

TECHNOLOGY

INSTALLATION EUROPE

driver uses patented PSAC (Pressure Sensing Active Control) circuitry, a feedback technology originally developed for USAF stealth aircraft. PSAC employs a custom pressure sensing device located just in front of the driver, feeding back information to a 'black box' that uses computer-modelled, high-order correction circuits to correct any non-linearity in the driver's output. This represents one of the first commercial attempts to provide a 'closed loop' control system for a loudspeaker, and will doubtless be emulated in the future. □

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▼ TRADITIONAL MANUFACTURING MATERIALS ARE HARD TO BEAT – BUT ALTERNATIVES ARE EMERGING

Manufacturers boxing clever

□ New materials are constantly being sought for loudspeakers – the traditional Finnish birch ply cabinet has not changed in many decades, but the requirements of minimal weight for some installations have led to products appearing with alternative cabinet construction.

QSC's newly-released 215PCM subwoofer, which forms the basis of the company's ISIS system, uses a proprietary compound called Compositlite, which is much lighter and stiffer than wood. This has the effect of increasing the cabinet panels' resonant frequencies to above the subwoofer's operating range, but also presents a problem; comparatively heavy moving cones require a solid environment in which to move.

The neat solution employed by QSC is to design the subwoofer with two diametrically opposing drivers, which cancel out the moments transmitted to the cabinet. JBL has also employed carbon fibre in its large-scale VerTec line array system, to reduce the load on temporary rigging points in touring applications.

Tony Andrews of Funktion One, however, offers a note of caution when it comes to driver materials. "A material like Neodymium is great – it means magnets can be smaller and lower in weight – but with that comes the problem that a smaller magnet is a less effective heatsink. Also, Neodymium is sold in several grades, and the poorer stuff is only magnetically stable up to 70–80° centigrade, above which it can lose its field

over a period of time. The better type, which we use, is usable up to 120°, which is enough even for 24-hour raves at full level."

On the subject of driver cones, Andrews points out that most materials have been explored. "There have been alternatives to the paper cone for years, and people have tried them all at various times. We've seen carbon fibre, Kevlar, huge 60in honeycomb drivers, aluminium and even ceramic. But for music, paper still accounts for 98% of all driver cones."

Andrews says this has nothing to do with cost – the argument is sonic. "It's all about what you can get out of it. For music or voice, the breakup modes are right, and the additives that are used these days mean that paper can stand up to pretty much any job."



Funktion One's Tony Andrews – 'paper still accounts for 98% of all driver cones'

"There's no getting away from the fact that the loudspeaker is the last interface between the sound system and the human ear; above all else, it has to sound right."

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