

# ProAudioEast<sup>Middle</sup>

INSTALLATION • A/V • LIVE SOUND • BROADCAST • POSTPRODUCTION • RECORDING

May-June 2010

## FEVER PITCH

### Preparing the stadia for South Africa 2010



AGAINST THE CLOCK  
KITTING OUT YAS ISLAND'S HOTELS



HIGH BEAM  
GETTING SOUND IN SHAPE



PRO LIGHT & SOUND 2010  
FRANKFURT'S ANNUAL EXTRAVAGANZA



# ATEIS



## We Build Different



# Countdown to kick-off

The eyes of the world are on South Africa as it prepares to host the 2010 FIFA World Cup. With the stadia now complete, **James Ling** takes a look at the sound systems in place



Soccer City stadium (inset control room and amp racks)

**BESIDES THE OLYMPIC GAMES, IT** is probably the most prestigious international sporting event in the world. Although it has an 80-year history, only seven teams have ever won the title – Brazil being the most successful winning it five times – and the host nation has won the competition on no fewer than six occasions. It is, of course, the FIFA World Cup, and this year it touches down for the first time in Africa.

On 11 June 2010 the 19th FIFA World Cup will kick off in Johannesburg as the hosts South Africa play Mexico at Soccer City. The tournament will run for a month, returning to the stadium for the final on 11 July. Africa was chosen as the host for the 2010 World Cup as part of the then policy to rotate the event between football confederations. Five African nations placed bids to host the tournament, but a joint bid by Tunisia and Libya was rejected. This left three nations, Egypt, Morocco and South Africa, to battle it out for the right to host the competition. After one round of voting, South Africa's winning bid was announced by FIFA president Sepp Blatter on 15 May 2004 in Zürich.

Having already been host the rugby and cricket world cups, South Africa has the experience, infrastructure and facilities to host international sporting events. However, the FIFA World Cup is an entirely different type of

tournament, which attracts much more attention.

One aspect that garners much of this attention is the stadia used for the tournament. Ever since Japan and Korea jointly hosted the 2002 competition, a focus has been put on striking architecture and high-tech facilities. The retractable playing surface at Japan's Sapporo Dome set the standard for innovation, and the iconic Allianz Arena in Munich, with its colour-changing exterior, was the architectural highlight of the 2006 competition.

South Africa has not shied away from the challenge that the stadia can present. Of the 10 venues for the tournament five are new, with the remainder either minor or major upgrades to an existing stadium. Nelson Mandela Bay in Port Elizabeth, Green Point in Cape

Town, Mbombela in Nelspruit, Peter Mokaba in Polokwane and Moses Mabhida in Durban are the new stadia to be built. Whereas varying degrees of upgrades were made to Soccer City and Ellis Park (both in Johannesburg), Loftus Versfeld in Pretoria, Free State in Bloemfontien and Royal Bafokeng in Rustenburg.

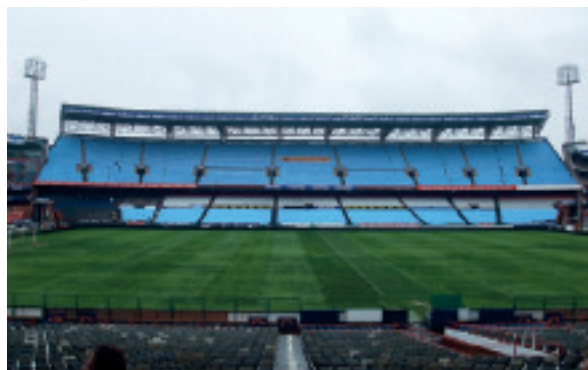
Of course, one thing that has been important in all of these projects was implementing new sound systems. Good quality sound is a critical component of modern stadium design, as the audio requirements for sports venues are the same as any other outdoor space and range from speech and music through to safety announcements.

The local organising committee for the World Cup did not take any of the technical facilities for the stadia under its remit, so there was no central authority for the stadia within the country. There was also no basic performance criteria specified, aside from that issued by FIFA. Every region appointed its own consultants, architects and engineers, so bidding for each stadium had to be approached as an individual project.

One company came out as a clear winner in this process – South African pro audio and lighting design, supply and installation company, Prosound, won the contracts at nine out of the 10 stadia. The projects ranged from design and installation of the full PA and evacuation system



The simple control room at Loftus Versfeld



Inside Loftus Versfeld

to installation of the PA, but each provided its own challenges. 'What gave us the ability to target the stadia in terms of the World Cup was our history,' explains Prosound technical director Mark Malherbe. 'We've done in excess of 30 stadia in the sub-Saharan region of Africa, dating back as far as Ellis Park in 1981.' This included upgrading venues for the 1995 Rugby World



Prosound's Grant Scott and Mark Malherbe

Cup and the 2003 Cricket World Cup. 'We were able to take that experience and apply it to the World Cup bid.'

The bidding process was a particular challenge for the company. 'It wasn't just bidding independently, it was that there were no common criteria. In one instance we were trying to present to really good, qualified electrical consultants, which is great, then the next minute you're pitching to a local council and their experience with sound systems is their home hi-fi. It was a completely different approach from that side,' laments Mr Malherbe. 'One of our major issues was trying to educate people how to adjudicate what was being thrown at them,' he adds. 'All we were trying to ensure was that when our bid went in, it was being correctly reviewed.'

The catalyst for winning the amount of contracts that Prosound achieved was the Orlando practice stadium in the heart of Soweto in Johannesburg. 'Once we'd been awarded Orlando, we were able to say we've been awarded the first



Dynacord speakers on the concourse at Loftus Versfeld

2010 practice stadium and we used that to get the ball rolling,' says head systems engineer Grant Scott. 'Once the ball got rolling, only Durban stopped us.'

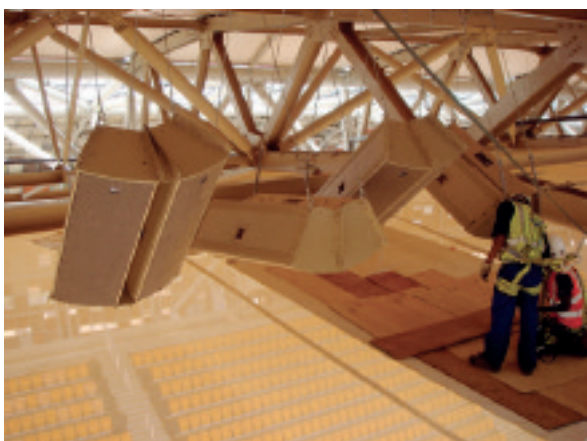
Of course, taking on this many high-profile projects would be a challenge for any company and good planning was the key to success. 'We had a project plan in place that if we were successful with the bids this was how we could tackle it and these were the resources we would need,' says Mr Malherbe.

The company went with a common audio backbone for all of the stadia including Electro-Voice speakers, Peavey MediaMatrix processors and Crest Audio amplifiers. 'EV was a straightforward choice for us, we've looked after EV as a brand since the late 1970s and all the stadia we had done prior to this were with Electro-Voice products,' explains Mr Malherbe. 'It's reliable, it does what it says on the packet, its robust, efficient and well-engineered kit. Also, with our experience of using it, it speeds up the whole process. We know that if we take this box and put it into that style of position, that's the result.'

Although Prosound represents other loudspeaker brands, there was never a thought of approaching the project with any other product. 'This was a prime target for EV,' continues Mr Malherbe. 'There were two huge kickers for us in the targeted approach that we did, one was that we could go and tell everybody that this was the product used for the World Cup in Germany in 2006, the other was the Electro-Voice, Peavey and Crest Audio solution that we put into the Orlando Stadium. Suddenly we had an up-to-date, premier



One of the amp racks at Loftus Versfeld



EV speakers being installed at Soccer City

venue, with a working system that we could show to people to explain the solution.'

The level of familiarity with the product was the reason behind offering the same brands at each venue. 'With the sort of time-frames we had, I didn't have time to learn another system,' says Mr Malherbe. The original plan for Green Point involved a complete EV solution including processors and amps, 'we did an alternative bid that we won on, which was MediaMatrix and Crest Audio, because we know them. It kept it as a commonality between all the other stadia,' he explains. 'We've been using MediaMatrix since almost day one, and it means we can adapt quickly – we can fit in with any change and don't have to quickly learn a new product.'

One of the biggest challenges for the company was stretching resources to meet the needs of the various projects. 'Normally we have one or two projects on the go of a reasonable stature at any one time, and we have people within the company who have their realms of expertise. All of a sudden those resources weren't enough,' says Mr Malherbe. Added to this were the issues of the physical resources needed to complete the work.

'Take for example cable, there are some local cable manufacturers but it's not of a standard really for this type of job, so it all needs to be imported. If you start looking at 50-to-60km of cable that you might need at any one time, that's got to be sea-freight which is six to eight weeks. Logistics planning was one of the main challenges.'

There were positive and negative points to the combination of new and refitted stadia. The positive side for the refits was that they

were known quantities and the stadium was complete. However, they weren't symmetrical so every grandstand required a redesign and the team had to use existing cable runs. 'All the new stadia are modern and symmetrical, so you design for one area of the grandstand and repeat and all the cable routes are new. That's the trade off.'

The major highlight of the project for Mr Malherbe was Soccer City in Johannesburg. 'There were sceptics – you've got a venue of just under 100,000 people and we are a South African company so people wondered if we knew what we were doing. But it's gone in and we're really proud. Everyone who has listened to it can hear how well it works. The distances at Soccer City are huge – 63m is a very long way for a box to fire, but it works.'

### Soccer City

The home of South African football, Johannesburg's Soccer City will host the opening and closing ceremonies of the 2010 World Cup, as well as the first match and the final. With a capacity of 94,700 it is the largest of South Africa's stadia



Midas Venice console in the control room at Green Point



Inside Green Point



Nion3 processors in the rack



Green Point Stadium

and has been redesigned and upgraded for 2010. The stadium's outer perimeter has been designed to resemble a giant African pot known as the calabash, and its aesthetic appeal will be heightened when the stadium is lit at night. The orange seating is punctuated by grey stripes which point to the other nine stadia being used for the competition.

The original stadium, which was known as the FNB Stadium, had a capacity of 80,000 and was built in 1987. In 1990 it was the site of Nelson Mandela's first mass rally since his release from prison, an event that Prosound was heavily involved in, and where Mr Malherbe worked as the sound engineer.

It has been a major renovation to the old stadium with only part of the main grandstand kept. The construction involved digging down to make the bowl deeper to create extra seating. Upgrades included extending the upper tier to increase the capacity; adding 99 suites to bring the number to 184; constructing an encircling roof; adding new changing room facilities and installing new floodlighting. For the sound system, Prosound was responsible for the design and installation of the complete PA and evacuation system.

The sound system at Soccer City is made up of 80 Electro-Voice PX2122 loudspeakers, 48 PX2152s, 22 SX100+s, four ZX1s and 24 Dynacord DL800/25T loudspeakers. Processing is by six Peavey MediaMatrix Nion6 DSPs, and 147 Crest Audio Cki power amplifiers were also installed. The installation is completed with 760 RCF PL60 speakers for the evacuation system.

For the main PA there are 20 clusters of six Electro-Voice Phoenix speaker units evenly spread throughout the roof. Two 12-inch dual cabinets are aimed at the bottom tier, two are pointed straight down at the middle tier and two 15-inch wider dispersion boxes are used for the top. There are also four clusters of an extra two 15-inch boxes that point towards

the field which are used for voice evacuation. 'The speakers were pre-played in terms of dispersion angles,' explains Mr Malherbe. 'We started off by doing test hangs back at our workshop and did a full analysis pre-installation.'

A total of 74 amps for the main PA are also located up in the roof. There are 10 amp rack positions, each driving two speaker clusters. These are evenly distributed around the 300m roof line and linked via fibre-optic cable.

The aesthetic considerations for the stadium were extreme. The cabinets were painted the same colour as the roof and hung behind a roof-lining mesh so that they could be hidden. 'The architects



Mbombela Stadium

### MBOMBELA STADIUM

**MBOMBELA** is siSwati (one of the 11 official languages in South Africa) and literally means 'many people together in a small space'. The 64,000-seat stadium in Nelspruit is the first football stadium built to international standards in the Mpumalanga Province.

The system comprises 24 Electro-Voice FRX940Pi speakers, 24 ZX5Pis, 210 RCF DM41s, 190 PL60s, 130 HD2414Ts and 24 HD4020Ts. A pair of Peavey MediaMatrix Nion3s are used for DSP and 26 Crest Audio Cki amps are also in place. The set-up is completed with two Electro-Voice N/D267 mics and two RE2-N7 wireless mics. 'This was a really straight forward stadium with no major issues,' says Mr Malherbe.

## INSTALLATION

ruled, and in a lot of cases picked form over function. It's always a battle to optimise what you are going to do and get the best out of it.'

The main challenge for this installation was the distances the PA needed to cover. From the front seat to the nearest loudspeaker is 63m, 'this is a colossal distance to expect a loudspeaker to perform and remain articulate,' says Mr Malherbe.

### Loftus Versfeld

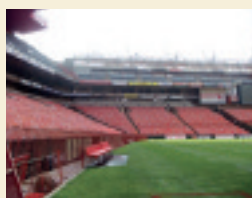
Located in the heart of Pretoria, the 50,000 seat Loftus Versfeld is one of South Africa's oldest stadiums. It has been used for major sporting events since 1903, and the first concrete structure, which could accommodate 2,000 spectators, was built by the City Council of Pretoria in 1923. Since 1948 it has undergone regular upgrades with all four stands being rebuilt over the years.

It is used for both rugby and football and is home to one of the country's top rugby teams, the current Super 14s champions the Blue Bulls. It hosted many significant matches during the 1995 Rugby World Cup and 1996 CAF African Cup of Nations, and South Africa's national team, Bafana Bafana, achieved its first ever victory over a European side at this venue when they beat Sweden 1-0 in 1999.

Only a minor upgrade was required for the stadium, which included putting a roof on the east stand and adding some seats. The new roof is supported from below as the stand was never designed to cope with one. To qualify for selection as a first and second round venue, the floodlights, sound system and scoreboard at Loftus Versfeld were upgraded and designated media areas were constructed in the lower level of the west stand.

This was a very different sort of project from Soccer City. Loftus Versfeld is one of the hardest working venues in South Africa and was not able to be closed for the installation. Therefore the installation work needed to be fitted in around the matches. Fortunately, having the full support of the stadium management team made this process easier. For this project, Prosound again handled the PA and evacuation system.

The stadium was using a ball-of-fire system made up of two clusters which failed to provide coverage to the east stand. The initial project saw a temporary upgrade in 2007 involving a number of Electro-Voice ZX5-PI speakers. These speakers were then refurbished for the full upgrade for the 2010 World Cup. The initial upgrade had speakers for the bottom tier firing from the field area with ZX1s attached to the roof



Ellis Park

### ELLIS PARK

**LOCATED** in the heart of Johannesburg, the ground was given a significant face-lift before the Confederations Cup finals and now seats 62,000 fans, increasing its capacity by almost nine per cent from the previous 57,000. Ellis Park was first built in 1928 as a rugby union stadium. It was demolished and rebuilt in 1982, again exclusively for rugby.

The largest piece of construction has been the new tier on the north stand which has increased the seating capacity to 62,000. It features state-of-the-art media facilities, team whirlpools, VIP areas for dignitaries, accessibility for disabled fans, a new pitch and audio-visual setup to keep the fans informed during the game.

The system in place is made up of 63 Electro-Voice ZX5-60Pi speakers, 20 SX100+s, 395 Dynacord DL800/25Ts, 233 RCF PL60s, two Peavey MediaMatrix Nion3 processors and 48 Crest Audio Cki amplifiers.

Prosound put in the original system in 1981, this stayed in place until the Rugby World Cup in 1995 with no changes in the fundamental design, just maintenance. 'Now we have done a complete upgrade, there's entirely new loudspeakers, all Crest Audio amps, and all MediaMatrix processors,' says Mr Malherbe.

for the top tier for the west stand. In the east stand the speakers were fitted to a specially designed bracket which could be pointed up to the top tier on match days. 'They were here for two years and I was dreading the day when we had to take them back and clean them up,' says Mr Scott. 'But we pulled the grille off and it was like brand new, it was absolutely amazing.' These boxes were cleaned up and re-implemented in the system.

The system at Loftus was made up of 36 Electro-Voice ZX5-PI speakers, 14 PX2152s, 17 ZX1s, 56 Evid 4.2Ts, eight ZX1i-100Ts, 16 SX100+s, 232 Dynacord DL800/10Ts, 93 DL800/15Ts for evacuation, two Peavey MediaMatrix Nion3 processors, 42 Crest Audio Cki amps and 25 RCF HD3216T speakers.



Peter Mokaba Stadium (Photo: Robbie Sandrock)

### PETER MOKABA STADIUM

**NAMED** after one of the renowned sons of the struggle and emancipation of South Africa against the apartheid regime, the Peter Mokaba Stadium in Polokwane holds much historical significance in South Africa. The design of the largely concrete structure is inspired by the locally iconic Baobab tree, with the steel structure supporting the roof plane gathered together at each corner of the stadium and supported by giant 'trunk' structures which accommodate vertical circulation ramps and service cores.

The system here includes 10 Electro-Voice FRX660Pi speakers, 12 ZX5-60Pis, 28 PX2122s, 49 Dynacord DL800/15Ts, 236 SP20Ds, 20 SP20s, 56 RCF HD410Ts, and 447 PL60s. Five Peavey MediaMatrix Nion6 processors were used and power came from 30 Crest Audio Cki amps and 16 Ci20x8 eight-channel amps. Also included was an Electro-Voice Rev-D wireless mic system.

'This was one of the stadia that didn't have a roof all the way round, it's just a roof over the west grandstand. We originally proposed a distributed system where we would be backward firing from the seating. The consultants didn't want that, they wanted everything from the main grandstand, so there is a ball of fire firing from the main grandstand,' explains Mr Malherbe. 'The big downfall of this system is underneath those boxes the sound pressure level is exceedingly high.'

'As in all the other stadia, all amplification was Cki. There is a mixture of mainly 1600s and 800Vs to do all the voice evacuation,' says Mr Scott. 'We have two Nion3s for processing, we are just using one and the other is redundant for standby.' Prior to the Nions being installed in 2007 it was a total analogue solution. 'It was very difficult; we had an amplifier room in the player's tunnel, they were all Crest Audio Cds at that stage, and we had one more behind each screen. We had long speaker runs.'



Moses Mabhida Stadium (Architects: von Gerkan, Marg and Partners. Photo: Marcus Bredt)

### MOSES MABHIDA STADIUM

**DURBAN'S** Moses Mabhida stadium is the odd one out in the collection as the installation here was handled by Wild and Marr. The ground epitomises the architectural innovation on display in South Africa and takes its design inspiration from the South African flag, with its arch representing the unity of the nation.

Built on the site of the old King's Park stadium, the 70,000-seat venue has been specifically designed as a multi-purpose venue and an amphitheatre. It is a world-class and multifunctional arena located in the heart of the Kings Park Sporting Precinct. The entire area will feature additional sporting arenas and facilities as well as restaurants, shops, play areas for children and a pedestrian walkway linking the stadium complex to the beach.

The kit installed here includes 42 Crown Itech IT4000s, 33 CTS4200s, 70 JBL AM6315s, 1,400 Control 24 CT Micro's, 500 Penton MSH 30T's, a range of BSS Blu-800, 320, 160s, wireless microphones, wireless in-ear monitors, Tascam DVD and CD professional players as the sources for playback, and Soundcraft GB8 16 and RM100 mixing consoles.

With the new system there is a full redundant fibre loop around the stadium, there are new amp rooms in both the west and east stands, and it is CobraNet distribution throughout.

The rack rooms involve a piece of custom Prosound electronics – a relay change over unit. 'The consultant specified amplifier change over for this project,' says Mr Scott. 'We use the fault relay from the Crest Audio amplifier. This notifies us in the main control room if there is a fault in an amplifier. It gives us the option to put a change over amplifier into place or leave it as it is,' he explains. 'The operator can decide if it's a large important zone to put the change over amplifier into place, or if it's less important he can keep it in case another amplifier fails.' The change

over unit will take the relays and direct the speaker cabling.

It is a simple design for the control room at the stadium. 'The consultant for the job specified a radio-style mixer and broadcast mics as he was from a broadcast background,' he explains. There is a GUI screen for control of the audio in the various stands. There is also a rack with two switchers for the redundant loop and the Nion processor is also housed here.

### Green Point

Set in by far the most beautiful location of all the World Cup Stadiums, Cape Town's Green Point Stadium stands in the Green Point suburb a short distance from the Atlantic Ocean and has Table Mountain as its backdrop. This aesthetic has been considered in the design of the new stadium, the architect decided against a flat roof because it would have interfered with Table Mountain. The brand new stadium has been partly built on land that used to be a golf course next to the old stadium of the same name.

The original design featured a retractable roof to make it an all-weather arena, but this was scaled back during the project. For the period of the World Cup, this will be a 68,000-seat stadium. But this includes 13,000 temporary seats at the top of the east and west stands which will be removed after the tournament. The stadium is enveloped by a fibre mesh which has been designed to reduce the wind effect. 'It allows normal airflow, but the moment the wind rises above a certain point, it becomes a solid barrier and keeps the wind out,' explains Marthinus Bester, the stadium's IT manager. The added benefit of the mesh is that it helps to keep the sound inside the stadium.

This was the only stadium of the nine contracts won where Prosound did not handle the sound design. The design for this project was handled by ADA Acoustic Design Ahnert in Berlin with Prosound acting as the installers. Prosound was responsible for the PA in the bowl and was not involved with the evacuation system. 'The specification from ADA was put out to tender, so we had to bid against a known list of equipment,' explains Mr Malherbe. 'Our job on this one was to supply and install to the instructions we were given by ADA.'

The system that went in was made up of 124 Electro-Voice XLD speakers hung around the roof of the stadium in line arrays, two Peavey MediaMatrix Nion3 processors, 62 Crest Audio Cki amps, a Midas Venice V240 mixing console and an Electro-Voice REV-D wireless microphone system.

'This is the only stadium out of the nine that has a line array

system in it, everywhere else we have gone in with decent high-quality large horn boxes,' says Mr Malherbe. 'We have 14 clusters of the Electro-Voice XLD boxes. Each cluster is different depending on the areas they are trying to cover.' He believes the brief from ADA was less concerned with ensuring the stadium was well covered, and more in terms of noise pollution outside the stadium. 'The brief was to keep the sound within the stadium and contain it, hence the desire to use the line array.'

The boxes for the line array needed to be custom ordered in white to hide them against the stadium roof. Due to the sea-side location, they also required a large amount of protection from rust. 'Everything has been triple-treated, galvanised, cadmium plated, everything is stainless steel in terms of rigging and everything was put up in winter.'

'Timing was a major issue for us, we could only put the clusters up when the top shuttering was in place because of the weather, but they were following immediately behind putting the membrane in, so we had a one day window each time to get the PA up and in place. It was an interesting little challenge,' recalls Mr Malherbe.

There are four amplifier locations within the stadium, one in each stand. 'It's all Crest Audio Cki power amps with the NX cards in them. It's all CobraNet distribution which is fibred to the breakouts and all processed by two Nions in the main control room,' explains Mr Malherbe. The stadium also includes 102 IPTVs which can be used for digital signage or displaying any media feed.



**Royal Bafokeng Stadium**  
**ROYAL BAFOKENG STADIUM**

**BUILT** in 1999, the Royal Bafokeng Stadium near Rustenburg required only a minor upgrade for the World Cup. The capacity of the stadium was increased to 42,000 with the construction of two additional rows of seating on the second level. New electronic scoreboards, floodlights and a new public address system were also added.

For the sound system Prosound used eight Electro-Voice FRX660Pi speakers, six ZX5-60Pis, 12 PX2122s, 60 EVID 4.2Ts, 70 Dynacord DL800/15Ts, 24 RCF HD410Ts and 200 PL60s are powered by 29 Crest Audio Cki amps. A single Peavey MediaMatrix Nion3 was used for processing. There was also an Electro-Voice Rev-D wireless mic system and a Midas Venice V160 desk installed.

'Here we again have just one roof structure so we have fire across the field. Here we have used smaller balls of fire but more often so we don't have that same development of high SPL underneath the clusters but we still reach the other side of the stadium,' explains Mr Malherbe.



**Nelson Mandela Bay Stadium**  
**NELSON MANDELA BAY**

**THE** brand new 48,000-seat Nelson Mandela Bay stadium in Port Elizabeth is set on the shores of the North End Lake and is the first football dedicated stadium in the city or surrounding areas. It features a unique three-tier design with two rings of skyboxes and has been designed to look like a shell.

The system consists of eight Electro-Voice FRX940Pi speakers, 28 FRX660Pis, 20 FRX640Pis, and 132 Evid FM4.2s. DSP comes from two Peavey MediaMatrix Nion3 processors and power is via 34 Crest Audio Cki amps. The stadium also has two Electro-Voice N/D767 mics and a Rev-D wireless mic system, as well as a Midas Venice V240 mixing console.

'It's a very uniform stadium, so from a design perspective it was easy for us,' says Mr Malherbe. 'The clusters are all visible and there was no attempt to hide them in the roof lining.' Mr Scott adds: 'I don't know if it's because it's intimate or because it's so uniform but as a stadium for me it's one of the nicest.'



**Free State Stadium**  
**FREE STATE STADIUM**

**THE** 48,000 capacity Free State Stadium in Bloemfontein takes its name from the province in which it is located. For the 2010 World Cup, a second tier was added to the main grandstand, which increased the seating by 10,000. New turnstiles were erected, the floodlights upgraded, electronic scoreboards installed and the sound system was revamped.

The system here uses two Electro-Voice FRX940Pi speakers, 10 FRX660Pis, 10 ZX5-60Pis, 69 SX300Pis, 36 EVID 6.2Ts, 66 Dynacord DL800/15Ts, and 120 DL86s. Power is from 46 Crest Audio Cki amps and two Peavey MediaMatrix Nion3s cover the system.

'This was another upgrade as they totally rebuilt the western grandstand. It's a really good distribution of speakers firing down from the roof and distributed amplifiers. It's a really good sounding PA,' says Mr Malherbe.

Green Point has been built with 132km of fibre optic cabling and 680km of copper cabling. 'We have Ethernet cabling for our access control system, the turnstiles and the cameras. We don't have any legacy telco cabling in here, everything is Cat6a. Even if the technology does not support Ethernet we still use that cable, it basically allows us to use that cable for multiple purposes depending on the configuration that we require,' Mr Bester explains.

Green Point has a particularly good set-up for the broadcast media. 'There are fibre connections to our outside broadcasting areas, so it's quick and easy for them,' says Mr Bester. These feeds can be displayed on any of the IPTV screens or on the LED big screens inside the stadium. 'We also have 32 fibre connections around the mote of the stadium for broadcast cameras to plug into. In terms of the cabling required to broadcast an event, we are trying to make it as easy as possible,' he continues. 'You take the composite camera's composite output or SDI output, you convert it into fibre and the OB broadcast can just jack in and they will get your feed.'

With the whole world watching, South Africa is gearing up for a spectacular World Cup. The quality of stadia it now has at its disposal with high-end sound systems means that it is guaranteed not to disappoint. The country will be hoping for the same from its football team.

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