Subject: Vocals in Live Sound
Posted by Nymeria on Fri, 29 Jul 2011 12:44:35 GMT
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Why do so many bands have trouble boosting their vocals enough during a performance? You go to a bar and you can hear everything but the vocals; I don't get it.

Subject: Re: Vocals in Live Sound
Posted by Thermionic on Sun, 31 Jul 2011 20:50:34 GMT
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Howdy Nymeria,

Often, the PA system that a band on a small budget can afford is inadequate to cut through the drums and amplified electric instruments clearly. Cheap mixer boards, mics, and power amps can sound veiled, muddy, and distorted, and cheap speakers often have little presence or "throw."

Another problem lies within the fact that many bands try to run everything through the PA when said PA is simply too small to handle it. Try to run bass guitar and all the drums through a too-small PA (and, at deafening levels!), and you get an unintelligible, homogenized mess, and the thing that ALWAYS suffers the most is the intelligibility and clarity of the vocals.

Unless you have quite a sweet PA system with good subwoofers and plenty of clean power to spare, it's best to stick with running only the vocals, keyboard, acoustic guitar, maybe a little electric guitar, etc, and perhaps a SMALL amount of kick drum. That is, provided your front-of-house main speakers can handle kick drum at all. Even then, you'll only hear the upper overtones of the kick drum, and not the fundamental pitch where the really fat punch lies at. It's just too low in frequency for most main speakers to reproduce with any real authority, let alone without blowing something up that costs a lot of money to replace.

This problem is often compounded by two things. One, I've met maybe 3 really good live sound techs out of probably a hundred in my lifetime, that truly understand acoustics and its unbendable laws. One of those laws states that for every additional open microphone that is amplified to a similar level as the others, the overall system volume that is attainable before feedback occurs is lowered by 3dB. Stick 6 or 7 mics on a drum kit and a couple more on two guitar players' amps, and you just created yourself an enormous problem.

The good news is that those mics are trained very closely on what are already loud sources, that don't need nearly as much amplification as the vocals to get a good, balanced mix to the audience. And, because the drums and amplifiers are typically located at the rear of the stage, those mics will be farther away from the monitors and mains than the vocal mics, and therefore less likely to feed back. Nevertheless, it's still a far worse feedback problem than without all those mics, that steeply lowers the attainable gain before feedback. Because of that, there's a much lower limit to how far the vocals can be amplified before the singers' mics will squeal. Hence, it's hard to get enough gain on the vocals for them to cut through the mix properly and stand out front. Add poor quality equipment and a soundman who doesn't know how to set EQ correctly, and well, you get the picture.

Two, the acoustics of the room have everything to do with it, and you are 100% at their mercy no matter how good your equipment and skills. The deader the room, the more gain before feedback you can get, and the clearer and cleaner the sound will be. The more live and reflective the room is, the lower the gain before feedback will be, because all those reflections make their way right into the open mics. They also wreck the sound, because the reflections bouncing from different room surfaces have varying time/phase relationships (which the ear is EXTREMELY sensitive to). This not only causes horrific distortions in the main sound reaching your ears when the reflections interact with it, but the room reflections arriving directly at your ears a few milliseconds later give you a double whammy effect. Again, vocal intelligibility and clarity is what always seems to suffer most.

Finally, some singers have to have their monitors loud enough to blow their hair backwards before they can hear themselves well enough to not keep screaming louder and louder, until they scream their voice hoarse. Ultra-loud monitors reduce attainable gain before feedback, and likewise cause some very major reflection problems in live/reflective rooms.

In summary, poor equipment, poor PA operation skills, and/or poor acoustics can all contribute to vocals that are difficult to hear, and lack clarity.

Thermionic

Subject: Re: Vocals in Live Sound
Posted by Nymeria on Tue, 02 Aug 2011 16:11:44 GMT
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Thermionic, thank you for taking the time to write that detailed explanation. I always figured it was a gain or EQ issue but clearly there is more to it than that.
