Onstage Monitoring

Floor Monitors, In-Ear Monitors, and Stage Volume.
My take on the subject based on 35 Years of Live Playing Experience.

By: Scott Oliver

I've finally gotten around to addressing what I believe to be a huge problem in choosing the best on-stage monitoring solution for churches doing contemporary music. Ie: A rock band in a church environment.

The difficult part is where to start and which area of concern warrants the first look. So, I guess the best thing to do is look at the problem as if you were hovering at 10'000 feet looking down on the problem as a whole. So, what is the #1 problem most churches are facing in terms of producing live music for an audience of widely varying ages, listening preferences, and expectations? Stage VOLUME!

That's it! Sound level, loudness, VOLUME……of the production. How loud it is. I won't bother going into the various complaints received by church staff in regards to volume, but we all know this is a very common occurrence….one that is troubling enough that when a "it's too loud" complaint comes in, it is addressed right away, and it is usually addressed to the sound man. Arrrgh.

So, before we go any further I want to state first hand, these are my observations from 35+ years playing as a musician in night clubs, churches, working in a recording environment as either a musician or as an engineer/producer, and now as my day gig…..a systems designer for churches. Is my opinion gospel? Nope. Is it valid?….I think so. And after you read this article you I think you will at least find some merit in what I have to say, and hopefully be able to make the best decision possible for your own specific monitoring needs. And last but not least, my final solution to the problem….at the end.

Rewind to 1983…..I was playing in a Heavy Metal band in North Carolina on a club circuit with a lot of other Heavy Metal bands looking for the golden ring. We all carried these stupidly HUGE sound systems, and we played really really loud. And you know what…..that's what everyone wanted. They wanted it loud. I remember one club we played at we were complaining to our sound guy (go figure) during sound-check that we could not hear the monitors. Like "Scotty" on Star Trek, his response was "I'm givin it all I got Kiptin, the drivers won't take much more, she's gonna come apart". So during the next song-check he walked up to one of our huge 15" 2-way floor wedges and held a DB meter about 6 inches away from it, and it read 121db. To put that in perspective, the typical decibel level at an arena rock show is about 120-125 decibels. He turned off the monitors for a minute, and the center stage volume was 125db from the amp stacks, and massive power drum kit. The monitors did not have a chance. So, whose fault was it that we could not hear the monitors? Was it the Sound Man's fault? Was it the monitors fault? Duh. It was the band's fault…..obviously.

So, what did we do? We got bigger power amps. In other words, we got even louder on stage. And then we started blowing drivers. Ahhhh….young and dumb. Now any money we made went to more gear. Bigger amps cost more money. Replacement drivers and reconing services aren't free either. Basically all we were doing was rolling the money we worked so hard for back into destroying our hearing, our gear, and our wallets. Ahhhh….again, young and dumb.

During the early 80's whilst roaming around to various clubs checking out other bands and what they were doing, I was invited by my old friend Mike Bennett (A great guitar player) to hear his band "The Younger Brothers". They did more of a Southern Rock thing than we did, so I was not really that excited to go and hear them. But, real friends go see other friend's band when asked, so I went. I arrived at the club and no sooner than I walked through the door, paid my cover (Hey Mike, no guest list?) I was floored by what I heard. It was without a doubt the best sounding mix I had EVER heard. Period. Not too loud, but really HUGE sounding and as clean as a record (it was still vinyl back then).

The next surprise was when I looked back at the mixing position, there was a girl running sound. WHAT? No way! "This mix is a product of a chick"?...I thought to myself. And the mix she was crafting was perfect in every sense of the word. For a fleeting moment I was a bit chauvinistic in my mind, but my pride was over-ridden by what I heard. I went back and introduced myself to Vickie Ingram, and she changed my perception forever on what is possible in a live mix. Even to this day, I still think of her as the best I have ever heard. From that point on, I went to see The Younger Brothers way more often, and hung out with Vickie and learned anything she would teach me. But, the one thing I learned that was of the greatest value is that great sound is a mix. Again, it is a MIX!

From dictionary.com

Mix–*verb (used with object)*

1. *to combine (substances, elements, things, etc.) into one mass, collection, or assemblage, generally with a thorough blending of the constituents.*

I remember when I started hanging out with her, one of the first things I asked was "how do you get such a great mix?" She went on to explain multiple things, but one thing that sticks out most was when she turned down the main speaker system to zero and let me hear the band without the mains. And you know what? The band sounded great…..only quieter. Not silent…..quieter. In-ear monitoring systems did not exist. But, what Vickie plainly understood was that her sound system was actually a ***sound reinforcement*** system. Not a vocal system, and certainly not a Karaoke system (Karaoke didn't exist either in 1983). She was only using her main system to reinforce the sound of the band. Well…..Duh….alrighty then……why didn't I think of that?

So, what was the "secret sauce" of The Younger Brothers live? It was everything. Great players, great gear, and a great Engineer…..all working **TOGETHER** to produce a great **mix**. They were not battling each other in any way shape or form. The other thing I remember most was that Vickie stood back from the console a lot and just listened. Only every now and then would she walk up and lightly move a fader. Watching her back then was really amazing, because she along with the band were focused on the overall "sound" of the band, not on themselves individually. And she very much considered herself an artist as much as the players did. I guess you could call it musical communism where the good of the group was more important than one individual. Whatever. It worked, and it worked extremely well. They had clearly worked together to make her job as easy as possible. And, they trusted her. They knew she had the chops to make them sound fabulous, and they went out of their way to please her.
Maybe it was actually because they knew when momma ain't happy the rest of the house ain't happy either. LOL! Actually Vickie has a very sweet vibe about her and all you wanna do is please her! We loved our sound man too and he had a really good ear as well, and he loved Heavy Metal. Mark Lewis was his name, and we loved having him around…..Mark used to complain about our stage volume as well; I remember him going with me to a Younger Brothers show and saying…"See, I told ya so….listen to her mix".

So, later I invited my band mates out to hear them, and they were equally blown away. Heck, we even started diggin their musical style just because they sounded so good! I think I might have even bought an Allman Brothers record during that time! We went back and applied what we learned from them, and guess what; we started diggin what we were doing a lot more as well. Our volume came down, and the band sounded bigger. We stopped replacing drivers, stopped buying gear, and stopped wearing earplugs. And, our attendance went up. Even the beer drinkers liked it better. Hmmmmm… I digress.

Ok, back to my article. Where was I? Oh yes…..it is a "Mix". Left-turn again…..Fast forward to 2011. I now attend a mega church here in the Nashville area. Since I play in some other churches here and there, and deal with churches every day in my job, I have chosen to mainly be an attendee at my church for now. And actually I have found this has become very beneficial. I will not mention the name of this church, but I will say that it recently received the esteemed honor of being named the fastest-growing church in America. This place is very cutting-edge in terms of production, and has the funds to do basically whatever they want.

On my first visit there, I was mainly getting familiar with the surroundings for the first few minutes, but at about half-way into the second song I started listening to the music a little closer and what I heard was very interesting. The players were all good, the singers were great, and the mix engineer was pretty good as well. He was no Vickie Ingram, but not too shabby either. I have noticed they have different people every so often so it does change from week to week as expected, but they do all seem to have ears cut from the same cloth. Vocals WAY on top, and the band is just decoration for the vocals. Not the way I, or Vickie mixes, but it works ok I guess.

But, there is one thing that sticks out that I really think sounds weird, and that is the new "Silent-Stage" approach they and so many churches are moving towards in terms of monitoring. No floor wedges in sight, guitar players running direct with no speaker cabs on stage, bass player is going direct, keys direct, and the drummer is a clear plastic box. In theory, this is a great idea. In practice, I think it stinks. When the stage is silent, then what you hear is only the main speaker system producing sound….obviously. So, there is this huge disconnect from what you see and where you hear the sound coming from. The closest thing I can compare it to is Karaoke. Both in the way it sounds, and the way it looks. Here you have this massive stage with nothing on it except some people with their instruments or microphones, and this massive sound system hanging directly above. For me, this is really a bad approach. Yes, the mix is 100% controllable….but with no live-band vibe at all. It is very sterile in terms of the energy level. On top of that, whoever designed their system, designed it to be mono…..yuk. (Another discussion for another article….and I do have one coming). So, here we have a live band playing live music silently on a silent stage with all their sounds being choked down into a mono signal…..Well….alrighty then. The sound tastes like unleavened bread. Who am I to say though? They ***are*** the fastest growing church in America. However, you can always learn something new, and it has been proven to me over and over that the stage does not have to be silent. It only has to be quieter. Not silent,….quieter. Just ask Vickie.
Now, I know that some of you reading think I am out in left field because you have been told that in-ears are the answer to all your problems. But the truth is they can be the source of all kinds of problems. Two of them being irreversible. Namely, hearing loss and/or tinnitus. Consider this…..your ear canal (The tube leading down to your eardrum) is really a port. And what does a port do in the world of sound transducers? It moves air in and out of an enclosure (in this case, your ear). It moves the sound waves via air molecules down to your ear drum. And what does the ear drum do? It vibrates in the moving air. The port gives the ear drum the proper amount of air so as to move and settle, move and settle, move and settle. God got the human ear design right the first time. So, if you stuff a speaker (an earbud) down into that port and seal it off, how is the air supposed to move in and out of the port? It can't. So, what happens to the ear drum? It becomes strained to move and settle, move and settle. Therefore, it does not move as well, and consequently does not translate volume levels as well to the brain. So, the brain says……turn it up! So, like most of us, we turn it up. Then there is your poor little eardrum being subjected to higher energy levels than it really needs because it can't relax, or settle; BECAUSE IT HAS A SPEAKER SLAMMING IT FROM 1mm away! Hello! Now I am no ear doctor, but from the research I have done heretofore, this is what I have come up with. In other words, it's akin to looking at the sun directly with your eyes and forcing your eyelids to stay open. Get my point? The result….hearing loss and/or tinnitus. There is a better way….which I will get to.

Now, lets look at why people decide to go in-ear over floor wedges. Well, there are several reasons. The first thing is the aforementioned……they can't seem to control the stage volume. The band either ignores the pleas by the sound person to turn down, or the players simply don't know how to get great tones at low volume and still hear themselves. Guitar players…..are ya listenin to me? I am a guitarist, so I do understand this. Rewind to 1994….I relocated from Los Angeles to Orange County California, just south of LA. My wife and I had just gone through the 1994 Northridge earthquake, and could not take the aftershocks any longer. We got tired of feeling like we could lose our lives at any moment….whilst we slumbered. No way to live I tell you.

Once I moved there, I met some guys who were playing at Places like Saddleback Church, Mariners, Southcoast Christian, etc. And for whatever reason, they started to call me when they could not be at church to play. And it was great! I loved being a sub guy because I got to play with a lot of great players, on big stages, and in the very first mega churches in America. It was awesome. Before long, I was on a lot of people's first-call list as a sub guy. And since I was a sub, I got paid. No way! I get to play with you guys and I get a check afterwards? Too cool! And the food in the green rooms……yes!

So, I was subbing a lot. But looking back on it, I think the biggest reason I got called so much was the sound guys loved me. Yes, I played pretty well, but I remember several of these guys telling me I was the easiest guitar player to mix of anybody they knew. Why? Because I learned how to control my volume and still get a stellar tone. This applied to bass as well. I also got calls to sub on bass, and I would show up with this little tiny Hartke Kickback combo that was just big enough for me and the players around me to hear me comfortably locally in the rhythm section. It had a great sound, and the sound guys loved the fact that they could nearly pull me completely out of the mix. Notice I said nearly.

Now, on to 2003….I joined a church that met in a Library in Huntington Beach, CA. The library there has a really nice auditorium that seats about 500 people. And as with any church that can't afford a building' they had an extremely small portable sound system. We had some great players, but the sound system was very inadequate for a live band. It got fairly loud and was adequate in my opinion for the situation, but we got complaints that it was too loud. And of course the drums got the blame. So, what did they do?... they bought an electronic drum kit with no cymbals. They decided to keep using real cymbals and put the kick, snare, and toms from the electronic kit through the floor monitors. Talk about strange. From where I was positioned on stage, I heard kick and snare in front of me on the floor, and hi hat and cymbals over to my right about 15 feet away. This was my first experience with someone trying to reduce stage volume. It worked ok, but the vibe and energy that was created as a band was history.

The music quality was sacrificed to keep people from complaining; another approach that yielded more problems than solutions. You may have noticed that throughout this writing that I keep pointing my finger more at the band than I do the sound guy. One of the benefits of you working with a designer who is a musician as well is that I honestly know this problem from both sides of the console. I see live music situations form both vantage points. On, and off the stage.

And as you might have surmised, I am not a fan of in-ear monitors. That's right, I don't like them. And, aside from the health risks to a person's ears, there is yet another factor that is the biggest reason I abhor them. When you have a band playing live music, it consists of players interacting with each other. Part of that interaction is hearing the different instruments originating from different locations on stage. If you are the guitar player, you will hear your amp coming from somewhere on the floor no more than 3 or 4 feet away. You may hear the bass player from across the stage, the drummer from the center, the keys through the wedges, and so on, and so on. The point is, the aural experience is four dimensional. Yes four (4). Length, Width, Height, and Time. Or left-right, up-down, back-forth, and when. All of these factors play into contributing to the "Sound" of a live band and the vibe on stage. When all of these instruments are silenced and fed directly into a mixer and terminate into a pair of earbuds, three of these dimensions are lost. No more left-right, no more up- down, no more back-forth, and everything arrives at the same time. Various acoustics and sounds all dumbed down to a mono signal identically fed into your ears, and then into your brain. Talk about a downer for a player. Yuk. Making great music is about a lot of things, but a great band is the product of the players interacting on stage with what the others are doing at any given moment in time, and knowing how to blend those sounds as a band so the sound person is only reinforcing the sound, not creating it. In-ears not only ruin your hearing, but they also ruin the experience for the players. I know, I have experienced both. A good band playing live instruments using wedges will ALWAYS create more excitement than the same band with in-ears.

Back to the races….

Another problem with floor wedges is that most people buy wedges that are just too big. And they will buy a truckload of the same size and model number for the entire stage. For instance, let's say you are in a church that holds 350 people. Your main speaker system consists of four 2-way boxes with 12" woofers. That's a total of four 12" drivers for 350 people. And you need floor monitors. So, what do most people do, they go and buy the cheapest and biggest wedge speaker they can. Not a big deal until you buy 9 of them to make sure everybody on stage has a monitor. All of a sudden, you have a bigger monitoring system than you have for the main seating area. Nine 12" speakers for the stage, and 4 for the house. Hmmmmm…..not rocket science. The second problem is all the high frequency information is pointed away from the congregation. So what you end up with is all of this mid and low frequency information coming from the stage and the sound person has to try and compensate and mix without getting too loud. Not his/her fault!

So Scott, what do you propose is the monitoring answer? Well, here goes…. Micro to Small/Mid-sized floor monitors that produce little to no low frequency information. At the same time the monitor's mids and highs should be sweet, smooth, and flat. For whatever reason, floor wedges have always been more of an afterthought with speaker designers than it has been with their main speaker system designs. Usually what these builders do, is take a regular speaker, and put a few angles on the back of it and call it a floor wedge…..never ever considering what the situation requires. I think the truth of the matter is that most speaker designers are thinking only from a technical standpoint, and never think about what a "musician" or a sound person in a church may need. This has been very frustrating for me as a system designer, and as a player.

Quite simply, for smaller churches there are few floor monitors on the market that I feel are the answer. And in-ears are certainly not the answer either. There are a few floor monitors that claim to and do the job, but the ones that do are either stupid expensive, or do not sound good. So, what we decided to do was design our own floor monitors, and produce them for customers on an as-needed basis. And so far, the prototypes are producing fantastic results. Better than we imagined. We kinda thought beforehand that it may be a waste of time and effort, but it has been just the opposite.

We have four basic models we are testing right now. All designed to stay away from low frequency resonance buildup when used in multiples. One is a micro wedge that has a dual concentric 8-inch driver, the next two are larger shallow angle wedges to be used directly under the listening position with either an 8 inch or 10 inch dual concentric driver, and the last one is a 10 inch dual concentric box with a 14 degree sharper angle so they can be placed further away from the listener….such as a pair for a group of praise singers. And the cool thing is every single component is made in America. The last thing we did, was put a speaker connector on each side of the box, as opposed to both being on one side next to each other like all the other guys do. To me, this makes way more sense. The prototypes and early versions are being sprayed in a polyurea coating, but we will also offer these in nice wood finishes as well.

Again, all built to order. The boxes are cut from marine grade plywood on a CNC machine, then glued and stapled so they will never ever rattle. Everything is either made in Tennessee or Kentucky. No Made in China garbage here.

We will be marketing these speakers under the name "Centerline Audio" very soon as soon as we have finished beta testing. Now, I'll bet you are thinking to yourself…. "All this to sell me some speakers"?. Yep. Not because we want to sell you just any speakers, but to sell you speakers that will solve a lot of problems, and ultimately help you create a better experience for your audience, and players alike. Believe me, there are tons of floor wedges available in the market, but none of them do the job both effectively, nor affordably. Except ours. These were designed more out of frustration than the desire to make a profit.

To be honest, we would much rather order completed speakers from another manufacturer that arrive already built, packed in a box, collect your check, and move on. It is a lot of work building our monitors and if it were not worth the effort, we would for sure not bother. But, we are just not like that. We are passionate about what we do, and this is the best solution we have come up with. In other words, if you want something done right, just do it yourself. Enter Centerline Audio Monitors. Can't wait for Vickie to hear them.

CA8MW…8" Micro Wedge

CA10SW…10" Standard Wedge

CA10SHW…10" Shallow Wedge

Centerline Wedges-Comparo

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