

Kaos Rules

PAUL MESSENGER TRIES OUT THE EXTRAORDINARY SOUNDKAOS WAVE 40, AN ANGLO-SWISS CONFECTION THAT REDEFINES THE FULL-RANGE DRIVER LOUDSPEAKER

I first encountered this unusual looking pair of speakers at the 2014 High End Society show in Munich, where they were making some very nice noises in a closed booth sited well away from the busiest parts of the show. As such it provided an oasis of musical sanity amid the hurly burly I had encountered elsewhere, assisted by the fact that proprietor Martin Gateley, born of an English father and Swiss mother, has spent much of his adult life in England.

That said, the Soundkaos *Wave 40* speakers that were making those nice noises are actually made in Switzerland, where Gateley spends some of his time, and where the 'tone wood' used in these speakers is actually grown. It's also presumably one reason why the price (currently 18,900 Swiss Francs, which converts to £12,330 in pounds sterling at the time of writing) is so high, as Swiss manufacture is invariably costly.

One justification is perhaps that this is a very unusual speaker indeed in a number of different ways. It's an unconventional shape, for starters, but judging by the reactions of numerous visitors (especially females), its curvaceous elliptical shape seems to be very appealing. Construction of the 36litre enclosure is particularly unorthodox: the front and back panels are each made from two pieces of alpine spruce 'tone wood', joined along its vertical centre line. Apparently this 'tone wood' is normally used in the restoration of

classic musical instruments, and is harvested at a particular time of day etc etc.

And the front has been attractively carved into a series of raised (and recessed) concentric circles centred on the main driver with the assistance of a CNC router. The curved sides of our samples were fabricated from a contrasting cherry wood, though other hardwoods such as maple and walnut, plus an all over black lacquer alternative are also available. A distinctively large port – confusingly and somewhat controversially described as the end of a transmission line or horn, and elsewhere as a 'hybrid scoop' – is low down on the inward facing side. (The two examples that make up the pair are constructed as mirror images of each other, despite their front panel symmetry.) Quite how this scoop-shaped outlet actually works is just as controversial as the attempts to describe it, though it does appear to reinforce the bass across a rather broader band than a regular port.

In addition this speaker uses an external crossover, which is housed in a matching wooden cylinder, and the whole enclosure is mechanically decoupled from the main drive unit and stand.

Although nominally a two-way speaker, the *Wave 40* may also be seen as a full-range or 'widebender' (to use the German phrase) speaker, to some extent at least, in that the main bass/mid unit is essentially a full-range 200mm device, from a small German operation called Enviee which is little known in the UK. It has a paper cone diaphragm with a secondary higher frequency cone, all supported by a pleated surround. A wooden 'bullet' polepiece extension provides phase correction, and the unit is energised by an alnico magnet. However, in this instance the very top end of the 'widebender' is augmented by a Raal ribbon tweeter – a Serbian device that's widely recognised as one of the very best around (see *HIFICRITIC Vol15 No3*), and effectively operates as a supertweeter, covering just the last audible octave or so above 7kHz, and helping to avoid a 'hot spot' at around 9kHz present in the Enviee driver.

Exactly how the crossover is managed proved rather tricky to pin down, despite the external network, because the latter uses some unusual



PAUL MESSENGER

connectors on the speaker side of things. The input side is a straightforward high quality pair of 4mm socket/binders, but the output uses an asymmetric 4-way socket that mates with a matching plug on a flying lead from the loudspeaker proper. My examination of the crossover circuitry reveals just a single capacitor in the Raal feed, to bring it in gently at 6dB/octave (and incidentally prevent it from being damaged by low frequencies). The Enviee feed is rather more complex, combining a 2nd order (12dB/octave) rolloff with a mild notch filter to shape the response.

The integral stand has a flat and hefty elliptical metal baseplate, arranged so it's a little wider than deep, and sits on four cones at the width and depth extremes. To this plate is fitted a slightly curved wooden spar that finishes in a horizontal protrusion which actually seems to be bolted to the alnico motor at the back of the drive unit.

Although the exact mechanism defies superficial scrutiny, foam inserts attempt to decouple the ovoid enclosure mechanically from the stand and main driver, and in fact the whole enclosure may be rotated about the main driver and stand, though the tweeter is supposed to operate vertically.

Technical Stuff

The specification only claims a sensitivity of 92 or 93dB (depending on which of two published versions you go for), which is rather modest for a design of this type. However, my in-room far-field traces indicate something much closer to 96dB. This is unquestionably very high, but not unreasonably so in view of the ingredients involved, though an additional bonus is that the speaker is also a true 8ohm load and stays comfortably above 6ohms throughout.

The port (whatever it is and how it actually functions) is tuned to around 44Hz, and the fundamental free-air resonance of the driver is a little above 50Hz, so the absolute bass weight and extension is bound to be somewhat limited. (Inevitably perhaps given the high sensitivity.) Under our in-room conditions the bass rolls off quite gently below 80Hz, so is overdamped with a slower rolloff than usual; it's still only 6dB down by 30Hz so is going to sound dry, but will still add some impression of scale and worthwhile bass extension.

However, the most impressive feature of this speaker is a frequency balance that's unusually well controlled for what is essentially a single full range driver system. It's not entirely flat, but

the unevenness is particularly well controlled and is also held within unusually tight overall limits, especially through the broad midrange. It's no surprise to find that the midband is a little prominent, as output rolls off (very gently indeed) below 70Hz and above 4kHz, but it actually holds within ± 2.5 dB between 90Hz and 4kHz. (Above 4kHz things are both uneven and a little restrained.)

I couldn't resist the temptation to take advantage of the ability, thanks to the external crossover network, to access the unequalised main driver directly. This results in a broad upper mid and treble prominence of 3-6dB, centred on 1-2kHz. (Incidentally, the tweeter contribution is worthwhile extra 10-20kHz output.)

Sound Quality

It has always been difficult to isolate the possible dynamic and coherence benefits of a solitary full range drive unit speaker from the balance limitations of such a speaker. In this instance there's no trace of the upper-mid peak that such a driver usually shows, thanks to the mild equalisation applied *via* the crossover network. That said, the overall balance of this speaker is still sufficiently different from the norm to frustrate easy comparisons, although as far as it is possible to tell, the *Wave 40* has all the extra charm normally found in full range driver speaker systems, and without the usual down sides too. It's all about vividness, and the way this speaker somehow manages to sound significantly more 'real' than more conventional speakers with much lower sensitivities.

The *Wave 40* does have its limitations, especially towards the extreme top and bottom of the audio band, and it tends to push the midband into a dominant and somewhat forward role. But this is a midband to die for, with marvellous dynamic grip and fabulous timing and coherence. The latter probably helps keep coloration very low indeed, and the imaging is very well focused too, if a trifle forward and short of depth.

Conclusions

This is an excellent example of how to retain the very real virtues of single full-range driver working while taming its usual eccentricities. The *Wave 40* is unquestionably costly, but it's also very pretty, and the bottom line is that it also does the sound quality business, sufficient to justify an Audio Excellence award.

HIFICRITIC
AUDIO EXCELLENCE



Manufacturer's Specifications

Bandwidth (-6dB)	55Hz to +30kHz
Sensitivity	92dB @1kHz (96dB measured)
Impedance	8ohms
Size (HxWxD)	116x42x26cm (inc. stand)
Weight	20kg (inc stand)
Room position	Floor, 0.3-1m from side boundary
Enclosure alignment	Ported (hybrid scoop*)
Enclosure volume	36litres
Input connectors	4mm socket
Long term power	50W RMS
Peak / music power	100W Peak
Rec amp power:	50-150W
Price (pair)	£12,330

*Exact mode of operation is difficult to define

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