Siltech SAGA power amplifier

By Michael Fremer • Posted: Oct 10, 2014

Among the biggest buzzes at the January 2013 Consumer Electronics Show, and at Munich's High End Show the following May, was the sound in the room of Siltech BV, a Dutch company best known for its high-end cables. Siltech was demonstrating an innovative new power amplifier, and using it to drive the company's glass-cabineted Arabesque loudspeakers ($90,000/pair). The sound was unmistakably lush yet also remarkably linear, notably dynamic, and seemingly free of electronic artifacts. It sounded like the sound of "nothing"—which was really something!—and so much of a something that it caught the attention of many reviewers. But while there's often controversy and disagreement about a given product's sound quality, this time the enthusiasm seemed unanimous.

What was responsible for the enticingly velvet sound? The speakers? The electronics? Both? It was impossible to know. (I later found out that the source component was an inexpensive CD player hanging off the back of Siltech's C1 preamplifier, so it wasn't *that*.) I quickly sought an explanation from Siltech's chief designer and CEO, Edwin Rynveld, who has a master's degree in electronics. He

gave me a quick conceptual description of their unique Structural Amplifier Gain Architecture, which was used in the amp that we were hearing, which bears its acronym: SAGA.

Two Chassis, But Not Monoblocks

For the SAGA, Siltech's engineers chose to rethink the structure of amplifier gain. Though the SAGA has two cases, they are not monoblocks, nor are they of equal size. Each serves a different purpose, and both are required. One chassis contains the V1, a battery-powered, tubed, stereo *voltage* amplifier. In the other is the P1, a solid-state, mains-powered stereo*current* amplifier. That division of labor between two boxes is unusual, but even more so is the P1's Apollo Light Drive, a hermetically sealed box containing eye-searing, high-intensity LEDs shining on a solar panel that converts the light into current to power the amplifier's drive section. The P1 is thus galvanically isolated from the V1.

The V1 voltage amplifier employs a pair of E80CC new old stock (NOS) Telefunken or Philips dual-triode tubes made between 1953 and 1965. These low-noise, low-distortion devices were originally intended to be used in audio measuring devices, among other applications. Also included, and operating completely independently in its own circuit, are two low-noise, low-distortion Philips 18042 pentode tubes, originally made between 1947 and 1958 for use in industrial telephone amplifiers. A toggle switch on the V1's bottom plate lets you switch it between triode and pentode operation, though the switch is labeled simply High and Low Output.

The V1's tubes run on high DC voltage. According to the one-sheet supplied by Siltech, keeping the SAGA quiet required a fully shielded "virtually DC to DC converter" that produces noise-free 380V DC. A bipolar, emitter-follower voltage buffer after each tube stage in the V1 ensures low output impedance, to reduce cable-load effects while leaving the sound quality unaffected.

The V1's output plugs directly into the P1's input via singled-ended cables. The P1 doesn't have to also be a voltage amplifier—the V1 has that covered—so the P1's output voltage equals its input voltage, which, according to Siltech, helped simplify its design. The P1 can be seen as "the ultimate buffer stage between the amplified music and the loudspeaker."

The P1 works as a high-impedance emitter-follower without negative feedback, but to avoid crossover distortion, the bipolar transistors must be biased to mimic class-A behavior. That required the design of the special circuit that keeps the transistors operating "full on," even with difficult loads. The purpose of the Apollo Light Drive is to provide the current needed to bias the SAGA's output stage without its output being modulated by other circuit elements.

The V1 and P1 are each priced at $37,500, meaning that the complete SAGA two-channel amplifier costs $75,000. Its build quality and industrial design befit the price. Siltech hand-builds the SAGA in-house, and its construction looks seamless, with nary a screw or bolt in sight. The satiny finish, and everything else about the two chassis, exudes understated class. The more closely I examined the small details, the more I appreciated what I saw. The internal build quality, too, appears high, and all audio and power-supply wiring is Siltech's own expensive, large-gauge, pure-monocrystal silver S8. The SAGA's claimed power output is 380Wpc into 8 ohms, 760Wpc into 4 ohms, or 1250Wpc into 2 ohms, though these are not continuous ratings. Still, that's a lot of power.

Actually, a *three*-box system

Siltech intends the V1 and P1 to be paired with their C1 Control Amplifier ($37,500)—a tubed, battery-powered preamplifier. The C1 uses four NOS dual-triode tubes: low-supply-voltage ECC86s, a type once used in car radios, making it a good choice for a battery-powered preamp. The C1 has one balanced and five single-ended inputs, a preprogrammed Logitech Harmony 1100 remote controller for volume and source selection, and no tape loop.

Stereophile's policy is to review one component at a time, and my assignment was to review the power amp. However, because the SAGA is intended to be used as a three-box system, I listened to it three ways: with the C1, with my reference darTZeel NHB-18NS solid-state preamplifier, and driven directly by the dCS Vivaldi DAC's digital volume control.

Setup and Use

The V1's battery supply is good for 12–15 hours of continuous use, and throughout the review period, it never ran out of juice—not that that's a problem, as the V1 automatically switches to AC power as needed. Ditto the C1.

The source's output connects to the V1's input, and the V1's output goes to the P1. I used balanced connections for all combinations, except for single-ended between the darTZeel and the V1.

Throughout the two-month listening period, the SAGA system worked as advertised; battery operation was never a problem, and never required attention. The tubes are claimed to last 10,000 hours, with replacement suggested after 5000–8000 hours. The battery is claimed to last five to 10 years, though replacing it after five years is recommended for the best sound quality. Following the

failure of the first two samples of the P1 and the first sample of the V1 on the test bench, I repeated my auditioning with additional samples after John Atkinson had finished his third round of measurements.

Unique Sound

My original question was answered in my first 10 minutes of listening to the original samples: It was the SAGA amplifier that had been responsible for a great deal of the sound I heard at CES and in Munich. With the SAGA installed in my system, the qualities I'd heard at both shows appeared in my listening room: a seamless, sonically air-tight sound with no obvious tonal colorations or other audible detritus, such as transients that were too sharp or too soft.

But, like every other audio product, the SAGA had a sound and a personality. Although that sound was as unique as its design architecture, overall it most reminded me of the sound of the Ypsilon Aelius ($36,000), another tube/solid-state hybrid, and one with a differently unique circuit topology.

Does *different* sound necessarily mean *better* sound? That judgment is yours to make. My job is to describe what I heard. Whether in triode or pentode mode, the SAGA delivered levels of sonic purity and background quiet that were unique in my listening experience. What's more, at both low and high SPLs, the SAGA maintained its composure.

Especially in pentode mode, but even in triode mode, compared to the darTZeel NHB-458 orD'Agostino Momentum monoblocks, not to mention the Lamm ML-3s, the SAGA sounded as if it had tightened the turnbuckles of tonality, space, and, especially, rhythm'n'pace—the sound was positively exhilarating. This all resulted, I figure, from the amp's ironfisted grip on the speakers. The SAGA managed a seamless, top-to-bottom grip on my Wilson Audio Specialties Alexandria XLF speakers that produced a taut bottom-to-top transient response and an overall speed reminiscent of the Soulution 710 stereo amplifier ($50,000) I reviewed in the August 2011 issue. But musical events had more staying power—as if the SAGA were lingering longer on them instead of too quickly rushing to the next—and the harmonic structures of instruments were far more impressively reproduced, despite the clarity and speed. Perhaps the positive influence of the tubes . . . ?

But such turnbuckling has inevitable downsides: Soundstage depth was somewhat foreshortened, with images between the speakers that normally appear well *behind* the speaker plane presenting themselves closer to a line drawn *between* them.

The balance of transient speed, precision of attack, and instrumental sustain produced some startling moments from very familiar recordings—for instance, from John Renbourn's *Sir John Alot of Merrie Englandes Musyk Thyng & ye Grene Knyghte* (LP, Transatlantic TRA 167), an album I've been playing for 45 years. The image of Renbourn's guitar was farther forward than I'm used to hearing it, and less of the space behind the instrument was apparent—but the guitar itself, and the percussion and recorder, sounded more transparent, coherent, and believable than I'd ever heard them, particularly the speed and clarity of Renbourn's fingers plucking the strings. "Forty-Eight" features percussionist Terry Cox playing finger cymbals with very delicate attacks followed by airy yet sharp sustains and gentle decays, one after another, separated by a good deal of empty space. I'd never heard this so perfectly and cleanly reproduced, or with such transparency. I didn't think it was possible.

I didn't "hear" the tubes as such, but they seemed to provide the cushion that allowed the SAGA's solid-state output to speed along without paying a price in over-analytical sound that was deficient harmonically.

As punchy and fully extended as the SAGA's bottom end was, only occasionally did I hear hints of a slight midbass warmth, especially with male voices—but this depended on the recording.

Overall, though, despite the SAGA's fast pace, electronic artifacts did not intrude: no brightness, no etch, no oversharp transients. The Siltech didn't have the darTZeels' or the D'Agostinos' "relaxed fit," but it still managed full-flowered harmonics, and rhythm'n'pace that was insistent, but sufficiently "sticky" to dig into the beat.

In other words, the SAGA sounded as it had in Siltech's rooms, where it drove their Arabesque speakers—and that sonic essence remained consistent regardless of which source I used: the C1, the darTZeel NHB-18NS, or the dCS Vivaldi DAC via its digital volume control. Still, each of those imparted to the sound a slightly different quality—just as cable swaps produced modest but discernible differences.

All of the above sonic attributes were evident in the first week or so, as I listened in triode mode with the darTZeel preamp—accompanied by an overprominent midrange and a slight global softness that I heard as a rosy coloration of transients and tonalities similar to that produced by the Lamm ML-3s. These qualities worked well with solo violin, solo piano, and chamber music—the combination of somewhat soft attacks, generous sustain, and harmonic richness produced a melt-in-the-ear sense of luxuriousness that complemented the music. I reveled in that warmth—until I craved some coolness.

For instance, John Lewis's solo-piano album *Evolution* (CD, Atlantic 7567832112), brilliantly engineered by E. Alan Silver (best known for his Connoisseur Society recordings), sounded as transparent and ethereal as I've ever heard it. The only surprise was the somewhat enlarged image of the piano, which appeared directly between the speakers rather than somewhat behind them.

A record that sounded positively alive and "ear delicious" (thank you, Neil Sedaka) was Ensemble HD's *Live at the Happy Dog*—two LPs of chamber music played by members of the Cleveland Orchestra, recorded live by Telarc engineer Thomas Knab at a Cleveland suds-and-hotdog bar (Smith&Watterson S&W V-001). Flute, oboe, violin, viola, cello, and piano, intimately recorded, and sounding so acoustic it's difficult to believe that electricity was in any way involved—or digital, though it was recorded in 24-bit/96kHz. Why vinyl? "Classical music really sounds good on vinyl. The sound quality is more open than on CD," says Ensemble HD's Joshua Smith, the Cleveland's principal flutist. But what does he know about music?

"It's Been a Long, Long Time," sung in part by Keith Richards on Lou Pallo's *Thank You Les: A Tribute to Les Paul* (CD), recorded to analog tape on vintage tube gear, sounded as if I were in the studio with the musicians. The guitars were a bit softer than life, but the voices were astonishingly lifelike.

With the Siltech C1 preamp, the soft transients became pleasingly harder-edged, and the overall sound got faster and leaner in the mids, while the lower octaves lost some heft and extension. The C1 did *not* sound like a tubed preamp. While its lean, fast, clean character well complemented the SAGA's personality, particularly in triode mode, I don't think I'd want to hear the C1 driving a lean, fast solid-state amp! Driving the SAGA directly from the dCS Vivaldi DAC produced the greatest transparency, the most muscular bass, and the most finely drawn images with digital sources.

For rock and jazz, as well as for symphonic music heavy in percussion and brass, triode mode was far less convincing. A recent 200gm LP of Fritz Reiner and the Chicago Symphony's recording of Rimsky-Korsakov's *Scheherazade* (RCA Living Stereo/Analogue Productions LSC-2446) pushed me to cut the power, flip the V1 on its back, and toggle it into pentode mode. The added gain was hardly necessary, but the sometimes cloying softness abated, restoring to the brass on this disc their realistic bite and brassiness without in any way harming the massed strings' tonal and textural suppleness. The image of the CSO dropped back to a less prominent place, with image size and definition also improving, though space and depth were not this amplifier's greatest strengths. In both triode and tetrode modes, regardless of the preamp in use, the SAGA's midrange richness produced generously sized images that dominated the soundstage and appeared as if along a line strung between the speakers. Carving images in space was not this amp's strong suit, though that won't be a problem for those who feel that that sort of imaging is an artifact of recorded music.

I ran the SAGA in pentode for most of my listening because I felt that mode produced—especially with the C1 preamp—faster, more satisfying transient response and crisper rhythm'n'pace, if at some cost in bass drive and muscularity. With the right recordings, the SAGA plus C1 produced a "like-live" experience I've rarely enjoyed at home, particularly with digital source material—though despite the image fullness and three-dimensionality, the overall tonal balance was a bit forward and bright (or raucous, depending on your perspective). Which is why the SAGA in pentode mode reminded me of the Ypsilon Aelius fitted with the Siemens C3g tube, and in triode mode like the Aelius fitted with the 6C45PiEH.

In pentode mode, my vote went for driving the SAGA directly from the dCS Vivaldi. A bit of midrange body was lost, but the SAGA already has a generous amount of that, and the gains in stage depth and bass weight were considerable. The bass line in "Ride All Night," from Joe Louis Walker's *Hellfire* (CD, Alligator ALCD 4945), was weak through the C1—but feeding this track directly to the SAGA from the Vivaldi produced just the right amount of weight and drive to fully propel the tune (which sounds like a song from the Rolling Stones' *Exile on Main Street*, but better). Feeding the SAGA Doug MacLeod's excellent *There's a Time* (CD, Reference REF-130) directly from the Vivaldi, the singer and guitarist sounded more fully and appropriately overwhelmed by the enormity of the Skywalker Sound scoring stage.

Dynamic Insanity

At moderate SPLs, the SAGA's promised 128dB of dynamic range wasn't all that obvious. But toward the end of the listening period I sat down, iPad in hand, to give the Meridian Music Server a workout, turning up the volume to levels I usually find unpleasant with digital sources. I learned more about the SAGA in that session than in all the listening I'd done up till then.

At high SPLs, the SAGA lost none of its composure or pleasing personality. It never turned hard, never sounded as if it was about to give up. It sounded virtually identical at SPLs high or low At high SPLs, the dynamics didn't hit a ceiling—they just keet growing as I turned up the volume. While I think that the remix of the Band's *Rock of Ages* included in *Live at the Academy of Music 1971: The Rock of Ages Concerts* (4 CDs, 1 DVD, Capitol UME 6 02537375271) is bass-shy and too cool, cranking it up to front-of-stage levels produced a near-live experience, spatially, dynamically, and tonally. The higher the SPLs, the *bigger* the stage, the wider the dynamics, and the more "live" it sounded, in part because of the SAGA's speed. It was *fast*, yet emotionally 100% engaging.

The latest and final high-resolution digital version of Miles Davis's *Kind of Blue* (24/192 FLAC, Columbia/Legacy/HDtracks) sounded as close to analog as I've heard it, with a convincing midband richness and pleasing spaciousness, though the images were larger and somewhat more diffuse than I'm used to, and somewhat farther forward in space.

After listening to very late in the evening to familiar "Red Book" and hi-rez PCM files, as well as to SACDs, I concluded that the SAGA was voiced using digital sources. If you listen only to digital sources and are in search of a touch of warmth, but want to keep digits' speed, tonal balance, and, especially, dynamic headroom, you'll find the SAGA a perfect complement to the sounds of many systems. If my reference solid-state gear trims too much meat off the digital music's bones and the Lamm ML-3s leave too much on, the SAGA did right in leaving it just as it was. That's why I was able to play classical, jazz, and rock files and discs louder, with more pleasure and more dynamic sound, than ever before.

Conclusions

Siltech's SAGA is one of the more interesting and innovative amplifiers to come along in quite some time. Its designers made some unusual choices, including separating the voltage and current stages, and using battery power in one section, a "light-powered" current source in the other—not to mention

using tubes for voltage gain, making this notoriously noisy technology operate in a dead-quiet way while offering the choice of pentode or triode tubes. The result meets the designers' goals of a sound that is "lifelike and exciting at any volume setting, while producing wide dynamic range and power sufficient to drive even low impedance speakers."

Still, like any audio product, the SAGA does not excel in every performance parameter, nor will it please every taste. While it's extremely fast, unusually quiet, exceptionally dynamic, and produces taut, well-textured bass, the SAGA is not the last word in bass extension and muscularity, or overall speed of transient attack. It doesn't resolve fine spatial detail as well as some other amps, and its reproduction of imaging and depth were not the most precise and generous possible.

However, I have never heard digital sources sound as convincingly real, as fully fleshed out, as free of artifacts, or as genuinely *enjoyable* as they did through the Siltech SAGA—something I reconfirmed in a later session using Simaudio's Moon Evolution 650 transport-DAC with 820S power supply rather than the dCS Vivaldi.

If you've got the money, this unique reimagining of how loudspeakers should be powered deserves your time and attention. Despite the SAGA's few shortcomings, as soon as I pulled it from my system, I began to miss it.

Siltech SAGA power amplifier Specifications

Sidebar 1: Specifications

Description: Hybrid stereo power amplifier with battery-powered voltage-gain and mains-powered current-gain sections in separate housings.
V1 Voltage-Gain Amplifier: Tube complement: two E80CC, two 18042. Inputs: 1 pair single-ended (RCA), 1 pair single ended (XLR, pins 1 and 3 tied to ground). Outputs: 1 pair single-ended (RCA), 1 pair single-ended (XLR, pins 1 and 3 tied to ground). Frequency response: 1Hz–110kHz, –1dB. Voltage gain: triode circuit, 28dB; pentode circuit, 34dB. Signal/noise, IHF-A: 128dB (triode). Dynamic range: 130dB (triode). THD: 0.08% at 4V, mainly second harmonic. Delay in-out: 50ns. Battery playing time: 12–15 hours. Charge time, empty to full: 12 hours.
Serial numbers of units reviewed: 02, 16.
Dimensions: 19" (480mm) W by 4.7" (120mm) H by 13.4" (340mm) D. Weight: 53.1 lbs (24.1kg).
Price $37,500.
P1 Current-Gain Amplifier: Inputs: 2 pairs single-ended (XLR). Outputs: two pairs binding posts. Rated power output (non-continuous): 380Wpc into 8 ohms (25.8dBW), 760Wpc into 4 ohms (25.8dBW), 1250Wpc into 2 ohms (25.0dBW). Voltage gain: 0dB. Frequency response: DC–110kHz, +0/–1dB. Signal/noise, IHF-A: 138dB. Dynamic range: 145dB. THD: 0.08% at 1W/8 ohm, linear with

level, mainly second harmonic. Delay in-out: 20ns. Damping factor: 100 at 10Hz–20kHz into 8 ohms.
Dimensions: 19" (480mm) W by 6.3" (160mm) H by 13.4" (340mm) D. Weight: 53.1 lbs (24.1kg).
Serial numbers of units reviewed: 12, 16.
Price: $37,500.
Both:
Approximate number of dealers: 21.
Manufacturer: Siltech BV, Nieuwe Stationsstraat 10, 6811 KS Arnhem, Netherlands. Tel: (31) (0)26-353-9040. Web: www.siltechcables.com. US distributor: Audio Plus Services, 156 Lawrence Paquette Industrial Drive, Champlain, NY 12919. Tel: (800) 663-9352, (450) 585.0098. Fax: (866) 656-0686. Web: www.audioplusservices.com.