

HK AUDIO ELEMENTS IN PRACTICAL APPLICATION (3)

The PA as a Monitor



TOBIAS JACOBS

is the owner of the Klein & Jacobs music shop in Koblenz on the Rhine river, and has been a product specialist and presenter for HK Audio since 2002. The trained instrument maker's workshops combine the fundamentals of acoustics theory with his 20+ years experience handling mobile sound reinforcement systems for musicians.

The Workshop

This workshop series focuses on how line-source PA systems work using HK Audio Elements as an example. One special feature of this system is its modular setup, which adapts to different venues.

This installment is all about how and why a line-source PA can make old-school monitoring redundant. This final workshop explains how this works and, on top of that, recaps helpful tips on handling line-source systems.



Electronic amplification for voices and instruments is a modern invention. From antiquity until around 100 years ago, it was up to resourceful architects and engineers to create the physical environs necessary to let music and speech be heard loud and clear across theaters and concert halls. It wasn't until much later, in the middle of the last century, that electronic sound generators and amplification caught on for music played live.

This solved many problems, but also created new ones such as the risk of feedback. It is generated when the speaker signal's is picked up again by a microphone, creating a loop that causes certain frequencies to oscillate. That familiar howling heard when microphones are used incorrectly is more likely to occur at the higher volume levels that are usually necessary to address larger audiences. The risk of feedback increases again when microphones are near speakers.

The path to monitoring

A common solution is to position microphones and therefore the musicians out of speakers' reach to prevent them from picking up high-frequency signals. In other words, the sound system goes out in front of the stage between the band and audience. This makes it tough for each musician to hear what they are doing as the instruments' gain levels (especially in rock music) rise, which is not conducive to the quality of one's performance and the interaction among the band as a whole.

This is why keyboard players, especially, began using monitors on stage at an early turn. Singers, brass players and other instrumentalists soon also took a shine to monitoring. Eventually a full-fledged sound system for the stage emerged. Special devices such as feedback eliminators were devised to address this problem, and cardioid microphones with rearward shielding are still widely used today.

As mixing consoles improved, the on-stage sound could be tailored to the individual needs of musicians - that is; signals were split up into channels for monitoring and mixed separately. At major events, dedicated technicians sit next to the stage with a separate mixer, their sole task being to mix the on-stage sound. The signals sent to the stage have little to do with the audience's experience of the music out front. Each musician gets the information they feel is most important, and it doesn't take much convincing to agree that a drummer wants to hear something completely different than the vocalist.

The problem with flying while blind

Over the decades the sonic sweet spot on stage, a feel-good factor for musicians, and the audience's audio experience diverged so that today the two are worlds apart. One of the most common questions musicians ask friends in the audience during a break was and is still, „How's the sound today?“ This is akin to flying blind, which I feel has estranged the individual musician from the overall

sound of the band. On top of that, more equipment means more hassle and lot more that can go wrong, all of which compounds everyone's stress levels.

Let's draw a comparison: In a purely acoustic setting without a PA, each musician has to play their instrument as loud as is fitting for the room and overall musical product. Every musician shares the same audio experience as the audience. This sensation of making music together is easily lost, especially on larger stages.

The solution to the problem

Allerdings lautet die Gegenfrage: Wie This gives rise to the question of how you actually play a dance gig at the volume level of a folk combo or a string quartet. Do you step back in time to the days without monitoring? Not quite. Part of the solution is a real line-source PA's low susceptibility to feedback as mentioned in the first part of the workshop.

I have been taking advantage of this property of Elements for some time now in my own band: We forgo monitoring

SETUPS

An example of a personal system

The author of this series of workshops on HK Audio Elements, Tobias Jacobs, is a vocalist in a four-piece line-up with a guitarist, another vocalist and a keyboardist. The repertoire consists of Italian music for weddings, corporate parties, wine bars and so on. The performance kicks off with an entertaining set of ,50s hits, followed by a more concert-like presentation of Italian songs. Ballads and other very soft tunes are on the set list. The final set is a sing-along featuring songs such as Caprifischer, Ti Amo and Azzurro. The configurations that Tobias Jacobs describes below are suitable for combos with similar line-ups:

50 to 100 people in a restaurant's 10 x 10 meter room:

Easy Base Stereo, but we use our Smart Base rig and leave components at home.

The audio result is the same, just with more powerful bass.

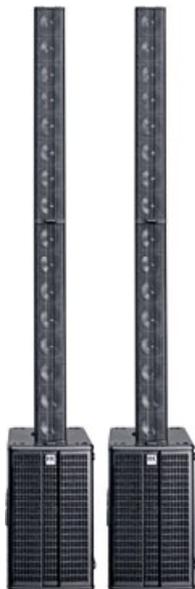
100 to 200 people at a wedding in a 20 x 15 meter room: Smart Base, sometimes with the Top Add- for greater reach and more low mids in the overall sound.

200 to 400 people at a company party, small gym, conference center, etc. in rooms around 30 meters long: Big Base. We usually also take the Sub Add-on, which gives us more low-end sound pressure for our uncompressed signals. DJs will certainly have it easier with this rig.

Tip: Be sure to set the Sensitivity switch to match your signal source: + 4dB for professional mixers and -10 dB for playback devices with low output levels. Another recommendation: Disable the 110 Sub AS's Auto Standby function before the gig. To run the Elements system at full power, set the signal source's output level so that the limit LEDs flash red no more than occasionally. If the limiter indicator lights red continuously or for longer intervals, reduce the incoming level.



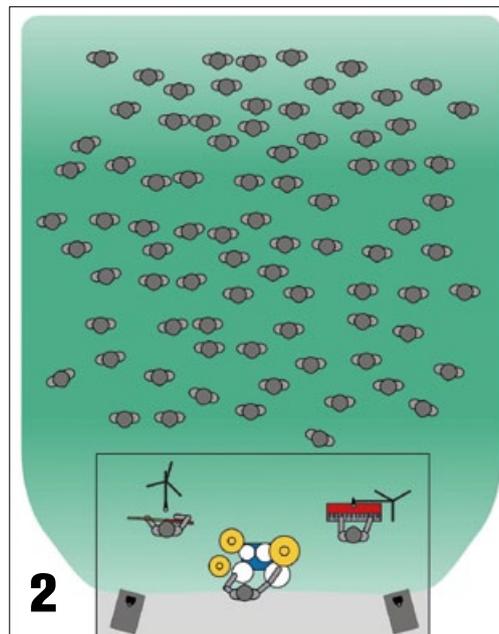
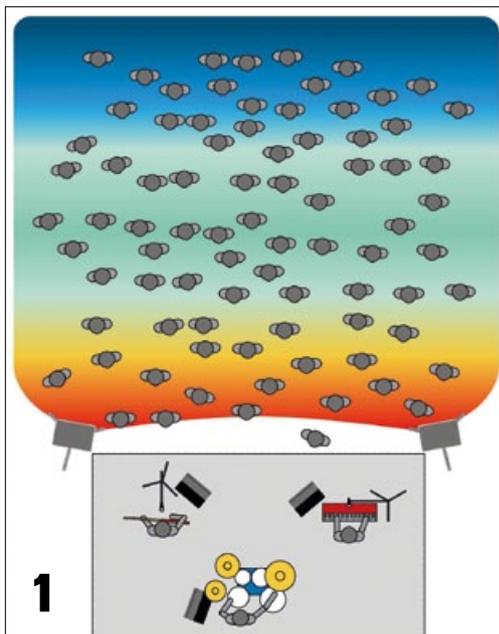
Easy Base Stereo: Two E435 line-source modules and two E110 Sub A subwoofers cover up to 100 people.



Smart Base: The basic configuration's audio specs are identical to Easy Base Stereo's, but it may be extended with add-ons thanks to the new E110 Sub AS, in this case with two line-source modules.

Bild 1: In a conventional front-of-stage PA setup, the musician is cut off from the audience's audio experience and has to rely on monitors. It's much louder in front of the stage than at the back rows.

Bild 2: A line-source system goes behind the musicians. Each band member is part of the overall sound and the signal level decreases less with increasing distance into the room's far reaches.



altogether in favor of a shared audio experience with our audience.

To this end, we set up the Elements PA behind the musicians so all microphones and musicians are within its field of coverage. The line-sources' far greater reach lets us share the sound with the audience at a moderate on-stage volume as is normally the case with acoustic music.

The positive effect is quite amazing after you've taken a moment to get accustomed to it: An audio experience shared with the audience inspires the individual musicians to intuitively find their place in the overall sound. Each band member is part of the overall sound and can now also experience their own performance as a listener in that larger context. Sometimes musician misjudge their instruments' volume, which is why guitarists often keep nudging up their amps. That mistake can hardly be made in this constellation. Even if this may sound a bit exaggerated, this experience is almost as enjoyable as an acoustic session by the campfire. Of course, it doesn't translate to every band in every genre, but it's worth trying out.

Tips for Elements newbies

The following tips for newbies summarize insights and recommended practices, recapping some points discussed in the workshop's first two installments:

- Line-source PAs project a narrow vertical beam. Set up the column so that its center is lined up at around the audience's ear level and no higher. This is especially important when the audience is seated as it provides the best audio

experience.

- Line-source PAs need the full extent of that line to do their job well. Turning individual enclosures in another direction does not increase coverage area; on the contrary, it reduces coverage and produces a thinner sound.
- Line-source and conventional PAs' subwoofers work in the same way. The bass signal is dispersed in all directions. In stereo mode, this causes cancellations that can be prevented with proper placement. Whenever possible, set up a mono cluster by placing all bass bins together on one side.
- A line-source PA does not sound piercing at close range. Don't let this perceived lack of top end prompt you to turn up the treble at the mixer. This overtones' lovely sound is not diminished with increasing distance.
- Select a column length (height) to match the room's depth and prevent unnecessary annoying reflections at the venue's far reaches. Although a column with 24 speakers looks impressive, it is likely to be the wrong choice for most restaurants.

By the way: If you have yet to experience the Elements system first hand, ask your local dealer about „Go Live.“ This is the slogan for a six-month campaign to promote the Elements live experience throughout Germany, to be launched in the days ahead by HK Audio and its dealers.

Tobias Jacobs