The new R700 loudspeaker benefits from advanced technology used in the flagship Blade, says KEF. Jason Kennedy listens in...

The fanfare! KEF is fifty years old, an achievement it has been celebrating with the £20,000 Blade, its most ambitious loudspeaker ever and a design that first appeared as a concept, but made it into full production last year. It incorporates the most advanced version of KEF’s coaxial Uni-Q drive unit thus far produced, so it’s only natural that the company should trickle down the technology to more affordable loudspeakers. The R series is the first to really take advantage of this, and features a Uni-Q mid/treble unit that shares parts with that found in its aforementioned flagship.

The R700 is an exceptionally well finished floorstanding loudspeaker; the piano black sample that took up residence in my listening room is one of the sleekest I’ve used in a long while. It sits on four precision cast aluminium outriggers for stability, and these have lockable spikes at each corner for a firm fixing. The chrome finished cable terminals have a simple but elegant linking system that consists of threaded caps; just unscrew them to unlink and bi-wire, no need to remove links.

Unlike previous KEF ranges, the R series floorstanders’ (of which this is the middle model) drive units are arranged D’Appolito-style with bass units either side of the Uni-Q. The difference is that most D’Appolito arrays have a tweeter in the middle of the two mid/bass units, and the quality of dispersion increases as the crossover frequency goes down. By using a mid/treble Uni-Q KEF is able to get this point down to 350Hz, far lower than any tweeter will go.

KEF’s engineers have put a lot of energy into making the drive units on this speaker work well, for the Uni-Q they have taken the voice coil, copper-capped pole piece and ‘tangerine’ waveguide from the Uni-Q in the Blade. The waveguide came about as a result of the research and development team that is shared by KEF and Celestion, a company that solely makes pro-audio loudspeakers and is part of the same group. The ‘tangerine’ is neither orange nor round, but does partially block the tweeter dome for the same reason, and this adds a useful 3dB of sensitivity at 20kHz as well as improving dispersion.

The tweeter dome beneath it has been reinforced around the edge with a second layer of aluminium that forms an ellipse-shaped void around the edge and emulates the way that many bridges are supported by a curved structure. The edge, being the weakest part of the dome, needs the most reinforcement, and like certain other tweeters on the market, this one has rearward ventilation via a damped tube.

The midrange driver that surrounds the tweeter is made of magnesium/aluminium, and has a very small surround because it has a very short throw. The bass drivers are a combination of a lightly dished aluminium exterior plate bonded to a paper cone of a variety that would be inefficient as a drive unit, but provides a stiff link to the voice coil.

The R700 is not just about drive units. KEF’s engineers have used finite element analysis (FEA) to figure out the best places to put bracing and constrained layer damping pads. There are four large examples of the latter inside the R700 and these help to turn cabinet vibration into heat. The two reflex ports on the rear have also been given the full computer modelling treatment, a process that has resulted in a very specific shape to either end of each port.

**Sound quality**

The R700 has a considerably smoother sound than most of the speakers that I am familiar with, and early listening left me craving more definition and grip to the bottom end in particular. But after some repositioning experiments and component as well as cable changes, the breakthrough came when I removed the heavy damping that hangs either side of my listening room to dampen first reflections in a long but not very wide room. This allowed the KEFs to show off their excellent lateral dispersion and deliver some bite along with the plentiful dose of detail that they produced beforehand. They image spectacularly well with voices and other acoustic sources, Nils Lofgren’s acoustic guitar was revealed in all its bodacious tonality and the ambience of his live performance was projected most effectively into the listening room.

The KEF R700s image spectacularly well with voices and other acoustic sources...

The R700 has impressive bass extension and needs a bit of space to breathe; it worked best when placed about a metre from the rear wall and a little less either side. KEF supplies port bungs for situations where closer to wall siting is a necessity, but you get the full benefit of the clever port design without them. The extended and substantial quality of bass is obvious with Kraftwerk’s *Man Machine*, where synth notes drop down as the track progresses. This was fully apparent thanks to the speaker’s ability to control and define the low end. This quality contributes to the realism of images as well, smaller speakers can produce a
Q&A
JASON KENNEDY SPEAKS TO KEF RESEARCH ENGINEER JACK OCLEE-BROWN...

JK: Why use almost flat aluminium bass cones rather than more conventionally shaped ones?
JO-B: The midrange driver frequency response is affected by irregularity on the front baffle. Other drivers, the edges of the box and port openings can all cause secondary radiation and scattering of the signal. On the Blade we were able to go to the extreme of only having the Uni-Q alone on the front baffle. For the R-series we were not able to quite so extreme with the design. However, one of the measures we are able to take to minimise the secondary scattering effect is to make the LF drivers as flat as possible without compromising their performance.

Unlike some competitors you don’t use exotic materials for the tweeter dome; why is this?
The geometry has a dominant effect on the performance of a tweeter dome. If the geometry is not well designed then the performance can be extremely poor, even with the most exotic materials. For example, if you take a completely flat disc of aluminium of the same diameter and thickness as the R-series tweeter and tried to make this into a driver, you’d find that the dome break-up is only a few hundred Hertz. Because of this we have concentrated on working with relatively conventional materials but using very unconventional geometries, such as the stiffened dome structure, to optimise the overall performance.

What hardware and cables do you use for R&D listening?
We have a large Electrocompaniet system, which we use as a high-end, high-power reference. This consists of a pair of the Nemo monoblocks with a ECQ 8 preamp. We use a server system as a source with a Squeezebox Touch feeding either a Prism Sound Orpheus, or an Arcam D33 DAC. We also use an Arcam system as a lower price reference consisting of a £280 integrated and a CD6 CD/SACD player. Cables are generally from the Chord Company.

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