**Audix Microphones**

Made With Drummers In Mind

by Mark Parsons

Wilsonville, Oregon, is a clean and green little city of approximately 15,000 that sits on "The I-5," as Left-Coast residents universally call the main thoroughfare that stretches from Canada to Mexico. Located within a few hundred yards of the interstate is a manufacturer that has gone from "interesting little company" to "big player" status in what seems like a very short time—although in reality they’ve been working hard at their craft for two decades.

The story of Audix today is essentially the story of Cliff Castle and Fred Bigeh. Cliff is vice president of sales & marketing, and Fred is director of product design & manufacturing. Between the two of them, they have perhaps the perfect combination of skills necessary to design, manufacture, and market technical products to an entertainment-driven industry.

"I went into college on an athletic scholarship and came out a musician," Cliff Castle says with a laugh. After leaving school, Cliff went on the road for ten years as a bass player. Then he met Fred Bigeh, who had a broadcast engineering education and a serious penchant for acoustics and electronics. They decided to go into business together, and initially they were the exclusive US distributors for Audix Japan. The first “pro-quality” product they brought into this country was the OM-1 dynamic vocal mic, which was introduced in 1985. This was soon followed by the OM-2. Both of these mic’s were originally developed and built in Japan. A few years later, Cliff and Fred acquired the

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rights to the company name, and they started designing and manufacturing microphones in California's Bay Area.

"It was more difficult than we thought it would be," Cliff says. "We put all of our profits back into developing the company, because if you don't have a solid product with R&D behind it, then you won't make it in the long haul. We weren't driving nice cars back then, that's for sure."

One of the payoffs of this "take the long view" approach was the development of VLM (Very Low Mass) technology. Some of the aspects are proprietary, but the gist is that by lowering the mass of the moving parts of a dynamic microphone you can get a condenser-like response from it, yet still have the ruggedness and low-end beef of a good dynamic.

In 1991, Cliff and Fred moved Audix operations to the current location near Portland, Oregon. There, they set about developing more models in the OM series, as well as other types of mic's. With the advent of the OM-3 and OM-5, things took off, many of the big Seattle bands, as well as their highly successful Microphones, as well as their highly successful microphone design and production. As Dave walked us through the design and manufacturing process, it was apparent that the employee philosophy at Audix is "total involvement." Many of their technicians are cross-trained in several aspects of production, which gives them a real sense of involvement with the products they're making.

The design process begins with a drawing. Says Dave, "It could be anything from a quick sketch to a fairly elaborate drawing. Usually there are several variations for any given microphone idea. One of the nice things about having our entire process in-house is that we can turn concepts into prototypes right away. So when we have an idea—or several variations on an idea—we can build them all.

But before machine meets metal to make a microphone, Dave has to tell the machines what to do. First he creates a detailed computer drawing of the mic's body, and then he uses some elaborate software to turn the drawing into a set of instructions for the CNC (computer numerical controlled) machines that actually make the mic's bodies. Once this is done, the prototype process can continue.

Once Audix has created several different prototypes, how do they decide which version ultimately makes it to the production line? By a process known as beta testing. The mic's go out to various engineers and artists who use them and report back with their opinions. As an example, the D6 was tested by the sound engineers for bands such as Blink-182, Pearl Jam, The Red Hot Chili Peppers, Galactic, and hundreds of drummers who are glad to have new Om-5 bodies on the other. The interesting thing is what happens in between.

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**Audix**

There is a similar test for phase, as well as a vocal test (primarily to check tolerances of the reference in order to pass this stage. Considering the way Fred conducts his business, those running shoes are a practical choice. During our visit he was bouncing around the facility from department to department, checking on things and “talking tech” with the staff. From listening to him discuss acoustics and microphones, it’s clear that this is a man who spends a large part of his waking hours thinking about new mic’ designs and better ways to manufacture them.

Electronic QC

Marc Wilson handles quality control for Audix, which involves electronic testing of finished products. Every microphone is checked before being etched with its brand and model information and then shipped. The test consists of a comparison analysis, in which the finished mic’ is compared to a known reference, and the resulting frequency response is analyzed on a computer screen. The product being tested must be within very close tolerances of the reference in order to pass this stage.

What’s Inside?

All of the above explains the design and production of the physical product. But what about the internals, and most importantly, the sound? For that, we met with the other leading light of Audix, Fred Bigeh. You might expect the director of product design & manufacturing at Audix to be a “suit & tie” guy behind a desk. Fred is wearing jeans, a T-shirt, and running shoes. (Both he and Cliff Castle are runners.)

Imagine a complete recording studio that’s set up in a room the size of a large club, and that also features a full-size stage complete with drumkit, mic’s, monitors, instruments, amps, and a professional PA system.

**Future Plans**

So, what’s new from Audix, and what’s coming up around the bend? “For drummers,” replies Cliff Castle, “we recently released the i5, and we’ve been getting very good feedback on it. And we’re reformatting our drum packs to give drummers better options when it comes to buying one set of mic’s for the entire drumset. We’ve also made some modifications to our SCX-25, which is a great overhead mic’. The updated SCX-25A is just now starting to ship.”

Audix has also just released the CX-112, an updated version of their large studio condenser, and they’ve got some new miniature mic’s in the works. And although they don’t want to say too much just yet, keep your eyes open for some very high-end condenser products from Tower Of Power. It’s still the kick mic’ of choice for several of those test groups. After the mic’s are put through the wringer by the beta testers, they go into production. That’s where we came in, watching bars of solid aluminum being turned into D6 bodies. And how does this happen? Mostly through the magic of CNC.

**Manufacturing**

On a standard milling machine, the part is fixed and the tools turn. On the machine that makes the Audix D6 bodies, both the part and the tools rotate, with movement possible in all directions. There are sixty tools housed inside, which the machine can change automatically in order to drill, cut, grind, mill, and shave all in one complex operation. This allows the machine to turn out a completed D6 body every few minutes.

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