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TACT Audio Millennium

With sound like this, Y2K looks to be a great one.

by Steve Guttenberg

Think about it. Sound is analog, whether it's coming out of Madonna's mouth, Wynton Marsalis' trumpet, or your speakers; if you hear it, it's analog. Digital audio isn't really audio, it's a

num's technology is so original, and the sonic revelations it unleashes are so great, it may require a total realignment of our expectations for reproduced music and sound.

From the outside it's simple enough. The Millennium functions as an integrated stereo digital-to-analog converter/preamp/power amp, but a more accurate description would be along the lines of a *power digital-to-analog converter*. In other words, the Millennium is a digital-to-analog converter that drives speakers directly. TACT's engineers have completely eliminated analog circuitry in the Millennium, so the word "amplifier" is slightly misleading. Huh? Well, let's see, amplifiers *amplify*—that is, they make small analog signals bigger, increasing their voltage and/or current, and the Millennium doesn't work that way. The Millennium converts the datastream from a digital source, such as a CD or DVD player, to analog only as it *leaves* the Millennium. It's a new kind of alchemy; the transition from zeros and ones to sound has never been this direct before.

For now, TACT offers the Millennium only in stereo form, and it's impractical to incorporate into a home theater system. A full home theater version will be available next year. We normally don't review stereo components in *Home Theater*, but after hearing the Millennium, we couldn't wait to tell you about it.

The Millennium is a preamplifier/high-power digital-to-analog converter capable of handling sam-

pling rates and bit-depth combinations up to 24 bit/96 kHz. According to TACT, it's easily upgradeable to 192 kHz, and to Sony/Philips Direct Stream Digital. Apparently, the Millennium is pretty much future-proof.

TESTING SYSTEM

Prototype NAD CD player,
Anthony Gallo Acoustics
Nucleus Reference speakers

Digital's prime bug-a-boo, jitter—time-base errors caused by varying time delays between digital components—is virtually eliminated by TACT's Clock-Gate system. Like I told ya, TACT's got the digital thing down, but here's where it gets really interesting—the plain old, garden-variety, pulse-code-modulated digital signal is reformatted into a pulse-width modulated datastream. The central processor then uses a patented algorithm called Equibit to determine exactly the right combination of pulse widths necessary to create the desired analog waveform. Very cool. No negative feedback or active analog signal processing is involved at any stage of this design. Playback level is controlled by adjusting the voltage of the power supply with an optical encoder.

At maximum output, the Millennium produces a rated 150 watts into 8 ohms or 280 watts into 4 ohms. Thanks to its 90 percent efficiency, this baby barely gets warm running full out! Furthermore, TACT claims the Millennium's distortion under steady-state and dynamic conditions remains the same; distortion specs are also largely frequency and level independent.



A. Millennium's simplistic faceplate belies the awesome circuitry that lurks inside.

B. On back there's four digital inputs, and, with the optional analog-to-digital converter, four analog inputs.

datastream that must be *converted* to audio before you can hear it. It's amazing—we're well into the Digital Age, but it now appears that TACT Audio, a Danish company, is the first to realize the full potential of digital audio by radically simplifying the signal path from digital source to speakers. Yeah, yeah, sure, we've all seen and heard that sort of hype before. We all know that even at the most excessive, cost-be-damned levels of the high end, where technology is continuously reshuffled and repackaged, the edge of the art only creeps forward in barely perceptible increments. Well, get ready for a giant step. The Millen-

C. It may look like some kind of futuristic thermometer, but it's the remote.

HIGHLIGHTS

- The signal stays digital all the way from your DVD/CD player to the Millennium's binding posts
- Extraordinary build quality
- Home theater version comes out next year
- Price? If you have to ask...

Listening to, no, make that through, the Millennium can be a mind-altering experience. I became addicted to the Millennium's holographic imaging, midrange palpability, resolution way down at the quietest levels, extended high frequencies, and a rhythmically precise bottom end;

for transparency/information freaks who savor every scintilla of sound, the Millennium has no peer. I checked out the Millennium with a variety of speakers ranging from my own Anthony Gallo

Acoustics Nucleus References to Audio Physic Virgos, to the Hales Transcendence Fives, to the \$29,000 JMLab Utopias. The Millennium exerted an almost unbelievable degree of control over those speakers' drivers; in my opinion, all

other amps, regardless of their pedigree, sound vague or sloppy in comparison. Only when pushed to the outer limits of its 150-watt-per-channel rating did the Digital Dane lose ground to more macho power amps, but even then the Millennium never once lost its composure. *HT* editor Brent Butterworth and editor-at-large Rob Sabin agreed—Brent commented that the TACT's sound was like listening to 20-bit ADAT masters in his

recording studio. Only assistant editor Joe Hageman dissented, saying the Millennium's sound was too clinical for him to love.

The Millennium's Futurama/Retro styling is flat-out stunning. Fit and finish are exceptional, and all the major chassis parts are CNC-machined aluminum billets. Just run your fingers across the 1.6-inch-thick (!) satin-finished sculpted fascia, or spin the centrally mounted volume/encoder control, and you'll get the feeling you're not in Kansas anymore. The precise, yet sensual feel of the encoder, mounted on two mil-spec large-diameter ball-bearing races, has more in common with fine instrumentation than with mere audio equipment. The innovative technology is all on the inside. From the outside, the Millennium's minimalist front-panel controls—on/off, separate analog and digital-input selector buttons, and the aforementioned volume control—are ergonomically straightforward as can be. The matching all-metal remote offers additional control functions. Out back there are four digital inputs, plus provision for four analog inputs (tuner, tape, phono, etc.) via the optional analog-to-digital converter.

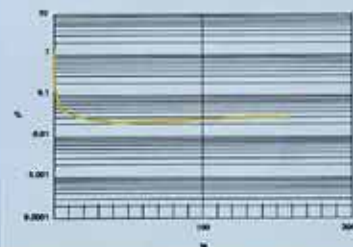
TACT's underlying goal is to reduce the real-world variations of sound reproduction, and their RCS 2.2 Room Correction System, uses vast computing power to compensate not only for a wide range of acoustic anomalies, but will also perform speaker and subwoofer time-domain alignment corrections. The Millennium

will accept an RCS module that will be every bit as powerful as the standalone unit. TACT is about to introduce a built-to-the-hilt five-channel preamp/processor/amp, the TCS (Theater Correction System), that will offer just about everything you need, including DTS, Dolby Digital, Pro Logic, 24 bit/96 kHz digital-to-analog conversion, room-correction software, bass management for its three subwoofer outputs, and electronic crossovers—the TCS's digital signal processing handles them all. There will also be a matching digital amp, the 5150, with five 150-watt channels. The



Millennium	\$9,800
TACT Audio, Inc. (201) 440 9300 www.tactaudio.com	

TACT Audio Millennium



CFG Labs measures: TACT Audio Millennium

This chart shows the Millennium's power output versus total harmonic distortion plus noise into an 8Ω load. Unlike most amplifiers, the Millennium does not really go into clipping—once the "power DAC" reaches maximum output, it just doesn't go any further. As seen on the above chart, the TACT's left amplifier channel, driving an 8Ω load, reached maximum output at 157 watts with a maximum of only 0.03 percent THD+N. Into 4 Ω, the amp reaches maximum output at 226.8 watts with a high of only 0.04% THD+N. Into 2 Ω, the amp reached 165.1 watts with less than 0.068% THD+N. The amplifier's frequency response was +0.04/-0.02 dB from 10 Hz to 16 kHz. The response dropped to -2.02 dB from 16 kHz to 20 kHz, which is very surprising and somewhat disappointing—almost all amplifiers measure ± 0.1 dB or better from 20 Hz to 20 kHz. THD+N from the amplifier was less than 0.03% from 100 Hz to 20 kHz. THD+N rose to only just under 0.1% from 100 Hz down 20 Hz.—*MW*

TACT Audio Millennium



Performance	99
Build Quality	97
Ergonomics	92
Features	92
Value	95

combination will run about \$18,000. A TACT DVD player should debut early in '99. Right now, the only catch I can see, other than the \$9,800 you'll have to cough up, is for those of us who've already assembled the system of our dreams. We'll have to nearly start all over again with the Millennium. You can

keep your speakers and sources, but your amp and preamp have to go. We eagerly await the home theater version; until then, this looks like the audio product of the year—or maybe the millennium. **A**

Millennium

An earwitness
report on the
world's first
all-digital amplifier

BY STEVE GUTTENBERG

Editors Note: Last summer, our Golden Ear-about-town Steve Guttenberg called with some exciting news. He had just returned from a hi-fi show where he'd heard a music system so real, so uncannily lifelike, that everything he'd experienced before paled in comparison. I listened closely as he described an all-digital amplification system that, somehow, revealed more of the music on CDs than he'd ever heard. Soon after, the buzz about the nearly \$10,000 TACT Millennium amp began filtering back from other sources. Some raved, others doubted, but the one thing everyone agreed on was that it was unique. So when Steve got his hands on an early review sample, we knew what we had to do. To determine whether this was really the Holy Grail we've all been waiting for, we'd

have to bring it to the best ears in the music business. What would they think? Was the Millennium a masterpiece...or a pretender? —Rob Sabin

Hold on to your ears: The fi(delity) in "hi-fi" just got a lot higher. Since the very beginnings of the Digital Age back in the early '80s, we've listened to digital audio through all-analog systems. We start with the digital data from a CD, convert that to a low-level analog audio signal (either inside the player or with a standalone digital-to-analog converter), then amplify that signal to drive speakers. But thanks to a new Danish company, TACT Audio, that's about to change.

My first glimpse of the digital future came during an audition of the

Madness



TACT Millennium digital processor/amplifier at the Hi-Fi '98 Show in L.A. last June. My initial response was surprisingly emotional—Millennium somehow decoded so much more of the music's metabolism—the sound was simply more alive and real. To check my sanity, I had to hear the Millennium in my own reference system, so I made arrangements to have TACT drop off one of the very first production samples.

Six weeks later, the Digital Dane arrived. Played over my own Anthony Gallo Acoustic Nucleus Reference speakers, it sounded even better than I remembered. I wasted no time spreading the word—I invited just about every 'phile and plain citizen I knew to my humble Brooklyn abode to hear it. Right from the get-go everyone flipped over the look and feel of

the Millennium. As you can see from the pictures, it's just plain gorgeous, with a massive and beautifully machined alloy faceplate, a giant free-spinning flywheel for volume control, and a super-clean industrial design that screams elegance. But it was the sound that blew 'em away. One of my pals listened for a just a minute before concluding, "The Millennium will make every speaker sound like a super-detailed electrostatic—without any of the 'stats weaknesses." Everyone gushed "Wow!" or "I've never heard anything quite like this before." The Millennium's revelatory sound even won over one of my most rabid audiophile friends, whose keenly analytical sensibilities were reeling after only a few minutes. This fella loves vinyl, and only grudgingly listens to CDs. But he was transfixed. "No grain,

Millennium Madness

very extended high frequencies, incredible layering of depth," he ticked off, shaking his head in disbelief. "The sound is completely free of the loudspeakers." Switching back to my all-tube system left him cold—"Now, digital sounds like *digital*," he moaned. "Play some LPs."

Viva la Differencel

To appreciate the magnitude of the Millennium's accomplishment, let's take a look at the way we listen to music today. Your CD or DVD player's first job is to convert the digital audio information on the disc to a low-level analog signal. It's also the trickiest part, requiring extremely precise engineering and execution to retain the original signal's integrity. The newborn analog signal is then stepped up before it leaves the player or outboard digital-to-analog converter on its way to your preamplifier, where you control the volume level, balance, or equalization (i.e., tone), and the signal undergoes another round of voltage amplification.

The puny signal still has a lot of growing to do, though, so your power amplifier's front end gives it another boost before it enters the amp's output stage, where the signal finally becomes powerful enough to drive your speakers. I've vastly simplified the process—each component is likely to contain several amplification stages. The infinitely complex music signal is a delicate creature, and its trek through this vast maze of electronics is fraught with losses and distortions. The fact that audio reproduction has reached its current level of sophistication is nothing short of miraculous.

By comparison, the TACT essentially connects the pure digital output of a CD player directly to the speakers. All of those amplification stages you just read about are gone! *That's all-the-way nice.* The details of how this is achieved are technical (see "Inside the Millennium"). But in simple terms, special processing is used to convert what's called a "pulse code modulation" (PCM) digital bitstream—the type found on CDs and other digital audio sources—to a different type of digital signal called "pulse width modulation" (PWM). Turns out this type of signal can be used to switch a power supply on and off in such a way that the output of the supply mimics the shape of an analog waveform, without requiring any conventional low-level digital-to-analog conversion.

That's nothing new—Class D digital amps have been used for years in special applications like subwoofer amplifiers, in part because they operate at something close to 100 percent efficiency and generate almost no heat. But the breakthrough here is in a proprietary processing algorithm, called EQUIBIT, which carefully controls the shape of the PWM signal to create a virtually perfect replica of the original analog waveform at the output of the Millennium's mondo power supply. From there it's a



Behind the Millennium: A host of digital inputs and speaker binding posts.

relatively simple matter to adjust volume by simply turning the power supply voltage up or down.

While the design philosophy is refreshingly simple, the TACT Millennium's gestation consumed the better part of five years of research at Toccata Technology and TACT Audio Inc. Hardly a boutique organization, TACT Audio was formed as a joint venture between Dr.

Radomir Bozovic, a wave-propagation scientist specializing in DSP, and AudioNord International, a majority shareholder of NAD Electronics in London and DALI speakers. At \$9,800, the Millennium is priced at the higher end of the high-end food chain. But since it combines the functions of a digital-to-analog converter, preamplifier, and power amplifier, the price is almost reasonable by high-end standards. Hey, I did say *almost*.

The Magical Millennium Tour

My buddies were, to a man, enthusiastic, but I needed more objective judges—guys who are involved in the creation of music—to validate the Millennium's sonics. After twenty years in the audio business I knew for damn sure that every system sounds different—that's no big deal. I wanted to know if the Millennium could take us closer to the truth. I was determined to get the real cognoscenti to hear this thing.

I must have made ten calls to David Smith, a vice president of engineering for Sony Music, before he finally agreed to spend some time listening to the Millennium. Smith has the reputation for staying on the absolute cutting edge of technology, and he's a serious audiophile—the guy has ears. He was incredibly busy, though, and he warned me that he would only have time for a 15-minute demo at Sony's recording studio complex on West 54th Street in Manhattan. Schlepping the 62-pound Millennium to midtown in a hurry was no fun, but once inside, things went smoothly. With the help of a Sony technician, I quickly hooked up the Millennium in a cozy editing suite, where we would be listening on a huge pair of Duntech monitors. I popped on jazz pianist Marcus Roberts' Gershwin-inspired *Portraits in Blue* CD (Sony Classical). Smith paced behind the console, but was intensely focused on the sound. He listened for a few minutes, changed discs a couple of times, then quietly proclaimed, "The next era has arrived," followed by, "It's a little bit scary." He was hooked.

The tech, meanwhile, quietly left the room, only to return two minutes later with three or four engineers. One of them was Doug Mountain, who recently worked on James Taylor's new *Live at the Beacon Theatre* DVD and



Beauty is more than skin deep: Under the Millennium's hood you'll find high tech digital processing circuitry and a mondo power supply.



CD (see "Digital Jungle"). "The quality and depth of the image is pretty amazing," said Mountain. "Everything sounds very real, and subtle changes aren't as subtle."

The buzz was flying around the room so fast I couldn't keep up with the remarks. Engineers who live daily with the best-of-the-best gear were lining up to hear a track on the Millennium. Smith was really excited now, and blurted: "If you make records listening to this thing, you'll make different records." What really grabbed him was the rare combination of detail and smoothness of the sound. "There is no overhang anywhere—and it gets the hard stuff right: detail, space and depth, image. It's like adding the third dimension to the sound." By now, the 15-minute session had become 45 minutes, and the Millennium was holding up a mixing session, so I packed up and moved on.

When I caught up with Smith in his office a few hours later, he was still agog over the Millennium's radical new technology, suggesting "It had to happen eventually—this is where we haven't been yet." I expressed my concerns about potential digital processing artifacts, and he admitted his own prior prejudices about digital sound. "I had them all lined up in my head, but as soon as I heard the Millennium the whole list went *boing!*" he said. "I heard more on that James Taylor CD than I've ever heard before. It's a different record; the perspectives and the proportions have been changed. The instruments have more shape to them. There's nothing in the friggin' way, and there's a lot of junk that moved out of the way." The Millennium, he believed, demonstrated more precise control over the speakers' drivers than any conventional amp, and he heaped praise on the Millennium's deep-bass capabilities. Remember, this guy has heard the best electronics driving those massive Duntechs, but the Millennium's firm hold on the woofers was in a class by itself.

Wow! I, too, was reeling from the overwhelmingly enthusiastic reaction of Smith and his peers. It was time for a reality check, and I soon got one. While the rest of Sony Studios was in the grips of Millennium Fever, I hooked up with Steve Epstein, a Senior Executive Producer who has worked extensively with Wynton Marsalis and Yo-Yo Ma. We squeezed in a little audition just before a session. His mixing suite has a set of B&W 801 speakers, a long-time reference for classical producers and engineers. After a round of classical and jazz CDs, we concentrated on Marsalis' recent Columbia CD, *The Midnight Blues*. Epstein listened thoughtfully and quietly, and I wasn't sure what he was thinking. Finally, he spoke slowly—"It's very clean, with wonderful resolution, excellent transient response," he said. "It's got all those things going for it, but I hear a coloration in the high frequencies. On piano and percussion it sounded great, but as soon as I started hearing strings and trumpet, and other high-energy material, they sounded very colored." Reproduction of stringed instruments are a dead-giveaway of a component's capabilities, Epstein said, and "the

Millennium needs to be a little more tonally transparent."

Epstein had burst the Millennium's bubble, and I had to agree with him, though not to the same degree, about the lack of midrange warmth. Epstein tries hard to capture the natural sound of unamplified instruments on his recordings. For him, making records is "a balancing act, and the best recordings should sound great on a wide variety of systems. I know Wynton's sound, and I've heard these recordings on many different systems, so I've got a sense of what's right and what's not right on these CDs. The TACT did not come as close as I would have hoped."

Damn, he was onto something. Now I had something new to chew on.

Dizzy Revisited

My next serious listener, Jon Faddis—powerhouse jazz trumpeter and Musical Director of the Carnegie Hall Jazz Band—was intrigued enough by my description of the Millennium to drop by my apartment to check it out. Faddis was very close to the late jazz great Dizzy Gillespie, and heard him play his horn hundreds of times, so we started our session with a stack of Gillespie discs. The multicolored sounds and rhythms of Dizzy's beautiful music filled my living room for maybe 45 minutes before I queried Faddis—did the Millennium take him back to his memories of hearing Dizzy for real? Did it bring him closer to his spirit? "No, I still know it's a recording," he replied. "As good as it gets, it's never going to sound like him. But I will say this—the Millennium reminded me of the feelings I had when I heard Dizzy's LPs on my stereo for the first time.

I wanted to pull out my horn to play along."

Just before it was time for Faddis to go, he asked to hear one of his own CDs, *Remembrances* (Chesky Records). We listened first on the Millennium, and then on my all-tube system Cary electronics. It was an ear-opener. Sonically, they were miles apart. The Cary was softly impressionistic, communicating the warmth of the music, while the Millennium projected an ultra-

high-rez photograph of the same music. Said Faddis:

"The Cary is prettier, but I'm missing stuff. For example, the piano at the very end of "Good-bye"—I didn't hear the whole line. I missed the continuation of the *arpeggio*. The Cary sounds like the old Carnegie Hall, while the Millennium sounds like Carnegie today."

It was a brilliant analogy. Classical music lovers continue to compare the old Carnegie Hall, which had a warm, inviting sound, to the more analytical sound of the refurbished Hall. Faddis prefers the new Carnegie, because it's easier to hear what's going on. Still, he wasn't sold on the Millennium; he felt the amp's 150 watts-per-channel power rating just didn't provide the gusto he needs to listen at realistic levels. Faddis craves the physicality of the real thing. He'll wait for TACT to make a bigger Millennium.

A Heavy, Metal Amp

OK, I had my feedback from soft pop, jazz, and classical ears, but the Faddis experience had me wondering—could the Millennium kick serious butt? Another round of phone calls put me in touch with George Marino at Sterling Sound. The man is responsible for mastering the heaviest of the heavies. From Hendrix and Led Zeppelin to AC/DC, Kiss, Metallica, Guns & Roses, Bon Jovi, *et al.*, Sterling's hallways and studios are overflowing with so many tributes and gold and platinum CDs that I had to



The Millennium comes with a slim LCD remote control similar to the one pictured. Above right, another peek at TACT's sexy design.

put my shades on! George Marino is *the* Masterer of the Rock World.

I set up the Millennium in Marino's suite, biwiring to his reference speakers, Energy Veritas. I gotta tell you, hanging out with Marino was an absolute blast. The guy loves his job and loves getting turned on by the music he's working on; he's always looking for ways to put as much of the energy of a recording into the master as possible. George first wanted to listen to some digital audio tapes of things he had been working on over the past few days—a new Peter Wolf recording, a new Jonathan Richman—before jumping to any conclusions. Once we started and I saw him groovin' and dancing along with the music, I knew he was into it.

"The Millennium makes you want to listen," he said. "I'm hearing stuff that normally would just slip by—there's something about the way the vocal sits in the stereo image—it's very, very good. There's an amazing amount of detail on these recordings I've never heard before." When I brought up

I had my feedback from soft pop, jazz, and classical ears, but I was wondering—could the Millennium kick some serious butt?

David Smith's observation—that the Millennium could so drastically affect what engineers and producers hear that it could lead to different-sounding recordings—George's response was steadfast: "I think we would make *better-sounding* records, because we'll hear more of what was going into them."

Clearly, Marino was smitten. In fact, he was more concerned that the digital amp might make everything sound *too* nice. "Usually when a system's detail is too great, the music falls apart," he said, but "with the Millennium I'm responding more to the music than to the sound. I'm appreciating the music so much more." Three hours into our intense listening session, George noticed his complete lack of ear fatigue. And this was after a full frontal barrage of Metallica, Bon Jovi, Hendrix, Ric Ocasek, Cindy Lauper—he didn't want to let the Millennium out of the building. "It's like a great eating experience," he said, "where you don't really have to think, you just like it. Better is better, there's no if, ands, or buts about it."

While the kudos from my panel weren't completely unanimous, I couldn't help but be impressed with the Millennium's reception overall. I was struck by the consistency of the remarks; I never initially told any of my listeners about previous listeners' responses. Everyone praised the extremely high level of detail and resolution, extended high frequencies, and very controlled bottom end. Most, but not all, were concerned to some degree about the Millennium's lack of upper bass/lower midrange fullness or warmth, though a good number felt that what they were hearing was true to the recording.

Bringing It All Back Home

Safely back at home, it was *my* turn to listen again. Perhaps, with the impressions of my expert listeners now hindsight, I might get a firmer grasp on this enigmatic beast. I focused on recordings that I had some involvement with (I'm an Associate Producer for the audiophile label Chesky Records), beginning my demo with the recent release *Sex Without Bodies* from the downtown hipster band, Dave's True Story. The Millennium surely nailed vocalist Kelly Flint's slinky presence, her sense of

Inside the Millennium

The Millennium is basically a high-power digital-to-analog converter capable of handling digital signals up to 96 kHz/24 bits, and the technology is easily upgradeable for future digital audio disc formats.

After the pulse code modulated (PCM) digital signal on a CD or other digital source is locked to the Millennium's internal clock to eliminate sound-degrading "jitter," it is reformatted into a pulse width modulated (PWM) datastream. A PWM datastream looks like a series of square waves of equal voltage or "height," but with varying "width," or time duration. That signal is used to turn a big power supply on and off in a corresponding fashion. But the power supply transitions between full-on and full-off more gradually than the square wave, creating an output that more closely resembles the curves of a conventional analog audio signal.

The secret in the Millennium is in the central processor, which uses a patented algorithm, EQUIBIT, to determine exactly which of 256 possible pulse widths to use for any given clock cycle. Playback level is controlled by adjusting the voltage of the power supply with an optical encoder. There's no low-level digital-to-analog conversion, no analog amplification, and no negative feedback used anywhere in the circuit.

At maximum output, the power supply produces 58 volts, equivalent to 150 watts into 8 ohms or 280 watts into 4 ohms, though the nature of the design means that, unlike a conventional power amp, the Millennium has no headroom above that 150-watt rating to hit instantaneous peaks. The amp does have serious current capabilities, maxing out at more than 100 amps per channel, but thanks to its 90-percent efficiency, it barely gets warm. —Steve Guttenberg

irony, and the way she locked onto the band's slippery grooves. The digital amp revealed the band's interlocking rhythms better than anything else I've ever heard; it was impossible to sit still.

For a complete change of pace I moved onto another Chesky project, the Mozarteum Orchestra Salzburg with pianist Nicola Frisardi performing Mozart's *Piano Concerto No. 27*. I've heard this recording on dozens of systems, but I've never heard it like this. As I remember from the session, the main stereo mic was positioned four feet in front of the edge of the stage and seven feet high. The Millennium's superior focus defined the relationship between the piano, the orchestra, and the splendid acoustics of the Mozarteum with a rare sense of continuousness. The effect was very un hi-fi, and so much closer to the true sound of the orchestra in the hall. And the Millennium's exceedingly high spatial resolution let me easily hear individual instruments within the orchestra, details other systems would glaze over. On disc after disc, the Millennium transported me back to the sounds and feelings of the sessions, painting a more complete picture of the event than I was used to hearing. It was almost spooky, and always a letdown to listen to any other gear after spending some time with the Millennium.

So, what's the verdict? Does the Millennium bring us closer to musical truth than anything before it? Will it change the way we listen to music? I, for one, am convinced it does—and it will. Will other manufacturers follow TACT's lead? Probably. But we'll look back knowing that this is where it all began. TACT Audio's digital amp heralds the next generation in sound reproduction. Looks like the Millennium has arrived a little early. □

TACT Millennium Amplifier

Price: \$9,800

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