

Increase Vocal Clarity: Utilizing Separate Mixes for Instruments and Vocals

By Dave Rat

Have you ever had the experience where you ring out a monitor system and get the vocals loud and clear - only to find that when you add instruments and the band comes in, the vocals get buried and unintelligible? Then the band stops, and vocals again seem clear and loud. The amps aren't clipping, but every time the band plays, the vocals seem to go away.

Is this frustrating situation your imagination, or is there an actual technical reason behind it? There's a fairly simple explanation, and also an easy way to demonstrate the effect and clearly hear what's happening.

Simply put, loudspeakers are most efficient when the voice coil is centered in the gap. Low frequencies require quite a bit of speaker "motion" in order to be reproduced at any substantial level. This motion can drastically reduce a speaker's efficiency as it approaches the limits of travel. Clarity suffers as a result.

To hear this effect, start with a low-frequency oscillator set at 30 Hz - a good point because it's low enough to be relatively inaudible yet above the built-in high-pass filters of most outboard gear. The oscillator's effect mimics many sources of low-frequency content that are detrimental to vocal clarity; for example, bass guitar in the wedges, kick drum, or just the cumulative effect of open microphones.

Next, set up a wedge and run a vocal mic into it at a good solid level, but not so loud that it feeds back. Mute the vocal mic and turn up the 30 Hz oscillator, feeding into the wedge. Not too loud, just enough to get the speakers in motion. Then, un-mute the vocal, and while talking into the mic, and listen to the difference with the oscillator on and off. When 30 Hz is playing, the vocal has a very noticeable vibrato blur that substantially reduces clarity.

This "blurring effect" is especially inherent in two-way (biamp) systems - triamp systems are affected to a much lesser degree if the low frequencies are reproduced by a separate driver than the mid frequencies.

Therefore, a 15"-10"-2" design is one very effective configuration, although some disadvantages include cost, size and the interaction between the various components at the crossover points.

In applications requiring extremely high vocal and instrument volumes in wedges, the unique design properties of EAW's stage monitors allow coherent multi-wedge/ multi-mix configurations that bring the quality and clarity of stage monitoring to new levels.