

## At 70, JBL still knows how to throw sound

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At least one participant at the upcoming presidential inauguration will care more about how clearly the speeches will be heard than about anything said that day.

JBL speakers will be used to swear in Donald Trump, just as they were at President Barack Obama's two inaugurations. JBL makes more than 3,000 other products that have been throwing sound at many of the world's biggest musical, athletic, social and political events since 1946.

"Our loudspeakers are very nonpartisan," quipped Mark R. Gander, JBL's director of technology. "We were at both the Republican and Democratic national conventions, too. If someone can't hear, or it's garbled, then we haven't done our job."

For 70 years, JBL - named for founding engineer James B. Lansing - has survived ownership changes, recessions and vast shifts in personal technology. It's won a Grammy, an Oscar and enough other awards, including dozens for technological achievement, to fill a long hallway at its 237,000-square-foot Los Angeles headquarters.

More change is in the works.

In November, Samsung Electronics agreed to pay \$8 billion for Harman International Industries Inc., JBL's Connecticut-based parent company, to turbocharge its growth in the business of connecting things to the internet, particularly cars. The South Korean company has said that Harman's management and its companies, including JBL, will remain

largely as they are, and Harman will be operated as a standalone subsidiary.

Samsung Chief Executive Oh-Hyun Kwon spoke of his "deep respect" for Harman CEO Dinesh Paliwal, "his strong senior leadership team and Harman's talented employees. After a few years of restructuring and shedding several hundred jobs as it moved out of high-cost production facilities, Harman in fiscal 2016 posted a 6 percent increase in net income to \$362 million and a 12 percent jump in sales to \$6.9 billion - with significant boost from JBL's operations.

"JBL is the crown jewel of the Harman companies," said Jim Garrett, Harman's director of marketing and project management for the luxury audio division, which includes JBL. "The advantage of our being here in California is that this is also the headquarters for our entertainment division, cinema, touring and retail."

At its factories in Mexico, China and Hungary, JBL manufactures headphones, wireless speakers, home theater systems and other consumer audio products. On the professional audio side of the business, JBL makes items such as sound systems for movie theaters and live performance arenas as well as equipment used in recording music or blasting it on a concert tour.

"When you are in a recording studio, you are often listening to JBL recording monitors," Garrett said. "When you go to a live venue like the Staples Center or to rock festivals like Coachella, the Emporium Festival, Rock in Rio, you are almost always listening to JBL. About 70 percent of movie theaters are using JBL."

JBL also makes so-called connected car products, such as its \$400 Legend CP100 in-dash touchscreen receiver. Toyota is JBL's biggest buyer of its automotive products. Five makes of Ferrari - including the

\$320,000 F12 Berlinetta - can come with JBL systems with 12 to 15 speakers.

New technologies have helped the company keep pace, said Bryan Bradley, a Harman senior vice president. "When someone has an idea, a drawing on a computer, we will use 3-D printing to see if it works. Instead of a process that used to take weeks, we can do it in hours."

JBL has moved its North American manufacturing operation to Mexico from LA in the last several years. Today, the company's LA facility, where about 300 people work, mainly handles design, engineering and lots and lots of testing.

"When we say our speakers are power rated for 1,000 watts, we don't mean that this is just how high it can go," Bradley said. "We run our speakers through a 100-hour power test. When we say 1,000 watts, we mean it has been able to run at that level for 100 hours straight."

Even with the best safety ear muffs, the noise in the test room is deafening. Hold your hand in front of a speaker during a test, and it feels as if a strong wind is blowing out of it. Touching the speaker could produce a nasty burn.

"You can feel the heat because so much energy is being dispersed," Gander said.

Four \$1 million echo-free chambers help the company refine its sounds. "They have zero reflective surfaces," Gander said, "so you get a true measurement of the sound coming out of the speakers without any interference."

One room looks like something in a typical home, for blind studies on whether JBL's or a competitor's speaker sounds better. A huge "arena

testing room" allows technicians to monitor how a sound system like the one at Staples Center or Dodger Stadium will work.

"We can virtually model and create on a computer and know what the end result is going to be," Garrett said. "That's instead of a bunch of guys sitting here with soldering irons and capacitors and resistors using that old trial and error approach."

One JBL conference room even houses a Lexus vehicle, which can be outfitted with microphones to measure acoustics.

"With all of our products," Bradley said, "we don't just say to a customer, subjectively, that 'this sounds good.' We are able to prove it."

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