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Diante do Trono
STELLAR STUDIO DESIGN
IN BRAZIL

GEAR UPDATES AT THE
Metropolis
CONCERT VENUE

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PRODUCTS AND PROFILES FOR THE AUDIO PROFESSIONAL

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Diante do Trono is one of Brazil's most famous touring bands and part of the Batista da Lagoinha church in Belo Horizonte, Brazil. With approximately 27 touring members, the group has performed to millions of fans – not just in Brazil, but all over the world. Even though the gospel-oriented Diante do Trono has released many albums since its inception, it has never had a studio it could call its own. To capture high quality recordings in the past, the group would often have to travel to the US and spend many thousands of dollars in other facilities.

As more and more DVD-oriented projects were being released from the band's live shows, the bandmembers finally decided it was time to leverage a studio closer to home – a monastery in their native city of Belo Horizonte. Ironically, Walters-Storyk Design Group (WSDG)'s own Brazilian office was conveniently located across town. Renato Cipriano of WSDG Brazil was already intimately familiar with Diante do Trono, having mixed some of its past projects.

When Andre Espindola, Diante do Trono's engineer, called Cipriano to talk about a potential new project, there was already a familiarity and mutual respect in place that helped take the project to the next level. "Aside from their expertise, being located in the same city was a great reason also to work with Renato and WSDG. Before we even started building the studio, we did live recordings that Renato mixed, so it was only natural that we started talking about the idea of a studio," Espindola recalls.

Core Requirements

Having knowledge of the group's requirements gave WSDG a head start on the project and the firm wasted no time getting to work. "From the beginning, we were aware of all of this client's needs. Diante do Trono actually records with a small orchestra, complete with strings, brass, and the band itself. It is a very traditional band with these other orchestral instruments," observes Cipriano.

The recording facility would be located in the rear of a four-story building owned by the group. Inside this space, WSDG designed a 600 sq. ft. live room, a 350 sq. ft. 5.1 control room, two isolation booths, and an additional 600 sq. ft. multi-purpose room on the second floor – including a full video edit suite. "The live room had to be spacious enough to comfortably accommodate 30 performers," says Cipriano, "and the control room had to be built to accommodate quite a few people as well – several members of the band like to be present in the control room during the mixing process."

"It is certainly possible to accommodate eight or 10 people in the control room, but we try not to have that many people around!" Espindola adds, laughing.

Having full 5.1 surround capability was a very important aspect to the design of Diante do Trono's control room, since the vast majority of the group's projects are released as DVDs based on live recordings. "Every project we do is released on DVD – it's a video going with a CD." This fact also influenced the group's decision to include an edit suite on the second floor of the facility, which will surely see its share of post-production work.

Striving For Visual Perfection

One of the critical requirements of the control room from the outset – and one that would drive the breathtakingly original design – was that the control room needed to have a view of as much space as possible through the glass. This is ultimately how WSDG came to the idea of mounting the speakers **inside** the glass.

When this solution was formally proposed, Espindola chuckled

Diante

Seeing & Hearing Is Believing



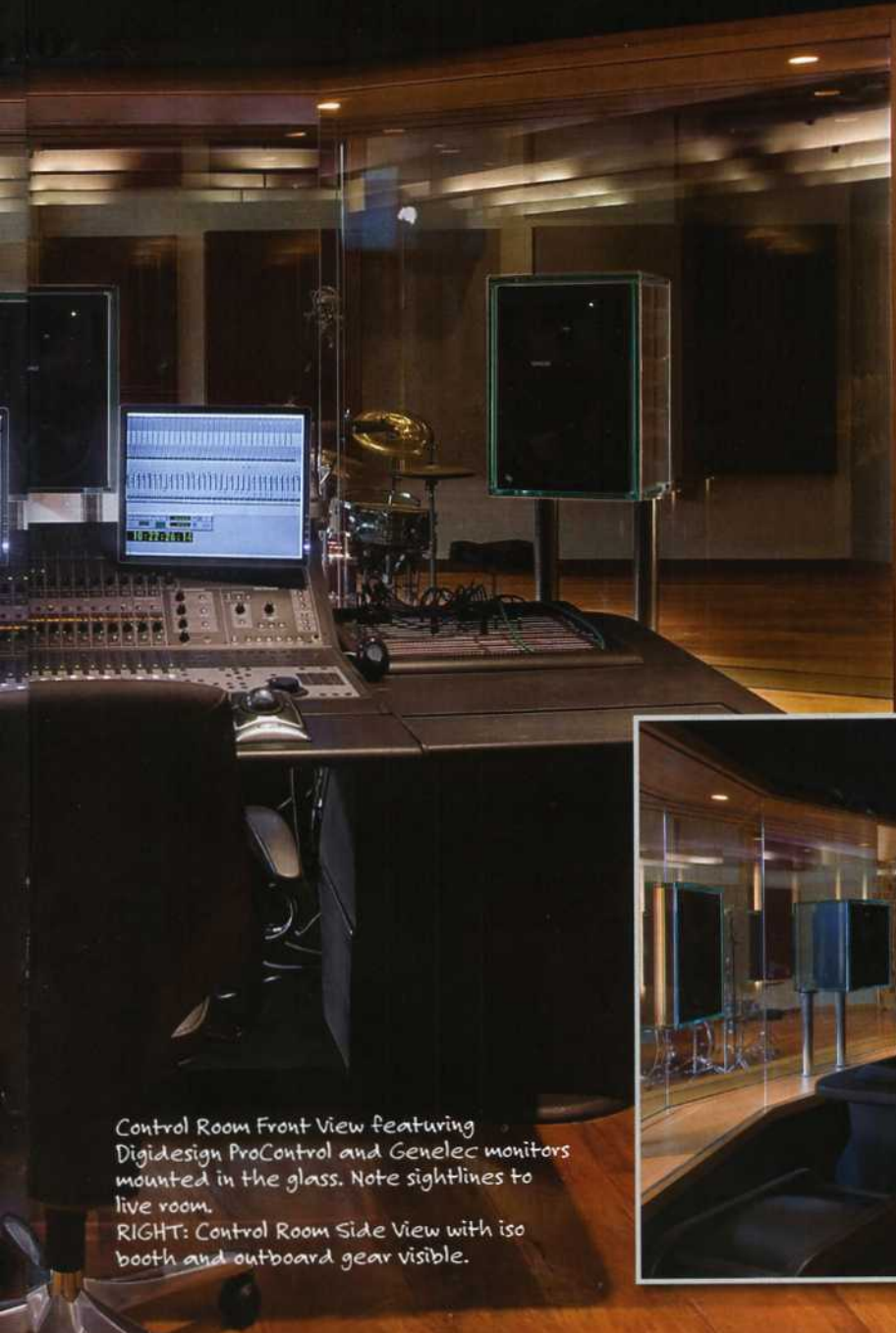
e do Trono

because the idea seemed so far-fetched and, to his knowledge, had never been done before. "We both laughed and thought it was crazy, but Renato said, 'No, no, we can do this and it will work.' We said, 'Okay, we'll go with it. I believe you.' Now, I have the speakers out of the way and have full visual communication with the whole studio — everybody can see me, and it's great."

"Having the front speakers at ear level is a conflict, because you can't put freestanding speakers very close to the glass — you will get cancellations," observes Cipriano. "We therefore decided to put the speakers inside the glass." Cipriano says this presented two functional challenges. First, the glass wall needed to be heavy enough so it wouldn't create vibrations inside of the room, and, as a result, alter the frequency response of the system. Second, there needed to be a seamless way to route audio and power to the speaker cabinets, which was done by integrating small poles into the design. "They are actually holding half of the weight of the cabinet; the other half is being held by the front of the glass, which, once again, is very heavy and very thick."

If creating a glass wall that was both acoustically and functionally efficient wasn't enough, WSDG also had to consider the overall room geometry. "We carefully studied the angles of the side walls and the size of the diffusor in the back so we wouldn't create reflections coming back to the front wall," Cipriano recalls. "Although it's a sufficiently large control room, it's not enormous. Since the reflections are very close in time to the direct sound, this could have potentially created problems." One of the ways WSDG tackled this problem was by refining the angles of both the glass and the side walls: "Part of the glass is angled to bounce the sound towards the ceiling, where we have a lot of absorption. Also, we made special angles on the side walls which reflect to the **back** wall."

The sound that makes it back to the rear of the room hits a very deep diffusor, custom-designed mainly to control



Control Room Front View featuring Digidesign ProControl and Genelec monitors mounted in the glass. Note sightlines to live room.
RIGHT: Control Room Side View with iso booth and outboard gear visible.



Diante do Trono

reflections of mid and high frequencies – which Cipriano says is what glass mostly reflects. To help manage low frequencies, the design team decided not to mount the subwoofers in a fixed position, but rather maintain flexibility by being able to move them around as needed to achieve better frequency response. “Having two subwoofers really helped a lot because this allows you to play with the phase and timing of each one to get a better result,” says Cipriano.

Stellar Sonic & Visual Performance

When it was finally time to test the control room’s frequency response, the hard work of the design ultimately paid off. “The results are very impressive. Most importantly, the sound of the room is great,” observes Cipriano. “The first thing we played was the 5.1 *Love* recording from The Beatles. It was amazing – both Andre and myself were there, and we were in shock.” John Storyk, who was integral to the design from the beginning and approved the final drawings, also liked the sound of the room: “None of us has ever heard a studio quite as responsive as this – or quite as smooth – where the response is so wide across the console position.”

The real test came, however, when the control room was put to use under real conditions: mixing a new Diante do Trono recording project. Cipriano describes the room as delivering an “audiophile” level response, meaning that it is very difficult to pinpoint the physical location of the loudspeakers (or studio monitors, in this case). Espindola elaborates: “Mixing in that room is beautiful. It’s very hard to describe because we’ve been mixing in so many different rooms and learning how each of these rooms sounds. For one thing, the stereo image and the surround images are huge. You have all these psychoacoustics that really create an unbelievable image, and you don’t actually hear the sound coming from the speakers. I’ve only had one similar experience before, when I mixed at a studio in Holland.”

Espindola also appreciates how effective the isolation is. “The control room is so unbelievably quiet. When we are working, we hear all these sonic artifacts that we couldn’t hear before – it’s pretty weird.”

The seamless visual communication also obviously has a positive impact on the recording process, says Cipriano. “Speaking as an engineer, it’s so important to have good visual communication with the musicians during the production process. You don’t want to have to move around to see people. If someone is playing close to his amp, it can be distracting or counterproductive if you have to move around too much to see the person.” Cipriano illustrates how visual contact

is particularly important when it comes to laying down vocals: “You need good visual cues to see when the vocalist might jump in, especially when laying down vocal overdubs. Recently, I was working on a project where the producer was in the control room and he was almost dancing – he was trying to push this energy out to the singer. If it wasn’t for the visual contact, that energy wouldn’t have been happening and would never have reached the musician.”

Espindola doesn’t take the outstanding visual performance of the control room for granted. “We are kind of old-fashioned in that we like to see and look face-to-face with the singer in one position. The window is so big that I can see the whole studio without having to move.”

Diante do Trono’s Live Room: Light & Flexible

The live room of the facility is equally as impressive in both its size and frequency response. According to Espindola, establishing a suitable room where every bandmember could comfortably perform was a paramount consideration from the outset: “We are a big group – it’s pretty much like a big band. We have a big brass section: trumpets, trombones, saxophones, and French horns. We also like a big sound, so the main goal for us was to get the biggest room we could get in the space we had available.”

Given the diversity of Diante do Trono’s instrumentation, the studio had to be flexible enough to accommodate every possible range of instrumentation



Natural light achieved in the Live Room. Also note variable acoustic panels.



John Storyk On Creating The Invisible Wall

Historically, control rooms were rooms for engineers and not dedicated to artists. An engineer sat in the control room, and looked through the glass to a studio. Speakers were put anywhere they could be located, and as they got larger, and as the front facing glass got bigger, the speakers ultimately landed on the top of the glass.

We recognized that the following conditions in a control room can cause a problem. One, which is very typical, is the need to look forward in a production environment into a large tracking room while maintaining a wide viewing angle.

When you have this condition, plus a 5.1 or even larger surround monitor situation, and with everybody at last recognizing that with monitors placed high above the front window, large consoles will cause a comb filtering, and thus have an adverse effect on the frequency response...

Recognizing this conflict, we said, ‘Wouldn’t it be good if we could mount the speakers in the glass? Then, we wouldn’t have this conflict.’ It started out, literally, with one of those quirky little sentences one day a long time ago, and off and on over the last 10 years, we’ve tried to achieve that. We’ve tried having glass

in between the monitors at ear level, and we’ve tried many times to put the speakers in front of the glass and deal with the rear speaker reflections – not always successfully. Ultimately, we said ‘Why don’t we just try to put the speakers in the glass?’ This is the first time we’ve been able to create a real world installation.

For the most part, this is one of those ideas whose time was inevitable. It’s tricky to do, and this install presented us with a few ‘real world’ problems. We already have two more installations such as this on the boards and we look forward to improving this concept.

DIANTE DO TRONO EQUIPMENT LIST

Pro Tools HD Accel 5 – Mac Pro Quad Xeon 3.0
 GHZ with 6 GB RAM
 Digidesign 192 32-channel
 Digidesign Control 24
 4 Avalon 737sp
 4 Focusrite ISA 11
 2 Focusrite ISA 430
 2 Millennia HV3-D
 1 Grace m801
 24 API 212L
 1 HHB Radius 10
 1 Focusrite Octopre
 1 Mackie Onyx 800
 8 Aphex 661
 Tube-tech Summing Amplifier
 Alesis Masterlink
 Radar 24 48-channel
 2 Blue The Bottle
 2 Blue Woodpecker
 2 Neumann M149
 4 Neumann TLM 103
 8 Neumann KM 184
 2 Neumann KMS 105
 1 Neumann U87
 4 AKG C414
 1 AKG D112
 4 Shure KSM 44
 12 Shure Beta 87
 4 Shure SM 91
 8 Shure SM 81
 2 Shure Beta 52
 6 Sennheiser MD441
 8 Sennheiser MD 421
 6 Electro-Voice RE20
 4 Electro-Voice RE27
 6 Electro-Voice N/D 468
 2 Electro-Voice N/D 868
 1 Audio-Technica AE2500
 1 Audio-Technica 4041

Drumkit: DW Collector Series "Custom"
 Marshall JCM 900
 Line 6 guitar amp
 Cabling: Reference, Mogami, and Monster
 Dis: Radial, Countryman, and Klark Teknik
 Monitoring: 5 Genelec 1032A Speakers
 with 2 Subwoofers (7060A and 7070A)
 Aviom Pro 16 for personal monitoring

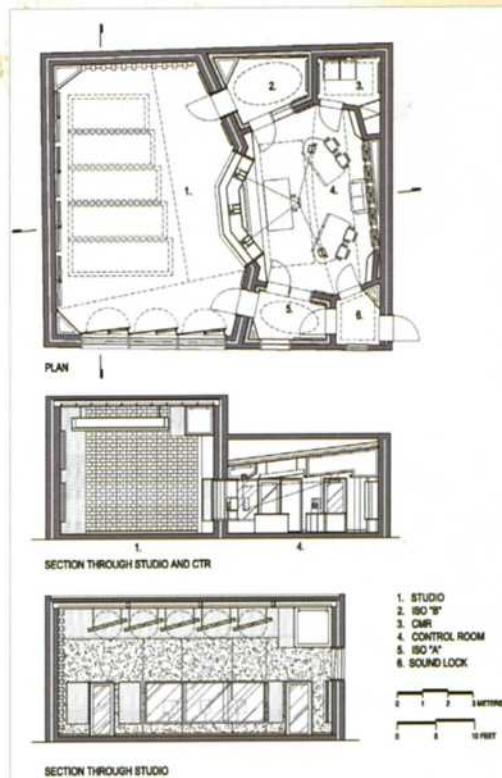
— from oboes, to cellos, to electric guitars. There are, therefore, three surfaces in the live room that contain variable acoustic panels: one right below three large glass panes (which cast abundant natural light into the performing area), a second on the "large wall," and a third on the ceiling.

Each of these variable acoustic panels can rotate, changing the response time of the room on command and enabling it to sound more "live" or "dead" as required. The panels on the ceiling can be rotated via a switch in the control room, making it also very convenient for the engineer to change the response of the room according to what suits. For example, an engineer may choose to utilize the absorptive surface of the panels for a full orchestral recording, and perhaps the reflective surface for a solo piano. "It's very cool," says Cipriano. "You can put the drummer in, he can play a few beats, and you can change the whole sound just by flicking this switch."

"Because we like to do a lot of strings, brass, and choral sessions in the studio, variable acoustics give us the full range of flexibility we may need on a given session," says Espindola. "You can have it sound the way you want. For instance, right now we are producing our new album, which we started recorded in July. The band rehearsed in the studio — all in the same room. The SPLs can be pretty high, but moving the panels can make all the difference. We got the right sound for them to rehearse so they were comfortable and really happy. It's like magic."

In addition to the generously-sized live room, there are two isolation booths: one on each side. Each of these isolation booths, which are big enough to accommodate a small drumkit, has different sonic characteristics — one is more absorptive than the other. "We've been using the iso booths a lot for amps and drumkits, but now we will be looking to isolate things like flutes and oboes," says Espindola. The isolation booths also enjoy full visual contact with the rest of the studio and one of them has natural light with a garden view — a welcome, if rare, attribute among booths.

According to Cipriano, natural light is a fundamental part of many designs and cannot be overlooked. "Natural light is very important



— every client wants to have that feeling of **not** being in a studio." For Diante do Trono, WSDG managed to create a large window in the studio, which throws light into the live space and also looks out onto the garden. "You have to be very careful with angles and the glass, but this light is very critical," he adds.

Equipment & Future Plans

Espindola and the design team chose a selection of Genelec monitors including 1032As, a 7060A, and a 7070A, which at the moment is being used in combination with a Digidesign ProControl console and an HD3 system. According to Espindola, the future may see the installation of a Neve Genesys or possibly the SSL AWS 9000. In the meantime, Diante do Trono's collection of outboard gear includes preamplification by Neve, API, Millennia, Avalon, Grace, and others. As for mics, Espindola tends to subscribe to mostly Neumanns, but also uses mics by AKG, Blue, Shure, and others. "Our main mics are the Neumann M149s," he says. "For the room, I've got a very interesting sound using the Neumann TLM103s in a very low position using a lot of compression — which makes for a big sound."

"This place is so well planned so there are connections anywhere we need," concludes Espindola. "We can put an amp in a room and patch it anywhere we want. It is very flexible. The best thing for us, above all, is that we can now record at home."



Rear detail of Genelec monitor speakers mounted directly in the glass.



Jeff Touzeau is a freelance writer and regular contributor to Professional Sound. His latest books are *Careers in Audio* and *Artists on Recording Technique*, both on Cengage.