

Sound engineer keeps symphony hall in tune

Application Note

What musical group has recorded 80 CDs and received more Grammy nominations than Travis Tritt? **The Seattle Symphony**

From its stunning new home in Benaroya Hall, the Seattle Symphony enjoys a worldwide reputation for adventurous programming, which often features the work of contemporary composers.

Until Benaroya Hall opened in 1998, the Seattle area suffered from what the symphony called "cultural gridlock." The orchestra scheduled its performances at the Seattle Center Opera House, along with the city's opera company and ballet. The Opera House was booked solid 360 days a year, virtually eliminating scheduling flexibility and growth of any sort. Even more of a challenge, the Opera House was an oversized hall not designed for symphonic music.

In contrast, the \$118 million Benaroya Hall was acoustically designed from the beginning specifically for the symphony. That makes it a beauty – and a challenge – for Rick Chinn, who maintains the Benaroya Hall sound system with the help of Fluke test tools.

The orchestra itself uses no amplification for its classical concerts and as little amplification as possible for its pops performances, said Chinn, owner of Uneeda Audio. Other performances and artists, such as the Seattle Men's Chorus concerts or groups such as Cowboy Junkies, require anywhere from the amplification of one instrument or section to "total amplification," when every instrument and voice is miked and amplified to one degree or another.

Balancing the need for amplification

Providing a sound system that offers the quality of sound production that Benaroya Hall requires at any level of amplification, takes ingenuity, persistence and patience. Balance is key.

"The reality is, in today's economy, your performance space needs to be used a lot," Chinn said. So, although Benaroya Hall was designed for acoustical orchestral performances, achieving the high sound quality that artists and speakers who require amplification demand and deserve requires some delicate negotiation.

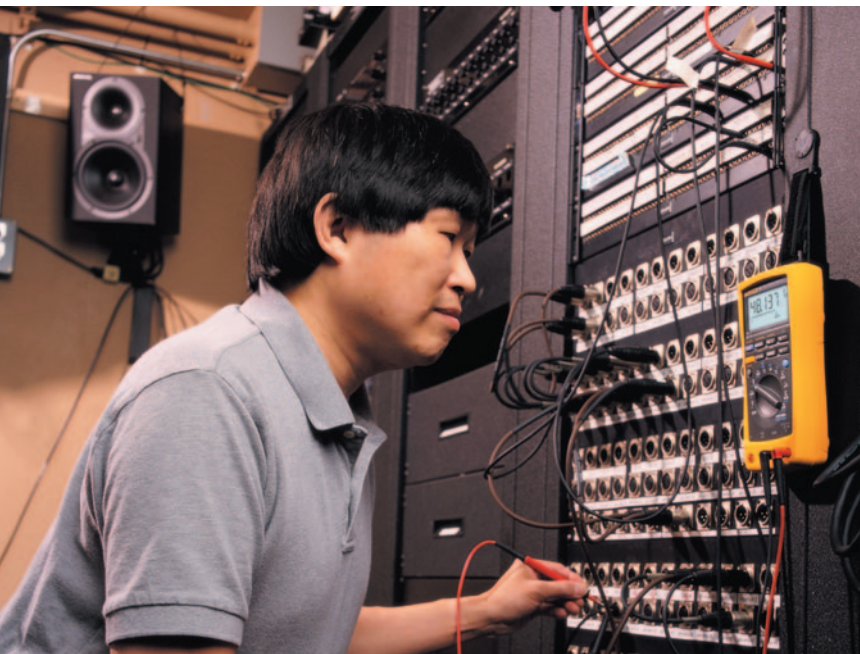


Audio engineer Rick Chinn uses Fluke instruments for audio-enhancement testing in Benaroya Hall, Seattle, Washington.

"Benaroya Hall is very reverberant," Chinn said. "In an environment designed to enhance orchestral instruments, speech intelligibility – the ability to understand what someone is saying – is sometimes a challenge."

The hall's sound system is always on, even when not in use during symphony performances. "It is the system used to make pre-performance audience announcements."

The system, however, gets its full workout for other types of events.



Fluke instruments prove valuable for Rick Chinn as he tests equipment in Benaroya Hall, Seattle, Washington.

“When Frank Sinatra, Jr. came, he brought a core rhythm section and additional players who were inserted into the orchestra,” he said. “We can amplify certain sections, certain players, certain artists, all at individual levels. It’s quite similar to what happens in a recording studio.”

Anytime amplification is involved, someone has responsibility for what the audience hears — a position Chinn calls “the fifth Beatle.”

“Generally there are two mixing boards: one on stage, which controls what the performers hear, and one at the back of the house, which controls what the audience hears,” he said. The on-stage monitor mixer is little known, but vital. “If the performers can’t hear themselves, 99 percent of them can’t sing in tune,” he said. “And, they need to hear the other vocalists as well as other key instruments. That’s how they get their timing; that’s how they know where they are.”

“The onstage monitor mixer, now he’s in a dangerous position. If the performers don’t like what he’s doing, they can wring his neck right there.”

Chinn’s world is one of cables and switches. Those are what go wrong, he says. Most troubles are caught during pre-performance sound checks. If something goes wrong during a performance, the offending part is tracked down and immediately replaced. Chinn uses Benaroya Hall’s Fluke ScopeMeter® and his tool kit of Fluke digital multimeters to track down trouble.

Help from the right tools

“I use Flukes because they don’t blow up,” he said with a laugh. “I can do stupid things with them and they may say, ‘No, I won’t do that,’ but they won’t blow up.” Chinn uses the DMMs to measure voltages throughout the system, the ScopeMeter to look at waveforms and voltage simultaneously.

“There are a lot of electronics in the sound system, especially in the mixing consoles,” he said. “Things shouldn’t happen, but they do. Then you have to signal-trace through the equipment, and the best tool to signal-trace is an oscilloscope. That’s what makes the ScopeMeter so valuable. Then the DMM can look precisely at the actual voltages.”

At start-up, Benaroya Hall had issues with power line hum because of improper grounding in the original sound system, Chinn said. Sound systems should use a star grounding system and it is critical how and where all the different ground systems are tied together. Previously, some parts of the system were grounded in several locations, causing problems in the way the systems tied together.

Chinn tracked down the problem with a Fluke current probe and a ScopeMeter test tool. Once each part of the system was grounded properly and brought together correctly in the right place, the noise problems ceased.

The Hall’s original audio wiring had no way to use wiring on stage to connect other equipment to it. Sound systems, like most others, require precise wiring to route signals between the various parts of the system without picking up unwanted noise along the way — in this case microphones, preamps, mixers and amplifiers. “The original wiring made no allowances for using the wiring from the stage to the audio equipment room for anything other than microphone inputs,” Chinn said. “We had to get very creative to find a way to route line-level signals back to the stage.”



Benaroya Hall, home of the Seattle Symphony

Fred Housel photo

In 2003-2004, the 189,000-square-foot Benaroya Hall will host the Seattle Symphony's 223-performance Centennial Season, as well as annual meetings for companies such as Starbucks and Amgen. In between, it offers world-class acoustical support to a full calendar of performances and artists. At the center of it all is a sound system kept running beautifully with the help of Fluke equipment.

Fluke. *Keeping your world up and running.*

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