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Sonus faber Liliium

Sonus faber assaults the high-end with the Liliium, a direct beneficiary of research undertaken for the Aida Review: **Ken Kessler Lab: Keith Howard**

With its Liliium floorstander, Sonus faber has produced a more 'realistic' loudspeaker than the controversial limited edition flagship, The Sonus faber [HFN Feb '11]... if you can call £47,000 'realistic'. That six-figure speaker, the sire of this entire family, elicited divided opinions, but none could argue with its genuine grandeur. The 103kg Liliium, too, is an equally imposing floorstander, one that also oozes luxury, its finish a match for the finest furniture.

If, however, you lack taste, happen to be a Russian oligarch or a star on *TOWIE*, an extra £20k or so will add the lacquered gold-leaf finish (photographed here) in place of the red-stained or walnut wood sections. It's not so much 'gilding the Liliium', more a case of *gilding* the Liliium, in my opinion.

Not that I should *kvetch* about any company pandering to the filthy rich: who else can afford high-end audio these days? And if price concerns you, think of this as costing £33,000 less than the magnificent Aida [HFN Apr '12], from which it is derived.

The Liliium's resemblance to the Aida and The Sonus faber is unmistakable. The cabinet is shaped in the form of company's now-familiar 'lyre' cross-section, tapering to the back and with sloped top. The lyre shape dates back a quarter-century to the original Guarneri Homage and its benefits are multi-fold, including the elimination of internal reflections, added rigidity and – crucial if you married a hi-fi hater – gorgeous looks.

Another nod to Sonus faber's historical precedents is the glass plate above the top-mounted infra-bass woofer. This recalls the metal panel that was positioned on the back of the original Extrema, spaced to cover its rear-sited KEF B139 woofer as a form of 'bass disperser'. Coincidentally, it also served that speaker as a way of dealing with proximity to the rear wall, acting as its own back reflecting surface, and making positioning less of a concern.

Although the Liliium's plate doesn't affect room placement (unless, perhaps,

you have seriously low ceilings?) I'm assuming that it serves a similar role in dispersion here, while it also acts as a dust cover. That was not an issue with the Extrema, as the latter's rear-firing woofer was vertically positioned and not a surface to attract falling particles. Suffice it to say that, along with the vertical slits that are part of the Stealth Reflex System, it made KH's life that more difficult [see boxout, p37 and Lab Report, p41].

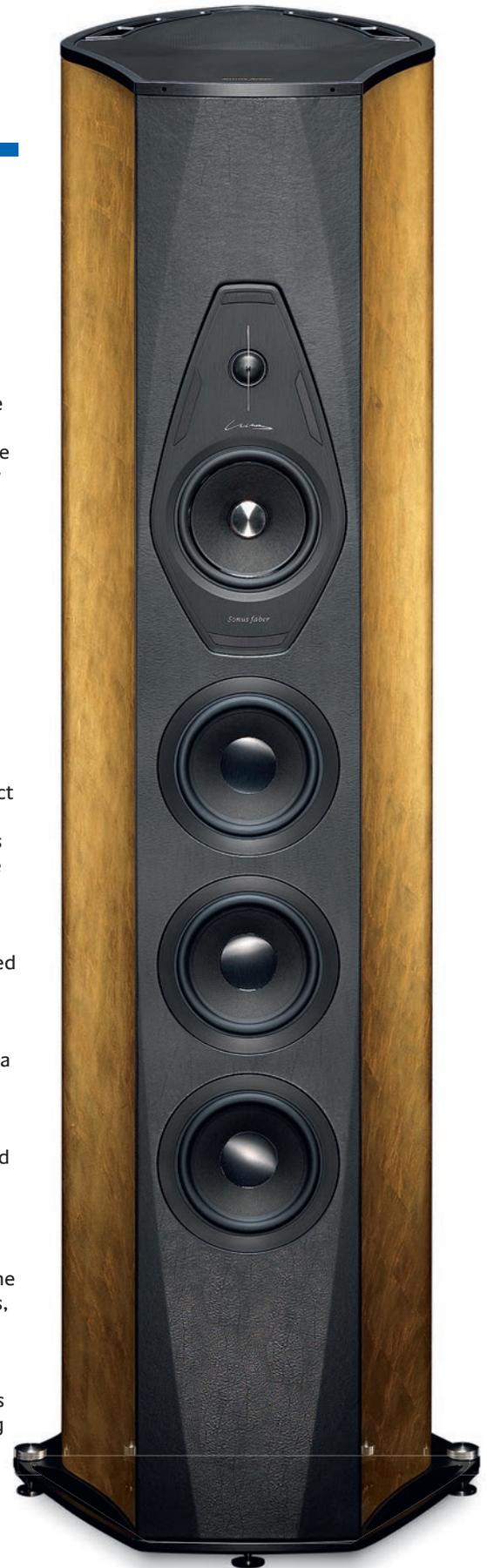
'A SCALED DOWN AIDA'

The Liliium, like its larger siblings, is an inordinately complicated system, and not just because of a plethora of drive units and the inevitably complex crossover. Starting with the cabinet, Sonus faber has again mixed solid walnut and leather, partly – it must be emphasised – to respect the 'organic' nature of all speakers from the firm's beginnings, the pioneering uses of shaped woods and inspiration from the forms of acoustic instruments originating at nearby Cremona.

Sonus faber itself calls the Liliium 'a scaled down version of the Aida', tempered with a bit of the limited-edition Ex3ma [HFN Jul '14]. All of the speakers of this generation – The Sonus faber, Liliium, Ex3ma and to a lesser extent the Olympica family [HFN May '14 and Mar '15] – are exercises in eliminating vibration and spurious noise. The recipe for all includes separate enclosures for the subwoofer and isolation of the tweeter and midrange in their own sub-enclosure, and a 'no port noise' passive radiator inherited from the Ex3ma design.

That beautiful, rounded lyre shape is the result of the triple curvature cabinet walls, real artistry in wood, while the structure is damped and ribbed to enable the 'total rejection of spurious vibrations and standing waves'. As first seen in The Sonus faber, the structure incorporates damping

RIGHT: The complex 3.5-way topology includes a top-mounted infra-bass bass unit with a diffracting cover, 28mm tweeter, 180mm mid and three 180mm woofers





STEALTH REFLEX

In a reflex-loaded loudspeaker, port output is due to Helmholtz resonance between the mass of air in the port and the compliance (springiness) of the air contained within the enclosure. Above the resonance frequency the port output is in-phase with that from the driver and adds to it, thereby bolstering output; below resonance the port and driver outputs oppose, increasing bass roll-off to 24dB/octave from the 12dB/octave of closed box loading. Reflex loading increases sensitivity and reduces distortion but there are downsides: airflow through the port can become turbulent, adding 'chuffing' noise at high outputs, and 'organ pipe' resonances can occur within the port tube itself. Sonus faber's patented Stealth Reflex system is termed 'para-aperiodic', ie almost non-resonant, because the inner surfaces of the port duct(s) are lined with sound absorbent material. It is claimed to provide a reduction in cabinet size, greater bass extension, reduced distortion and the elimination of port noise. KH

shelves made of CNC-machined and anodised avional aluminium, positioned at the top and bottom of each enclosure.

Also inherited from its forebears is the 'Anima legata' system. This uses structural ribs in the subwoofer enclosure and a steel rod that secures the tuned mass dampers, two differently tuned devices that oscillate in anti-phase to 'erase micro-vibrations'.

All the drivers are new Sonus faber designs. They include a 28mm H28 XTR-04 'Arrow Point' damped Apex Dome tweeter with neodymium magnet, and the M18 XTR-04 180mm mid with neodymium magnet and CCAW wire on a composite former, to produce an eddy current free voice coil.

The mid employs a diaphragm made with 'a real-time air-dried, non-pressed blend of traditional cellulose pulp, kapok, kenaf and other natural fibres'. Sounds like a blend of tea to me... To inhibit residual cone coloration, the diaphragm is damped with a viscous surface coating. Behind the tweeter/mid sub-baffle is an acoustic chamber, with a coaxial anti-compressor to remove cavity resonances and distortions.

Below this mini-baffle are the three W18XTR-16 180mm midwoofers. These share the diameter and structure of the solo midrange unit because the company feels it encourages better merging of the relative spectra. The midwoofers feature sandwich cones made of a syntactic foam core and two external surface skins of cellulose pulp. Further reinforcing the bass are the SW26 XT-08 260mm infra-woofer and its companion ABR [see KH's boxout, above].

When you see the Liliu's owner's manual, you'll be as grateful as I was that someone else did the set-up (PM, in this case). And not just because of the size and weight: there's a lot to this speaker, the box even including a special suction tool for handling the glass plate (which will also serve afterwards as a useful tool for housebreakers). In addition to a rotary control on the upper back section for setting the bass level, the wiring

possibilities mean that this speaker is adjustable to your heart's delight.

Enabling this is the crossover, derived from the company's Paracross technology and incorporating Mundorf's

Supreme Silver/Gold/Oil capacitors and Jantzen inductors. It operates at 80Hz, 250Hz and 2500Hz, and provides a choice of single wiring, bi- or tri-wiring, as well as facilitating a combination of multiple amplifier configurations.

'That beautiful, rounded lyre shape is real artistry in wood'

A NEW TRANSPARENCY

For the review, we used high resolution recordings (192kHz/24-bit unless otherwise stated), and CD transfers from an Astell & Kern AK120, feeding the editor's optimised PC via a JRiver v1.9 music front end. It was fed directly into Devialet 800 monoblocks via USB and wired to the Liliu's with legacy Deltec Black Slink speaker cable. (Note that Devialet's SAM bass correction system was not available for the Liliu at the time of writing this review.)

As for positioning, the usual toe-in is recommended, ideally an equilateral triangle with a minimum of 2m between the speakers and a similar minimum distance to the hot seat. Suffice it to say that these speakers will fill a huge room, 



ABOVE: The tweeter and mid are located on a mini-baffle, decoupled from the main baffle and fitted with its own acoustic chamber. Note the mini-baffle's 'lyre shape' recalling the Liliu's cross-section

and, with their high sensitivity, will go loud enough without needing a kilowatt per channel amp.

NO SUBSTITUTE FOR SIZE

As I grow fonder of the Astell & Kern when it's playing back high-res material, or even transfers from decent CDs, I can understand why PM loves his Devialet so much. His system always sounds clean and analytical – it needs to be as it is a testing tool as much as a source of pleasure – but I was not expecting my first reaction to be one of exposure to even greater transparency.

Normally, when faced with a behemoth the size of the Liliu, or its natural competitors from Magico, Vivid, Wilson and similar towering floorstanders, the initial effect is one of scale. However much we may love small two-ways – and I still adore LS3/5As with near-religious fervour – when it comes to speakers there is no substitute for size. In this respect, the Liliu is a classic tower, with its broad stage width amply balanced by similar depth.

This added transparency, while evident even with the best of the high-res material, actually showed its worth with two particular recordings – vintage mono! – that I'd ripped from CDs. They spoke volumes about the Liliu's prowess... if getting closer to the music is what this is all about. They were, of course, tracks from The Cardinals and George Formby. OK, so it pre-dates WWII, but the title song from

When I'm Cleaning Windows – His 52 Finest 1932-1946 [Retrospective RTS 4104] is Formby's masterpiece... if you think the banjolele can yield such an event. I have no idea how many times I've played this, but the Devialet/Liliu combination eked out even more nuances than I'd heard before.

Tiny licks, variations in Formby's lightning-fast strumming (he surely must be the Alvin Lee of the ukulele), more sounds from the orchestra: it is impossible to resist those hoary old reviewer clichés about lifting veils. I wouldn't be surprised if ol' George had a song about that too...

Woodwinds and brass with more air, the trumpets especially punchy – the clarity defied the limited

bandwidth of the recording. But that banjolele break! Harmonics, decay, the plastic-y sound of the banjolele's skin – it was as if the recording had dropped 20 years from its true vintage.

Less crippled by audio arthritis is 'The Door Is Still Open To My Heart' from The Cardinals' CD of the same name [Collectibles COL9977]. Which is precisely two decades newer than the Formby track. This slice of classic doo-wop, aside from being so gorgeous a song that it sends chills down my spine, is always revealing of a system because of the backing vocals and the sax break. As for the lead vocals, they're so velvety it's as if Mel Tormé had a twin singing half-an-octave higher. ➔

'It's impossible to resist those hoary old clichés about "lifting veils"'

PAOLO TEZZON

'The Liliu is, with the exception of our Ex3ma, the first Sonus faber to be developed with instrumentation more accurate and precise than previously available. These tools have not replaced the "humanistic approach" that has always been the foundation of our design philosophy, in which nothing is subordinated to human perception.

'Listening remains the centre of our design process, but it is also true that the new tools, in particular our anechoic chamber, enable us to raise the levels of performance. Definition, transient speed, transparency and ability to correctly reproduce the silence – an essential component of music – are much improved. All this is combined in developing membranes for materials able to reproduce sound in a natural way, without causing fatigue – a traditional Sonus faber quality.

'We'll move in two directions after the Liliu – the first is to continue to develop speakers that are more reliable, with higher performance, while retaining the essence of Sonus faber. But the brand is also moving in a second direction as we're aware that today people enjoy music in ways that are very different from traditional hi-fi listening, using new technologies, and mobile devices. This is especially true for young people.

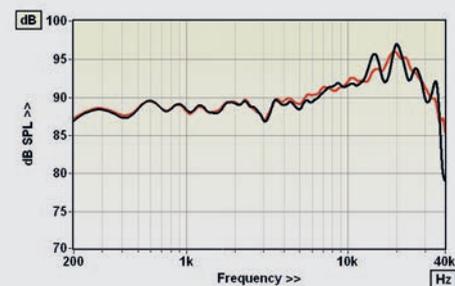
'So we are thinking of objects that are able to keep pace with the times, maintaining the Sonus faber quality despite the different ways of enjoying music. The Chameleon line [see News, p14] is the first example of what you'll soon see.'



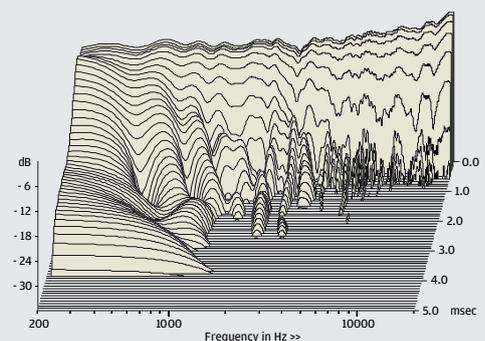
SONUS FABER LILIUM

Sonus faber claims 92dB sensitivity for the Lilium, a figure substantiated by our simple average of the FFT response data but not by our pink noise or music-weighted figures which suggest that 90dB is more representative. Nominal impedance is 4ohm which accords well with our measured minimum modulus of 3.1ohm at a low 27Hz. Impedance phase angles are quite high but well enough controlled where the modulus is low for the minimum EPDR (equivalent peak dissipation resistance) to be a quite amplifier-friendly 1.8ohm at 95Hz.

The forward frequency response, measured at tweeter height at 1m [Graph 1, below] explains the disparity between the sensitivity figures. Below about 5kHz the response trend is flat but above 5kHz the output steadily rises, suggesting that the flattest response will be achieved slightly off-axis. Because of this treble rise, frequency response errors are necessarily on the high side at ± 5.1 dB and ± 4.5 dB, respectively, just as pair matching was disappointing at ± 2.3 dB (200Hz-20kHz). The largest disparities occurred above 13kHz – below that the matching was a superior ± 1.0 dB. Because of its many drivers and the inaccessibility of the top-mounted infra-woofer and base-mounted Stealth Reflex ports and ABR, the Lilium is a difficult prospect for near-field bass measurement. Sure enough, our diffraction-corrected results inspired sufficient confidence only for estimating the output to be below 40Hz (-6dB re. 200Hz), the frequency at which adjusting the bass level control increases or decreases output by approximately 2dB. The CSD waterfall [Graph 2] evinces fast initial energy decay but some low-level treble resonances are visible. KH



ABOVE: Off-axis listening will ameliorate the post-5kHz treble lift. Pair matching is excellent <13kHz



ABOVE: The Lilium's cabinet is very well damped, but some low-level modes are revealed through the treble

HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL/1m/2.83Vrms – Mean/IEC/Music)	92.4dB/90.2dB/89.5dB
Impedance modulus min/max (20Hz–20kHz)	3.1ohm @ 27Hz 15.9ohm @ 1.4kHz
Impedance phase min/max (20Hz–20kHz)	-42° @ 2.1kHz 45° @ 108Hz
Pair matching (200Hz–20kHz)	± 2.3 dB
LF/HF extension (-6dB ref 200Hz/10kHz)	<40Hz / 38.1kHz/38.4kHz
THD 100Hz/1kHz/10kHz (for 90dB SPL/1m)	0.4% / 0.8% / 0.2%
Dimensions (HWD)	1600x491x705mm



LEFT: In addition to its tri-wiring/ tri-amplification capability via three pairs of terminals at the bottom, bass level can be adjusted by ± 2 dB for the room or personal taste via a three position knob

ever heard, the closeness apparent on every track. This particular version was taken from the remastered *Unplugged* in 192kHz/24-bit, and every sparkling note, every plucked string had a presence so seemingly real that 'in the room' almost seems insufficient. Transient attack? Nigh on perfect. It was a reminder of what one experiences in small folk clubs. As that was the intention of the *Unplugged* series, then Sonus faber's Lilium achieves everything MTV could have wanted.

FALLING IN LOVE AGAIN

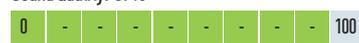
'Nobody Knows You When You're Down and Out' had a glorious lilt, the piano accompaniment so authentic that I'm sure a pianist could tell the instrument's manufacturer. The ringing, chiming note and the liquid flow... sitting still was not an option. I was at a loss to find any area to criticise. So I brought out the big guns, The Beatles' *Rubber Soul* from the 24-bit USB stick.

Can 50 years really have passed since I brought home the LP version of this unequivocal masterpiece? The Lilium brought back that day in December 1969 when I queued to buy it. Pitter-patter stage right and the raunchy organ break in 'I'm Looking Through You', Ringo's astounding drumming on 'You Won't See Me' – this was always my favourite Beatles album. The Lilium made me fall in love all over again. ☺

HI-FI NEWS VERDICT

Sonus faber has certainly rediscovered its 'mojo' for making huge floorstanders. No, these are not of the same approach nor disposition of the much-loved Homage models. Instead, they exhibit what Brunello is to Barolo: two thoroughbreds differing mainly in attitude. Stradivari/ Amati win on grace and subtlety, Lilium on power and sheer scale. My goodness, is this a truly magnificent loudspeaker.

Sound Quality: 89%



The Lilium removed a layer of *schmutz* that opened the song in both the physical planes and removed a tiny trace of haze that simply rendered the sound more vivid. What I didn't expect was an increase in perceived bass extension with 'Wheel Of Fortune', which has minimal instrumental backing. But when the drums kick in at 1m 20s, it's almost a surprise and a shock. Better still are the interwoven vocals at 1m 50s, each so distinct that you wonder if it was an early multi-track.

As I grow older and soprier, I find it increasingly more difficult to listen to Eric Clapton's 'Tears In Heaven'. Its portrayal through the Liliums was as intimate as I have