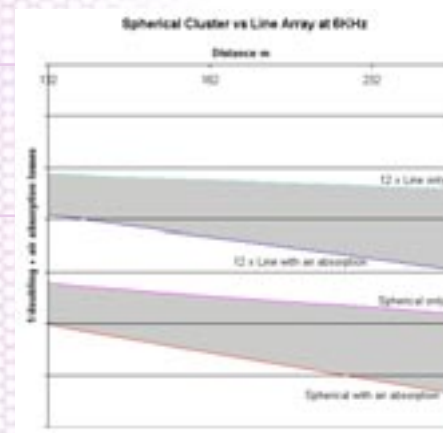
Whether you're new to Martin Audio's comprehensive range of products or an old friend trying to balance conflicting system requirements, our technical support team is here to help you benefit from a wide range of sound system design experience.

Martin Audio User Workshops are open to suitable numbers of Martin Audio installers and users. The workshops are usually held in conference venues near our distributors' premises. The courses are split into specific product sessions and may be tailored to suit attendees.

All workshops include: Corporate introduction; Introduction to sound and hearing; Architectural, Portable Club and Cinema loudspeaker features and applications; Large Format Architectural (stadium) loudspeaker features and applications; Distributed system spacing and cluster design for optimum coverage; Loudspeaker management, powering and cabling; New product introductions including the Blackline F8 and F10 loudspeakers.

All attendees receive the latest User Guide CD, which is multilingual and in industry standard Adobe Acrobat format.

Wavefront Touring sessions cover: Martin Audio product design philosophy; Wavefront Compact Series applications guidance; Line array theory and practice covering the use of the Wavefront Compact line array — the W8CT/CM Longthrow system — in Wavefront Compact systems and a sneak preview of Martin Audio's new all-horn Wavefront Line Array; An introduction to DISPLAY — Martin Audio's user friendly PC/Windows software aimed at the busy practitioner rather than the desk-bound systems designer.

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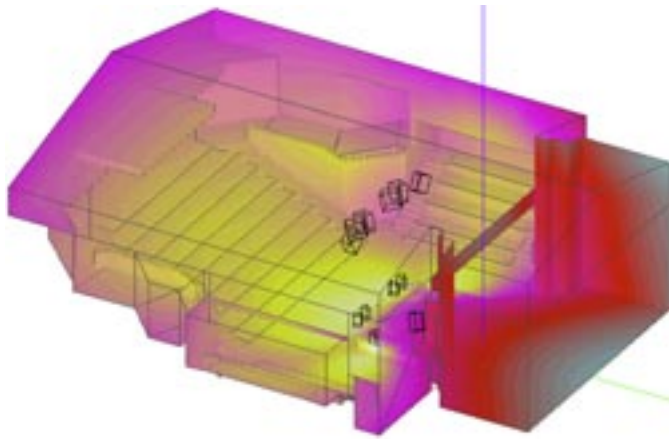
Wavefront Touring users receive a copy of the Wavefront Compact Series Applications Guide plus an Adobe Acrobat version on CD.

For further information or to arrange a User Workshop contact Jim Cousins at Martin Audio (jim@martin-audio.com).

EASE Sessions

Martin Audio has always provided on-demand EASE data and system verification support for installation clients. We can now offer workshops for larger system installation clients wishing to brush up on the use of EASE with our wide range of stadium, architectural and club products.

Please contact Peter Child (peterc@martin-audio.com) for further details.



Martin Audio Rigging Workshops

Martin Audio/M.A.N. rigging workshops are available for suitably experienced technical crew.

Please contact Rich Rowley (richr@martin-audio.com) for further details.

Technical Bulletins

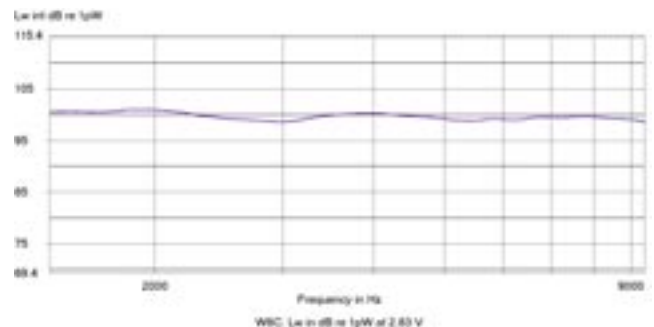
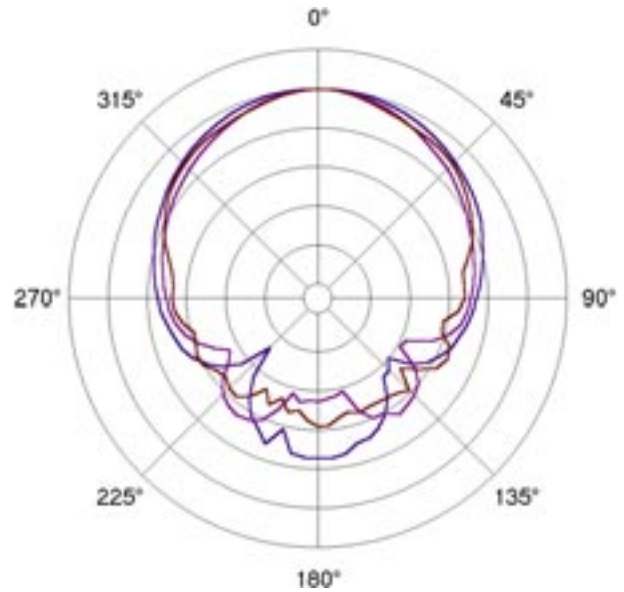
We are publishing key elements of our User Workshop presentations as Technical Bulletins. These will cover subjects like:

Martin Audio loudspeaker series vs maximum spl and throw; Optimum loudspeaker splay and spacing for smooth coverage; Loudspeaker polar, directivity and beam-width plots; Loudspeaker power responses; Line array spectral performance and throw vs RH; Subwoofer stacks for typical venues; Power amplifiers performance considerations; Limiter settings vs amplifier gain/power and sensitivity.

Software Development

PolarPlot

Martin Audio has developed PolarPlot — engineering software that allows us to produce high resolution polar, directivity index, beam width and power response plots plus DISPLAY and EASE compatible export files from raw measurement data.



Technical Bulletins including polar, DI, beam-width, power response and EASE data will shortly be available on CD.

DISPLAY

We shall shortly be introducing DISPLAY — Martin Audio's user-friendly PC/Windows software aimed at the busy practitioner rather than the desk-bound systems designer.

DISPLAY enables Martin Audio loudspeaker clusters and line array columns to be optimised for direct sound coverage "on the fly" — accepting a wide range of venue drawings including scans and bitmaps. DISPLAY uses amplitude and phase measurement data for accurate predictions of system response vs physical alignment.

The Best Sound in Hong Kong



C-Club, situated in the central district of Lan Kwai Fong, has been labelled by some as the best sound in Hong Kong — largely in acknowledgement that their recent sound system install, including Martin Audio Blackline Series F15 full range speakers and S18 sub-woofers on the dancefloor, provides an irresistible combination.

Alan J. Jewell, the sound and lighting designer for Hong Kong's C-Club, has been using Martin Audio speaker systems for five years. He says, "Martin Audio systems always give me the exact sound I need for my projects — powerful and clean. The system controllers make it difficult even for an inexperienced technician, sound engineer or DJ to blow them."

After a site visit from Eddie Lee of Dah Chong Hong at the beginning of the year, the sound system was decided upon.

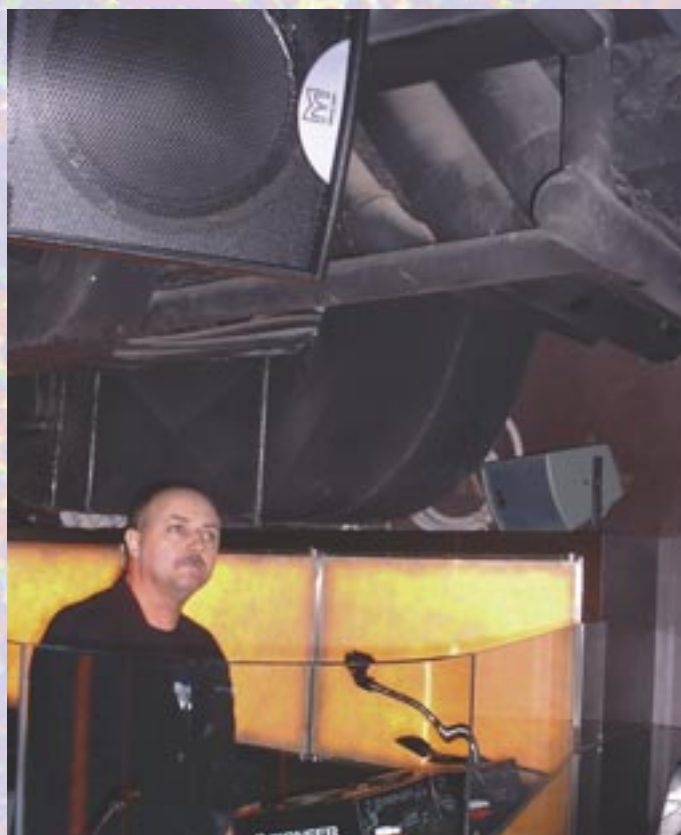
Dah Chong Hong duly supplied the club with four Martin Blackline F15's and four S18's, along with four EM56's, seven EM26's, three EM15's and a pair of EM150 subs, as well as two Contractor Series C115's, in graphite finish. This is run through two dedicated Martin M3 system controllers and an EMX1A.

The F15 & S18 speakers are used on the dance floor, and the EM56 and EM150 speakers in the bar area. The EM26's and EM15's are distributed around the rest of the venue, as well as the C115 for the smaller, confined areas.

Although other clubs in Hong Kong have similar speaker setups, the sound system in C-Club makes use of signal processors, tuned to create a more intense club sound than the usual disco. The bar room fill system also utilises the Martin Audio EM system in order to produce a loud but clean sound, in combination with EM150 sub-woofers.

Alan Jewell is extremely happy with the system and says, "The C115 speakers particularly sound good in the small areas, and look really funky in the graphite dark grey colour."

His next projects are two bars and two restaurants in Hong Kong as well as a disco and restaurant in Shanghai, China.



Alan J. Jewell, in the DJ console

W8C's Cluster at Zuhai 3D



One of China's biggest venues, Zuhai 3D Club, recently opened its doors to reveal an interior divided into four distinct areas — a discotheque, pub, bar and karaoke VIP rooms.

Situated in the centre of the building, the disco provides

the main focus. Installation company, Hui Feng Performance Equipment Co. Ltd used PC software to verify the locations and performance of the main Martin Audio loudspeaker system, which was selected for the disco. The roomfill

speakers use a combination of W8C's, in a two wide, two deep clusters and TxG speakers; the clusters are flown to the left and right of the DJ box booth.

A further 12 Martin Audio WSX bass speakers are groundstacked, and linked

with the eight W8C speakers, to form a complete FOH system. Eight further Martin Audio WT2's, and eight TxG speakers provide the roomfill system. Audio signals were fine tuned by Martin Audio's DX1 system controller, Klark Teknik delay, DN360 equaliser and DN504 quad comp/limiter, with all amplification by TxG.

The main effects lighting equipment comprises Cyberlights and Par 64's, operated from an Avolites Pearl 2000 lighting desk.

Playback sound systems have also been specified in the Pub (to the left of the disco), the Bar (to the right) and the Karaoke — which features the largest number of karaoke VIP rooms in the city.



Blackline Fits the Bill at 3D



3D Disco & Bar, situated opposite Kowloon Park in Tsimshatsui, was refurbished by new owners in March this year, converting the venue into a discotheque with 25 karaoke VIP rooms.

As a result, it has become the biggest combined disco/karaoke VIP facility in Hong Kong, with the disco area measuring approximately 15,000sq. ft. on the first level, and the whole of the upper floor being committed to the karaoke VIP rooms.

A walk-through tunnel — based on the interior of a space ship — directs customers from the reception/foyer area into the disco's main area, while above is an international standard 4-star hotel for tourists, with 500-plus guest rooms.

D&E International Ltd was awarded the contract to supply and install the new sound system for 3D Disco, with Ming Wong, D&E's sound engineer, supervising the project on site.

Martin Audio's Blackline Series was selected as the main speaker system for the disco dancefloor (measuring 14m x 10m x 8m).

There are two main clusters of three Martin Audio F15 speakers and a further pair of flown Martin Audio F15's at opposite sides of the DJ booth as monitors, at the same time providing better coverage and SPL for the dancefloor.

Ten Blackline Series S218 bass speakers have also been installed under the DJ booth, facing out to the dance floor.

Martin Audio's managing director, David Bissett-Powell, visited 3D Disco and Bar with D&E's representatives after the recent *CALM 2001* expo in Beijing. He agreed that the set up and installation of the speaker system was a perfect complement to the shape of

the disco, and that the main speaker system had been tuned to provide a well-balanced frequency response, with good coverage of the dance floor and seating areas to maximise the characteristics and performance of the Martin Audio system.

In fact the owners of 3D Disco are so impressed they have already asked D&E to undertake another project in Shenzhen, China.



EM's on the Menu at Indi Tapas Bar



The new 270-cover Indi Tapas Bar in Birmingham Chinatown's trendy Arcadian Centre has been opened by Eastern Leisure.

With a late licence, the venue — which will specialise in a fusion of Asian/Spanish cuisine — wanted a high-octane sound system in its minimalist surroundings that could be pumped up by its DJs during the later stages of the evening.

Seeking the optimum solution they turned to Martin Audio, which resulted in Middlesex Sound & Light — whose

experience of specifying Martin Audio systems includes the Spearmint Rhino table dancing chain — winning the contract on the basis of their projected loudspeaker design and ease of control. For the delivery, they selected white-finish versions of the EM architectural range.

Situated on a single floor, Middlesex's Lance Bromhead designed the Indi Tapas Bar into three separate zones, using a Cloud Z4 zoner to route source material generated from a Denon twin CD player or a pair of Technics decks. This included a raised food area around the periphery, an area for casual dining and a sunken floor area.

In the inner field of sound four EM26s are flown, with the sound ramped up by a Wavefront WS2A (2 x 15) sub.

Deployed in the second zone is a further pair of EM26s, reinforced by an EM150 subwoofer, while the raised area is serviced by a pair of tiny EM15s.

A Behringer mixer, a QSC amp rack and Seleco projection complete the array of technology.

Said Lance: "This operates as a thoroughbred club, and the combination of loudspeakers works very well and sounds good. We have used Martin Audio's dedicated EMX1A controller and wouldn't have considered anything else."

If the Birmingham pilot is a success, Eastern Leisure will be contemplating a roll-out of the Indi Tapas Bar concept.



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The Martin Experience

Rea Sound Spread the Net



Over the years Rea Sound has successfully completed a number of high profile installations throughout Ireland. Two main markets have come to the fore, namely Theatres/Performing Arts Centres and Churches. Due to the expansion of these markets the company has taken the first steps towards opening its third office in Ireland, based in Belfast.

With small drama groups increasingly requiring proper spaces to perform, and more touring companies appearing throughout the country, venues have started to spring up across Ireland. Rea Sound, with its newly formed 'sister' company Solas Design, can offer a complete technical fit-out to any venue. Not only, with the complete range of Martin Audio equipment can Rea Sound offer a complete sound requirement installation, but Solas Design also offers a complete lighting, rigging and hardware installation service.

The first complete project, utilising all aspects of the two companies came about in January 2001, with the new-build theatre in Tipperary Town. The Excel Theatre, a beautifully designed performance space, also houses a three-screen cinema, exhibition rooms and a community focal point. This 360-seat 'state-of-the-art' modern theatre will host a variety of 'live entertainment'.

As part of the project, custom-coloured Martin EM76's and EM26's were installed at unique flying points and positions to give the best possible sound quality to all aspects of the venue. Controlling the Martin amplification (comprising an MA1.3, three MA1.6's and an MA2.8) is an Allen & Heath GL3300 32-way control desk. Throughout the building 15 Martin C115T's have been positioned to provide the sound requirements for the foyer areas.

The Maydown Ebrington in Derry was a different style of venue, catering for a more modern audience. The venue was to be used not only for theatrical performing arts, but also as

a dance venue, from Raves to Ballroom. The installed sound system has been specified to cater for the theatrical side and the 'lighter' dance productions.

During Raves, the company hires in additional Martin Audio WSX and W8C's from Rea Sound, to cater for the differing sound requirements. Again, custom coloured Martin EM76's have been positioned on HTKM20 flying yokes to provide sound across the venue. Two EM251 sub bass units, positioned at either side of the stage, provide that extra punch, while three MA2.8's provide the unseen amplification for the whole system.

Rea Sound's most recent installation involved not only a theatrical performance space but also a recording studio, with rehearsal rooms and conference facilities at the Ballymun Arts & Community Resource Centre (BACRC) is a centrepiece in North Dublin.

This venue will be run by a local community backed company. The theatre sound is provided for by four Martin WT3's on specially-designed flying frames mounted above the audience seating area. These are backed by a pair of Martin WS2A sub bass units and eight Martin LE400C monitors. The first show is scheduled for September.

On the outskirts of Belfast, the new Carryduff Elm Pentecostal Church has been built, privately funded by the church. During the building stage Rea Sound was approached to give their advice on the sound requirements.

Being a lively evangelical church, there were three main requirements for the sound installation — (a) the band/choir, (b) the recording of the congregation during prayers and hymns, and (c) the main sermon. A flying frame was housed above the pulpit, holding three Martin EM76's, while two EM251 sub bass units were situated at either side of the church. During a recent customer relations meeting with the church Rea Sound learned that people had travelled from far and wide to see this installation, and to hear the quality of the sound within the building.

In the town centre of Portadown lies the Elm Pentecostal Church, another recent installation for Rea Sound. Martin EM76's have been strategically positioned throughout this very wide church hall, with the added support of a pair of sub bass EM251 and a WM0.5 stage monitor system. The church has very lively bands that perform at each and every service, with regular visitors from soloists and other live entertainment; the congregation plays a very interactive role in the praise services.

Rea Sound emphasise that there are further installations on the horizon, and agree that having the right products available from Martin Audio is a massive boost.

International News

Going Back in Time



The Belgian coastal town of Zeebrugge is hosting the annual *Sand Sculpture Festival*, with an average of 45,000 visitors. Every year a special theme is selected to capture the imagination of the 65 artists who design and create the scenes.

The team went totally overboard this year and recreated a pre-historic environment with a touch of fun about it on the beach. The whole area is about 1000m in size, and visitors are free to walk between the dinosaurs.

Deltarent won the contract to provide the sound for the opening, attended by 8,000 people including all national TV stations, using the Martin Audio W8 system which they bought earlier this year. Inside the exhibition they used the specially-weatherproofed Martin Audio Blackline F12.

Explained a spokesman for the company: “We wanted a clear sounding box with sufficient low-end, as we had no room for subs.

“Because the pre-historic sounds are driven at quite a high volume we wanted it to sound as natural as possible, and took a long time to decide how we were going to do it. We knew we wanted a 12in for the vocal clarity (safety announcements are also distributed via the same speakers); but there are a lot of boxes out there with a 12in that don’t deliver what the specs

promise, and most of the time you just end up with a very aggressive loud speaker.

“Secondly, we needed a manufacturer that was willing to weather-proof their product as the event was held outdoors in the sand. Martin delivered — and everything is working according to our plans.”

The festival stays open to the public until September 8.



Shaq Drops in on KROQ Weenie Roast



Delicate Productions, of Camarillo, CA, was the sound contractor for the ninth annual KROQ Weenie Roast held at the Verizon Wireless Amphitheater recently. The capacity crowd enjoyed such acts as 311, with drop-in guest (literally!) Shaquille O'Neal arriving and leaving by helicopter. Other acts to appear included Stone Temple Pilots, Jane's Addiction, Blink-182, Stabbing Westward, Linkin Park, Papa Roach, Stained and The Cult.



The sound system for the show consisted of a Martin W8 rig, 30 enclosures flown per side with eight per side stacked on subwoofers. Front of house consoles comprised of a pair of Yamaha PM4000's, while two Midas Heritage 3000's were used for monitors. The system was powered by Crest, and processed by BSS devices.

A turntable effect was utilised for the band changes, so the monitor system needed to be duplicated to expedite the changeovers. The stage foldback was built around Martin LE700 floor monitors, with Martin F1 bass cabinets and F2's used as side fills.

The audio crew deployed by Delicate for this huge event was Kurt Wolf, Dan Knutson, Steve Walsh, Jebi Kritz, Meegan Holmes, Paul Sarault, and Andrew Fletcher. Guest engineers included Will Salarno (*Stabbing Westward*), Tom “Bone” Edmonds (*The Cult*), Brendan Brown (*Papa Roach*), Brad Divens (*Linkin Park*), Jeff Gilmer (*Staind*), Jim Huth (*Stone Temple Pilots*), Gungi Patterson (*Jane’s Addiction*) and Bryan Worthen (*Blink-182*).



International News

Between Heaven and Earth in Prague



The high class, 300-capacity Duplex disco club is perfectly situated on the top floor of a commercial building in Venceslav's Square in Prague's business and nightlife centre, with a breathtaking view of Prague Castle.

Dara Rolins, a well-known pop singer, and Vlastimil Vyhřídál acquired the club known formerly as Fromin in April 2001. They decided to name it Duplex as it comprises a restaurant on the sixth floor and disco club on the seventh. The club has been totally refurbished and there was an obvious need for a new sound system.

František Michálek, the owner of Prague's leading disco-equipment retailer MaxiStore, suggested the Blackline system from Martin Audio. The deal was confirmed after an on-the-spot sound demonstration organised by MaxiStore along with Jindra Stelka and Zdeněk Altynski of Praha Music Center, Martin Audio's distributor in the Czech Republic, who acted as consultants.

The installation utilised four Martin Audio S218 subs and four H2's in passive mode, one sited in each corner of the

square dance floor, with Martin M3 and dbx 481 sound processing, powered by Crown MA3600VZ and Crown MA2400 amplification to provide an excellent sound. As the DJ's booth monitors, two Blackline F12 were selected, powered by Crown CE 1000 amplification, with the M3 processor handling the EQ and limiting.

Since the opening ceremony on May 30 there has been a regular programme four nights a week, sometimes including professional dancers and live musicians. The most famous DJ to appear at the club has undoubtedly been Wesley Snipes, who organised two private parties at Duplex during his spring stay in Prague, while shooting the movie, *Blade II*.

Dara Rolins and Vlastimil Vyhřídál commented: "As our club is connected via open staircase with the restaurant and café, we wanted a sound system which would sound great at both high and low volumes. Martin Audio Blackline boxes fulfil this with great fidelity and musicality."

And they added: “We got our inspiration from the best place of all — Fabric.”



New Theme Park Equips with ICT300/C115 Combo



Terme Olimia is a new theme park situated next to the Sotla River, which forms the border between Slovenia and Croatia.

The complex comprises a hotel, apartment block, village, sports park, pool complex, nature camp and the Aqualuna Water Park.

All the entertainment and announcements throughout the complex are broadcast through a combination of 36 Contractor C115's, distributed undercover throughout the restaurant and café bar areas, and 16 custom-weatherproofed ICT 300's, which are found in most of the zones in the park.

The sound installation was undertaken by KSL Studio, Martin Audio's Slovenian distributor, who has achieved systematic penetration with the company's sound reinforcement products throughout the country.

Once again KSL won the contract because of the quality of their work, and Martin Audio were favoured by virtue of reputation.

Said the company's Bostjan Konic: "This is a highly-prestigious installation and once again Martin Audio have been able to fulfil

the park's multi-purpose requirements with their products."



Access Extend Rumo's W8C Fleet



Access All Areas, Martin Audio's exclusive Portuguese distributor, has supplied a W8C turnkey package to a hire company who specialise in the concert arena.

Rumo do Som, Lda bought the Wavefront W8C system as an upgrade to their current rental stock, adding 16 W8C's, 16 W8CS, 16 WSX, along with four racks each consisting of a DX1 Management System, three MA 1.3 amplifiers and two MA 4.2's. The W8C system will be rigged using a MAN flying system.

Rumo do Som already carry a large stock of Martin Audio LE700s, which are the standard in Portugal for floor monitors.

Pedro Tome, owner of Rumo do Som comments: "As well as Martin Audio having a tremendous name in the business regarding equipment durability, their equipment is constantly

being specified on technical riders. Technicians know that the name means quality."

The equipment was bought for its excellent reproduction capabilities, its clean bass and the clear vocal presence.

"We are absolutely delighted with the new system, and new business opportunities are now appearing for our company to enter into other markets."

Access All Areas also report large sales of the C115 Contractor cabinets for the installation market, as well as continuous sales growth in Martin Audio amplifiers and LE700A's.

They also recently sold a large quantity of EM Series enclosures to an AV company and to Portuguese National Television, for use as 'Hot Spots' for orchestras and television shows.

Wavefront 8 Rental Companies Around the World

COMPANY NAME	COUNTRY	TELEPHONE
3200 LIGHTIUNG	AUSTRALIA	+ 61 2 9693 1777
AVSOUND PRODUCTIONS	AUSTRALIA	+ 61 2 9949 9000
ANDY J SOUNDS	AUSTRALIA	+ 61 8 8376 2771
MARTIN PARKS PRODUCTIONS	AUSTRALIA	+ 61 2 6360 4411
ENTERTAINMENT INSTALLATIONS	AUSTRALIA	+ 61 2 4324 3873
JAZZRIGHT PRODUCTIONS	AUSTRALIA	+ 61 2 9311 1197
TOP END SOUNDS	AUSTRALIA	+ 61 8 8981 7744
AVL	AUSTRALIA	+ 61 3 9387 1055
CENTRESTATE	AUSTRALIA	+ 61 2 6362 0587
SOUND SOLUTION	AUSTRALIA	+ 61 3 9686 4755
PHASE ONE AUDIO	AUSTRALIA	+ 61 89 22 77979
DERRINGERS MUSIC	AUSTRALIA	+ 61 88 37 11884
STEPHEN SOUND	AUSTRALIA	+ 61 3 9436 8981
DAVIDSON AUDIO	AUSTRALIA	+ 61 29 36 81159
MASTER SOUND PRODUCTIONS	AUSTRALIA	+ 61 2 9683 4971
HARWARE CORPORATION PTY LTD	AUSTRALIA	+ 61 3 9510 7529
KRAXBERGER HERBERT	AUSTRIA	+ 43 7242 45193
PA SOUND & LIGHT TEC	AUSTRIA	+ 43 7667 6090
TOPLAK STAGE POWER	AUSTRIA	+ 43 222 4898877
VIDEO & SHOW	AUSTRIA	+ 43 7242 66588
FOR MUSIC VERLEIH	AUSTRIA	+ 43 2236 71684
BRUNNER & BRUNNER	AUSTRIA	+ 43 663 037578
ATI	BELGIUM	+ 32 9 362 07 48
RIKES	BELGIUM	+ 32 3 309 1742
STUDIO 2000 BVBA	BELGIUM	+ 32 89 30 89 54
ART SYSTEM	BELGIUM	+ 32 10 24 68 68
STAGE PROJECTS BVBA	BELGIUM	+ 32 75 721710
PHILIPPO AUDIO BVBA	BELGIUM	+ 32 3 491 91 76
GROUP SON PRIVE	BELGIUM	+ 32 2 767 24 10
D-RENT	BELGIUM	+ 32 3 324 02 97
ALL AUDIO ACCOUSTICS KORK BVBA	BELGIUM	+ 32 475 5745 17
DELTARENT NV	BELGIUM	+ 32 50 49 00 81
SOUND ART PA & LIGHT SERVICES	BELGIUM	+ 32 50 81 61 30
NORTHWEST PRODUCTIONS	CANADA	+1 250 765 8451
THE LION SHARE INC	CANADA	+1 905 830 0525
D & E (INTERNATIONAL) LTD	CHINA	+ 852 2898 8666
HUIFENG LIGHT & SOUND ENGINEERING LTD	CHINA	+ 86 20 8481 1088
AV CENTRUM	CZECH REPUBLIC	+ 420 602 227357
SOUND SERVIS	CZECH REPUBLIC	+ 420 602 2220870
RINGSIDE TOUR PRODUCTION	DENMARK	+ 45 3393 4748
AUDIOTEL	ESTONIA	+ 37 2 7 38 5485
RADIANT SOUND COMMUNICATION	FINLAND	+ 358 3 22 33311
UNITED SHOW ENTERPRISES HELSINKI LTD	FINLAND	+ 358 9 759 4180
BGM	FRANCE	+ 33 4 66 84 39 34
TECHNISCENE	FRANCE	+ 33 2 35 88 86 86
PRODUCTION 44	FRANCE	+ 33 2 40 52 07 07
ART SON ET LUMIERE	FRANCE	+ 33 4 94 03 03 52
ATC	FRANCE	+ 33 5 56 69 60 60
AUDIO CONCEPT	FRANCE	+ 33 563 39 67 86
AUDIOLYRE	FRANCE	+ 33 5 59 98 31 10
GPS	FRANCE	+ 33 251 686 900
EURO LIVE	FRANCE	+ 33 296 743 326
MEGAWATTS	FRANCE	+ 33 478 431 026
BALLOON FARM STUDIO	FRANCE	+ 33 299 321 111
RICHARD LAURIANT ECLAIRAGE	FRANCE	+ 33 385 391 535
LWS	GERMANY	+ 49 228 94676-0
KLEMENT ELEKTROTECHNIK	GERMANY	+ 49 5626 8475
SCHALLDRUCK VERANSTALTUNGSTECHNIK	GERMANY	+ 49 3531 65300
NEW NOISE	GERMANY	+ 49 201 8686010
BIG BEAT PA - SERVICE	GERMANY	+ 49 4403 6358
COMPLETE AUDIO BERLIN GERMANY	GERMANY	+ 49 30 661 00 45
MEGATEC	GERMANY	+ 49 351 8386811
SATION AUDIO	GERMANY	+ 49 8225 958134
SLP PRO SARL	GUADELOUPE	+ 590 80 15 80
D & E (INTERNATIONAL) LTD	HONG KONG	+ 852 2898 8666
THUKRAL PRODUCTIONS	INDIA	+ 91 11 431 1011
REA SOUND	IRELAND	+ 44 1648 764059
MAFFEI SERVICE	ITALY	+ 39 0461 707852
FUMASOLI SERVICE	ITALY	+ 39 0165 35806
PHOENIX AUDIO SNC	ITALY	+ 39 041 5342349
RADIO SATA SERVICE	ITALY	+ 39 051 6332440/6332398
MUSIC SERVICE	ITALY	+ 39 0577 306032
PIANO & FORTE	ITALY	+ 39 0522 661506
ELECTRA SERVICE	ITALY	+ 39 0375 82919
CLAPS	ITALY	+ 39 0434 26882
MEZZA NOTA	ITALY	+ 39 0444 695507
BIG TALU SERVICE	ITALY	+ 39 0174 45314
BLU STUDIO	ITALY	+ 39 079 293179
COOPERATIVA 56	ITALY	+ 39 051 6153339
FAST SERVICE	ITALY	+ 39 081 8237009
T.S.S.	ITALY	+ 39 0521 776810
VOX SERVICE	ITALY	+ 39 049 5380151
ZOHO MUSIC SERVICE	ITALY	+ 39 011 6645754
W M AUDIO SERVICE	ITALY	+ 39 0962 865013

COMPANY NAME	COUNTRY	TELEPHONE
CORIPPO ALBERTO	ITALY	+ 39 030 2511722
MUSIC LIGHT INSTRUMENTS	ITALY	+ 39 0566 56356
MASTER SERVICE	ITALY	+ 39 371 460304
JE-IL SOUND	KOREA	+ 822 835 1608
LIVE	KOREA	+ 822 747 2162
SOUND BOX CO	KOREA	+ 822 419 5141
MARTIN KOREA SOUND CO., LTD	KOREA	+ 822 419 5141
SHINHAN SOUND CORPORATION	KOREA	+ 822 376 8383-4
ELTEK	LEBANON	+ 961 1 265048
CHIFU	MACAU	+ 853 567847/8
KILMI MUSIQUE	MOROCCO	+ 212 332 44 23
SIMPLON	NETHERLANDS	+ 31 50 3184150
EAST SOUND	NETHERLANDS	+ 31 575 519365
MANIFESTO	NETHERLANDS	+ 31 229 279839
PURPLE HAZE	NETHERLANDS	+ 31 348 424477
VAN ZANDBEEK PA	NETHERLANDS	+ 31 653 902690
ACME AUDIO LTD	NEW ZEALAND	+ 64 9 302 0352
NORSTAGE A/S	NORWAY	+ 47 52 71 43 10
AMAS LYD PRODUKSSON A/S	NORWAY	+ 47 55 32 90 50
RHYTHMIC SOUND SERVICES	SINGAPORE	+ 65 841 0911
PLOHL MIRAN	SLOVENIA	+ 386 62 661 761
MEGA AUDIO D.O.O.	SLOVENIA	+ 386 62 314063
CONZERT	SPAIN	+ 34 96 120 31 11
SONOSET (MILWAUKEE AUDIO S.L.)	SPAIN	+ 34 93 372 40 53
SONARTE	SPAIN	+ 34 926 31 28 28
SONOBEXI	SPAIN	+ 34 953 76 33 37
LUC SON	SPAIN	+ 34 96 530 30 23
TOUR SERV. PROF. SO I I L.LUM. S.L.	SPAIN	+ 34 93 477 04 95
RED TSO	SPAIN	+ 34 977 64 34 95
PROSEC AUDIO S.L.	SPAIN	+ 34 985 98 07 01
ELECTRIC-SO	SPAIN	+ 34 93 726 54 44
MUSIBELIOS S.L.	SPAIN	+ 34 95 234 12 54
SEGUNDO LASER	SPAIN	+ 34 967 40 10 96
SONORIZACIONES Z, S.L.	SPAIN	+ 34 961 20 31 11
FATSINI S.L.	SPAIN	+ 34 97 770 1412
MUG HYR AB	SWEDEN	+ 46 31 130990
SKELLEFTEA LJUDUTHYRNING	SWEDEN	+ 46 910 173 74
SOUNDHOUSE	SWITZERLAND	+ 41 41 240 44 24
AUDIO-PHASE	SWITZERLAND	+ 41 32 384 26 72
REYANG PROFESSIONAL SOUND CO LTD	TAIWAN	+ 886 2 2254 2926
YASHIN PRO-AUDIO INC.	TAIWAN	+ 886 7 322 2555
DINGLEY PROSOUND SERVICES	TAIWAN	+ 886 7 384 3845
TEMPO MUZIK LTD	TURKEY	+ 90 212 230 38 18
HAWTHORN THEATRICAL	UK	+ 44 1664 821111
STAR SOUND SYSTEMS	UK	+ 44 1924 278875
CAV	UK	+ 44 1453 751865
ADLIB AUDIO	UK	+ 44 151 486 2214
CAPITAL SOUND HIRE	UK	+ 44 207 978 5825
ROSSCO LTD	UK	+ 44 1462 431413
AUTOGRAPH SOUND RECORDING	UK	+ 44 20 7485 4515
PA PA	UK	+ 44 1248 670980
CABLE MUSIC PA HIRE	UK	+ 44 1926 339780
ZU 2	UK	+ 44 7974 418867
INTASOUND PA	UK	+ 44 1905 841591
BLIZZARD SOUND	USA	+ 1 920 451 1343
GSA NEW YORK	USA	+ 1 914 632 0192
PROLINE AUDIO	USA	+ 1 918 260 0503
SOUND CONSTRUCTIONS	USA	+ 1 718 893 7352
SAI	USA	+ 1 612 724 5395
DYNAMIC PRODUCTIONS	USA	+ 1 770 794 1133
RALEIGH MUSIC	USA	+ 1 919 965 4300
SUNBELT SCENIC STUDIOS INC	USA	+ 1 480 598 0181
CLEARWING AUDIO	USA	+ 1 414 258 6333
ORDWAY MUSIC	USA	+ 1 651 282 3045
WORLD AUDIO	USA	+ 1 210 472 3932
OPRYLAND PRODUCTIONS	USA	+ 1 615 228 0491
GO AUDIO	USA	+ 1 414 764 8290
A.C.E.S	USA	+ 1 800 204 5415
CELEBRATION SERVICES	USA	+ 1 937 836 5662
DELICATE PRODUCTIONS	USA	+ 1 805 388 1800
LA SOUND	USA	+ 1 818 765 6900
LOUDSOUND	USA	+ 1 916 481 3679
MHA AUDIO	USA	+ 1 301 733 9337
PROMIX	USA	+ 1 914 662 3543
ROLLING THUNDER	USA	+ 1 401 954 6068
SOUNDWAVE	USA	+ 1 520 327 5590
STICHA BROTHERS	USA	+ 1 608 276 5570
TECHNOTRIX	USA	+ 1 815 935 0233
TECHNICAL PRODUCTIONS	USA	+ 1 314 644 4000
VERTICAL SOUND	USA	+ 1 216 521 9994
WAVE TRIBE PRODUCTIONS	USA	+ 1 541 618 9499
AV PRESENTATIONS	USA	+ 1 504 542 9196
PHIL REIGH SOUND	USA	+ 1 884 411 7445
NORTHEASTERN PRODUCTION	USA	+ 1 716 427 8760