Static power

Newly introduced to the top of Martin Logan's hybrid electrostatic loudspeaker range is the Renaissance. Noel Keywood listens in awe.

Gilbert Briggs, founder of Wharfedale loudspeakers, said after hearing Quad's first electrostatic loudspeaker in 1955, "we solemnly agreed to change into black and meet in the workhouse". It wasn't the end of the conventional box loudspeaker and that's why the Martin Logan Renaissance I am reviewing here has one, and why it is termed a hybrid. But the electrostatic drive unit is a shock all the same, threatening to put conventional loudspeakers out of business – and the new Renaissance is now one of the world's top electrostatics, price £25,000. And it makes large the reason Gilbert Briggs' was fearful.

The Renaissance ESL-15A is yet another step up the performance scale from the wonderful Summit X (£15k) I reviewed in our February 2014 issue. The Summit X was big but the Renaissance moves into the realms of being physically challenging size-wise, mainly because of its even-larger powered bass cabinet. Three of us struggled to unbox these 'speakers, yet in spite of their 64kg weight and near 6ft height (177 cms) they don't consume much floorspace, one major benefit of Martin Logan's tall, slim electrostatic panel.

Martin Logan shoehorn two 12in bass units into the bass cabinet of this loudspeaker, one firing forward and one backward. They're housed in a 70 cm deep cabinet, each working in an 'infinite baffle'

sealed chamber; there are no ports.

Also in each cabinet are two 500 Watt Class D power amplifiers no less, one per driver – so you can see where Martin Logan are positioning this speaker in the marketplace: it is very much for those want a large sound in a large room – and have large pockets to match. The Summit X went very loud in my view – the Renaissance goes even louder. It is altogether a bigger and bolder statement.

But that's not all. Where Summit X integrated an XStat panel with a powered bass cabinet using clever phase and radiation shaping techniques, Renaissance has similar but switched options and a Perfect Bass Kit (PBK) that can be bought as an optional extra. This compensates for room behaviour at low frequencies using a measuring microphone, a practice common in AV receivers. We were supplied with PBK about which I will say more later.

I'm going to presume you know that the tall, curved, see-through panel of each Renaissance holds a sheet of super-thin, transparent mylar film, like Clingfilm, that produces most of the music. It radiates front and back through all the tiny holes you can see in the fixed metal panels, or 'stators'. The film is super light, having virtually no mass, so it can start and stop perfectly, and it is driven all over by electrostatic force, not at one point by the cone of an electric motor, as in a conventional drive unit. This suppresses distortion to levels three times lower than cone speakers, from 0.3% to 0.1% our measurements show. Electrostatics are recognised as super-low distortion transducers.

That explains how and why Martin Logan's XStat panel is a see-through loudspeaker. It can also be Hoovered, believe it or not. Traditional electrostatics have dust bags to prevent dust ingress, and outer safety grilles, so they're not see-through and are sonically hampered by the protective covers.

Martin Logan have progressed way past such issues: their panels are insulated and the polarising supply switches off when the speaker is not playing.

The Renaissance uses an XStat panel 38cm (15in) wide and 117cm high – it's a big panel. If you want even more technical detail read the on-line instruction manual where film thickness, resistive coating, stator coating and such like are all talked about.

The electrostatic panel works from 20kHz down to 300Hz Martin Logan say – most of the audio band – and the subwoofer from 300Hz down to 20Hz (see our Measured Performance for full details).

The bass unit cuts off hard below 20Hz our measurements, so as not to reproduce LP warps since two 12in bass units driven by 500 Watts apiece would otherwise be over-driven, something I suffered with Celestion's SL-6000 open dipole subwoofer that reached down to 5Hz, that I paired with a Quad ESL-63. The Martin Logan bass cabinet is not a dipole however, it is a monopole where both bass units are either going out, or in, at the same time (i.e. they are in-phase).

A bass system like this can produce vast power and drive a big room but with bass turned down via the rear on/off switch Renaissance can also be used in a smallish room, down to 18ft long or so – or smaller with suitable back wall (front wall in ML parlance) acoustic treatment. I suspect those that can afford them will not be using a small room however.

You must sit well back for a coherent soundstage that will have razor sharp images on it; electrostatics image superbly – and Martin Logan's curved panel is one of the best at this. If you sit 12ft back and leave 4ft behind the speaker then you are up to an 18ft long room including speaker depth – and that will just do. The Renaissance, however, is really purposed for bigger environments: think up to 30ft or more. They are meant to be able to fill a big space – and go loud.

Ideally, the wall behind the loudspeaker should have light sound absorption to ensure a clean, composed sound from the XStat panel which on the Renaissance is producing a lot of rear-radiated sound power because of its huge radiating area.

The bass cabinet houses two Class D 500 Watt Icepower amplifiers, one per drive unit, plus a Digital Signal Processing Unit (DSP) in its base. A DSP is needed to apply equalisation, filtering and what have you, so the input signal is first turned to digital through an ADC, then processed, then turned back to analogue through a DAC before being amplified. There's a bass gain control with a large 10dB of gain or cut plus a switch that offers boost or cut in the crossover region between electrostatic and bass cabinet.

The bass cabinet houses a 12in bass unit behind a protective mesh grille. Below are single input terminals, so the panel cannot be split from the bass unit. There is a bass level control knob and an array of switches.

With cut, you get a dry sound; with boost you get a full sound more reminiscent of a box loudspeaker; there is also a zero (i.e. flat response) position – see Measured Performance for more.

Additionally, room tuning can be switched in or out, and there's a mini-USB socket computer input to facilitate room tuning.

To be clear, the electrostatic panel is driven directly from an external amplifier – transistor or valve – but the bass units have their own Class D power amplifiers.

The rear wave of a big bass unit isn't fully absorbed within a cabinet, coming out through the cone as delayed sound; only isobaric loading attempts to address this issue (or a dipole such as I used). This is the source of the "box sound" conventional loudspeakers suffer. Putting two 12in bass units and power amplifiers into a small box doesn't ease this, so it's eyes wide open here: you get bass power, good cone damping, electronic equalisation and all but still you have box bass.

An interesting feature available as an optional extra with Renaissance is Perfect Bass Kit, or PBK. This allows the bass cabinet to be tuned to the room, cancelling a room's influence on accuracy. Room tuning is a complex subject and PBK was problematic but useful so see our box-out on it.

SOUND QUALITY

I haven't sat in front of a 15in wide XStat panel before but guessed from previous experience with 12in panels what was coming – huge sound power, especially at high frequencies. Your average loudspeaker has a tiny little tweeter cone firing only forward. Looking at the expansive XStat panel of Renaissance firing forward and backward I knew that I was about to receive powerful treble – and in initial 'sighting tests' I did. No surprise here.

Faced with such a clean, clear yet forceful delivery I was also pushed into thinking about which amplifiers and source products would match and which would not. Super clean sources are needed. The Renaissance can be a challenging listen when spinning CDs passable on other loudspeakers. Good CDs like Dali demo discs we often use survived well but older CDs did not. The ruthless delivery and analysis of the Renaissance isn't flattering to poor CDs. I can see from measurement that Martin Logan have made an effort to lessen this by progressively reducing high frequency output in Renaissance – an exercise in tiger taming.

The ultimate digital source is the new Audiolab M-DAC+ with its John Westlake designed, time-domain optimised digital filters within the ESS ES9018 Sabre32 series DAC, connected via its balanced output: I felt obliged to use it. Meaning I needed an amplifier with balanced input – and our Quad QMP mono blocks were ideal. They have the Quad smooth'n'easy sound and this was just what the ESL-15As needed.

Into the Audiolab M-DAC+ I mostly fed hi-resolution digital from my Astell&Kern AK120 portable digital player, to avoid CD (16bit) quantisation noise and distortion. I did however also use the Oppo to spin CD through the Audiolab, using the Oppo's digital output.

I span LP on our Timestep Evo modified Technics SL-1210 Mk2 Direct Drive fitted with SME309 arm carrying our Ortofon A-95 MC cartridge. This fed an Icon Audio PS3 valve phono stage (with volume control), connected directly to the Quad power amps. This way of operating is simple and offers pure sound quality – and it suited the Renaissance loudspeakers so well. Almost strange that LP played like this still remains ahead of even hi-res digital – at least, when spinning high speed 12in, 45rpm singles.

Why? Well LP via this system had drier and seemingly deeper bass than digital. The vast power of the Renaissance bass enclosures best utilised it. LP bass usually has more bloom than digital bass, but here spinning old 1980s, hi-cut disco 12in singles like Billy Ocean's 'Get Outta My Dreams, Get into My Car', with all its sound effects, the opposite was true.

The huge 12in aluminium cone bass drivers had absolutely massive slam plus Mack truck power in full US fashion – but were also dry and tight in their delivery. There was no subtle, wall-flower stuff here: the bass cabinets shook and shuddered our 25ft long room on a Sunday when I can get to play at vast levels without Notting Hill complaining.

Big 'speakers like this shake a building and upset others far and wide; my only competition was a lone street sweeping vehicle that wouldn't go away, so I kept turning the volume up – and the ESL-15As didn't blink.

In the end it did go away, leaving a Sunday silence that allowed me to hear how these loudspeakers revealed the edits and added reverb existent in studio produced music. Again, ruthless analysis makes for jaw-dropping insight but sometimes

At left are an RJ45 socket for connection during room tuning, a miniUSB input for computer connection and an ARC switch. At right of the input sockets lie a small toggle switch for crossover level adjustment and at rar right a light switch.

you wish to hear less, a bit like sometimes you like to see less when what you see isn't so good, if you know what I mean!

Pressing the 33rpm button on the Technics and spinning Kate Bush singing 'King of the Mountain' from Aerial (180gm vinyl), the deep repetitive bass line cruised along with unbridled power – and again LP bass made the speakers sound especially tight and well integrated. Kate Bush's hushed tones at centre stage were pure and easy to enjoy, a fine tapestry of treble percussion illuminating the background. Only a big Martin Logan can paint a sound stage so large and detailed, yet in this case suitably gentle, befitting the song.

With LP then, the Renaissance offered a wonderful sound; for some reason bass quality was better than that from digital playback. My simple initial explanation here is that LP has more low-end energy (not necessarily music) than digital and fed more into the bass cabinets at very low frequencies. This produced dry, seismic bass.

With CD the 15in panel was incisive in nature – lightning fast and razor sharp in its delivery of transients, giving the acoustic guitar strings in Nils Lofgren's 'Keith Don't Go' the feeling of a surgical knife. There was, I fancy, a slight smoothing here as time went on and the panels ran in; tracks I played initially then later had eased in terms of laceration. Martin Logan say the panel needs little run in, the bass bin needs more. I found the XStat panel sweetening in delivery as it ran in, rather than losing its transient speed.

With Nigel Kennedy playing Massenet's 'Meditation' (CD), the Martin Logans gave his Stradivarius a light, clean and wondrously pure tone, unsullied by the usual crossover phase problems of conventional loudspeakers.

As a result the instrument was all of a piece – and I could hear right into the way he was bowing the strings; the emotional intent behind his playing was evident in the subtly worked intonations. With a such a pure and large image in front of me it was impossible not to hold my breath at times with pieces like this. You can't approach the ability of an electrostatic to handle violin and Martin Logan's XStat panel in the Renaissance was breathtaking here.

Such large projection brought scale to the London Symphony Orchestra playing 'Mars' under Andre Previn's guidance. A thunderous piece like this was made large by the speakers, filling the room with heavy percussion, massed horns and agitated violins. The individual instruments I could pinpoint easily across the width of the soundstage – 7ft between loudspeaker centres. Imagine then, a 7ft wide and 6ft high TV screen, but one delivering audio instead of video, my eyes in awe.

With visceral Rock, like Queen's 'Radio GaGa' (24/96) the deep synth line and metronomic drum machine intro welled up from the floor whilst Freddy Mercury crooned down at me from just above, about teenage nights in front of the radio.

The sheer grip of the bass units and the enormous force of their delivery, with 1kW behind them all the way down to 25Hz was staggering.

With tunes like this I realised just how monstrously powerful bass lines can sound in what is an active loudspeaker of unlimited power. The Renaissance quite obviously has more bass grunt than an unpowered loudspeaker and the cone area of two 12in bass drivers move air like a big 15in Tannoy, but from a smaller cabinet. There were times that – when really pushed hard to very high volume – the boxes had the characteristic box sound I mentioned earlier, due to return energy through the cone, but this wasn't apparent at normal to high listening levels.

> "a breathtakingly powerful musical ability yet one that also delivers the clearest sound with finest detail imaginable."

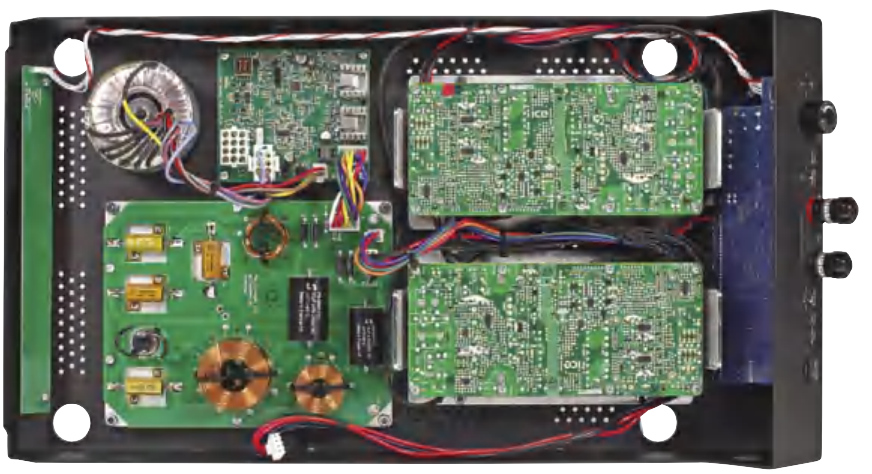
CONCLUSION

The Renaissance is a statement electrostatic loudspeaker, as you might expect for £25,000.

But it delivers a sound quite beyond conventional box loudspeakers in almost every way. It literally dwarves others with its massive. precision soundstage, hung between electrostatic panels nearly 6ft high.

The bass cabinets deliver vast bass power from two 12in drive units driven by 500 Watts each – way beyond the power of all else.

This is a big loudspeaker with a breathtakingly powerful musical ability yet one that also delivers the clearest sound with finest detail imaginable. It's very different from all else but also extraordinary for it. Gilbert Briggs would have been even more impressed – or depressed!



Inside the bottom tray lies a complex array of electronics, including two B&O Icepower Class D 500 Watt power amplifier boards (right), high and low voltage power supplies plus DSP (top) and an enormous crossover board with air core coils and polypropylene capacitors (bottom left).

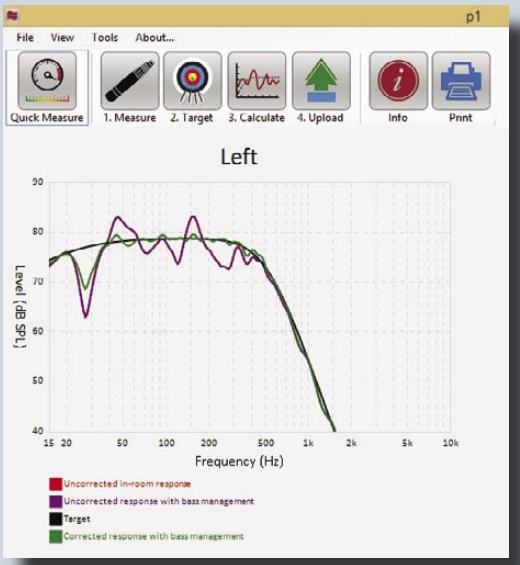
PERFECT BASS KIT

Martin Logan offer electronic room equalisation in the Renaissance, in this case the ARC system from Anthem AV, of Ontario, Canada. The Perfect Bass Kit has a small measuring microphone, a pivoted holder and a tripod, two 13ft long USB A to mini-USB cables to attach both loudspeaker and microphone to a computer and a CD carrying software. Documentation was minimal and PBK comes with difficulties that, I would suggest, make it a dealer install tool. We had "fun" with PBK; there were many problems with this Windows-only programme.

The computer sends a measurement signal – a fast sine sweep – to the subwoofer and processes the sound it receives from the mic. The software puts up on-screen a target response and the measured room response – and attempts to equalise latter to former. Position-averaging using five mic positions during measurement is used. Such a system should ameliorate room effects, rather than wholly cancel them.

You can see the results from the system here, showing it flattened the smaller peaks at a listening position that is a set-tee against a wall at one end of a 25ft long, 18ft wide room. The room has a 1st length mode pressure peak here at 23Hz, and a width mode dip at 31Hz in theory; the system sees a dip at 28Hz that it ameliorates. The smaller peaks and dips are flattened, however. There was a slight subjective smoothing of bass at this position as a result. This analysis just shows what PBK can do.

Because of the controversial nature of such room tuning systems, if you don't like what it does you can switch it out, using an off switch on the rear of the loudspeaker. You cannot however, manually tune the system. As a dealer install, PBK is used at no charge, otherwise it costs £222.00.



As a general note, big rooms like our listening room (6000cu ft) hardly need equalisation; PBK is most needed for small, modal rooms, especially square rooms of around 20ft or below.

MEASURED PERFORMANCE

With the Renaissance, wherever I put the measuring microphone it gave the smooth, consistent result you see in our analysis. So the 'speaker is very consistent across what is termed a wide solid angle, meaning laterally and vertically. It is also accurate and predictably smooth, due to an absence of resonances in the radiating structure, and little interference by the stators, the metal front/back panels with holes. This is an almost text book perfect measured result, even at bass frequencies.

The overall response trend of this huge loudspeaker is down toward high frequencies, to subdue the amount of high frequency power fed into a room. Deep bass output is +6dB higher than output at 10kHz, showing how Martin Logan have sought to give the Renaissance a subjective balance closer to a box loudspeaker.

The XStat panel handles all frequencies from 300Hz up to 16kHz our analysis shows – a huge frequency range. This means there is no change of character from different materials or drive unit structures, no phase dips and no dispersion problems. A wide range electrostatic eliminates a whole host of drawbacks conventional loudspeakers suffer.

The bass cabinet runs smoothly from 300Hz down to 25Hz, below which it cuts off sharply. With LP strong attenuation of warp signals is needed to prevent cone flap in such a powerful bass set up. Running down to 25Hz does not subjectively lessen deep or subsonic bass.

With the bass cabinet gain control set to zero, the system has slight bass lift, so the Renaissance set 'flat' will have obvious bass. Around -2 on the gain control was flat under measurement and a large +/-10dB adjustment range available. Maximum bass cut would suit a smallish resonant room; the roll down starts at 80Hz. Maximum boost is extreme.

The lower midrange boost/cut switch (+2/-2) alters output at the subwoofer's crossover frequency to change the subjective match to the XStat panel, a trick I used in 1993 to blend a powered Celestial SL-6000 open dipole subwoofer to a Quad ESL-63 electrostatic.

With one nominal Watt of input (2.8V) the Renaissance produced 90dB sound pressure level. Turning down bass a little, to -2 for a flat response, gave 89dB, so the speaker will run very loud from little external power, and could be used with a 20 Watt valve amplifier.

Our impedance trace shows that at high frequencies the panel is almost a short circuit across an amplifier, measuring just 1 Ohm – and not all transistor amplifiers like this. Valve amplifiers have no problem with it though.

The Renaissance ESL-15A measured superbly in all areas, being flat and smooth right across the audio band from all angles. It has accurate tonal balance and low colouration, but Martin Logan now trend high frequencies downward to account for the high amount of sound power from a big panel firing forward and backward at very high frequencies.

The bass cabinet is sufficiently adjustable without the Perfect Bass Kit to suit all rooms. The monopole-bass to dipole-panel lower midrange gain switch, for subjective matching, also works perfectly. Martin Logan have a full grasp of what they are doing in this system and have implemented technology superbly.

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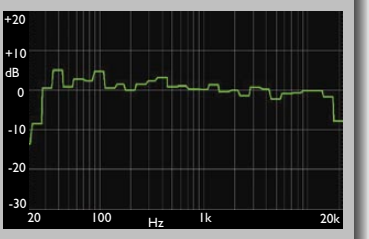
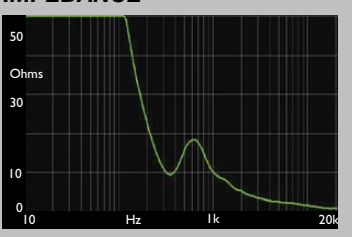
FREQUENCY RESPONSE



IMPEDANCE



MARTIN LOGAN RENAISSANCE ESL-15A £25000

OUTSTANDING - amongst the best

VERDICT

The Renaissance moves the electrostatic further toward perfection in sound. It isn't perfectly integrated at high volume, but it gets very close.

FOR

- pure sound
- pinpoint imaging
- wide and high soundstage
- massive bass power

AGAINST

- needs a large room
- brutally revealing
- expensive

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