

Live Sound Mixing Techniques

In our continuing series on live sound, Konrad Skirlis looks at the soundcheck, preparation, and the art of mixing.

Good live sound depends greatly on your familiarity with the room, so having time for a sound check is important in familiarising yourself with the room. It not only helps sort out problems, it also provides performers with the opportunity to 'hear' themselves as they would during the actual performance. A musician's concern will primarily be for loud and clear stage monitors. If foldback is run from the mixing desk, stage monitoring will be the responsibility of the front of house (FOH) mixer. If it's a big show, stage sound will be handled by a foldback mixer using a separate foldback desk located by the side of the stage. Good communication and rapport with the foldback engineer can in itself influence good FOH sound on the night. If the musicians can hear themselves (and each other) comfortably, their performance will not be compromised. The stage volume of the band will dictate foldback levels and consequently FOH levels, especially in a small to medium sized room. The end result will be a confident performance which in itself usually translates to a solid sound. If the guitar player just bought a new Marshall stack, chances are it's going to be loud. If it's so loud that it's going to knock the socks off the audience in the front rows, then diplomatically asking the volume to be turned down is advisable.

Once stage levels are under control, working with stage monitors becomes a lot easier. An effective technique is to set up stage sound with FOH levels switched on. This provides useful bass reinforcement that the monitor system doesn't have due to cabinet size limitations. (If you do a soundcheck without FOH sound, the inclination will be for the band to turn the monitor volume up to compensate for a lack of bass frequencies.) The idea here is to keep the stage sound down to a workable level so that it doesn't fight FOH sound. Remember, the band will have a natural inclination to play louder once the show starts, and a room full of people will sound different to an empty room during soundcheck – so having that extra headroom on the desk (and therefore the amps) is advisable.

Mixing Position

Correctly locating the mixing position is fundamental to achieving a good mix on the night. The actual centre of a space can add an additional 3dB-6dB peak in low frequencies, making it difficult to appraise everyone else's listening position. Moving the mixing spot slightly off centre will provide a more realistic listening position, favouring the majority of the audience. Just as there's a peak in bass frequencies within a room, there's also a null to be found

where bass frequencies cancel out. Mixing in that sort of position will naturally produce a bass-heavy mix. Walking the room during soundcheck is therefore important. Do not be compromised by a promoter trying to sell seats where the mix position should be! If problematic reflections start bouncing off the back wall, setting up theatre curtains may often be a quick solution. Otherwise, bridging the back-wall echo with an 'in-between' delay may help smooth out bouncing sound and provide a quick-fix on the night.

Preparing For The Mix

For big rooms, it is necessary to listen to effects in the context of the mix. Two guitarists playing together for example, will have a natural chorus sound between them. If each guitar has too much chorus in itself, then the total combination effect can be doubly bad. Matching a mic to a particular instrument's sound is an important skill to develop – especially on a continuing tour where you're striving to optimise the sound characteristics. On big tours with loud players, miking amps backstage (or even under the stage) can facilitate a more effective mix. Using two mics on an amp serves dual purposes: one can be used for foldback and the other for FOH sound. Furthermore, each serves as back-up for the other in case one goes down. Mics with high rejection characteristics are needed if other loud amps are nearby, thereby reducing spill and helping the mixing process. Don't expect exact effect settings used in the studio and heard on the album to work in a live situation without some judicious tweaking – this can especially be the case in large venues.

In addition to a good pair of ears, you'll benefit from owning an SPL meter (to ensure levels are not too loud), gaffer tape, headphones (useful for PFL monitoring and cueing tapes), an array of audio adaptors also help in tricky situations, and, of course, markers and masking tape to write on. Most live engineers have a prescribed way of labelling the desk. For a simple 'standard' rock outfit using a five piece drum kit and a right-handed drummer, a typical desk layout will generally match the band's stage positions as seen from the audience's perspective and may look like this: kick (ch. 1), snare (ch. 2), hats (ch. 3), floor tom (ch. 4), rack tom 2 (ch. 5), rack tom 1 (ch. 6), bass DI (ch. 7), bass mic (ch. 8), guitar left (ch. 9), guitar right (ch. 10), keyboard left (ch. 11), keyboard right (ch. 12), vocal left (ch. 13), centre vocal (ch. 14), vocal right (ch. 15), and then the effects returns (usually as seen from top to bottom on the effects rack and matching top to bottom auxiliary sends). By labelling in a logical way, reaching for channels and

auxiliaries becomes intuitive.

A live desk's subgroups are used to simplify instrument grouping. A four-bus system (for a stereo PA) may be divided into 'band' on subgroups 1 and 2, and 'vocals' on subgroups 3 and 4, each pair panned left and right to the master left and right outputs. An eight-bus console may accommodate drums and bass on subgroups 1 and 2, guitars on subgroups 3 and 4, keyboards on subgroups 5 and 6, and vocals on subgroups 7 and 8, for example. If an effect is part of an instrument, then it should be bussed to the respective sub group(s), otherwise effect returns should be sent directly to the master left and right outputs bypassing subgroups altogether. The kick and snare should peak at 0dB on the PFL meter with other drums running 3dB-6dB below that. If the stage is excessively 'live', raising the bass cabinet off the stage will help with the overall sound. Emphasising the bass DI in the mix will get you around this problem and matching the cab sound with an appropriate desk sound will maintain consistency in the overall bass sound of the band.

Mixing

After all this, you are ready to mix! Yes, there's a lot of prep work required but it's all part of being a live mixer. Generally speaking, the vocals are the most important component in a 'singing' band. Amped instruments will generally be heard to some extent without a PA and drums are pretty loud anyway, however, vocals will need some sort of amplification. Start by prioritising vocals in the mix with the music just under – further adjustments of instrument sounds can be made during the show without taking anything away from the performance. Leaving adequate headroom allows the rest of the instruments to match the perceived level of the vocals after the first song or two. Remember to mute effects between songs, as there's nothing worse than hearing the singer announce the next song swamped in delays and reverb from the previous song's settings. When using multiple open mics, the system gain is effectively higher than if you only have one open mic – which increases the potential of feedback occurring. A practical way of eliminating this is to mute unused mics. A song list detailing which vocalist is singing on each song will help facilitate this.

The faster you get a solid rhythm sound happening (drums and bass), the quicker the crowd has something to groove to. Be careful of too much boom in the kick. I like to take out 3dB to 6dB of low mids and slightly boost the lows (80Hz to 100Hz), while adding around 1kHz to 2kHz will give definition to the kick. Make sure the snare has a bit of snap to it (3kHz to 5kHz) as well as sounding full – do not necessarily roll off the lows unless you need to. The toms should sound full but not too boomy. Again, taking away low mids will help keep them under control and provide definition as well as reducing the risk of feedback. The bass guitar may need some low frequencies to start pushing the sub bass units, a boost at around 300Hz to 500Hz gives

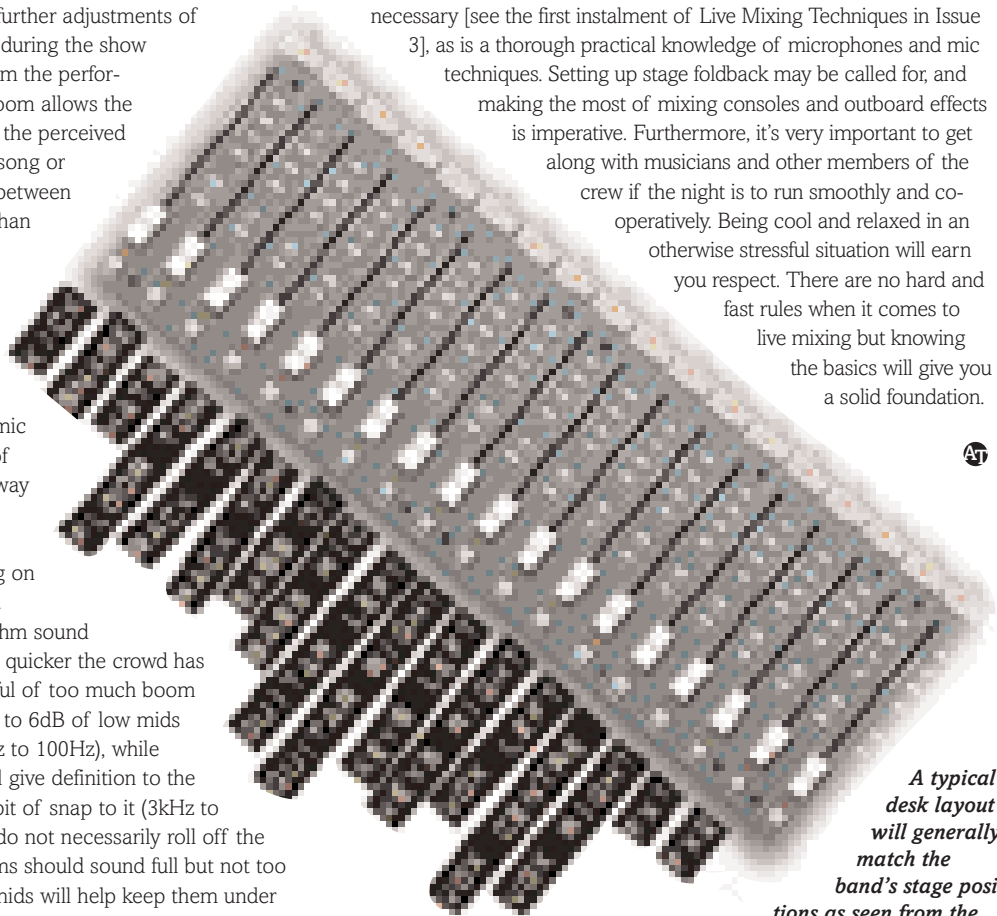
drive and adding high frequencies will help bring out individual notes. Keyboards will benefit from a little high and high mid boost, along with low frequency roll-off to help cut through the mix. Remember to bring up keyboard solos in the same way that you would a guitar solo. With a close mic technique, the guitars' EQ settings can usually stay untouched apart from a high-pass filter (around 100Hz) to cut out stage rumble.

Using a high-pass filter on vocals will also cut unwanted low frequencies and reduce problems associated with the 'proximity-effect'. The vocal channel gain should be peaking at 0dB on the loudest notes. Leaving yourself enough headroom on the fader becomes a safety for quieter vocal performances. Vocals also need to sound clear and crisp. Problem frequencies will be around 200Hz to 500Hz – they tend to muddy up the vocal sound, so pulling back on some of these will help clear things up. Adding a little at 3kHz to 5kHz will help vocals cut through the sound of the rest of the band; boosting the 10kHz to 16kHz frequencies will add crispness.

During the performance keep your fingers close to important channel faders such as vocals and solo instruments. You'll need to anticipate performance changes and react to them with quick but smooth mixing responses.

Cool & Calm

Live sound involves much more than just 'mixing' the band on the night. Setting up for the available stage will vary from venue to venue, thus a knowledge of acoustics and how to combat problems is necessary [see the first instalment of Live Mixing Techniques in Issue 3], as is a thorough practical knowledge of microphones and mic techniques. Setting up stage foldback may be called for, and making the most of mixing consoles and outboard effects is imperative. Furthermore, it's very important to get along with musicians and other members of the crew if the night is to run smoothly and co-operatively. Being cool and relaxed in an otherwise stressful situation will earn you respect. There are no hard and fast rules when it comes to live mixing but knowing the basics will give you a solid foundation.



A typical desk layout will generally match the band's stage positions as seen from the audience's perspective. Please note: the above labels are for illustrative purposes only, in 'real life' you'd use a scribble strip – obviously.