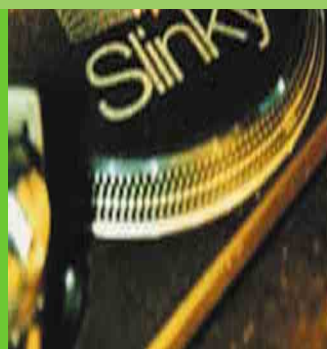


the **EDGE**

Issue One | April 2000

Martin Stretch the Global Net

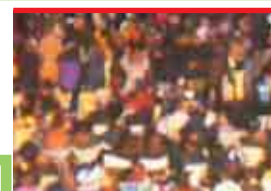


The Martin Experience

In this Issue:
Warner Bros Cinemas
Blackline Launch
Texas on Tour
Eurovision 2000
Conquering Hollywood

CONTENTS

Texas 'Adlib' with New Wavefront Stack	3
Blackline Debuts in Spain	4
Slinky now boasts a Total Wavefront Rig	6
Warner Bros Fit Systems into new Preview Theatres	6
Martin at Eurovision 2000	7
Knights in Martin Armour	8
Martin Fuel Dynamic Earth	9
The Progressive Sound of Martin Audio	10
Factory Finish	12
Martin Launch New DSP processor	13
Sultan of Swing	13
Martin Board the Atlantic Bandwagon	14
Soundhouse Maximise Swiss Market	14
News Extra	15
Wavefront 8 Users Around the World	16



WHERE TO SEE US

Right at the Cutting Edge

Welcome to the first edition of **The Edge**, which will bring news from Martin Audio's global network of distributors and users on a regular basis.

The Edge is a direct result of feedback we have received from our customers, and in this pilot edition we have tried to present a snapshot of the growing number of markets and applications that our products now address around the world.

We are always on the lookout for contributions – and will be starting to work almost immediately on our Autumn journal, which will be published at the *PLASA Show* in September. Submissions for consideration can either be faxed to Maureen Hayes at our head office on +44 (0)1494 438669 or sent online to Jerry Gilbert at our PR company at Jess_G@compuserve.com

Of course we also welcome feedback to this edition – and if your comments should be heard during the course of this month's *Musikmesse* in Frankfurt, on our stand C59 in Hall 5.1, then you'll probably also qualify for a beer or glass of wine.

Finally our gratitude is due to a number of people who provided general assistance with the preparation of **The Edge**. In particular we should like to thank Mike Lethby of *Installation Europe* and Martin Jones and Justin Gawne at *Mondo dr* for photographic elements used in this edition, along with our own Martin Kelly. The editorial was co-ordinated by JGP and the overall journal design and layout were conceived by Red Square Advertising, Dartford.

Where to see us

April 12-16: **Musikmesse**, Frankfurt, Germany

April 29- May 1: **NSCA**, Las Vegas, N. America

May 18-21: **CALM**, Beijing, China

May 23-25: **ExpoLatina 2000**, Miami Beach, N. America

June 7-9: **PLASA Light & Sound**, Shanghai, China

June 26-29: **Cinema Expo**, Amsterdam, Holland

July 6-8: **PALA**, Manila, Philippines

Sept 10-13: **PLASA**, London, UK

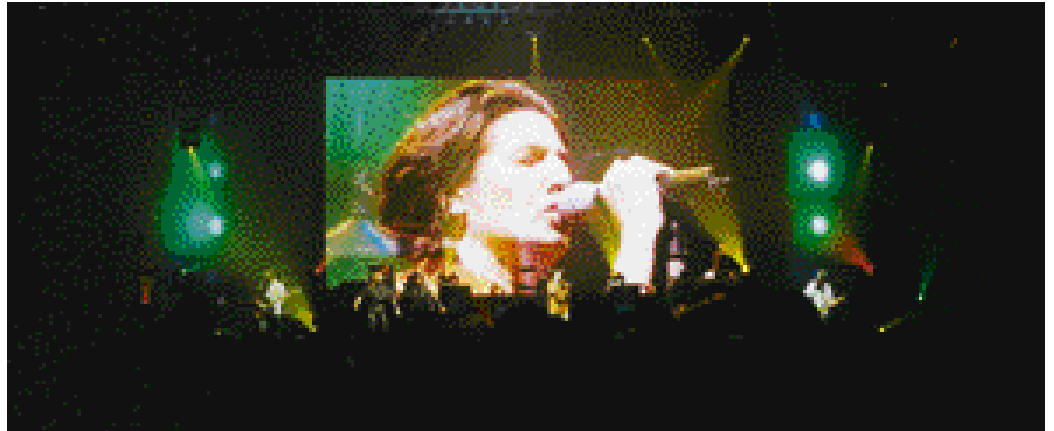
Sept 22-25: **AES Convention**, Los Angeles, N. America

Texas 'Adlib' With New Wavefront Stack

Following on from the success of the 1997-8 Texas *White On Blonde* tour, British-based PA rental company, Adlib Audio, were retained to service the recent *The Hush* arena tour.

Due to an incredible end-of-year workload, which also included tours with Gomez and Space, an additional Martin Audio Wavefront system was added to the company's hire stock, comprising 56 W8C high units and 18 WSX subs (including MAN I.T. flying systems and the addition of 12 PCM Lodestar motors).

Andy Dockerty, who runs Adlib Audio, commented: "We are delighted to be adding to our Martin stock as a result of this heavy touring schedule. Martin Audio always go the extra nine yards to help us out – both on and off the road."



The purchase followed the initial acquisition made by Adlib Audio in the Autumn of 1997 for *White on Blonde*, a tour which also featured the first use of the then newly-launched W8CS – the Compact's dedicated sub – which was flown at all the smaller European concert venues and used as infills in the arenas.

Commenting at the time, Andy Dockerty explained: "We realised that if we wanted to be taken seriously when we were quoting on new business it was important to have a name such as Martin Audio that everyone recognised. Now we have a named cabinet to put alongside our own boxes.

"For the amount of SPL the Wavefront 8C generates it's definitely one of the best value-for-money systems on the market. The other benefit is that while it works entirely independently, it's also complementary to our own system in that the configuration is identical – all the cabling is pinned exactly the same as ours so we don't have to change the amp racks."

When Texas released *The Hush* last year it marked a new direction for the band, with the emphasis very much on soul and Motownesque ballads. *The Edge* caught up with the band's tour – featuring Adlib's extended Wavefront fleet – at Wembley Arena.

Dockerty continued: "We spent well into six figures this time around, and equipment-wise, the most interesting facet is that this is probably the first use of the MAN I.T. systems – or 'flybars' – which have certainly made life easier when it comes to rigging the PA.

"With several other tours out simultaneously – including Gomez – we had to re-equip and re-invest fairly quickly during the planning stages. I'm always very aware that our game is extremely competitive."

In fact the night before Texas played Glasgow he went to hear another top UK band who favour a Wavefront rig – Ocean Colour Scene – which he says was stunning. Dockerty, who undertook FOH mixing duties for Texas (with Marc Peers on monitors) is worthy of a separate editorial focus. Originally an electrician, he set up Adlib Audio as a small PA hire/installation company in the early 1990s, from which it has blossomed. Asked what he would do if he ever had to 'hang up his ears', he says: "Teach sound engineering skills to kids who want to listen."

As in *White on Blonde* two years ago, the band worked through a plethora of different styles during their two-hour set, culminating in a stunning version of the Human League showstopper, *Don't You Want Me Baby*.

Blackline Debuts in Spain



It is something of a conundrum when a company as comfortable in their pro audio environment as Martin Audio are, should conceive a high-power portable range of products only to find it destined to become one of their best-selling lines – in fixed install.

Blackline looks and sounds solid, industrial, utility – the very qualities that Bill Webb's engineering team knew would be a winning combination for semi-pro musicians and mobiles – provided they could hit the right price points.

It was their Spanish distributors Alberdi Pro who forced their way to the front of a very long queue when the first models rolled off the production line.

They put the stock to good use, probing three quite diverse venues on a new leisure park (Parc Valles) in the densely populated suburb of Terrassa, 20km north west of Barcelona.

Brothers Pepito and Antoine Nonell had already been sold on the trademark Martin sound when Alberdi Pro's Nacho Alberdi installed EM series speakers into their twin venues Irish Winds (an Irish bar) and Star Winds (a nightclub) down on the fashionable Maremagnum harbour area of Barcelona several years ago.

When they decided to replicate the formula in the Parc Valles the brothers were willing candidates for the expanded potential of the Blackline series, so that in

the Irish pub they have a conventional stage PA system reinforced by EM15 in-fill/background speakers, and next door a classic dance system in the highly-specified (and highly-reflective) Star Winds, with its moving projection screen walls.

But what of the third venue? This is Mojito, a bar dedicated to the famous Cuban cocktail and a lively Salsa emporium where Latin dancing is first taught, and later practiced with gusto.

As after dark trading in Spain generally means a near-dawn experience these speakers have to perform a long and arduous duty cycle.

However, there's no shame in having an all-functioning box and certainly no shame in stressing its unbelievable price, since this remains one of the principle drivers in all buying decisions.

Mojito

Alberdi Pro installed both the sound and lighting (the latter masterminded by Nacho's brother, Carlos) for Luis Luque's new venue.

"It's a very colourful venue, requiring a unique sound, which we've tuned entirely differently," emphasised Nacho. The main system comprises four flown Blackline H2 two-way, bi-amped enclosures, with four S218 high-powered twin 18's recessed under the stage. Two further compact Blackline F12's (12in LF + 1in compression driver) are flown full range on the balcony without further bass extension. Martin conceived these multi-angled enclosures to double as floor monitors.

Resident DJ Sergio Rodriguez was unstinting in his praise for the audio toys Alberdi Pro had provided for him, particularly the sound reinforcement. Had he been working in a Miami Hispanic salsa bar, the sound would have been "awesome".



Star Winds

Five doors along, the four flown F12's this time keep company with the similarly-profiled F15's (15in and 1.4in) in the peripheral areas, while the main dancefloor resonates to eight H3 three-way boxes, producing a forcefully articulated sound and six S218 subs, stacked under the stage. The first thing Nacho Alberdi did when he powered up the Star Winds sound from his MC2 Mac750 and 1250 amplifiers for the first time was phone High Wycombe to proclaim: "It sounds incredible." Indeed, the system coped admirably with a wide range of material (mostly house, sourced from a similar configuration as Mojito) and a percussionist flailing at the four electronic pads (pictured). A pair of Martin Audio W8S hybrid subs are on a delay from the XTA's, while up on the balcony a further four F12's are flown above four S18's.

Resident house/techno DJ Marcello Astorga, working off three Pioneer CD's and a pair of Technics decks (alongside Dani Drum) was as ecstatic about the sound as Sergio Rodriguez had been in Mojito.



Irish Winds

Next door to Star Winds, Guinness have put up the money and concept for a kind of kit-tavern of Irish memorabilia and artefacts. It was a good opportunity to sample the series in a live context where four F12's are flown above a pair of S18 (single 18in) – with a delay set up to align the drive units. A six-play CD feeds the ten or so Martin EM15's by day before the Blackline kicks in at night. However, it is the compact Wavefront WM0.5, rather than the F12's, that have been deployed as foldback monitors for the succession of string bands.

Introduction of Blackline has given two men ambitions. For Nacho Alberdi it is the prospect of setting up a series of pro shops to test its merit at street level.

His confidence was also borne out by the response from around 40 dealers who attended the official launch seminar in late January.

For Pepito and brother Antoine this purely visceral, highly-charged sound could now carry them right into the Balearics' dance zone called Ibiza. They have hit Terrassa, a fast-developing area at just the right time, confirming that for the same money they invested in Maremagnum several years ago they have now been able to buy three times the space in this suburb.

But why had they settled on Martin Audio loudspeaker enclosures? Pepito smiled. "It is simple. The Maremagnum is full of bars and nightclubs, each with its own sound system – and that allows people to make a straightforward comparison.

"And every time they tell us that our sound is the best!"



Slinky now boasts a Total Wavefront Rig

The Opera House in Bournemouth, Britain's largest independent nightclub and home to the infamous club-night, Slinky, has made further investments into Martin Audio equipment, and now boasts a complete Wavefront system, which serves the entire venue.

The club, awarded the South West Region's 'Club of the Year' title in the 1999 *BEDA Awards*, has purchased units through London-based LMC Audio, to create a left and right flown array either side of the DJ booth in the main dance area.

Each array consists of five W8S hybrid bass units, a full range W8 and two W8C Wavefront compacts. The new house system is controlled via two BSS Soundweb DSP networking systems, one of which is tasked with limiting and compressing the main audio input and running the W8Cs, while the other is used to provide a mono sub bass signal to the W8S and W8.



Lee Price, head sound engineer at Slinky, was convinced the club had made the right choice: "Slinky has a long-running relationship with LMC and also with Martin Audio. We've used various Martin systems when we've taken the event to other venues around the country and it's always worked for us.

"The sound we've been able to generate from the speakers is fantastic – it comes across as really well-balanced, and the build quality is really excellent.

"Basically they sound better and last longer than any other system... Top Banana in our opinion."



Phil Crawley, director of projection and sound



Warner Bros Fit Systems into new Preview Theatres

Warner Bros Theatres have chosen Martin Audio cinema systems for soundtrack reproduction in their two new showcase preview theatres, in the company's new headquarters in Holborn.

Warner Bros' director of projection and sound, Phil Crawley, had no hesitation in recommending Martin Audio's purpose-designed systems following their appraisal of a demonstration system which they had been evaluating in their Bristol complex, including multiples of Screen 5, Effect 5 and Screen Sub enclosures.

He remarked: "This system has been acclaimed by everyone who has heard it, including Dolby. It's easily the best system we've heard and on that basis I decided to specify it in Holborn."

The exclusive THX specification rooms hold 60 and 13 people respectively, and Martin Audio will supply their three-way Screen 5 for the larger auditorium and Screen 2 for the smaller.

The Screen 5 consists of a 2 x 15in low frequency section, plus a unique 6.5in midrange horn and a 1in HF horn, which exhibits ideal pattern control from 300Hz-20kHz.

Martin Audio's product manager, Richard Rowley, confirmed that the company have been hard at work producing a three-channel system that will become their Screen 2, and designed to meet THX Category 1 covering projection distances to 40ft. "While this will be developed specifically for Warner Bros Theatres it is probably something we should have been doing anyway for smaller theatres, and will become an essential part of our range."



Martin at Eurovision 2000

The annual European showcase to find the best new song this year moves its stage to Sweden, where rental company DM Audio, a sister company of Martin Audio distributor EM Nordic, will ensure that Eurovision Song Contest viewers around the world hear the crystal clear sound delivery provided exclusively by Martin Audio enclosures.

DM Audio has been in business for more than 30 years and was probably the first company in Sweden to offer rental of sound equipment.

Lars Wern's company recognises the Eurovision as being a very prestigious event, and DM Audio have been involved in many domestic finals – as well as a European final in Gothenburg at the Scandinavium Arena in 1985 – before arriving at the Globe Arena in Stockholm for this year's event.

It is a venue that they are entirely familiar with. The PA company's contract this year involves supplying the complete sound reinforcement for the Arena and Green Room, including a crew of six sound engineers. The Swedish Broadcast Company (SVT) themselves will provide OB trucks, microphones and so on.

At time of going to press the configuration of the rig had yet to be fully decided since a final seating plan for the arena had still to be issued. However it will be based around two main clusters, consisting of W8C, W8CT and W8CM. These will be flown on each side of the stage in a standard configuration, with floor-mounted WSX sub woofers.

Since this is a TV show, requiring a "clean", unimpeded view of the stage, DM Audio will be forced to trim the clusters higher than they would customarily do. To compensate for that they will fly additional W8C's as downfills from the front lighting truss and add a row of WT15 speakers around the front of the stage.

They also favour the use of a delay system to cover the back of the arena. "Even though we are using the W8CT and W8CM long throw cabinets – which would reach all the way – we would prefer to provide a delay system for this show," explained Lars.

The reason is that one of the design features of the arena is a restaurant, with a giant curved window, situated above the seating area in the back. "We have found that it is easier to cover this area without hitting the window, and causing a slap back effect, if we use a delay system, aimed slightly downwards," explained Lars.

Classic Martin Audio floor monitors will also feature in the production in the form of Martin LE12J and LE 700A wedges. These are planned for siting under the stage, shooting through a steel grid or mesh. Foldback sound is also expected to be reinforced by some further W8C's as side fills – and in-ear monitors will be provided once the final specification has been agreed.



The Arena itself is one of the largest spherical buildings in the world. The height to the catwalk is 36 metres and from the catwalk to the top of the arena there is a further 50 metres.

"This gives us almost 90 degrees of vertical coverage," continued Lars. "The plan, therefore, is to add an extra cluster each side to infill in the highest seating area."

DM Audio will use state-of-the-art amplification, digital processing, FOH and monitor mixers from leading international brands. There will be two OB trucks (one as a back-up) and every microphone, video and audio feed will be split between the two trucks, the FOH mixers and the monitor mixers.

Lars Wern is full of praise for the performance characteristics of the designated Martin Audio components.

"We have been working with Martin Audio for a short period of time but the experience has been a very positive one. The Wavefront 8 Compact system is easy to handle. It rigs fast and precise, the sound is impressive and the combination of the long throw cabinets is really what we have been looking for.

"As for the subwoofers, the WSX's are the best we have ever heard, and the lack of backward 'spill' is extremely important in a situation like this. For this show we have been able to find exactly what is required for the various situations," continued Lars. "In the Green Room we needed a high quality playback system and the WT3 cabinets sound so good.

"The frontfill system in the arena needed to be super small, and once again we found an excellent product in the WT15. With its sound quality and flexible connector set up, it is ideal for this application."

Knights in Martin Armour



Baseball, it has often been pointed out, is the only team sport not tied to the clock. But off the playing field time definitely does have a real significance.

For instance, try installing a sound system when you have just seven weeks from contract to completion. That was the task facing RJC Consulting of Rock Hill, NC, and principal Rossi Craft. They had to complete the install for the Charlotte Knights, Triple A affiliate to the Chicago White Sox (International League), in time for the new season.

The Knights installation is centred around a distributed system of 41 loudspeakers in custom outdoor enclosures from Martin Audio. As Craft is eager to emphasise, he could never have met his deadline without staunch support from Martin Audio themselves.

Though the Knights sound system install took place overnight, figuratively speaking, the relationship between RJC and the team management took longer to establish. In the first part of last year's season the Knights' audio system took a serious lightning hit – with a game upcoming in four days time. "Rossi had us up and running in 26 hours," said Knights assistant general manager (sales and marketing), Derrick Grubbs. "His nearest competitor couldn't get to us within two weeks. Rossi earned our respect with that performance."

In addition to his installation work in the south-east region, Craft has also been chief sound engineer for the Blumenthal Performing Arts Center in Charlotte, NC for the past four years. He has a total of 17 years' experience in live sound to his credit, in addition to his installed sound work.

The lightning strike experience got Knights management thinking about RJC recommissioning their current sound system; what could RJC do, given some budgetary freedom, to improve the system – a cluster located in centre-field above the scoreboard? "The configuration was a little strange," Craft reported. "Viewing it from centre-field, the subs were on the left, mids in the centre and highs on the right. It was like a cluster that had been laid on its side. It was a job just to get it in phase."

Craft tweaked that cluster to where he said it sounded satisfactory, but nowhere near as good as a properly-conceived system could sound in the park.

Craft began working with Delicate Electronic Sales Inc. of Camarillo, CA, and Josh Thompson at Soundelux Showworks of Orlando, FL, to explore what was possible for the Knights' park. "I had Josh come down and look at the park and my design. I asked him to show me what would work and what wouldn't."

Josh worked hand in hand with me and eventually introduced me to Rob Hofkamp, at Martin Audio's North American HQ in Kitchener, Ontario.

"Rob sent me a couple of his Wavefront series speakers and I fell in love with them. I showed Rob what I needed," said



Craft, "and he offered to build custom cabinets for me. He was very receptive to working with me – far more receptive than other companies I talked to."

Craft duly submitted a proposal for a distributed system to the Knights which was shot down immediately. "Knights management wanted to know instead if they could do anything to the old system to improve it. I explained that it was a question of quality versus quantity, and that I could get better performance out of less equipment with a correctly designed system."

Then lightning struck a second time: the Knights committed to installing a new video screen and scoreboard in centre-field, and that meant that the existing cluster would have to come down anyway. They asked Craft to resubmit an updated version of his earlier bid and this time he was given the go-ahead. "Basically," he said, "I determined the time frame for the completed installation by backing up from opening day. 'If I can get everything I need for this installation physically on site,' I said to myself by opening day deadline, 'I'd feel lucky.'"

Craft knew the Knights project would be a challenge at the outset. It was an almost impossible task; Rob at Martin Audio told me that it would take four to six weeks alone to get custom cabinets made for the 30 Wavefront W3 boxes, nine W2's and the two EM201 sub bass." The first two weeks were spent in prep – drilling holes ready for the install.

Craft devoted a day merely to time-aligning the system with Josh Thompson's help. "We hung 41 boxes and didn't have to move a single one from where I'd positioned it. Josh said it was the first time he'd ever seen that.

"Frankly, I amazed myself ... but I did have a secret weapon: the Martin Audio design."

"The W3 is the first box of this size (15in bass driver, 6.5in mid-range, 1in high compression driver) that I've seen for fixed installation, with a 65° horizontal dispersion pattern; that extra 50° really complements another box in the cluster." Each cluster comprises two front-firing W3's and one back-firing W1 speaker.

Craft EQ'd the system, using three installed BSS Omnidrives under live conditions at a Clemson-Miami college game before testing it with the TEFF20 3-D imaging system.

"You can sit directly under one of these clusters and still have an image," Grubbs said. "I've worked for two other minor league clubs and one major league club and I've never heard coverage throughout a park like this. You can walk from area to area throughout the park and there's absolutely no drop-off anywhere."

Grubbs handles PA duties for the team, using music, sound effects and clips during the game. But until now he was never sure who heard them, as during the regular Friday night firework displays last year, his carefully-prepared music programme went largely unheard because sound from the former scoreboard cluster competed with the fireworks ... and lost.

"Fans come up to me now and compliment me on my material, as if it were all new," Grubbs said. "Truth is, they were never able to hear what I was doing until now."

Nine clusters of two W3 and one W1, mounted 18 inches back from the front lip of the stands, cover the lower deck sections at Knights' Park. The upper deck sections are covered by six clusters, comprised of two W3's each.

Somewhat unconventionally, Craft inverted the W3's in the lower-deck clusters in order to achieve a shorter throw and tighter pattern. The W3 cabinets for the upper deck are mounted in standard configuration.

The two EM201 subs hang in the press box area, alternating between clusters – one in the centre aisle section, a sub to



either side, then clusters on both the first and third base sides in the outer sections. "I hung the subs so they'd work with the cluster, at the same angle, not firing straight down in conventional fashion," Craft explained. Again, the effect is improved imaging.

A total of 19 QSC amplifiers drive the Martin Audio clusters. These are located in three amp rooms in order to eliminate long cable runs, and so that every distance from amplifier to speaker cluster is identical.

Martin Fuel Dynamic Earth



Around 50 Martin Audio EM Series loudspeakers are featured in *Our Dynamic Earth*, Scotland's 34m Millennium project, which was opened by the Queen in Edinburgh on July 3.

Set against the breathtaking backdrop of Salisbury Crags, the permanent visitor centre was designed by Event Communications.

Telling the story of the planet through 11 state-of-the-art earthscapes, it features control and image

display provided by Electrosonic, while the sound consultant, commissioned by Event Communications, was Peter Key.

The Millennium-commissioned project – the first to be completed, with aid of a £15m National Lottery Grant – had been talked about as long ago as 1992 but Peter Key's team was only brought in as the final concept was taking shape two years ago.

It was his task to detail all the playback equipment, which formed the specification which went out to tender. Electrosonic were appointed as the hardware suppliers.

The other element in Key's contract was to produce the soundtracks, which he did with the aid of a Soundscape Workstation. With audio part-stored on Electrosonic ESTA units and Fostex hard-disk storage devices, video sources on MPEG servers are synchronised to the related audio, using SMPTE or MIDI time-code. All playback, amplifiers and Electrosonic show controls are stored in a central track room.

Among the array of loudspeakers Peter opted for Martin's EM Series, supplied by Electrosonic, for its suitability and transparent performance characteristics.

He specified batches of EM15's, EM26's, EM56's, EM76's and all three sub enclosures in the series, the EM150, EM201 and EM251.

"There is no set pattern," he explained. "All are used randomly and altogether we took around six weeks programming and mixing on site."

The speaker equalisation, he says, was carried out within the Soundscape software and recorded direct onto the audio tracks. Any show presets are stored and routed via an Allen & Heath DSP management system.

Our Dynamic Earth, which represents a 90-minute long experience as well as housing conference facilities, is expected to have received more than 430,000 visitors by the end of its first year.

The Progressive Sound of Martin Audio

Martin Audio's reputation was established in the '70s, when Dave Martin's horn-loaded systems first took to the road with the likes of ELP, Supertramp and Pink Floyd.

These first systems, built around the 115 bass bin, were a big step up from the direct radiator columns which couldn't keep up with the demands of the emerging progressive music scene.

The rear cover of Pink Floyd's *Ummagumma* album showed their sound system laid out on the ground alongside the van (not truck!) that carried it. A few years later, a shot of their 1973 Earl's Court concert using Martin bass bins and HF horns, shows how things moved on and how much more gear was being used.

Even so, this was essentially a two-way system, with the bass bins going straight into high frequency horns using phenolic diaphragm compression drivers.

Martin introduced a direct radiator mid a couple of years later but dedicated midrange horns did not make an appearance until around 1978 when the Martin MH212, nicknamed the Philishave, first made its appearance.

With this, the stage was set, and teamed with Midas mixing consoles and early BSS crossovers, the Midas/Martin system became the standard touring system for the bands of the late seventies.

The association with '70s progressive music earned Martin the reputation as a manufacturer of a heavy

rock sound systems with an upfront midrange. During the '80s this reputation was maintained with the RS1200 one-box and F2 two-box touring systems. The F2 in particular was a loud beast with a midrange horn which squeezed every last decibel out of a 12in monster mid cone driver.

Martin's reputation as a purveyor of heavy rock loudspeakers became enshrined, and to this day, Martin is still viewed by some in this light, although the company has long since broken out of the narrow confines of heavy rock, and into new territories.

During the '90s, the company underwent major changes. It was acquired by TGI plc who were able to invest resources to enable the company to expand and develop a wider product and distributor base. With the appointment of David Bissett-Powell as managing director, Martin instantly acquired many years of pro-audio sales and marketing expertise. On the technical front, the author was appointed engineering director, bringing with him 20 years' knowledge of professional loudspeaker and system design, including a period working for Dave Martin in the Philishave days. Subtle changes in Martin's profile were underway, starting with the EM Series.

With this range of products, the first steps were taken into the increasingly important install market. The install market is a graveyard for hi-fi based loudspeakers which cannot take the heat, and one of Martin's great strengths has always been reliability. With this in mind, the smaller products in the EM Series, such as the EM15, were conceived as miniature high power, professional loudspeakers rather than jumped-up home audio products.

A year later, the Wavefront Series, consisting initially of the W1, W2 and W3, arrived. These were compact, high-power systems aimed fairly and squarely at the professional hire and live theatre market. The Wavefront Series represented a conscious step away from the voicing characteristics of the older Martin systems.

With the earlier Martin systems as well as the F2, the emphasis had been placed on absolute maximum efficiency particularly in the midrange, which resulted with a system that could require some taming to optimise its performance. With a good engineer in the driving seat a Martin heavy rock system could be both loud and smooth. But like a racing car, some engineers found it more difficult to achieve the correct balance of power and smoothness.

With the Wavefront Series, the balance shifted to a more musically transparent sound without some of the more aggressive characteristics of the earlier systems, whilst maintaining overall efficiency. More emphasis was placed on providing both extended low end and extended high frequencies, in line with the changing nature of '90s music. In 1996 the development of the Wavefront Series culminated with the introduction of Martin's most successful products to date – the Wavefront W8C/WSX touring system.

**Engineering Director,
Bill Webb, charts three decades
of product development**



Bill Webb



*Pink Floyd at Earl's Court, 1973,
with Martin Bins and Horns*

**MILESTON
WAY TO
NEW M**



*The F2 Touring system,
rigged at Tourhout*

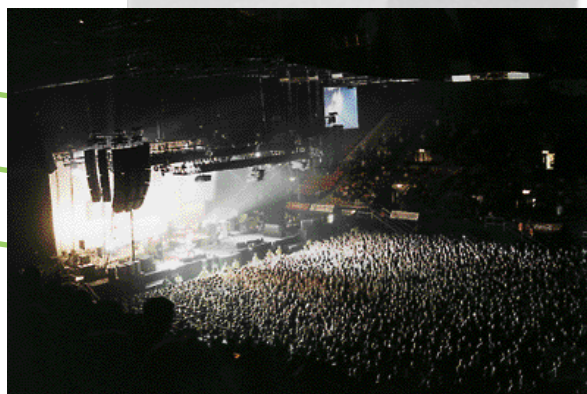
The W8C is at the heart of the current Wavefront Touring toolkit. Confirming the trend for increasingly compact systems, it can be rigged quickly to deliver outstanding performance and power in smaller configurations than previously possible. Ground-breaking horn design is evident particularly with the sophisticated high-mid horn which has been specifically developed to overcome the power and distortion limitations of traditionally-used, large-format compression drivers. The result is a remarkably clean, transparent sound which can produce extremely high levels without distress.



*The legendary 115 bass bin
and Philishave*



ES ON THE
THE
ILLENNIUM



*The Stereophonics – using the
Wavefront W8C at Wembley*

Low frequencies are produced by the WSX – a very high efficiency sub-bass horn which can deliver exceptionally high levels of bass in all applications. It is designed to be ground stacked and used in multiples to increase the mouth area of the stack and couple the horns. The horn loading of the WSX results in typically a 6dB greater output for the same input in comparison with direct radiator subs.

Right from the early days this emphasis on horn-loading has been a cornerstone of Martin Audio's design philosophy. All the elements within the W8C toolkit of products, including the more recent W8CS compact sub-bass and W8CT/W8CM Longthrow systems, are horn-loaded for maximum efficiency and directional control.

The most recent changes in Martin's product portfolio and direction has been the addition of architectural and cinema product ranges. The appointment of EASE specialist Peter Child has seen a growth in architectural applications and the provision of customer support including system design with EASE for large-scale permanent installs.

On the cinema front, Martin's dedicated series, with its THX-approved screen and surround systems, has resulted in unprecedented take-up for a new player in the highly competitive cinema business. The cinema industry has taken some time to evolve from the traditional two-way behind-the-screen loudspeakers to three-way designs and, again

– as in the early days of sound reinforcement – Martin's expertise in midrange horn-loaded cone transducer design has been the key. Now major cinema operators such as UCI, Warner Brothers and ABC have all specified Martin three-way screen systems for their sites.

Martin's latest foray into new product categories has been the Blackline Series, a competitively-priced range of portable loudspeakers introduced late last year. With the Blackline Series, the Martin trademarks of high quality, high performance and reliability are now available to a much wider audience.

With presence in touring, architectural, portable and cinema categories, Martin today has a strong, highly-regarded product line-up that is the envy of many of our competitors. In engineering terms, our future aim is to build on this base, offering complete solutions and providing increased technical support. We will also increase our involvement in electronics including amplification, signal processing and system control.

Modelling and prediction of the performance of a loudspeaker array is becoming an important strand within the industry, so we intend to undertake research into new measurement and design techniques that will keep us at the forefront of both loudspeaker design and use.

Factory Finish



Martin Audio's front-line contractor products have been specified and installed as part of a major refit in Hollywood's leading nightclub, The Factory.

Owned by Sandy Sachs and Nathan Goller, the building has an elaborate history. Built in the 1920's as a camera factory by William Fox (of 20th Century Fox fame), early movie cameras were developed there.

Then in World War II the US government took over the building and it became the Nordon Bomb Factory. By the late '60s the infamous Rat Pack owned the venue and it became a private club for the movie industry. In 1974 the famous gay nightclub Studio One was born under the ownership of Steve Forbes (a rival for Studio 54 on the east coast) and lasted for about 20 years.

It then operated as Axis and Love Lounge for eight years under the tenure of the present management, with Sandy working as promoter, manager – and finally owner.

She bought the 1400-capacity club in May 1999 – the same month as she committed to a \$2.1 million refurbishment, ready for the new millennium. "Clubbing in LA had got pretty tired so I wanted to try and bring it alive, and give the city something it had never seen", she said.

Technological responsibilities were entrusted to Entertainment Environment Equipment (better known as E3 Inc), co-owned by Danny Quinones and Richard Rutherford, who won the contract to co-design an audio, lighting, video and fibre optic system. This was carried out under the direction of Sandy Sachs and interior designer/architectural co-ordinator, Bruce Liebertz, while the installation was under the direction of Gary Hagen from E3's team. The contract was worth in the region of \$500,000.



Knowing that it would attract a predominantly upscale, gay audience as well as the cream of Hollywood, Danny, who project managed the refit, decided to put a fresh spin on the area's biggest nightclub by going predominantly for European effects to fit out the two-roomed club.

"It would have been easy to have specified one of the obvious American loudspeaker brands," said Danny. "But we wanted the kudos of a system that sounded good, looked the part and hadn't been over-exposed."

This was his first major installation using Martin Audio components. "I knew it was a reputable brand in Europe which has yet to be fully exploited in America."

Sandy, too, was aware of Martin's reputation, largely through their presence in the Ministry of Sound. "I've heard and read a lot about that sound system and I just wanted to blow everyone away with the more European sound created by Martin Audio. The main system has sounded really good – full and pumping."

For the main system in the larger of the two rooms, Danny selected 20 EM186 compact three-way trapezoidal boxes, reinforced by 12 of the WSX 18in folded horn cabinets.

He then carried the design theme through by adding 20 70V and 8ohm versions of the beautifully-styled C115 Contractor series, in the bar and lounge, combined with a further four C516 flush-mount ceiling speakers (run 70V line) in the rest rooms.

Sandy says that maintaining the design element was central to the operating ethos of both rooms. "The larger dancehall (The Factory) is very modern industrial, with a lot of stainless steel and hi-tech materials, fibre optics and metallics everywhere," she said. "The rear part of the club is known as Ultra Suede, which is much warmer – a sort of earth tones meets Philippe Starck. It's more elegant and plush." The Factory enjoyed a spectacular opening on December 12th.



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Sultan of Swing



Just when you thought the melee of a weekend night out at Mohamed Sultan was sufficient, guess what! Singapore's latest watering hole – Sultan of Swing – opens for business in Magazine Road. Situated just a stone's throw away from Mohamed Sultan, it oozes its own charm and laid back feel.



The venue is capitalising on a colonial theme, the fittings and seating area carefully construed to give a measure of quaint Old World charm.

The entire system installation was designed and completed by Solid State Events, with equipment supplied by Hawko Trading Company. Hawko are Martin Audio's distributors in the region and dedicated Wavefront and ICT™ Series loudspeaker systems are used to cover the entire 24,000ft² entertainment facility, which comprises interconnected discotheque, live performance, bar, members and pool game areas. In fact a total of 28 ICT300's have been distributed throughout the venue.



The main dancefloor area features a total of four W8C, six W8CS and four W3 enclosures, and overlooking the two-island bar area are 16 ICT300 enclosures. These form the reproductive end of a highly-specified pro audio system.

A quieter members' drinking environment is serviced by four ICT300's, while a further selection of ICT300, ICT500 and ICS300's cover the live band/bar area.

Martin Launch New DSP Processor

Martin Audio have released the DX1, a new compact and powerful DSP-based audio processing unit, which is ideally suited for live applications and fixed installations.

To achieve this, the DX1 has been provided with two inputs and six outputs, which can be configured in five basic modes: 3 x 2-way, 2 x 3-way, 4-way, 5-way and 6-way crossover. Each input has adjustable gain and delay, each output consists of a high and low-pass filter, five bands of parametric equalisation, limit, delay (adjustable in 2.6μs steps), gain and polarity controls, the RS232 interface and user memories are provided as well as a multi-level security 'lock out' function for all controls.

The DX1 is supplied pre-loaded with the most common configurations for all Martin's current product ranges that benefit from the use of a system controller. Factory presets can easily be updated by downloading the current file from the Martin Audio website. The DX1 can also be used as a fully-configurable electronic crossover system.

Features include: superb audio quality, with full >110dB dynamic range, high sampling rate with minimal filtering; 2 input, 6 output multi-mode format; 6 x 5-band parametric EQ sections, plus high and low shelving filters; six high-performance limiters with variable attack/release time constants; variable High and Low pass filters for each output; delay of up to 650ms can be independently set for each output, with a minimum increment of 2.6μs; comprehensive standard specification includes a maximum of 80 factory presets, 19 user memories, RS232 interface for factory preset updates via a PC and a multi-level security lock-out function.





Martin Board the Atlantic Bandwagon

Our first Distributor profile is focused appropriately on Atlantic Audio, who will be joining Martin Audio for the first time at this month's Frankfurt *Musikmesse*.

Wolfgang Garçon's company was appointed as our exclusive territorial representative last Autumn, and their performance so far would suggest a long and successful relationship.

The company was only incorporated itself back in September last year, with backing from NOB, the Netherlands National Broadcast Organisation.

The move had been forced by the amalgamation of Crest Audio and Peavey in the summer of 1999, whereupon the parent company decided to sell the German distribution of Crest Audio goods. The employees of Crest Audio GmbH were willing to continue the successful relationship, and with the NOB Group committing to a financial interest in a new pro-audio distribution set-up, Atlantic Audio was finally born.

Situated in the south part of Düsseldorf, the seven employees operate out of 207m² of office space and 259m² service capacity, offering plenty of potential for the expansion that they anticipate.

With a desire to build up a portfolio that would address both architectural acoustics and rental requirements, Atlantic saw Martin Audio as a natural target when it came to earmarking a proprietary loudspeaker brand.

Wolfgang explained that it was important to have a partner with a high potential of growth around which to build a new pro-audio distribution set-up. "We wanted a manufacturer with a lot of history to satisfy the rental market, but at the same time Martin are looking more and more at the architectural acoustics market, where we have a lot of experience," he stated.

"In any case the NOB Group has been working with Martin Audio for several years."

The Martin Audio appointment took effect on November 1, with Atlantic ordering a Wavefront system comprising 16 x W8C's, six W8CS flying bass systems and eight WSX subs (including a MAN flybar), to give them a five-way demonstration rig. It immediately went out on a nationwide tour with popular German band BAP. The rental company servicing the tour, Frankfurt-based Sirius, were hugely impressed with their evaluation.

Wolfgang Garçon admits that the markets in Germany are principally for rental sound and installation, and Atlantic Audio have recently carried out several installation projects using Martin Audio products, the largest being a fit-out for Daimler Chrysler involving around 30 EM Series speakers.

The initial promotion has gone well for Wolfgang's team. "All prospective buyers and clients that have seen and heard the products were surprised at how such an outstanding audio result can be achieved with such a small outlay."



*Atlantic Audio: Left – demonstrating equipment.
Right – company HQ.*



Shows that are Swiss Made



Swiss distributors Soundhouse have put Wavefront 8C rigs through a heavy duty cycle of late, covering some high-profile shows with superb audio performance.

This included stacks of 12 W8C and eight WSX rigged with the aid of a special flying construction, which handled announcements, performance and celebrations during the Powerman World Championship.

Martin's classic LE700 stage monitors supported a W8T/S FOH system for the Lucerne Blues Session, featuring Robert Cray, Nina Simone, Dr. John, Johnny Winter and others at the renowned KKL (Lucerne Congress Centre) with Wavefront W2's and W3's used as balcony fills.

But the highlight of last year's summer season was the massive rig fielded for the Heitere Open Air in Zofingen, featuring Massive Attack, Jovanotti and many others – including all Switzerland's leading bands. For this event Soundhouse fielded 24 W8C/WSX stacks, with four W8T and four W8S as infills and a further four W8CT's and four WCM's.

"The performance of this system surprised and stunned both organisers and audience alike," remarked Soundhouse's Mark Waldispuehl.



Martin Audio Install New Test System

In line with their long term commitment to quality, Martin Audio have commissioned Phil Knight, a freelance audio consultant, to design and install a test regime for crossovers and complete speaker systems.

Phil, who was formerly technical director for another company within the TGI Group, has custom-designed and installed a new semi-anechoic test booth capable of taking the largest of Martin Audio's products with ease: a quiet room within the factory environment, to give much more reliable detection of subtle imperfections.

Using the speaker industry-standard NatKit test equipment, Martin now has 100% test-complete systems for frequency response, phase, rattle and buzz.

This is the start of a process which will lead additionally to complete logging of all system measurements and statistics to ensure the best of production consistency.

The second phase is now underway to 100% test crossovers to limits set by statistical analysis of component tolerances, which will enable out-of-tolerance components to be easily detected without laborious testing of individual items.

The opportunity is also being taken to consolidate testing documentation with other assembly instructions, to give complete assembly dossiers for every Martin speaker product.

At the same time Martin Audio is launching a completely redesigned website. The address is: **www.martin-audio.com**

Cinema Additions to Screen and Effects

Cinema system specifiers will be reassured by the release of new Martin Audio dedicated enclosures.

Screen 2, designed to meet THX approval (Category 1 theatres no larger than 45,000ft²), is configured as a small room cinema sound system, with the emphasis on articulate dialogue and transparent sound reproduction.

Housing a single 15in LF transducer, reflex-loaded with a single horn-loaded 1in HF unit, it boasts a 90 degree x 90 degree dispersion pattern and has a sensitivity of 98dB.

Ideally suited for preview theatres, screening rooms and post production studios, it is available in fully passive (Screen 2P) version, or for bi-amplified operation (the Screen 2).

The system's thin profile has been designed to minimise space requirements and is easy to set up – a fact already discovered by Warner Bros, who have specified it for their new preview screening rooms in London.

At the same time Martin Audio have also launched the Effect 3R – a unique surround loudspeaker that has been optimised for use in restricted ceiling height environments, or when positioned on a rear wall, where the port hole size can cause restrictions. It can also be used in under-balcony areas.

The enclosure – which has gained THX approval – consists of a single 8in bass driver and 1in HF device, mounted on a conical waveguide, loaded in a two-way passive reflex enclosure.

The enclosure measures less than 300mm in height; a traditional style surround of this format is also available, known as the Effect 3.



STOP PRESS*STOP PRESS*STOP PRESS

Wavefront 8 Preferred for Premier Club

Martin Audio sound reinforcement equipment is the preferred option in the rebuilding one of the UK's premier venues, The Stables, in Wavenden, Milton Keynes.

The Stables, which has played host to over 10,000 musicians from all disciplines, operates as a charitable trust, with jazz legends John Dankworth and Cleo Laine as its joint presidents.

The high-grade audio equipment – specified by technical consultants Carr & Angier – was supplied exclusively by LMC Audio Systems Ltd and installed by The Sound Company.

Due to open on April 21, the new

installation features equipment from right across the Martin Audio product range. Six Wavefront W8C's are used in the main auditorium, with four W8S subs, while six Wavefront W2 are used for downfills.

A further two W8C's will also be deployed, when required, as additional FOH speakers at balcony level, while onstage six of Martin's classic LE400's will be used for monitor mixes, alongside an S18 Blackline, which will be used for drumfill, when required.

The Edge will bring a full report of this important and highly-prestigious opening in the next edition.

Mick Jagger Backs Martin

Rolling Stone Mick Jagger has lent his name to a new £2 million Lottery-funded performing arts centre at his former school – Dartford Grammar in Kent, UK – and attended the official opening this Spring.

The facility, which will be available to the community, comprises a theatre auditorium, drama studio and recording studio.

The contract was put out to tender by technical consultants Carr & Angier, and won by Slough-based Stagetec (UK), who put a specification together.

The sound reinforcement revolved around Martin Audio, with a pair of W3T's and WS2A subs detailed for the auditorium, run through a WS3A system controller, along with a pair of EM56's, midway back in the auditorium. Four Blackline Series F12's were used for stage monitoring.

In the Drama Studio, which will be more of a teaching environment, Stagetec (UK) again turned to Martin, specifying a pair of Wavefront W1's.

The overall contract – including the 16-track digital studio and lighting throughout the building – was worth in the region of £150,000 to Stagetec (UK).

Managing director, Andy Stone commented: "We do a lot of work with Martin Audio and they are our preferred supplier. They have a product catalogue that was entirely suited to this project."

Wavefront 8 Rental Companies Around the World

COMPANY NAME	COUNTRY	TELEPHONE
MUSCAPRO	AUSTRALIA	+ 61 2 67 622 452
TOP END SOUNDS	AUSTRALIA	+ 61 89 817 744
SOUTHERN SOUND PRODUCTIONS	AUSTRALIA	+ 61 2 6232 9310
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
STEPHENSOUND	AUSTRALIA	+ 61 419 567991
DAVIDSON AUDIO	AUSTRALIA	+ 61 29 36 81159
ORACLE MELBOURNE	AUSTRALIA	+ 61 418 139200
KRAXBERGER HERBERT	AUSTRIA	+ 43 7242 45193
MAYRHOFER JOSEF - 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
SOUND & LIGHT SYSTEMS	BELGIUM	+ 32 59 276646
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 9178 8278
SOUND SERVIS	CZECH REPUBLIC	+420 2 3536 4098
UNITED SHOW ENTERPRISES BALTIC LTD	ESTONIA	+ 37 2 50 78900
RADIANT SOUND COMMUNICATION	FINLAND	+358 3 22 33311
UNITED SHOW ENTERPRISES HELSINKI LTD	FINLAND	+ 358 9 759 4180
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
LWS	GERMANY	+ 49 228 94676-0
HORN VERANSTALTUNGSTECHNIK	GERMANY	+ 49 172 7231337
KLEMENT ELEKTROTECHNIK	GERMANY	+ 49 5626 8475
SLP PRO SARL	GUADELOUPE	+ 590 80 15 80
D & E (INTERNATIONAL) LTD	HONG KONG	+ 852 2898 8666
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
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

COMPANY NAME	COUNTRY	TELEPHONE
LIVE	KOREA	+ 822 747 2162
SOUND BOX CO	KOREA	+ 822 419 5141
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 ILLUM, 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
MILWAUKEE AUDIO S.L.	SPAIN	+34 93 372 40 53
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
MUG HYR AB	SWEDEN	+ 46 31 130990
DM AUDIO	SWEDEN	+ 46 89 70785
RIGHIRE	SWEDEN	+ 46 16 145300
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
STARSOUND SYSTEMS	UK	+ 44 1924 278875
CONTRACT AUDIO VISUAL	UK	+ 44 1453 751865
SAVAGE AUDIO	UK	+ 44 114 258 2172
ADLIB AUDIO	UK	+ 44 151 486 2214
CAPITAL SOUND HIRE	UK	+ 44 171 978 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
RALEIGH MUSIC	USA	+ 1 919 965 4300
SUNBELT SCENIC STUDIOS INC	USA	+ 1 602 598 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	+1 518 270 4747
PALAMINO SOUND & LIGHTING	USA	+1 800 876 4501
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	+1 914 668 8886
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

In compiling this list we may have missed you off, if so we apologise.

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