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YG Acoustics Sonja XV loudspeaker system

by Chris Martens

The Arvada, Colorado-based firm YG Acoustics is widely considered to be one of the three leading producers of true top-tier loudspeakers in the United States (the other two being, of course, Magico and Wilson Audio). All three firms are known for their uncompromising and single-minded pursuit of sonic excellence, yet each takes its own distinctive approach in the ascent to the sonic mountaintop.

Since its inception in 2002, YG Acoustics has been a science and engineering-led company, but one whose work has always been informed by extensive critical listening and a keen and discerning musical sensibility. The firm has by tradition offered a comparatively simple product range where the aim was to produce a handful of equally superb but differently sized floorstanding loudspeakers that could scale up or down to fit the requirements of various sizes of listening rooms. Thus the first generation YG models were, in ascending order of size, the Carmel, the Kipod, and the Anat, while the second generation comprises the small Carmel 2, the mid-size Hailey, and the large Sonja—all of them, save for the single-chassis Carmels, configured as modular loudspeakers with milled aluminium enclosure systems.

For a long time, YG's founder and president Yoav Geva felt that his three-model loudspeaker family could meet the needs and desires of the majority of demanding, performance-minded audiophiles, and with good reason. The speakers sounded great, measured very well, and offered exquisite build quality. All the models in the range shared the firm's specialised design and construction technologies, and all were built to meet the same high standards for build quality and sonic performance. In practice, then, this meant that differences between the models were not so much qualitative ones (although some qualitative differences could be observed), but rather were more a matter of scale.

Over time, however, a number of YG's distributors approached Geva to ask if he could create a larger and higher performance version of the flagship Sonja—a seemingly simple request, but one that posed two daunting questions. First, given how much of Geva's personal expertise and know-how had already been poured into the flagship Sonja, was it realistically possible to exceed its performance in meaningful ways? Second, if hypothetical performance gains were possible, how could they be achieved in practical design and manufacturing terms? Geva has spent over two years seeking answers to these questions and the result is now the spectacular four-way, four-tower Sonja XV ('XV stands for 'Extreme Version') loudspeaker system ($265,900) that is the subject of this review.

The Sonja XV system is a four-way, four-tower loudspeaker that incorporates a total of 20 drive units (two tweeters, four midrange drivers, six midbass drivers, and eight woofers) and an enclosure system that uses twelve dedicated modules made of CNC-machined, black-anodised aircraft-grade aluminium. Each Sonja XV speaker consists of two towers: a main and a companion woofer tower that are both 1.79 metres tall. The twin towers are similarly but not identically proportioned and share a common design motif, with each tower featuring three stacked modules, starting with broad-shouldered woofer modules at the floor level, and with middle and upper modules featuring subtly curved sidewalls that gradually taper inwards as the towers rise upward. Although YG Acoustics tends not to emphasise this point, Porsche Design played an essential consulting role in helping to develop the system's elegant industrial design aesthetic.

The main tower consists of a midrange-tweeter-midrange module at the top, a three-driver mid-bass module in the middle, and a bass module at the bottom. The woofer tower, in turn, also has three modules, with three woofer modules perched atop one another. Visually, the illusion is that the three woofer modules are of different sizes, but in point of fact they are different in shape but identical in volume.

Obviously, part of Geva's plan for improving upon the sound quality of the original Sonja was to distribute the Sonja XV's workload over a much broader array of drivers, thus minimising the excursion and distortion levels of the drivers in the array. The objective was to give the speaker virtually limitless frequency extension and dynamic capabilities. Another element in Geva's performance enhancement plan was to ▶

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design the Sonja XV as the firm's first-ever four-way model, with crossover points set at 1.75kHz, 337Hz, and 65Hz. The intent was to have each main frequency band—and especially the critical midrange and mid-bass bands—handled by their own sets of purpose built, frequency-optimised drivers.

Through the years, YG Acoustics has developed a number of specialised, proprietary loudspeaker design and construction technologies and of course the firm has applied all of this speaker-building know-how in the Sonja XV, while adding some impressive new technical features unique to the new flagship speaker system. It is worth taking at least a cursory look at these technologies, since they collectively play a huge role in defining the sound of the speaker.

Large YG loudspeakers use modular chassis where each module can be optimised for the specific set of drivers it encloses and where the modular approach simplifies transportation and installation tasks while also—as you will learn later on—affording at least some degree of flexibility in configuration. The enclosures are made of exquisitely finished CNC-machined, black-anodised slabs of aircraft-grade aluminium, and by design panel-to-panel joints leverage aircraft-style 'pressurized assembly" techniques that impart tremendous structural rigidity while holding unwanted vibration to an absolute minimum. Then, within, YG uses its so-called FocusedElimination™ technology to apply various proprietary anti-resonance materials in strategically chosen cabinet locations, providing critical damping while minimising internal turbulence and friction. The result is a rigid, acoustically inert, and well-damped enclosure that manages to offer, notes YG, the sort of friction-free performance "associated with enclosure-free concepts".

Unlike some manufacturers, YG does not use off-the-shelf drivers in its designs. Instead, all YG bass, mid-bass, and midrange drive units use the firm's proprietary BilletCore™ driver diaphragms, where driver cones are CNC-machined from billets of aircraft-grade aluminium. This admittedly costly and labour-intensive technique offers several key benefits. First, machined diaphragms are claimed to offer tighter dimensional tolerances than either stamped metal or composite driver diaphragms and they make it possible to machine strategically positioned stiffening ribs into the rear surfaces of the diaphragms. Second and most importantly, YG's machined diaphragms remain free of the micro-stress-cracks that eventually can and do form in stamped metal or composite diaphragms; in short, BilletCore diaphragms offer superior performance from the outset and over the long haul.

New for the Sonja XV is an impressive BilletDome™ tweeter, which YG says is the firm's "most complex mechanical invention to date". The tweeter uses a uses a resonance-free fabric dome that is reinforced by a light, stiff precision-machined aluminium 'airframe' that looks like a miniaturised, gently curved flying buttress that supports the sides and centre of the fabric dome from within. The airframe weighs just 30 milligrams, but its support legs are proportioned so that they add enormous stiffness—yielding a dome that is even stiffer and stronger than a solid metal dome would be. The result is a tweeter that offers incredible acceleration capabilities and effortless treble extension to 40kHz and beyond, yet that does not exhibit the hard, sharp resonance peaks most metal dome tweeters do. To complete the picture, the tweeter's motor features YG's signature ForgeCore™ magnet system, which uses a combination of forging and CNC-machining techniques to introduce what YG describes as "sophisticated 3D geometries" said to reduce distortion while imparting "a sense of ease to the sound".

In lieu of traditional printed circuit boards, YG's crossovers feature heavy-duty fibreglass boards covered with extra thick layers of high-purity copper, where—owing to the thickness of the copper—circuit traces and component mounting-pads are precision CNC-machined into the surfaces of the boards. Only the highest quality resistors and capacitors (sourced from manufacturers such as Mundorf and others) are used on the boards, but for critical midrange and tweeter applications YG uses its own proprietary ToroAir™ CNC-wound, toroidal air-core inductors, which are said to reduce crosstalk and to eliminate unwanted "harshness, brightness, or sibilance".

Then, as a performance enhancement for the woofer section of the Sonja XV's crossover network, YG introduces its new ViseCoil™ inductors. Typically, inductors used in high-power/low-frequency applications are prone to residual losses, non-linearity, and quite audible vibrations. ViseCoil inductors, however, are CNC-wound in the YG factory and then encased in ultra-beefy, vise-like milled metal enclosures that resist vibration, while cutting residual losses by 24%, and

"I discovered the Sonja XV was capable of extraordinary resolution, but not of the type that draws overt attention to itself."

improving linearity by 60%. The result is audibly superior bass control, better low-end transient impact and pitch definition, and the sense that there is simply less low frequency noise.

Tying all these technical elements together is the jewel in YG Acoustics' design crown: namely, the firm's proprietary Geva-developed, DualCoherent™ speaker design software that has the singular capability of optimising the loudspeaker's frequency and phase response at the same time—something no other computer-aided software design tool we know of can do. Geva's DualCoherent design tool arguably gives YG's speakers a significant performance edge and one not easily matched by competitors.

The Sonja XV is an ambitious, cost-no-object loudspeaker whose performance targets are as high as they come. But how does it actually sound when playing real music in real-world listening environments? To find out, I was offered the opportunity to have a private, multi-day listening session with the Sonja XV as presented in the large listening room at GTT Audio's beautiful facility in Long Valley, New Jersey (a space that YG Acoustics feels is one of the best-sounding Sonja XV demonstration facilities in the USA). Driving the system was a Roon-based music server, an extensive suite of Audionet amplification and source electronics, plus a Kronos/Airtight analogue turntable system. Then, tying the components together was a mixed set of Kubala-Sosna Realization and Elation audio cables. The resulting sound was breathtaking.

First, I found the Sonja XV to be smoothly balanced and neutrally voiced with essentially limitless extension at both frequency extremes. These extension capabilities became particularly apparent when either evanescent, upward-reaching treble passages or powerful, deep-plunging bass passages came along.

For example, when I played the track 'Bell Painting' from Marilyn Mazur and Jan Garbarek's *Elixir* [ECM, 16/44.1], which features a delicious mix of small, high-frequency percussion instruments in play, the Sonja XV responded with effortless transient agility and terrific resolution, beautifully recreating the sound of the instruments playing within the reverberant recording space. Despite its size, the big Sonja XV perfectly captured the small, intimate, and tightly focused sound of the performance, while doing a beautiful job with the distinctive voices and reverb tails of each of the instruments.

The Sonja XV also proved just as capable when faced with demanding bass tests. One such test would be the track 'O Vazio' as performed by the Jim Brock Ensemble on *Jazz Kaleidescope* [Reference Recordings, HDCD], which features several passages with high amplitude and very low frequency percussion content. Frankly, these passages routinely cause loudspeakers to become overloaded and to falter in audible ways, but when I played them through the Sonja XV all I heard was powerful and extremely low frequency bass delivered in a taught, precisely textured, and pitch-perfect way. Boom. No drama, no distress, and no histrionics: just powerful and dramatic bass content as required by the music. This pattern of the Sonja XV handling so-called audio torture tests without even breaking a sweat is one that repeated itself over and over again during my listening tests.

Next, I discovered the Sonja XV was capable of extraordinary resolution, but not of the type that draws overt attention to itself. Rather, the speaker offers 'organic resolution'—the kind that slyly astonishes you with unexpected moments of sheer realism. A great example would be Miles Davis' live performance of Cyndi Lauper's 'Time After Time', from *Live Around the World* [Warner Bros., 16/44.1], where not only does Davis's horn sound believably real, but where soft accompanying percussion instruments and indeed the entire acoustic setting of the performance stage sound real, too. As one guest who joined my for some of my listening sessions put it when hearing this track, "If you close your eyes, this presentation really is pretty much indistinguishable from being present at a live event."

What makes this possible is the way the Sonja XV's so perfectly capture the attack, bloom, and decay of notes from individual instruments in a holistic way that lets you hear and feel how the entire ensemble interacts with the performance space. What is also stunning, however, is the way the speaker serves up gobs of low-level transient and textural details, but without even a hint of dryness, overshoot, or excess treble brightness. As in real life, musical details are simply present and available to enjoy, but without unpleasant artefacts marring their appearance. Suddenly, it's as if you're no longer listening to recorded music, but rather are experiencing a taste of what it must have been like to be present when the music was made.

The Sonja XV Junior – A smaller alternative to the Sonja XV

The Sonja XV is a big loudspeaker system that performs best in sizable listening spaces—rooms larger than some enthusiasts may possess. To address this potential issue, YG Acoustics can—on a special order only basis—build what is in essence a 'Sonja XV Junior' model that is identical to the full-size Sonja XV in most respects, but that foregoes the lower woofer modules from both the standard XV's main and woofer towers, reducing the total woofer count from four to two per speaker. Naturally, this change also requires a special, purpose-built crossover network that compensates for the shorter system's reduced number of woofers. The result is a significantly more compact system that—apart from its absolute bass output capabilities—sounds identical to the full-size Sonja XV and that may better fit mid-sized listening rooms.

TECHNICAL SPECIFICATIONS

Type: Modular, sealed enclosure, four-way, four-tower, dynamic driver-equipped, loudspeaker system. Enclosures for tower modules are CNC-machined from solid aircraft aluminium.

Driver complement (per channel): One BilletDome™/ ForgeCore™ tweeter, two BilletCore™ midrange drivers, three BilletCore™ mid-bass drivers, and four BilletCore™ woofers. (A total of 10 drivers per channel, or 20 drivers per stereo system.)

Frequency response: Below 20Hz - above 40kHz, ± 1dB in the audible band, ± 5° relative phase throughout the entire overlap.

Impedance: 4 Ohms nominal, 3.5 Ohms minimum

Sensitivity: 88dB/2.83V/1m 2π anechoic

Dimensions (H×W×D): Four towers, each 179×43×72cm

Weight: Four towers, each 210kg unpackaged. Shipping weight for the entire system (crated) is 1.3 tonnes.

Finish: Black anodised aluminium

Price: $265,900/pair

A word on product availability: The Sonja XV system is not yet available in all markets. Readers interested in the Sonja XV are advised to consult their regional YG Acoustics distributors to determine if the speaker is available in their home market.

Manufacturer Information: YG Acoustics LLC

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Third, the Sonja XVs proved to have superbly expansive dynamic capabilities, not just in terms of playing 'big' (although the speakers can certainly do that), but also in terms of playing both big and small while preserving the dynamic contrasts inherent in music. This can be quite dramatic when playing recordings whose dynamics might have seemed unremarkable in the past, but which the Sonja XVs show to be far more expressive than you at first thought. A good example came in the form of the second movement (Scherzo: Allegro molto) of the Copland Organ Symphony as performed by Michael Tilson Thomas, Paul Jacobs, and the San Francisco Orchestra [SFS Media: DSD64]. The movement came alive through the Sonja XVs, as the speaker sharply underscored the contrasts between the quieter and more contemplative organ passages vis-à-vis the louder and more vigorous orchestral passages. In fact, the Sonja XV made these contrasts much more dramatic than any other loudspeaker on which I've tried this recording. Through the YGs, the track seemed 'reborn' in a musical sense, taking on new dynamic shadings I never realised it possessed. In short, the Sonja XVs give music its proper lifelike scope and scale, providing the recording is willing.

Finally, the Sonja XV is capable of amazing imaging precision, focus, three-dimensionality, and soundstage width and depth. One recording that forcefully drove home this point was an old favourite: namely, the Von Karajan/Berlin recording of Bartok's 'Music for Strings, Percussion & Celesta' [DGG, 16/44.1]. On this recording, the Sonja XV paints a vivid and spatially specific picture of each of the orchestra sections arrayed in their designated positions upon the stage, while nicely conveying a sense of both the size of the orchestra and of the recording space. Images are not just precisely placed from left-to-right and front-to-back, but also solid and almost palpable in their presence.

Put all of these technical and sonic factors together and the YG Acoustics Sonja XV stands as the finest and by far the most accomplished loudspeaker I have yet heard, and by no small margin at that. If your budget and listening space permit, the Sonja XV will serve you as a mighty musical force for good and one that will not easily be equalled, let alone surpassed. +