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# A MAJOR STEP FORWARD

## THIEL CS2.7 LOUDSPEAKER

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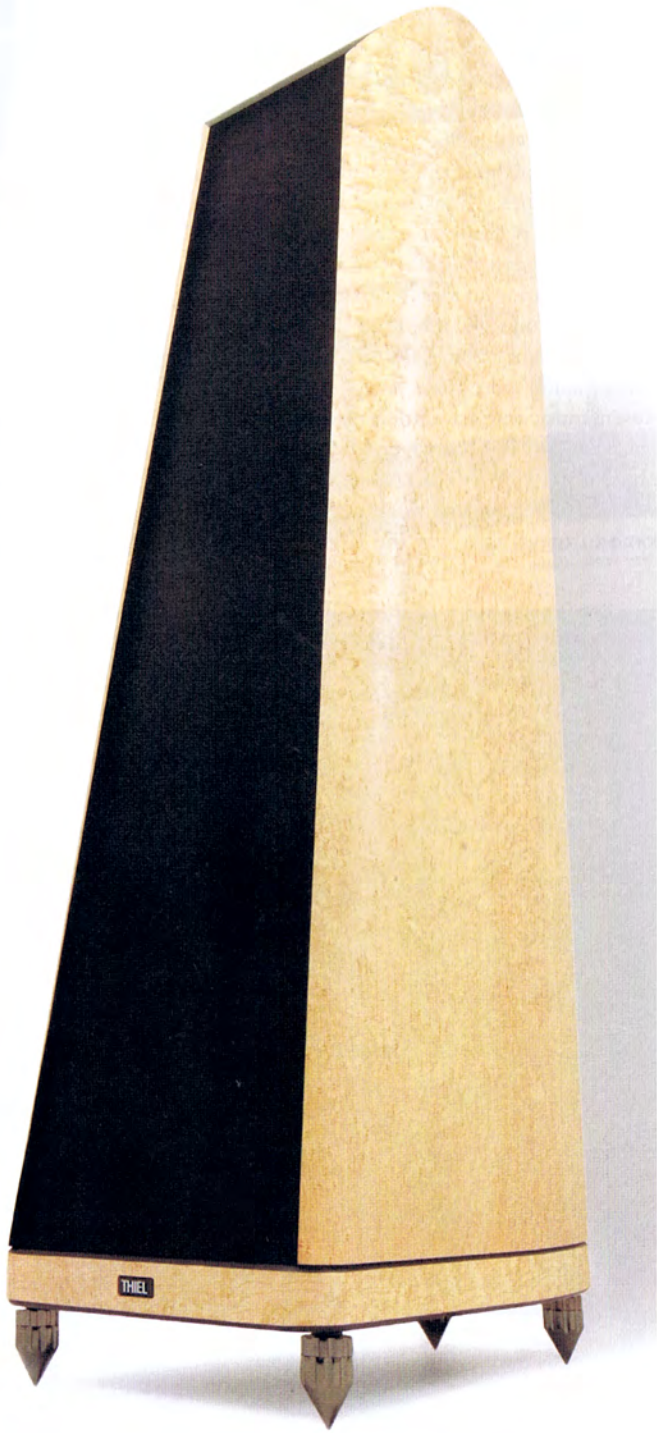

# THIEL

has a long track record of producing some of the best speakers around, but this time it has taken a major step forward.

The Thiel CS2.7 is a remarkable transducer at any price and a superb value even at its cost of $7999 a pair. To be quite frank, I expected far more sonic compromises relative to Thiel's top-of-the-line CS3.7. In practice, however, the CS2.7 is one of the most neutral, detailed, and transparent speakers I've heard, and its only real compromises lie in the deepest bass—a sonic area largely of interest to synthesizer and organ fans.

I also have to say that a photo will not do it justice. If you want to seduce your wife into accepting a floorstanding speaker—and paying nearly eight grand for it—the Amberwood version of this speaker is as suitable for exhibition at MOMA as it is for the listening room, combining a sculptured profile, a visual impact that manages to be striking without being dominating, and a size whose shape and height is well suited for real-world listening rooms without appearing to tower over the rest of the furniture.

But then, as a loyal reader of TAS, you have to at least pretend you could care less about looks. It should all be about the sound (although a little "glitter factor" in technology and design can be allowed to creep in).

## Sonic Coherence, Treble and Midrange, and the "Coaxial Coincident Driver"

Let me begin with sonic coherence and the soundstage. The Thiel CS2.7 comes close to mimicking a point source. Like other current Thiel designs, it uses the same coincident tweeter/midrange driver pioneered in the CS3.7 (see sidebar). As a result almost all of the music and soundstage information emerge from a single driver. Whether this is necessarily better than closely spaced separate drivers is far from clear. There are many other speakers including my reference Vandersteen Model 5 Carbons that achieve excellent coherence with separate tweeters and midranges.

Nevertheless, what Thiel calls a "Coaxial Coincident Driver" not only produces a remarkably integrated sound without tying the imaging and soundstage to a location near the speaker or a given driver; it also has the kind of unity and transparency that full-range ribbons and electrostatics are praised for.

If you need a written description for techie (read "dork") status in bragging sessions with fellow audiophiles, Thiel states that, "the midrange and tweeter diaphragms are formed of anodized aluminum. The unique ribbed geometry of the midrange is engineered to deliver immense rigidity and clarity. An uncharacteristically large diameter voice coil further braces the midrange against the out-of-phase bending common in virtually all other loudspeaker drivers. Tremendous control and high output capability is afforded by the massive neodymium magnets powering the drivers. A very large ring magnet drives the midrange, while 5 neodymium magnets drive the tweeter. As with all Thiel designed and built drivers, this element utilizes a short-coil/long-gap and copper stabilized motor system to ensure ultra-low distortion and utter faithfulness to your music."

Decades of listening to high-end speakers have taught me that no single design approach is "best" or "right." It has also taught me, however, that the finest speakers do largely live up to their hype.

In this case, the highs and midrange are truly revealing without any tricks emphasizing the upper midrange or presence areas, without creating any apparent peaks in the highs, and without some sweet spot in loudness or dynamic detail. This comes across clearly with massed strings and demanding solo passages with clarinet, trumpet, and flute—instruments that can all sound hard or lose some of their musical realism with the wrong driver and speaker.

As is the case with the CS3.7 and all of today's best speakers, the CS2.7 is not forgiving, but it also does not harden classical music or acoustic instruments. It is exceptionally revealing of the detail in small (very well recorded) jazz groups and demanding rock recordings. It also gets voice consistently right, avoiding any coloration of male voice in the midrange and artificial exaggeration of the upper range of soprano voice or exaggeration of sibilants.

## The Sound Stage, the Drivers, and the Cabinet

The radiation patterns of the Coaxial Coincident Driver are also exceptionally well chosen, provided, as the instruction manual states, that you keep the speakers a reasonable distance away from sidewall reflections. The soundstage has very good coherence from left to right, without gaps in the middle or seeming to cut off to the left or right of the speakers.

The sound is consistent at any reasonable listening height and loses very little upper-octave data and imaging detail when you are standing. You can use an unusually wide spread between the speakers without


## SPECS & PRICING

Bandwidth: (-3dB) 35Hz-20kHz
Frequency response: 35Hz-20 kHz +/-2.5dB
Phase accuracy: +/-10°
Sensitivity: 87dB@2.8V/1m
Impedance: 4 ohms (2.4 ohms minimum @160Hz)
Recommended power: 100–400 watts
Dimensions: 11" x 41" x 16.7"
Weight: 77 lbs.
Price: $7999

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losing center fill or exaggerating the size of solo instruments or small musical groups, and depth is about as good as your room, speaker placement, and listening material permit. I would recommend a carpeted floor over a wood floor for listening to the CS2.7s at reasonable distances, though it was no more vulnerable to floor reflections than other floorstanding speakers of its size, and less so than many.

The cabinet shape and design obviously play a role here as well. The front baffle is not as sculptured or physically "time-aligned" as some other speaker designs, but the cabinet is tapered at the top, relatively narrow (11"), and relatively deep (16.7").

The cabinet is also is exceptionally well-braced inside, and replaces the one-inch-thick MDF cabinet walls in previous CS2 Series models with much stronger curved plywood. It uses a 3"-thick front baffle to mount the drivers and three solid 1"-thick internal braces, the top one of which seals the coaxial enclosure from the bass chamber. No parallel surfaces exist anywhere inside the cabinet, limiting the development of standing waves. It is not as mass-damped as some competing speakers. The CS2.7 weighs only ("only?") 77 pounds. However, its structure and an excellent spiking system make it exceptionally vibration-free even at volumes above 90dB.

This almost certainly contributes to its exceptional midrange coherence, as does what is clearly an exceptional crossover design that blends the treble and midrange in the Coaxial Coincident Driver near seamlessly with the lower midrange and bass.

## The Bass

If there is any trade-off in cost and size, it lies in the deep bass, but the trade-off is much smaller than I expected. The CS2.7 has only an 8" woofer, but it is supported by an oval passive radiator. Thiel also claims that this woofer has "distortion that is 1/10th that of typical woofers of this size. The magnetic system is a Thiel proprietary short-coil/long-gap design whereby the voice coil never exits the ultra-strong and stable magnetic field set up inside the gap, thus helping the amplifier exert complete control over woofer motion. The motor structure is stabilized by sheathing the center pole with a copper sleeve, and by including a copper shorting-ring at the base of the back plate. The first of these measures dramatically reduce the inductance of the voice coil thereby ensuring that the frequency response of the driver is not modulated by the motion of the coil over the pole. The copper shorting ring guarantees that the voice coil's magnetic field (again, analogous to the signal from the amp) always reacts against a rigid and fixed magnetic field as set up by the magnet."

Once again, I can't validate any given set of technical or design claims, but Thiel has long produced some exceptional woofers and passive radiators, and the CS2.7 did meet its specification of relatively flat power output down to nearly 35Hz in the best location in my listening room when I measured its response using a mix of pink noise, bass warble tones, an AudioTools RTA and FFT routine, and an iTestMic.

The bass was not only extended, it was also very smooth with the right room location, and very tight and detailed. As is usually the case, it also initially sounded a bit limited until I ran it through the usual range of bass spectaculars and test tones. Unlike many other speakers, the fact that the CS2.7's bass does not have some inherent coloration or peak means that the deeper bass really is deep, rarely produces massive power, and does not have some form of "overhang" on deep bass transients.

This is not the ideal speaker to try to blast away with the opening organ tone in *Thus Spake Zarathustra*, Saint-Saëns Symphony No 3, or the kind of electronic music and rock whose main musical virtue seems to be vibrating your house or driving the neighbors in your apartment building to manslaughter. You won't get the same bass with Kodo drums or the Telarc bass drum records as you do with the CS3.7s or the subwoofer built into my Vandersteen Model 5 Carbons, and you won't get the ultimate impact of an exaggerated deep bass line in a vocal like the Jennifer Warnes' recording of "Way Down Deep" (*The Hunter*).

But for the other 97% of music you will get very extended bass that will take you to the real-world limits of the bottom octaves and do so with minimal coloration. I'd also suggest that for most audiophiles who are not total bass freaks, this can actually be better than speakers that do have subwoofer-like bass.

The last 5 or 10Hz often come at a major cost in room interactions the moment they actually appear. This can sound dramatic for a while, but resonance, room vibrations, etc. become a pain in the, er, ear once you really start listening for extended periods. (There is also enough extraneous deep bass on some recordings to produce low-level room-effects almost without you realizing or expecting it.)

In short, the CS2.7 has real bass for real music for real people in real listening rooms. It may choose overall accuracy from the top treble to deep bass over exaggerated output in the deepest bass, but life is a series of tradeoffs and this is a case where I feel Thiel has made all of the right ones.

## Compatibility and Interfaces

As for compatibility, the CS2.7 has no rear-panel adjustments and no options for bi-amping or bi-wiring—not that it seems to need such features. It was not sensitive to any given speaker cable I had, but clearly revealed the differences between the ranges of AudioQuest and Kimber Cables I use as references. It also produced the sound I expect from a range of solid-state and tube amplifiers, including my reference Pass Labs XA160.5s and the Cary CAD 120S II, and did not seem an unusually demanding load.

The CS2.7s' bass performance did, however, benefit from higher-current amplifiers with higher damping factors. I'd recommend a solid-state amp with at least 100 watts and high current capability. As for listening levels, the CS2.7 was clean with music to levels of 110dB, although I did not explore its possible use a rock monitor driven consistently to levels of 120dB or more—levels that have no place in high-end listening where anyone cares about his hearing.

I recommend front ends, preamplifiers, and amplifiers that are neutral to warm, and avoid ones that are a bit hard or bright. As least with classical and other acoustic music, the CS2.7s' timbre is neutral but does not have any added warmth or roll-off in the upper midrange and highs.

I did, incidentally, get information from Thiel after I completed the first draft of this review that the 2.7s take some 300 hours to break-in. This is one hell of a long practical break-in time. I also found that break-in did not make a dramatic difference or affect the issue of timbre I've just discussed. The speakers did seem to get even more transparent and have a slightly higher degree of midrange warmth with break-in, but there is no way to exactly compare a speaker with the 200 hours I'd put on it when I began this review versus the same speaker at 300 hours when I finished. Acoustic memory simply is not that accurate.

I would strongly recommend you actually read the instruction manual. It has unusually good speaker-placement instructions, and it's worth spending serious time experimenting with placement. The Thiel CS2.7 is not particularly placement-sensitive if kept at a reasonable distance from room boundaries, but it is far too good to simply plunk down casually without a long series of efforts to find the best mix of soundstage, bass, overall timbre, and detail in a given room. I'd also suggest that if you do hear any initial coloration, you have a placement and not a speaker problem.

Finally, the Thiel 2.7 works as well with digital room-compensation systems as any speaker around, and worked very well with the very affordable DSPeaker Anti-Mode 2.0 Dual Core unit [*reviewed by Robert E. Greene in Issue 230*]. But don't push the Thiel 2.7s much below 30Hz, by using too much bass boost in the lowest frequencies, or equalize them much above 200Hz, unless you really need to. The speakers already have really good bass for transducers their size, and trying to turn them into an electronic jukebox is not going to improve their sound.

### Summing Up

One hell of a speaker—and one your wife or partner is likely to be happy to live with. **tas**

## THE THIEL COAXIAL COINCIDENT DRIVER

The Coaxial Coincident Driver that is at the heart of the CS2.7 is the identical unit used in the more expensive CS3.7. It mounts an aluminum dome tweeter at the center of a midrange diaphragm, ensuring that the output of the drivers arrive at the listener's ears at the same time, no matter what the listening distance or height. Moreover, there's no electrical crossover between the midrange and tweeter; the tweeter is high-pass filtered mechanically by the suspension surrounding it. Removing crossover components from the tweeter signal path has obvious advantages.

Jim Thiel told me several years ago at a CES how he had conceptualized such a driver and its advantages. When combined with first-order crossovers, the system would be time and phase coherent at any listening angle, height, or distance. Jim thought about the driver for more than a year, putting off building a prototype because he believed that he'd need to dedicate six months to a year perfecting the driver. He had other, more pressing, design commitments that required his attention.

One Saturday, he was overcome with curiosity and made what he thought would be the first of dozens and dozens of prototypes. A couple of hours later, he had, to his great astonishment, a working prototype that performed nearly flawlessly. That driver became the cornerstone of the Thiel line. What's remarkable is that Jim had worked out, purely in his head, every last detail of the driver's construction needed to make it perform as intended. The trial and error took place in his imagination.

The ribbed aluminum midrange diaphragm is equally innovative. Jim had been working with different materials and cone shapes in an effort to produce the stiffest material with the lowest mass. His efforts paid off with about a 10% increase in stiffness and a 10% reduction in mass. Most loudspeaker designers would have been thrilled by this advance and moved the driver into production. But Jim told me that he asked himself "Why settle for a 10% increase in stiffness? Why not try for something with ten times the stiffness?" This inspiration resulted in the radically different ribbed aluminum midrange diaphragm of the coincident driver, as well as the flat ribbed woofers in the CS3.7, which, according to Thiel, are ten-times stiffer than conventional diaphragms.
**—Robert Harley**