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The Bosendorfer VC1 Loudspeaker

by Paul Messenger

Bosendorfer's VC-1 is one of the most unusual speakers to come my way in more than twenty years. It doesn't look all that strange – rather it's both pretty and discreet, with a notably slim front panel minimising the bulk – but appearances are deceptive. It doesn't just bend a few of the rules, it breaks most of them, and comes from a company that was founded a century before the hi-fi industry had even been thought of.

I don't know how many readers will know the name Bosendorfer. I guess it will depend very much on one's taste in music: the Coldplay generation may be none the wiser, while fans of Alfred Brendel will be much more impressed. This Austrian manufacturer, steeped in the Viennese traditions of the spiritual home of classical music, makes some of the world's finest pianos, and has done since 1828. Its list of celebrity endorsements is headed by Franz Liszt and Johannes Brahms, and continues down through a who's who of famous pianists still alive today.

Does that give it any right to make loudspeakers? By no means. But it does mean that the company is marinated in musical culture, and arguably has a rather better idea of how music is actually created than those in the hi-fi industry.

That said, conventional wisdom has it that the loudspeaker and the musical instrument should be worlds apart, and indeed that the requirements for a speaker are virtually the opposite of those for a musical instrument. Creating

and controlling resonances lies at the very heart of how musical instruments are played, and the theory goes that the loudspeaker should therefore be as resonance-free as possible in order to avoid adding resonant colorations to the reproduction process.

At the same time, it's also true that a relatively small loudspeaker diaphragm, pumping away like mad, will never replicate the physical way that a large instrument like a piano or acoustic bass creates low bass notes and rich harmonics, through a large area vibrating invisibly. Perhaps this is one reason why hi-fi systems never really approach reality; why big speakers sound more 'real' than small ones; why horns have a special charm. And maybe also why this Bosendorfer, with its resonant enclosure and extra sounding board, also captures something of the same magic.

I'm getting a bit ahead of myself here, but that's because this is such a disorienting loudspeaker. The basic ingredients look prosaic enough, and hardly seem sufficient justification for the VC-1's base asking price of £2,500 per pair. What we have here is a compact floorstanding two-way, with a relatively small (140mm frame) main driver and a conventional enough 25mm soft fabric dome tweeter. That's no more than one

might find in a little 7-litre miniature stand-mount, selling for a fraction of the price. But the key to this speaker lies in the complexity of its cabinetwork and the contribution it makes, which includes an 'acoustic sound board' energised by a reflex port, as well as the unusual disposition of the drive units.

The VC-1 is the smallest of three stereo pairs in Bosendorfer's range, all of which are very similar, both conceptually and in the ingredients involved: the rather larger top-of-the-line VC-7 (\$4,745), for example, is also a two-way, but has four bass/mid drivers, two tweeters and two of the acoustic sound board resonators. The quoted figures are just the starting prices for each model, where the finish is plain black or white. Bosendorfer might be new to loudspeakers – that side of its operation is only five years old – but the piano making heritage has given it access to all manner of very classy and attractive real wood veneers. Both the speakers and the pianos are made in a relatively modern plant some 50km from Vienna, and as a result the speakers are also available in some very fancy veneer options, usually at substantial extra cost.

The man behind these designs is an Austrian called Hans Deutsch, who ran his own speaker company for many years, and has more than thirty years ▶



▶ experience in loudspeaker design. He calls his radical approach the Acoustic Active Principle, and deliberately rejects the usual approach of attempting to control enclosure resonances and rely purely on the drive units to generate the sound. In a backgrounder he sets out his stall: "Without resonances, there cannot be lifelike sound", an assertion which most speaker designers would regard as pure heresy. He sums up the Acoustic Active Principle as treating: "the loudspeaker cabinet as a vibrating, resonant body, allowing the creation of a three-dimensional, transparent, true-to-life sound".

Whether you agree or disagree with that contentiously controversial statement, there's no escaping the fact that creating a speaker that follows such principles is going to be a very difficult task. Regular motor-driven drive units are substantially predictable things, far more so than large resonant panels of wood. However, if one accepts that Hans' AAP approach may have some validity, no company is better qualified to develop and manufacture such devices than a skilled and experienced piano maker, where the whole *modus operandi* is to augment the string vibrations with carefully controlled and evenly distributed panel resonances.

Exactly how this accomplished in the VC-1 is difficult to say precisely, though there are a number of clues. The bass/mid drive units are mounted on the (out)sides of the relatively large enclosure sides, and strategically placed just off-centre of both the height and the depth, in order to excite the maximum number and variety of bending modes. There's a little narrow slit or slot, about 14cm long, near the plinth and just in from the back edge, and what appears to be a matching one on the inside face too. These presumably act as well-damped reflex ports, and the inside one helps excite the special 10x91cm 'acoustic sound board' (ASB) that is attached by six strategically placed fasteners to the (in)side of the enclosure.

A proper separate plinth ensures good overall stability in all directions: pretty gilded spikes are supplied as standard, though these were supplemented by Black Diamond cones for most of the listening. Two side grilles are supplied to cover the side-mounted main driver and preserve symmetry with the ASB on the other side, though the front panel is uncovered and the surface-mounted tweeter is left exposed. The small bass/mid driver has a 140mm cast frame, a relatively stiff foam surround and a 100mm diameter paper cone. Signal is applied via single pair of terminals low down on the rear.

Intrigued by the AAP and ASB features, I experimented by feeding one of the speakers with sinewaves, and it was readily apparent that different parts of both the enclosure panels and the ASB were resonating at numerous frequencies throughout the bass and lower mid-band. The ASB, for example, was clearly generating significant vibration at 130-140Hz, and again at 180-200Hz.

This review was actually delayed by an issue, as Bosendorfer's Rupert Loeschner wanted to come over with Hans Deutsch in order to help optimise placement and set-up. This proved a fascinating exercise, as Hans started moving the speakers around while listening to the music we were playing. It was a procedure that smacked more of mumbo jumbo than any scientific method, yet when Hans had found the locations for each speaker that he found most satisfactory, I have to admit they

were sounding remarkably good, especially after he'd finished twisting the orientation of the speakers.

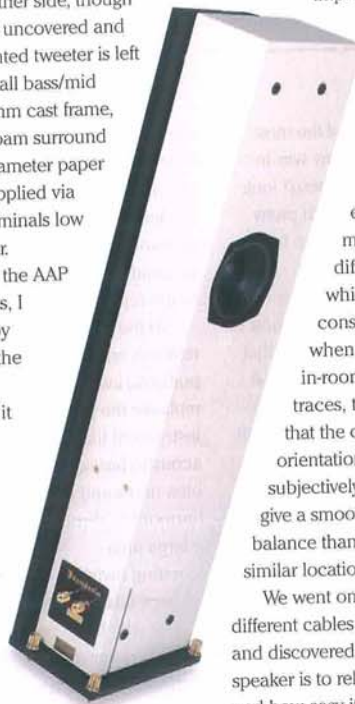
The subjective effect was somehow to manage to integrate speakers and room modes, to such an extent that the two were working in harmony together, minimising boxiness and creating the impression that the sound-

field was being generated across the whole of the end of the room.

It was a curious, almost uncanny, yet wholly pleasurable effect, and one that makes this speaker very different from the norm, while also conferring considerable charm. And when I subsequently ran my in-room far-field response traces, they only confirmed that the chosen locations and orientations that Hans had subjectively selected did indeed give a smoother and more even balance than alternatives in broadly similar locations.

We went on to experiment with different cables and floor coupling, and discovered just how sensitive this speaker is to relatively small changes, and how easy it was to tweak and tune them to taste. I suspect that two key factors are responsible. First, this is an exceptionally simple design, with a minimalist crossover network and no damping, so time coherence is essentially very good; then there's the 'magnification factor' that the enclosure resonances provide, which also seems to emphasise differences.

Aside from the above, both the sound quality and the measured performance are somewhat mixed. Starting with the measurements, there's no really deep sub-50Hz bass here, which is no real surprise in view of the small bass/mid driver, and also the fact that the reflex porting is tuned to a ▶



▶ relatively high 70Hz. The far-field in-room tonal balance is also a little unusual: it's around 4dB stronger through the bass and lower mid-band (between 50Hz and 250Hz) than over the rest of the band, though both sections are reasonably even and well balanced either side of 500Hz. Sensitivity is well below average – realistically, around 85dB – but the amplifier load is very benign, staying comfortably above 6 ohms throughout, and above 16 ohms through much of the mid and treble.

This combination of modest sensitivity and power handling inevitably mean limited loudness capability, but it still seems quite able to deliver rock music at decent enough levels, albeit without too much headroom left in reserve. Serious headbangers and techno-fans should maybe check out one of the larger Bosendorfers, such as the VC-7, whose multiple main drivers gave a high 91dB sensitivity under the same conditions.

However, if high levels and deep bass aren't major priorities, this slim and compact VC-1 is a hugely enjoyable loudspeaker, especially in the way it handles acoustic instruments and sorts out complex arrangements. The review actually coincided with the BBC's annual Prom season, giving plenty of opportunity to enjoy this to best advantage, with a little help from Magnum Dynalab's MD102 tuner. Dramatic dynamics make the concert piano a particularly difficult instrument to reproduce convincingly, and while the Bosendorfer name indicates this might have been a priority, it still came as quite a shock that such a compact speaker could make such a large instrument sound so realistic. Likewise, acoustic basses were very persuasive: the plucked responses from the orchestral basses at the beginning of the fourth movement of

Ravi Shankar's *Sitar Concerto No1* sounded most impressive and realistic.

Despite the lack of genuinely deep bass, the VC-1 never really sounded small or lacking in scale, simply because it delivers such a strikingly realistic dynamic performance through the bass and lower mid-band. In a very real sense

these dynamic capabilities are reminiscent of horn loudspeakers, even though the sound



is very different in other respects (much more 'in-the-room' imaging, much less coloration and lower sensitivity).

Just occasionally the sound can be a little too rich and warm – Lamb Chop's 'Is a Woman' springs to mind, and male speech can sometimes sound a trifle 'chesty'. But these are very much the exceptions, and for the most part this speaker simply sounds delightfully natural and open, with an inherent musicality that's powerfully seductive, yet also very different from the norm. Its music making is wonderfully agile, yet also effortlessly consistent right across the band, making no attempt to force the pace with undue grip or drive.

All speakers involve various compromises that are reflected in the

overall performance, and it's often possible to predict the likely outcome from any given collection of ingredients. That's certainly not the case here. Low bass, sensitivity and power handling might all be modest, and the tonal balance a trifle unusual, but few can match the convincing way the VC-1 delivers dynamics, with very superior speed and coherence. And once the correct locations and orientations are found, it's quite remarkable how well speakers and room integrate together, spreading a convincing image across the whole area, with a splendid freedom from boxiness. Indeed, the knowledge and expertise that is required to optimise placement could well be this design's Achilles' heel. Ideally sited, Bosendorfer's speakers might be very different from the norm, but their unique approach can deliver a sound that is triumphantly natural and easy to live with, while also delivering outstanding musical communication. ▶+

TECHNICAL SPECIFICATIONS

Type:	2-way active resonator (see text)
Drive Units:	1x 25mm fabric dome tweeter 1x 140mm paper cone mid-bass
Frequency response:	35 - 25,000 Hz (±3 dB)
Crossover frequencies:	130 Hz*; 2.0 kHz
Power rating:	60 watts
Music rating:	120 watts
Impedance:	8 ohms
Efficiency:	90dB/2 Watts, but see text
Dimensions (WxHxD):	160 x 927 x 245mm
Weight:	13 kg ea.
Price:	From £2500/pr.
* based on the performance of the HornResonator	

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