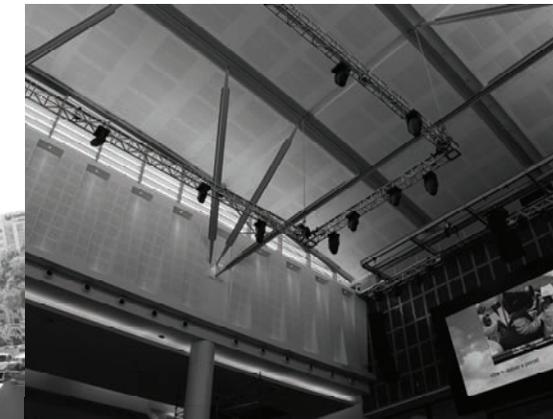




machoy

**Mackenzie Hoy
Consulting Acoustic Engineers**

YEARBOOK 2011/2012





machoy

Mackenzie Hoy Consulting Acoustic Engineers

Contact Details:

5 Coniston Way, Pinelands
South Africa, 7405

Tel: +27 (0)21 531 4452
Fax: +27 (0)21 531 3334
Web: www.machoyrsa.com
Email: mahoy@iafrica.com





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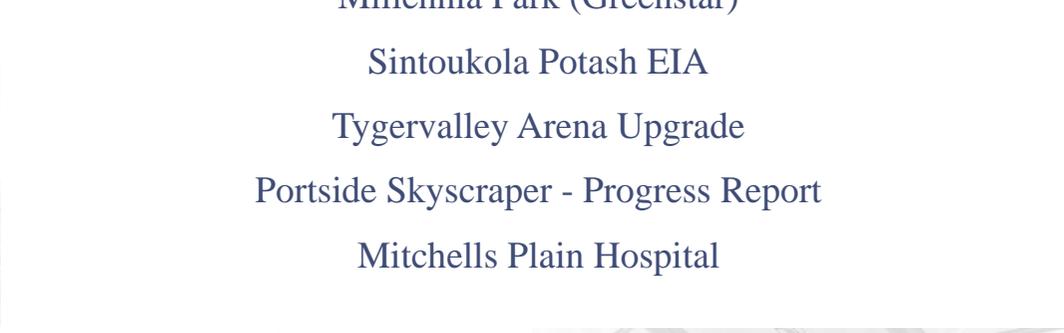
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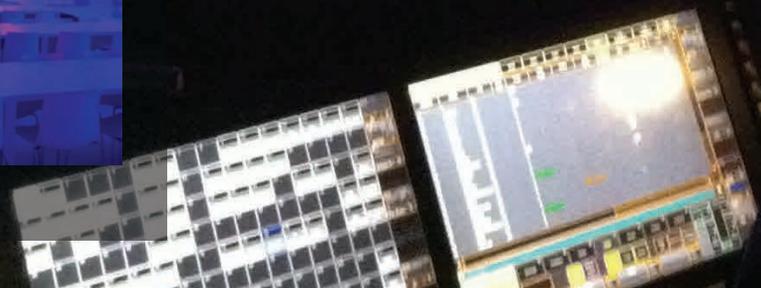
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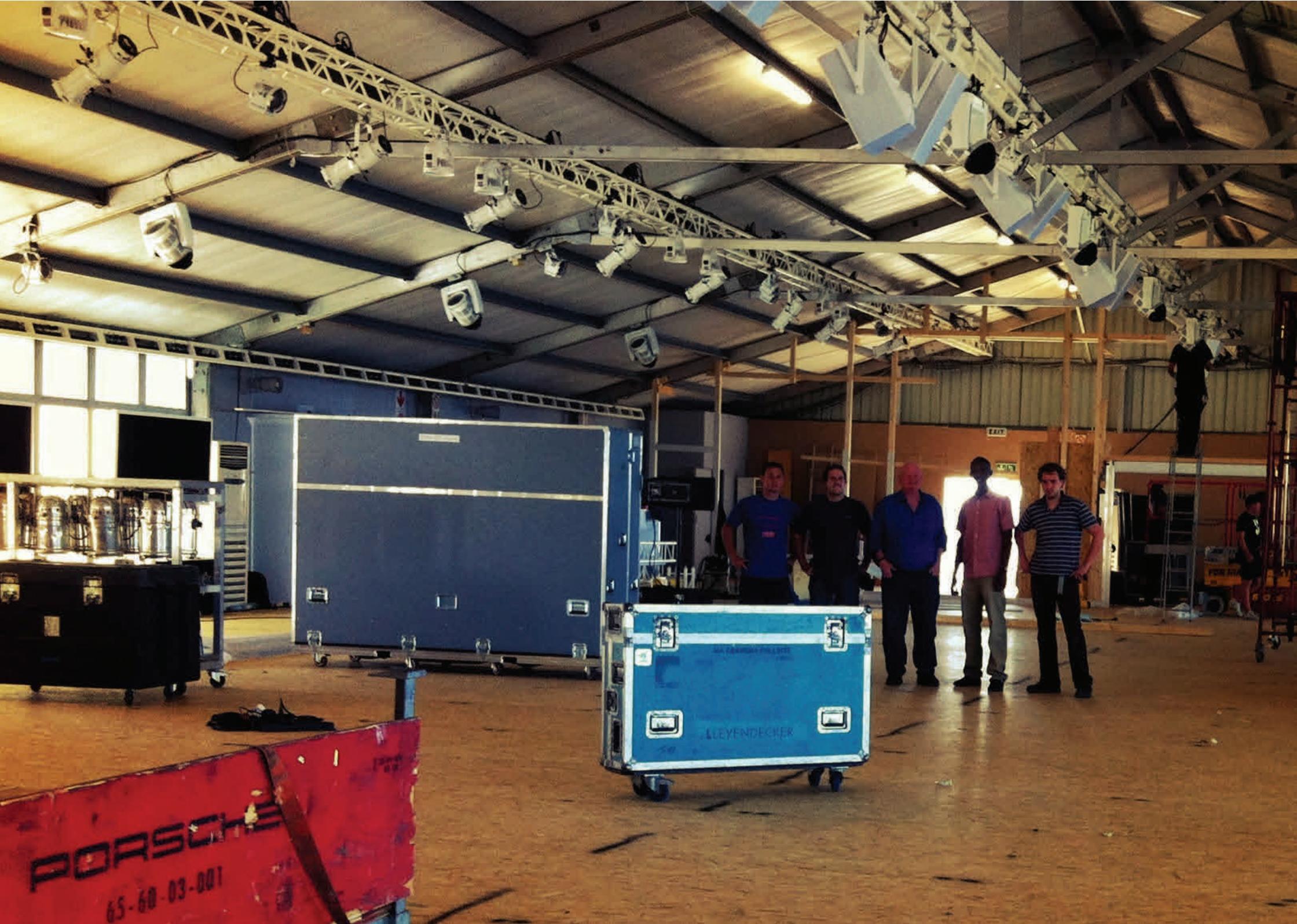
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V&A WATERFRONT LOOKOUT EVENT—PORSCHE 911 LAUNCH

This year marked the world-wide launch of the brand new Porsche 911 Turbo and Porsche chose Cape Town as the international destination for this event. It was decided that the model would be shown at Ysterplaat Air Force Base and at various other presentation venues, with a final unveiling taking place at a gala dinner. This prestigious event would be hosted at the Lookout: a venue which was constructed to house journalists for the 2010 FIFA World Cup. The problem with the Lookout however, is that while it is fairly soundly constructed, noise breaks out very easily through the timber frame walls and eaves of the building. This means that any noise from an event, such as the loud and compelling music accompanying the unveiling of the latest piece of Porsche engineering, could easily disturb the neighbours at the Water Club next door. We were asked to design sound proofing and monitor the noise from the event, both indoors and at the plot boundary, to ensure that the event did not disturb the neighbours. In all, the presentation went off fabulously and our thanks to Chattels for giving us this appointment

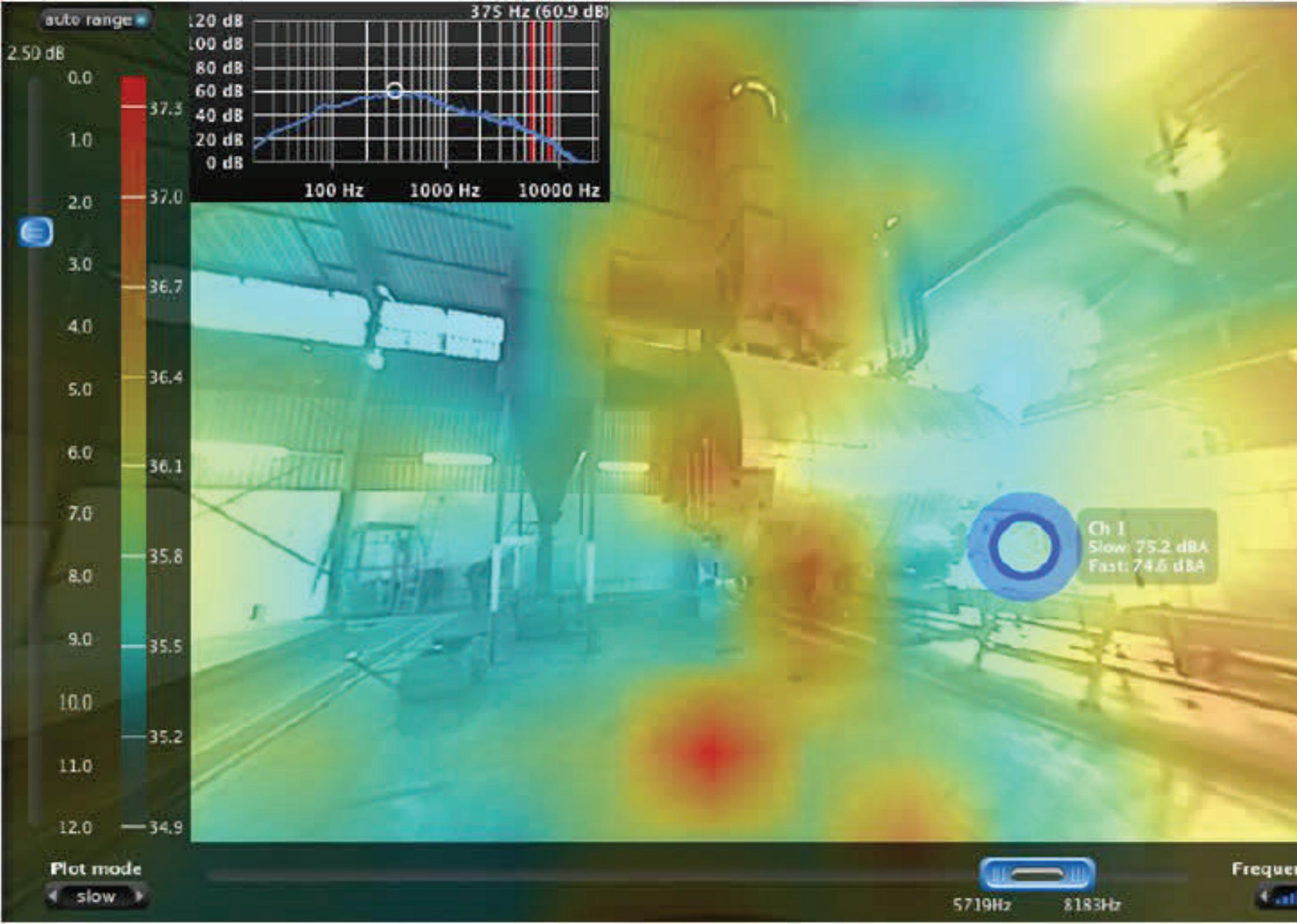




PORSCHE

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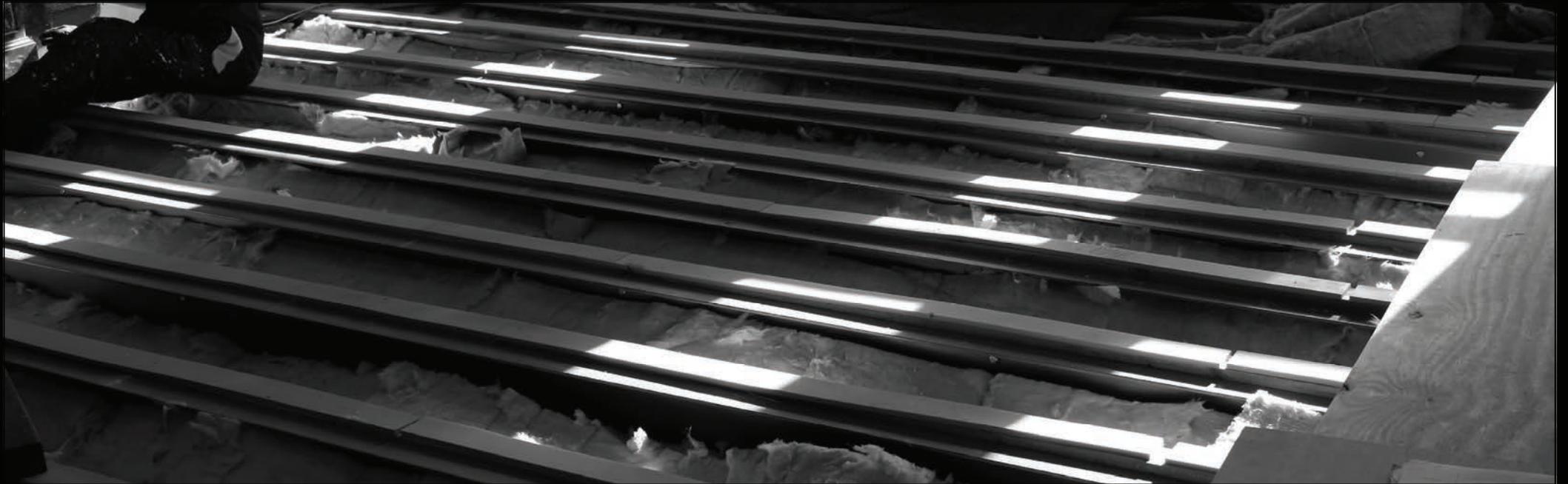
ALL EQUIPMENT FULL SIZE
LEYENDECKER



CERES PROCESSING PLANT

If you buy a fruit blend or 100% fruit product in South Africa, it almost certainly will have originated from Ceres Fruit Processors (Pty) Ltd. We were asked to examine the noise generation by Ceres' plant and provide recommendations for the reduction of noise. At the time we had use of an acoustic camera from Norsonic AS, which allowed us to plot real-time noise contours at the plant. Using this we were able to generate a full report complete with numerous recommendations. Unfortunately however, Ceres decided to expand the plant and consequently our recommendations, if used, will only be initiated next year. Nevertheless, we are quite sure that this is the first time that an acoustic camera has been used in South Africa for industrial noise measurements.





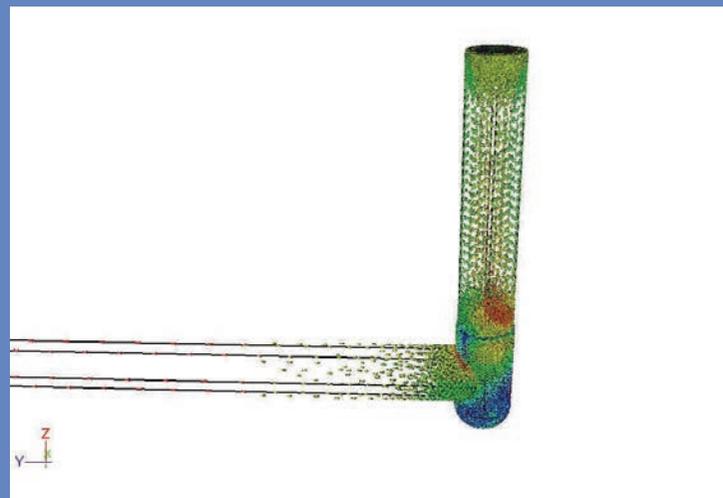
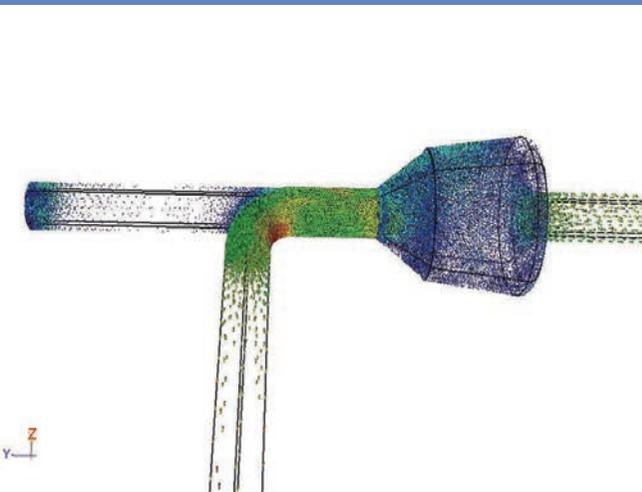
UCT MUSIC SCHOOL

An integral part of the University of Cape Town's Music School is located in a large Victorian building in the Southern Suburbs of Cape Town. While loved by students, lecturers and the public alike, one of the music rooms presented an acoustic problem, which is hardly conducive to an efficiently functioning institution in which fledgling musicians are meant to hone their skills. One of the music rooms was situated directly above a meeting room and there was evidence of noise transmission from the room above to the meeting room below. We were asked to investigate and provide a design to fix the problem. Ultimately the whole floor had to come up and be replaced with a specialised sprung floor. In addition, the use of structural engineer Paul Laros was required to make sure that the new floor didn't fail under the load of aspirant musicians and associated University furniture. With all investigations complete and mitigation measures introduced, the new installation was an outstanding (and thankfully, not 'resounding') success.



UBOMBO SUGAR MILL

Ubombo Sugar Mill is located at Big Bend in Swaziland. Recently John Thompson (a division of ACTOM (Pty) Ltd) installed a 20 Megawatt boiler - fired on sugar cane bagasse - which was established to generate power to the Swaziland electricity grid. After construction it was found that a very high-pitched and persistent noise appeared to arise from a steam knock-out drum designed to remove water from the steam-flow. Christine Thoresson of John Thompson asked us to look at the problem. We conducted a computational fluid dynamic analysis of the drum but could find no evidence of flow irregularity. We concluded that the noise was probably coming from a spindle of a shut-down valve located downstream. We put this thesis forward with all our other findings to John Thompson. They challenged this conclusion, citing as evidence that the noise persisted even when the valve in question had been removed. This was not true, as subsequent tests (with the valve removed) showed...







Park Inn Hotel.

Park Inn Hotel is owned by Radisson and was created by renovating an office block on the Heerengracht in Cape Town. We were asked by project managers Betts Townsend to provide the acoustic design for the hotel. This proved relatively easy in the case of the guest bedrooms and general areas, but a major challenge was to prevent considerable noise generation by reflections of sound in the atrium, which rises from the second floor to the roof. Ideally we would have liked the whole atrium to have been clad in absorbing tiles but the atrium would have become very dark and forbidding as a result. We therefore devised a solution whereby the balustrades of the atrium could be glass-clad, and with clever use of overlapping glass we could effectively create an 'acoustic filter', thus preventing noise generation but at the same time providing adequate light.





Millennia Park

Millennia Park, owned by Remgrow, is the first refurbished building to receive a Five Star Greenstar Building rating in South Africa. We were asked by Bornman and Associates to specify where necessary acoustic finishes would be required so that the points for acoustics according to the Greenstar requirements could be earned. To ensure that the necessary sound pressure levels as measured were accurate with respect to each other, we deployed a team of five people with five sound level meters to take simultaneous measurements throughout the building (to ensure the required internal sound pressure levels had been met). To the best of our knowledge, this has not been done before in South Africa and no other practice in this country has the resources to do this. There were four points in total to be sought, both for the 'Design' phase of the building and 'As Built', all of which were ultimately awarded subsequent (in part) to our input and the building's Five Star rating was achieved.







MASTER POINT

SINTOUKOLA POTASH EIA

Sintoukola Potash exploration camp is located in the Republic of Congo, approximately 50 kms from Point Noir. We were requested by SRK (UK) Limited to conduct noise measurements for a baseline noise study for a mining transport and processing facility. The facility is to be located near the exploration camp, with all mined product transported via a hauling road to be processed at a plant on the coast. The area is serviced by extremely rudimentary, mud roads and we had to take 12 different measurements and project these into an accurate estimate of the ambient sound pressure level of an area of some 2,500 km². This was achieved using a method known as the Quantum Unit Area Noise Distribution Mapping Method (QUAND©), whereby simultaneous readings off our sound level meters located 5 kms apart and all measuring at the same time can be used to calculate possible noise sources or the absence thereof. This project represents a groundbreaking approach to the large scale measurement of ambient noise levels.







TYGERVALLEY ARENA

In the original design for this shopping centre with an entertainment arena, plasterboard was specified to be used as surface cladding throughout. Had the construction proceeded in this fashion, the interior surfaces would have been so reflective of noise as to render the venue entirely unusable. Together with Bentel Associates, we fast-tracked a design, which made extensive use of Gyptone Bigline Six cladding from Saint Gobain. In one single order we managed to deplete the entire stock of Gyptone Bigline Six in South Africa. The results have been very successful and the venue is extremely exciting.



PORTSIDE SKYSCRAPER

In the past year the Portside Project, during which the tallest building in Cape Town is to be erected, has proceeded rapidly and the building is expected to 'top out' in a few months time. We have been involved extensively in the specification of noise transmission requirements of the façade glass, as well as in noise attenuation treatment of various plant rooms. In the coming year we expect to complete a number of site inspections, in particular relating to the insulation of building services equipment. There were a number of considerations in this regard, including: the effect of industrial air intake and exhaust on surrounding structures which, in some cases, are no more than 50 m away even though they are 14 stories high; and the practicality of an air intake – one which is acoustically appropriate but which does not alter the building façade in an un-aesthetic way. We have also been appointed to obtain Greenstar status for this building and work in this regard is well underway.





Mitchells Plain Hospital

Hypothetically, if you were designing an institution in which frail, sick and vulnerable people are to be treated and rehabilitated, which would be the correct location for such a building: (a) below the flight path of jumbo jets from a nearby international airport; (b) in between two extremely busy and often congested roads; or (c) both below airplane flight paths *and* abutted by highways. If you guessed (c) you would be correct, if not also somewhat bewildered. The result of the decision to erect the Mitchells Plain Hospital at such a site was that extraordinary care had to be taken in the design of both the roof and the windows of the hospital, as these would have to present the transmission of noise from of passing aircraft, and reduce the considerable noise generated from the highways. Furthermore, being a place for rest and recovery, it was essential that the building be insulated from surrounding environmental noise particularly in wards where children are treated, as young people are far more sensitive to sound than adults. Although construction is not yet complete, we can claim that it is one of the quietest hospitals in South Africa. In some wards the ambient sound pressure level is an astonishingly low 25 dBA and even with large passenger jets overhead the sound pressure level rises to no more than 45 dBA. For this project we had to take extensive noise measurements of departing aircraft at various altitudes and this information will be of great use for future noise control initiatives at any South African Airport

