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A New Standard of Musical Accuracy

Thiel CS3.7 Loudspeaker

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The more I review speakers, the more cautious I get about calling one a breakthrough. Speaker design has advanced to the point where dramatic qualitative differences are rare, where the personal taste of the audiophile is highly relevant, and where room-interaction problems can do as much to shape the sound as many aspects of engineering.

That said, the Thiel CS3.7 does more than demonstrate how good the current generation of speakers has become. It represents decades of effort by Jim Thiel, who has long been one of the world's top designers, and I do feel it is a breakthrough in sonic accuracy and resolution at its price of $12,900. At a time when the high end seems to be drifting towards reference-quality speakers that cost as much as a good car, the CS3.7 delivers an extraordinarily advanced set of new driver technologies, integrated into what is about as close to a true "point source" as any full-range dynamic transducer. It is a remarkably coherent speaker in any halfway realistic listening position, and one that offers truly exceptional detail and resolution.

Don't misunderstand what I am saying: The Thiel CS3.7 does have many rivals in overall performance, and it is not a "no-holds-barred" assault on the state of the art that ignores cost considerations. The race between dynamic, ribbon, planar, and electrostatic loudspeaker technology is still wide open, with excellent examples of each in the running. There is also no one "right" configuration for dynamic loudspeakers in driver type or in the choice between line-source or point-source arrays. You can find outstanding speakers regardless of the mix of technologies involved.

I have, however, found that development of integrated-tweeter-and-midrange drivers that provide coherent dispersion and imaging at a minimal cost in distortion and coloration is leading to major advances in speaker quality. I have heard such advances in KEF and TAD designs, and the Thiel CS3.7 pushes this aspect of the state of the art to new levels of sonic performance—particularly at anything like its price point. It may well represent the most accurate dynamic speaker now available at anything close to twice its price or more, at least from the lower midrange to beyond the range of human hearing.

Rethinking Dynamic Driver Technology

I don't want to bore you with too much techno-babble, and the Thiel Web site provides far more detail than I can fit into a review. At the same time, you cannot understand this product, how it achieves its sound quality, or why I can use the term "breakthrough" without knowing some key facts about its design.

The Thiel CS3.7 is the result of years of effort by Jim Thiel—one of the world's leading speaker designers—to make a major advance in the coherence of the treble and midrange signal and to reduce levels of distortion. I quote from the Web site:

"Thiel uses two techniques, singly or in combination, to achieve time coherence in all our products. One is to mount the drivers on a sloping baffle and adjust the angle of the slope and the driver spacing to achieve coherence. This can work well for floorstanding speakers, especially at lower frequencies. But it cannot work for non-floorstanding speakers where the location of the speaker is unknown, and in any case the accuracy of the results at high frequencies becomes somewhat dependent on the listener's position.

"For this reason, a better technique for time coherence at higher frequencies is to mount the tweeter coincidently (both coaxially and coplanarly) with the midrange driver. Such mounting ensures that the sound from both drivers always reaches the listener at exactly the same time, regardless of where the speaker is placed or where the listener is. Such mounting also completely eliminates any 'lobing' in the speaker's radiation pattern."

The CS3.7 also represents the result of a similar effort to develop a far more rigid midrange driver material that is breakup-free. Thiel states:

"The CS3.7 has a midrange diaphragm that is ten times as stiff per weight as [our] previous extremely stiff composite diaphragm while also being flat rather than cone-shaped. But these requirements work against each other. The flatter the diaphragm's shape the weaker it becomes… [so] an undulating, radially ribbed contour is used for the diaphragm which provides light weight and great stiffness in the radial direction while still maintaining a basically flat shape."

I should stress that the CS3.7 also makes important refinements in bass driver, crossover, and enclosure design. For example, all of the drivers in the CS3.7 use copper-stabilized, short-coil motor systems that Thiel claims produce only one-tenth the distortion of conventional motor systems and have a much larger magnet and much longer magnetic gap.

The crossover is a true first-order type that Thiel claims provides complete accuracy of amplitude, phase, time, and energy and, therefore, does not distort the musical waveform. The cabinet is carefully shaped to minimize standing-wave problem and interference with the radiation of the drivers, and its front baffle is machined from aluminum, which Thiel states is more than thirty times as strong as the usual MDF baffle, reduces unwanted vibrations, and provides a rigid mounting for the drivers so they cannot move, even a miniscule amount, as they recoil from the forces they generate.

Dynamic loudspeakers may now be older than any living audiophile, but Thiel and other cutting-edge high-end manufacturers are showing that it is still possible to make technical advances that are at least as important as any I have seen in electrostatic, ribbon, and planar design, and to do so without plunging into the costs and problems associated with beryllium and diamond drivers.

A Speaker You Can Actually Live With

The CS3.7 is also a practical speaker—at least by high-end standards. It does not require exotic amplifiers and a snake pit of expensive speaker cables. It does not require (and cannot use) bi-wiring. It has a relatively smooth impedance curve that does not dip below 2.8 ohms (it carries a 4-ohm nominal rating), and its sensitivity is rated at a relatively high 90dB.

Bass "speed" and detail do improve with amplifiers with high damping factors, and the CS3.7 has the dynamic range to benefit from amplifiers with high power. At the same time, even moderately priced tube amplifiers in the 50-watt-and-above range, such as from Cayin and PrimaLuna, provide enough control and power to produce very high sound quality; thus, choosing between the cost-benefits of tube and solid-state does not require a massive investment in either type of power amp.

No speaker is free of room-interaction effects, but the Thiel CS3.7 proved to be the easiest speaker to place I have encountered in several years for getting the proper balance of bass response and power relative to the rest of the sonic spectrum. If you read the instruction manual, and follow its recommendations—a principle that Plato once gave the acronym "RTFM"—you can count on getting truly good sound from this speaker in any room large enough to minimize major sidewall reflections and that gives you enough space to produce a decent soundstage and avoid serious standing-wave problems.

The CS3.7's visual profile is curved and sculptured, not just a "big box"; its height is good in terms of vertical dispersion, and moving it does not involve a weight-lifting contest. (I am still waiting for a speaker to be called the "Hernia.") There is a low-profile outrigger that attaches to the bases of the enclosures and ensures excellent stability in spite of the CS3.7's small footprint. This is a speaker that you and your partner can easily live with, although I suspect most wives and design-sensitive roommates will want a want a finish a little less bland than the normal walnut.

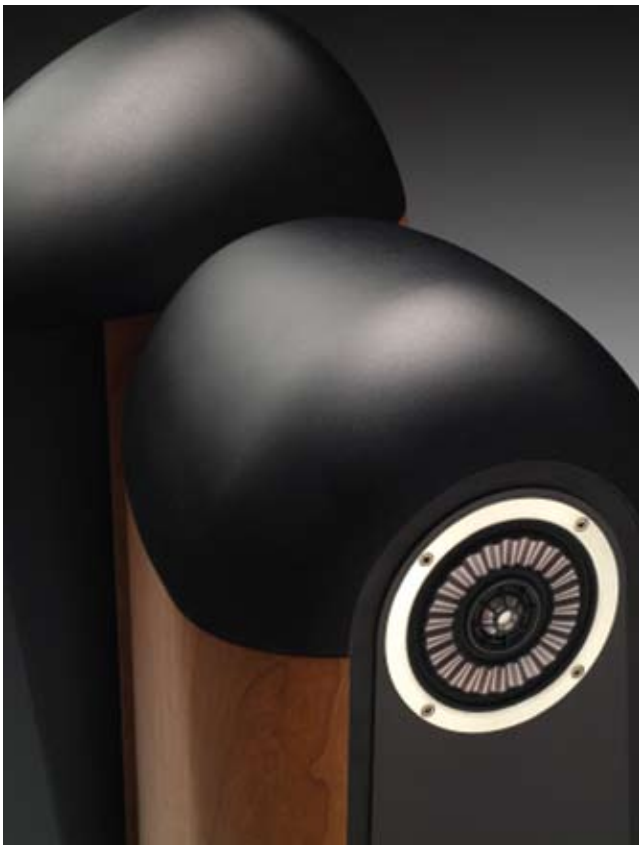
Sound Quality: The Strengths

The key strength of the Thiel CS3.7, however, is its sound quality. We all listen for different things and we all have our own personal image of what the absolute sound should be in reproduced music. This came through clearly when I started to evaluate the CS3.7.

Having read the technical literature, I initially listened to see if I could hear the level of midrange-to-treble clarity and coherence that Thiel promised. When I asked one of my sons to provide a "blind" comment on the speaker, however, he had no idea of the speaker's design goals or background. He didn't focus on transparency and coherence. Instead, he said that the CS3.7s provided the best soundstage he had ever heard from a stereo setup.

My other son focused on something different. He praised the quality of bass guitar and deep bass, and the CS3.7's ability to get deep room-exciting bass out of Jennifer Warnes staples like "Way Down Deep" [Private Music] and "The Well" [Musicforce], as well as its exceptional combination of deep bass energy and complex musical detail on the Ray Brown recording *Superbass* [Telarc].

My sons are more rock and pop oriented than I am, but they are also right. The soundstaging is truly excellent with classical music, with a very realistic mix of imaging size, width, and depth. The illusion of a realistic soundstage is also reinforced by exceptional detail, transparency, and lifelike dynamics. For example, you can clearly hear the differences in both soundstaging and imaging when you compare two versions of Mozart's Clarinet Concerto



SPECS & PRICING

Driver complement: One 10" woofer with wave-shaped aluminum diaphragm, one 10" wave-shaped passive diaphragm, one 4.5" midrange with wave-shaped aluminum diaphragm, one 1" aluminum dome tweeter coincidently mounted with midrange
Frequency response: 33Hz–26kHz +/-2dB
Sensitivity: 90dB (2.8v/1m, true anechoic)
Impedance: 4 ohm (2.8 ohm min)
Recommended power: 100–600 watts
Dimensions: 45" x 12.5" x 21"
Weight: 91 lbs.
Price: $12,900

THIEL AUDIO
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Lexington, Kentucky 40511
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ASSOCIATED EQUIPMENT
Dynavector 20X, Sumiko Celebration, and Koetsu Onyx Cartridges, VPI TNT HRX turntable and JMW 12.7 tone arm, Tact 2.2X digital preamp-room correction-equalizer-D/A converter (not used for speaker evaluation), EMM Labs SACD/CD player, Pass Xono phono preamplifier, Pass XP10 stereo preamplifier, Pass X160A power amplifiers, Boulder 1010 preamplifier, Boulder 1050 power amplifiers, Vandersteen 5A speaker, Audioquest Niagara and K2 cables, Kimber Select, Transparent Audio Reference XL, and Wireworld Super Eclipse and Eclipse interconnects and digital cables

in A Major—the Martin Frost/Amsterdam Sinfonietta version [BIS] and the Antony Michaelson/Michaelangelo version [MFS]. The CS3.7 reveals all too clearly that Frost is spotlighted in ways which make his clarinet seem incredibly large, while Antony Michaelson's instrument is recorded in ways that are far more realistic, as is the hall in which he plays. At the same time, no instrument on either recording had an unrealistic timbre, and the orchestra was remarkably clean and detailed even in comparison to excellent competing speakers.

This same mixture of excellent detail, dynamics, life, musically natural timbre, and realistic imaging comes through in a very demanding, all-Strad recording of Mendelssohn's Octet for Four Violins, Two Violas, and Two Violincellos [Sony]. Resolving inner detail on music this complex is not easy, and the music can sound slightly hard if the midrange and tweeter are not exceptionally transparent. This same high resolution, incidentally, was audible with the radically different music and mix of instruments on both the LP and CD of the Modern Jazz Quartet's *Blues at Carnegie Hall* [Mobile Fidelity]. I thought I had long listened this recording to death. The CS3.7 provided enough new insight to give it a new life.

The CS3.7 is not the kind of speaker that produces the "big" sound that large column or line-source configurations do, but its point-source configuration does provide a very convincing rendition of orchestral, large-scale choral, and operatic works. Wagnerians will be more than happy with the imaging, detail, dynamics, and life of the better *Ring* recordings (and the rest of us will find it harder to nod off out of sheer boredom). Telarc's wide range of really good choral music recordings comes through with remarkable detail and realism.

Equally important, the CS3.7's combination of accurate timbre, low- and high-level dynamic contrasts, detail, and extended frequency response makes ordinary recordings more pleasant to listen to. The Eugene Ormandy, Philadelphia Orchestra rendition of Carl Orff's *Carmina Burana* is not a great recording, but it sounds far better when the male and female voices are reproduced in full detail and have more lifelike timbre and image size. You will find the same to be true with any good Mahler disc, particularly in complex orchestral and vocal passages. Close your eyes as you listen, and you may find it difficult to believe that the CS3.7 is not a far larger speaker.

In short, I soon realized from the reactions of other listeners that the CS3.7 does more than make advances in midrange and treble performance. It provides the best overall sound I have ever heard from a Thiel speaker—serious praise for a manufacturer with such an established history of success.

Paying Attention to the Trade-Offs and Limits

Are there limits to the CS3.7's performance? Of course! This is not a "big" speaker with an enclosure so solid and vibration-free that it takes ten men to move it into the house. It can play as loudly with rock, jazz, and symphonic music as I care to go, but I'm sure that its distortion rises with listening levels—the laws of physics almost ensure this—although this is not as apparent up to 100dB SPL as it is with other speakers in this price range. Push it to the levels that are likely to damage your hearing, however, and you will find that the bass is not equal to that of much larger and more expensive speakers.

This is not the ultimate speaker for the audiophile who likes sitting next to the Marshall stacks at rock concerts, whose idea of organ music is a half hour of 32Hz notes at extremely high volumes, or who won't go to a club where the sound levels don't constantly produced physical pain. Don't get me wrong: This is not a bass-shy transducer; it is easier to place than most speakers to get good bass, and it can produce furniture-vibrating deep bass you can clearly feel. *But* it is a speaker for demanding but *rational* listeners.

The "point source" character of the CS3.7 provides all of the soundstage merits that I have described, but its stage is not as big as that of columnar dynamic designs or tall ribbons and electrostatics. Some other speakers can be placed wider apart without centerfill problems, although at a cost in soundstage detail and, usually, depth. Every speaker ever made makes real sonic trade-offs in soundstage performance, and you may prefer a different mix of qualities.

The wide dispersion of the midrange and treble do produce potential reflections from an undamped floor, close-by untreated sidewalls, and a "live" or reflective area around the listening position that are much less problematical with a speaker with more focused dispersion like the Vandersteen 5A. You really do need to read the manual to place this speaker properly, use a carpet to damp the floor, avoid putting reflective objects between you and the CS3.7, and pay attention to room surfaces and reflections.

Most importantly, this speaker is unabashedly designed to meet Jim Thiel's definition of flat frequency response. His definition is scarcely unique, although I do not know of another manufacturer providing more demanding specifications and frequency-response data. The timbre of the CS3.7, however, is not in any sense romantic or forgiving, and there are no adjustments as to treble and midrange levels. The end result is intensely realistic with good recordings, where there are no tell-tale signs of hardness or excessive upper-midrange energy on female voice, violin, flute, or woodwinds. But if you want forgiving or romantic frequency response, or a softer or warmer sound, the CS3.7 won't provide it.

Close-miked digital recordings can present problems, particularly classical recordings with a great deal of upper-midrange energy. If you are into rock or jazz, you probably don't need to worry. The most you may hear with a female singer with poor breath control is how she aspirates into the microphone. The same is true for most pop music, although I was struck by how clearly the CS3.7s reproduced the hardness in the voice and sibilants on some poorly mastered Judy Collins recordings.

The story can be different, however, with spotlighted acoustic instruments where the recording engineer did not give a damn about natural timbre. The advantage of the CS3.7 is that its exceptional clean and detailed midrange and treble do not add to the hardness of such recordings or their peculiar "where the hell could the musician be standing if this were a live performance" quality. At the same time, you will hear the hardness and excessive upper-octave energy that is actually present on far too many classical recordings of piano, flute, clarinet, violin, etc. You will hear the bad moments on recordings of tenor and, particularly, soprano voice. Accuracy has its costs, especially in an era where tone controls, equalization, and any form of correction in the preamp can get you publicly burned at the stake by large segments of the high-end cult in the U.S. and Europe.

This is not the speaker for hard front ends, electronics, interconnects, and speaker cables. It works fine with a wide range of equally accurate solid-state electronics—Boulder, Pass Labs, Parasound, Mark Levinson, etc. It also worked very well with my reference Kimber and Audioquest interconnects and speaker cables, and older Straightwire, Transparent Audio, and Discovery Cable designs. But you do need to show some caution in blending the CS3.7 into a system.

Summing Up

No speaker is all things to all men and women. The CS3.7 has clear sonic limits, and accuracy sometimes comes at a price, given the problems in far too many modern recordings. This is more than a truly good speaker, however; it is an important one. It makes advances in coherence, transparency, and sonic detail, and in providing the advantages of true point-source soundstaging. I have not heard anything like it at its price.

You may well prefer other sonic qualities in your search for the absolute sound, but you owe it yourself to audition this speaker with your music and learn just what it can do. Highly recommended and a real challenge to other designers and manufacturers. **TAS**