

Sound technology

Innovations: the manufacturer's view

Ribbon, Revisited

Technica AT4080, AT4081 Ribbon Mics

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has recently come out
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AT4080 and AT4081.
ending, these micro-
significant innovations,
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D and AT4081 are side-
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4081, with an appear-

ance more like that of a pencil condenser, is optimized for strings, saxophones and other horns, acoustic instruments, drum overheads, orchestras, ensembles and guitar cabinets; its low-profile stick design maximizes placement options. Both mics excel in recording studios as well as in live-sound settings.

When we took on the ribbon microphone, our engineers in Japan were intrigued by the fundamental simplicity of the ribbon. We could not resist tackling such a simple yet challenging design. In approaching the project, we essentially deconstructed the ribbon, looked at limitations on current design, and reinvented the capsule, finding a way to achieve smooth, natural and accurate sound while solving problems that have long plagued ribbon microphones.

The ribbon offers the purest form of transduction: a thin strip of aluminum

moves between two magnets, inducing voltage. The condenser and conventional dynamic are complex in comparison. The condenser requires an electric transducing method to convert the movement of the diaphragm into an electrical signal, while the conventional dynamic microphone relies on a connection between two moving parts (diaphragm and coil); connections are places where sonic aberration can occur, as the diaphragm and coil have fundamentally different resonances.

(continued on page 42)



The AT4080 (left) and AT4081 mics

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Angelica Dewlow, Marketing Director
Location Sound Corp. / North Hollywood, CA

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Mackie HD Series Powered PA Loudspeakers

by Strother Bullins
for Pro Audio Review

After a 2007 review, Mackie's SA Series powered speakers have served as a personal benchmark of high-quality, reasonably priced, large, full-range speakers at the very top edge of what I can still consider "portable PA" applications (if a band consisting of at least two people with fairly strong arms can transport its sound reinforcement in a SUV or van alongside its instruments, I'll justify it as "portable PA").

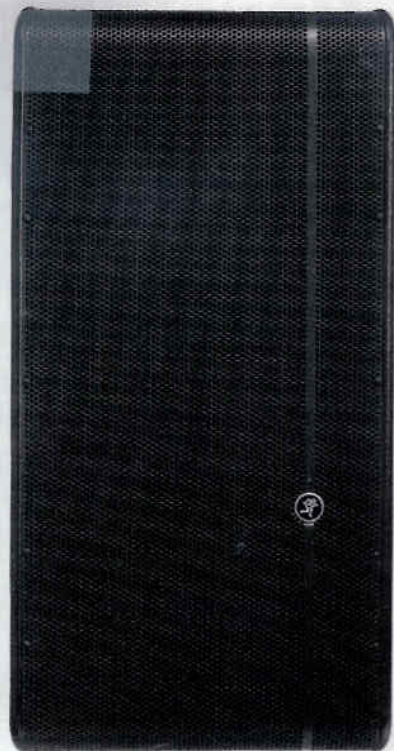
Mackie's new HD Series of powered loudspeakers reveals itself as the next logical developmental step in truly powerful portable PA and, in many ways, outperforming its older (and more costly) predecessor, the SA Series.

Features

The HD Series includes two models: the three-way HD1531 and two-way HD1521 (\$1,499 and \$1,249 list, respectively). I reviewed the HD1531, which

features 1800W (peak) "of ultra-efficient Class D Fast Recovery amplification." According to Mackie, which prevents the HD's output from saturating, ensuring better sound when the amps are pushed toward clipping (a thoughtful design for the real world). The three-amp power breakdown—each amp coupled to EAW-designed transducers—is as follows: 700W RMS/1,400 peak for the low-frequency 15-inch neodymium woofer with 3-inch voice coil; 100W RMS/200W peak for the 6-inch horn-loaded, high-output midrange transducer; and 100W RMS/200 peak for the 1.75-inch compression driver with heat-treated titanium diaphragm.

Frequency response of the HD1531 is 50 Hz to 18 kHz (-3 dB). Horizontal and vertical coverage, averaged 2 kHz to 10 kHz, is 90 degrees and 40 degrees (-6 dB), respectively. Maximum peak SPL, calculated and measured, is 135 dB and 126 dB, respectively. Crossover points are 400 and 1,500 Hz.



The HD1531s chameleon-like ability to adapt to every place I used them was consistently surprising and impressive to everyone in earshot, myself included. Clearly, EAW and Mackie's investment in R&D on the HD's DSP features were well spent. Further, the HD's built-in EQ proved to be useful in several acoustically challenging rooms; its frequencies and range of adjustment are well chosen. All in all, "high-definition" is a deserved moniker for the HD1531.

As an HD "feature," Mackie refers to the HD1531 as "ultra-compact and lightweight." Not surprisingly, because huge sound in live audio rarely comes in small, lightweight boxes, these well-built HD cabinets are not something I preferred to load

in/out, pole mount or fly, etc., alone. So while I don't find them to be lightweight at nearly 100 pounds, for what they do, I guess they are. I did discover that their size, low-end extension and high power often allowed me to leave that 150 lb. powered subwoofer at home—definitely a good thing.

Summary

During my time with them, these new Mackie loudspeakers proved themselves deserving of a "whoa—awesome" description. The HD Series clearly benefits from a combination of newly applied, EAW-borne transducer and DSP technology with sensible design elements that have long defined Mackie live sound products.

The HD1531 is built and designed well enough to please seasoned professionals in small- to medium-sized live venues, yet a pair would be a real boon for those over-achieving, aspirational audio folks amongst us; the HD Series is remarkably affordable for what it provides its users. Owning a pair of HDs will likely allow users to ask for better pay, delivering what modern audiences and club owners (and even discriminating pros) expect for live music events. I consider the HD1531 a worthwhile investment in a large, portable PA speaker.

Mackie
www.mackie.com

I/O, controls, and indicators (mounted above the long, vertical heat sink on the HD1531's rear panel) include XLR main input; XLR loop out; three-band, contour, digitally controlled EQ with sweepable midrange; a -6 dB to +6 dB master level control and overload/limiting indication.

Three digital processing-related features, hence the HD Series' "high-definition" moniker, are Mackie-patented acoustic correction algorithms, transducer time alignment and a phase-coherent electronic crossover; in its signal flow, all processing takes place directly after the EQ circuit. The HD1531's tour-grade enclosure is made of 15mm birch plywood, featuring two well-designed handles and a dozen fly points for flexible rigging options; it weighs 96 lbs. Dimensions are 35x19x18.25 inches. [According to Mackie product manager Greg Young, "We've departed from the SA design, which uses plastic end caps (top and bottom), in favor of the all-wood cab. This sets us apart not only from our legacy model, but also from other products in this price range. All wood is obviously more rugged/durable than plastic, but there is also an acoustic advantage to all wood: plastic resonates, whereas wood is (more) rigid, so you get less unwanted resonance with all wood. The HD1531 ends up being 6 to 9 inches shorter than our competitors' three-way boxes, and we have much more output before LF starts to distort."—Ed.]

In Use

I used a pair of HD1531 powered loudspeakers in a variety of gigs and settings over two months, with and without a powered subwoofer (18-inch, 1,400W peak power), depending on the show. I found the HD1531s to be an ideal main PA for a wide range of gigs and settings ranging from a medium-sized, multi-genre live music venue with acts ranging from oldies R&B to piano-based pop/rock, to a hot outdoor summertime show with a 400-plus person audience that collectively demanded several hours of non-stop, punchy, clean and pristine-sounding 100 dB-plus rock 'n' roll.

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