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DIGITAL EDITION

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ON TEST

KLANG:Fabrik 3D In-Ear Mixing system

KLANG:Fabrik picked up a coveted Gold Award at this year's PLASA Awards for Innovation for its 3D stage monitoring soundscape. Simon Allen listens in . . .



ABOUT THE EXPERT
SIMON ALLEN
A freelance internationally recognised engineer/producer and pro audio professional with over 15 years experience. Working mostly in music, his reputation as a FOH and studio mix engineer continues to reach new heights.
simona@lsionline.co.uk

I was a member of the judging panel for the PLASA Innovation Awards 2016 in September. There were some really interesting products this year, sparking a few tough discussions. However, throughout the process KLANG was a clear winner. Fabrik went on to win a Gold Award, which is an accolade reserved for something special, and doesn't happen every year.

So why did this entry deserve such a high level of recognition? Well, there's been a lot of talk of 'dimensional' sounding headphones and pro software packages this year, in both domestic audio and the studio world. However, it's this system, designed for the stage, which I believe delivers the most complete and compelling solution using binaural processing. This is clearly a game-changing product which already achieves so much, you have to remind yourself this is still a first revision. Following the product's success at PLASA, I have been given the chance to get my head around this 'virtual sound-stage'. Here's what I discovered . . .

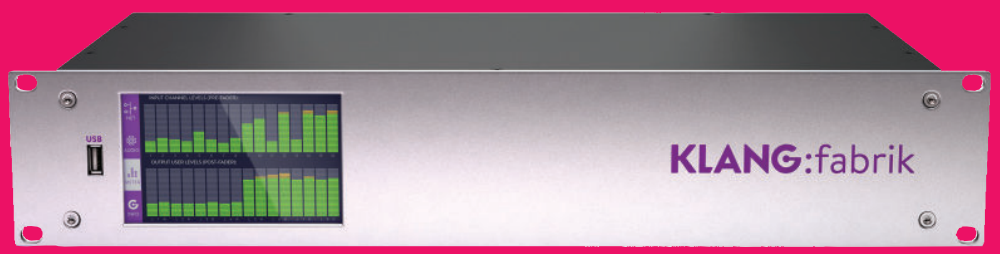
WHAT IS IT?

In-ear systems have changed how musicians work on stage, thankfully for the better. Noisy wedges or insanely large side-fills are no longer a necessity, allowing the overall stage volume to drop. This has in turn brought a wonderful list of benefits. These benefits are yesterday's news, but we should reflect on how much sweeter the experience is for everyone. The artist can protect their hearing and listen to exactly what they want. The monitor engineer can deliver almost any mix that the performer requires, and without feedback concerns. The FOH and broadcast engineers aren't fighting unnecessary spill and, of course, the audience hear better quality audio - even if they don't understand why.

In-ear mixing also saw a huge leap forward in the form of personal mixers for each performer, allowing artists to control their own mix in their earphones. There's been a host of additional developments, either adding further control or moving towards more flexibly integrated solutions. The cost of these systems differ, but for the professional market there hasn't really been a price drop, in the same way that the cost of other equipment has fallen in recent years. Even today's Aviom personal mixers still cost many hundreds of dollars.

The KLANG:Fabrik system is all of the above, but so much more at the same time. Let's be clear, KLANG has not offered anything for the in-ear monitoring market before now. This is their debut into the sector, so you might think they'd need to gain some experience. Well, that's not the case. Apparently, they've thought about all the usual aspects associated with personal in-ear mixing and the stage environment. For example, the unit comes with a dual redundant power supply as standard.

Where there are complaints around working with in-ears, it's often because musicians and artists can feel disconnected, either from the other band



The KLANG:Fabrik 2U 19" rack-mounted hardware from the front

"I am so impressed with the 3D processing implemented in the Fabrik unit, it leaves me thinking: 'why don't we have this technology already?'"

members on stage or their audience. This remote feeling can also influence a different level of performance that isn't always ideal. Well for me, this is where KLANG comes in and addresses this issue from 'all angles'.

The killer feature is, of course, 3D mixing, which is based around binaural hearing. Whilst there's some very smart processing going on, the result is actually quite simple. It enables you to pan in a spherical method so that elements of the mix can come from behind your left shoulder, say, or above and in-front of you, or dead centre, or of course along the usual stereo plane. In fact, you can place anything almost anywhere around you. This creates greater separation between elements in a mix, compared to a standard stereo mix. It does this by calculating delays and filtering just as in the real-world, which our brains decode to give us a surprisingly accurate location of the source.

The system comprises just one 2U, 19" rack-mounted piece of hardware. The front panel, which is a refreshing silvery-champagne colour, only features a single USB connection and a small 5" touchscreen. This touchscreen isn't the most responsive but then it only really facilitates monitoring the system status, as all control aspects are carried out via a remote client. On the rear there are eight pairs of XLR outputs, two zero-latency analogue XLR inputs, three ethernet ports, BNC word clock in and out, four optical ADAT inputs and outputs, plus the dual power supply sockets. The ethernet ports offer two Dante connections for up to 64 bi-directional channels and a control line for connecting to a wi-fi router.

The system uses this pool of inputs and outputs for a variety of configurations. If using all eight stereo outputs, then the total number of inputs it can handle is 24. If, however, you only need three stereo outputs, then 56 inputs become available. It should be noted that any number of users/mixes can be generated up to a total of 16, which would give you 12 input channels to mix with a single Fabrik unit. The additional outputs required to make up those 16 users can obviously be patched from the ADAT or Dante connections with a DA converter, such as the monitor console outputs.

All mixing and control of the system is done via an app on a third-party device, which most of us already have. The control app works seamlessly across tablets, laptops or smartphones on Windows, Mac, Android and iOS platforms. Obviously, to manage your Dante network and channel patching, a hard-wired Dante controller such as a laptop is required for setup only. The only other additional piece of hardware you need is a wireless router, which again it is assumed most of us will have already.

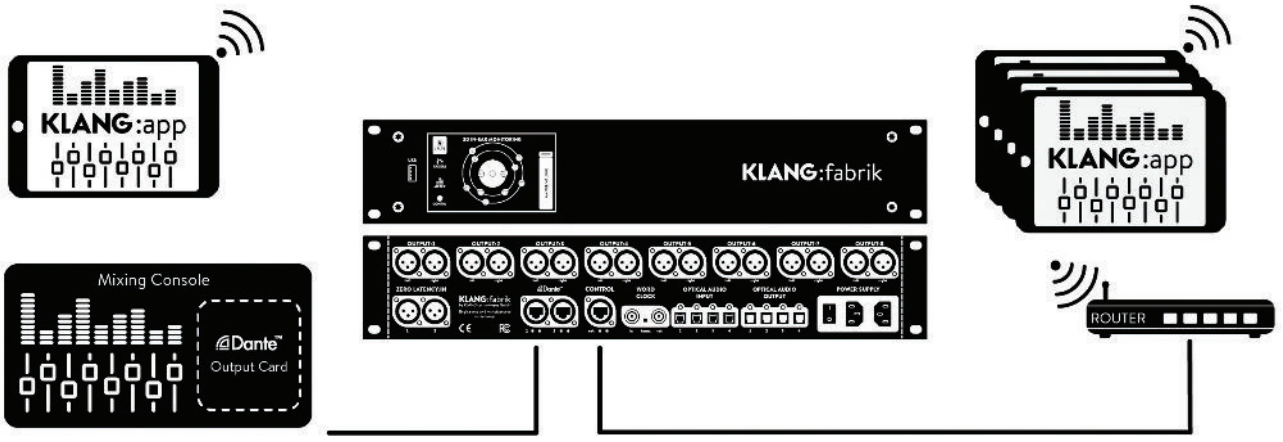
SETTING-UP

Implementing KLANG:Fabrik into any typical off-stage monitoring setup is just as easy as other personal in-ear mixing solutions. In fact, with Dante connectivity it is really compact and fast to install, particularly if used by touring acts. Once you've established the audio connections from the monitor console and back out to your wireless (or cabled) in-ear body packs, it's a simple case of connecting the control aspect. This could be just a single device, which a monitor engineer then uses to manage the individual mixes in the same way he would with standard in-ear mixers. Alternatively, this could be as many devices as there are mixes/users, plus one for a technician and another, of course, for the monitor engineer.

The KLANG app can be run on virtually any device, including smartphones, where it functions surprisingly well, with accurate control of mix parameters. Obviously, a tablet provides an easier interface, especially for the performers on stage, but I have been impressed by how well the app performs on a device with less



The rear panel of the KLANG:Fabrik processor



screen real-estate. The app has clearly been developed very carefully from an industry point of view. As I mentioned earlier, you have to remind yourself that this is effectively the first revision of this product. Although there have been some minor updates since it was released, the layout and concept is very much in its first stages.
Finally, the app also supports three levels of user control: musician, technician and administrator.
Just as you expect, the 'musician' mode locks out several features and only leaves that individual's mix editable, so they can't accidentally control another player's balance. The 'technician' mode provides access to all mixes but locks out some configuration settings.



I'm planning a tour for a band which doesn't currently have the luxury of a monitor engineer. I am planning on y-splitting all necessary input channels on the FOH console and providing direct outputs as well as some bus mixes to the Fabrik unit. From there, the band can manage their own mixes which shouldn't change much, as it will be the same inputs from the same mics, to the same console each night.

Needless to say, this isn't the answer for everyone but it does demonstrate how simply this system can be implemented, even if tour budgets are less than ideal. I'm certainly not trying to argue that this system does away with a monitor engineer or a monitor console; the monitor console is still very much required when working with a Fabrik system, although it's work-load is probably reduced. There is no indication from the design of this system that KLANG intends for you to use it without a console. The software and DSP doesn't facilitate pro mixing tools, and there are only two analogue inputs on the hardware. What I would love to see, however, is this 3D in-ear mixing solution finding a way of directly integrating into some digital consoles. This would be really fluid, cutting down setup to the point that monitor engineers could mix IEMs in 3D whenever stereo in-ears are used. Dare I say it, this could become the new format.

IN USE

To be honest, when I heard about this system I was sceptical. I'm assuming I'm not the only one, particularly amongst engineers, who will immediately start questioning whether or not this tech is any good. How effective is the processing? Does the processing throw up any issues with the audio quality? Is this just a gimmick, or is this really a professional tool? When I was introduced to the system for the first time, it only took a few minutes to realise that this was not only a solid solution, but something that stands a chance of changing in-ear mixes for good.

Much of the initial scepticism spans from hearing other 'dimensional' products. There are headphones which promise an 'immersive' feeling, software plug-ins which create surround sound formats from stereo files and plug-ins which emulate listening environments. While some of these achieve their goal extremely well, they don't offer the same 'surround' feeling that this 3D system can. What's more, the processing involved here doesn't affect the tone and quality of the audio in an undesirable manner. Unfortunately, because time and phase shifting is at play with these types of products, the source material can end up sounding 'processed'. This isn't the case with Fabrik.

I am so impressed with the 3D processing implemented in the Fabrik unit, it leaves me thinking: 'why don't we have this technology already?' It's so obvious to do panning in a spherical way using binaural techniques - it's not like we haven't been making binaural recordings for years already. You don't need to take my word for it either, as anyone can download the free app on any device - iOS, Android, Mac and PC. The app contains a demo mode with some pre-recorded stems so you can have a go at 3D panning straight away.

Once over the shock of how well this system performs you start to notice so many other great aspects of Fabrik. For example, relevant levels in a mix. A typical scenario might be that the lead vocalist has created their mix with their mic already at 0db and then they need more level. Now, before the jokes start, we must realise that we've tried educating musicians and artists about gain staging forever, and failed. However, this isn't an issue with Fabrik, as the singer, or whoever is monitoring their mix, can still press '+'. The software will simply lower all the other levels proportionally. Tell me you're not smiling now.

Fabrik is full of features like this, which to me demonstrates a very good understanding of IEM monitoring by the developers. It is as a complete solution that I am most impressed with Fabrik. I would never expect a manufacturer releasing a product into a new area and get so much right from the beginning. The connectivity is in-line with modern standards, both from an audio point of view with Dante and from a control point of view with wireless operation.

KLANG:FABRIK
TECH SPEC

FEATURES
- Professional personal monitoring
- Realistic 3D sound using binaural technology
- Up to 8 musicians per unit
- Digital inputs via Dante, compatible to ADAT
- Lifelong firmware updates and software improvements

APPLICATIONS
- In-ear monitoring for bands and performers in a wide range of professional environments



A simple KLANG:fabrik connection diagram, plus a view of the KLANG:app on an iPad, showing the spatial mixing options around a performer.



The KLANG:app's simple-to-use mix interface

The control app is excellent across all platforms, something which other manufacturers often still can't get right years into a product development. The design of the app is really smart and the fact it looks the same on any device means it's easily recognisable even if a user changes device. Security has been addressed, which is so important in a live situation, mostly via the three levels of user access. And there's the dual power supplies as standard. Altogether these things add up to a very solid product.

There is one very small and simple feature I'd like to see in a future software update. In 'technician' and 'admin' mode the 3D panning display in the app has four buttons on the bottom right of the screen. These buttons switch the mix engine from mono, to stereo, to 3D and to i3D. In 'musician' mode however, these have been removed - presumably so there is less on the screen and it can't be accidentally changed. What I'd like to see, however, is a single button at least, for switching to mono. One big red button if you like. We all know in-ears can fall out, or occasionally artists remove one side to interact with the audience or other band members. With only one side of a 3D mix they could well be missing something important.

TURNING TO THE FUTURE

So there's an obvious progression for this tech and I've just mentioned the 'i3D' mixing mode. You may have guessed its meaning already. KLANG is currently working on a way of tracking the position of a musician's head so the mix will 'turn' with you. For example, if they turn to look at fellow band members and then look back at the audience, the location of panned elements will move with them. This should provide a very natural feeling and I'm really excited to try it.

I don't have much information about this development other than they are already working on a solution which should be on the market early next year. I also know that their solution is being implemented in the cable of IEMs. This would mean you can continue to use the IEMs you're used to with the existing wireless body pack, but by replacing the cable with KLANG's own, it will track the position of your head. I wonder if these cables will one day communicate with each other, so that the 3D panning is automatic once the system knows who is wearing which pack.

CONCLUSION

I wasn't prepared for the accurate and high quality processing that this system offers. Whilst the concept of panning in a binaural format is reasonably straightforward, there are some very clever algorithms here. Among the benefits, mixing in '3D' creates far more space between elements in a mix and therefore, hopefully the general level of in-ears can be lower, even if unconsciously. I found it a really natural feeling listening to a 3D mix and it is potentially safer for full-time performing musicians.

Closely following the pleasant surprise I had listening to a 3D mix for the first time, are all the other details this system offers. For a first revision, the team at KLANG have jumped many hurdles. This is already a professional solution, with many aspects of stage work and touring applications thought about in quite some detail. I wouldn't hesitate to spec' this system for any tour or concert where personal mixers are required, even without the 3D aspect considered.

I believe the future for this system is bright due to its solid delivery. I don't think it would have stood a chance if its focus was on the 3D experience, but it can be considered to directly replace existing personal mixing solutions with the 3D feature being a bonus . . . and what a feature it is.

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