

## Clarity in the courtroom

Bringing audio excellence to a Milwaukee federal court



Judge Stadtmueller's courtroom in the Milwaukee Federal Courthouse

When the gavel falls in the courtroom of Judge Joseph Stadtmueller, nobody questions that his word is law. Like many other courtrooms around the country, this stately, walnut lined room in the federal courthouse in downtown Milwaukee gives off an aura of uncompromising authority. Audio and video technology have been welcomed in to this judicial environment as a way to enhance the proceedings without distracting from the task at hand.

"Very simple, yet functional," is how Judge Stadtmueller describes the audio system recently installed by Lewis Sound and Video Professionals of Waukesha, Wisconsin. Simple to use perhaps, but not simplistic in what it can do. Today's courtroom audio system opens up new and interesting possibilities without taking away the judge's command of his courtroom. "Basically it provides total control of the sound as well as telephone conferencing in a very, very user friendly manner," says the judge.

Lewis Sound installed the courtroom's original audio system in the early 1990's, but it needed updating by 2006. "Mainly we upgraded the head-end electronics," says Susan Lewis, CEO. "A Polycom Vortex replaced the old mixer, graphic equalizer and telephone hybrid system, taking us from automatic mic mixing technology to mic mixing, echo canceling, and DSP matrix routing technology. That was a quantum leap forward."

Although the judge enjoys a certain level of technological expertise, he left the basic design to Lewis Sound. "What drives us in a courtroom most often is the architecture," says senior design consultant Henry Lewis. "That, in itself, defines the acoustics. We have a table here, a raised witness box there, perhaps a carpeted floor yet echoey paneling and hard benches in the visitors' gallery." No matter what the conditions, every ear in the courtroom must hear every spoken word. Good microphones and good sound components are crucial to the court's day to day operations.

### Placing microphones

"A mic is like a camera lens," says Henry Lewis. "If I'm taking a picture of you from three feet away I'll use one lens, but if I'm on the other side of the football field, I'm obviously going to use a telephoto. Microphones are very purpose driven."

In Judge Stadtmueller's courtroom Lewis chose eight AKG table mics because of their excellent pick-up pattern and off-axis rejection. "These mini goosenecks get the pick-up element up away from table, so any shuffling papers are under and behind the microphone," says Henry Lewis. "And attorneys aren't always seated. So we need a mic that's going to be somewhat forgiving when they stand up." The AKGs also offer good gain before feedback, so the judge can change the volume without fear of screeching audio.

Lewis selected two handheld wireless microphones for jury selection and the judge himself wears one of two lavaliers, allowing him freedom of movement. The other lavalier can be used by attorneys or witnesses who move around when making presentations. "The mics are

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much better and provide good sound so lawyers don't have to bark," says Stadtmueller. "They're not only great functionally, but they blend in to the ambience of the courtroom in an unobtrusive way."

## Easing language and reporting issues

One new option in this courtroom is the addition of a sound masking system. For years, jurors had to be escorted out of the courtroom during private conferences, a time consuming process. Lewis Sound included a "sidebar" button on the judge's touch panel that, when trig-

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Close up of the control panel on the judge's bench

gered, pumps pink noise into the jury box, effectively blocking any conversations at the counsel table or the judge's bench from reaching the jury's ears.

"Attorneys like the pink noise because it's a more efficient use of everybody's time," says Stadtmueller. "We don't have to send the jury out of the room and then wait for them to file back in again."

Audio teleconferencing has added a new dimension to courtroom proceedings. Integrated into the courtroom audio system, it too is a logistical time saver. "We have used the conferencing system to take testimony from a witness otherwise unable to be present in the courtroom," says Stadtmueller. "Though we have not taken this step, there are other courtrooms around the country also equipped with videoconferencing systems that would allow a defendant to participate in a trial from a jail cell or other remote location."

One great advantage of teleconferencing is that it allows the use of translators without having to bring them physically into the courtroom. "It is very difficult to find interpreters for certain languages," Stadtmueller explains. "In Wisconsin we have a growing Hmong population, but there are very few translators who are effective because of all the different dialects within that language. Now we can bring in a translator without the expense of physically having him in the courtroom."

The expense of court reporting may also be lessened if PC-based recording systems become more popular. Lewis Sound installed such systems in Milwaukee's municipal courtrooms a few years ago. Audio from the sound system is fed into a computer, which produces an audio file that can be emailed to a transcriptionist. The transcriptionist listens to the file, converts it to text, and then emails it back to the court, effectively eliminating the need for a highly-skilled reporter to capture the proceedings in real time.

"Because of budgetary constraints some judges have opted for electronic recording as opposed to a court reporter," says Stadtmueller. "It's easier for judges to extend court hours without having to worry about a reporter who may have to get to day care to pick up the kids. It gives the judge a little more flexibility if he or she doesn't have to have that extra person in the courtroom."

## Security and convenience

To aid the hard of hearing, Lewis Sound chose to install an infrared assisted listening system in Judge Stadtmueller's courtroom. Lewis prefers infrared light transmission because it offers a more secure audio environment. "The difference is that an RF system is based on a radio broadcast that can get picked up by anyone tuned to that frequency," says Susan Lewis. "It doesn't matter if someone is in the back alley or on the next floor. If the RF strength is sufficient, an unauthorized receiver can pick up the proceedings, hear them and record them." The infrared signal, on the other hand, consists of light waves that are contained within the walls of each individual courtroom.

"We like the Sennheiser system because it uses a rack mountable two-channel modulator," adds Lewis. The modulator sends audio from the sound system to two emitter panels mounted on the reveal around the dropped tile ceiling, above and behind the judge's bench. Anyone who needs higher audio levels wears headphones that include a receiver able to pick up the infrared signal from the emitter panels.

Lewis Sound and Judge Stadtmueller have worked together to design an audio system that enhances every aspect of the proceedings. "In order for him to communicate," says Henry Lewis, "we have provided a tool which absolutely cannot, in any way shape or form, be burdensome on his decision making process." It would be unfair to both defendant and judge to give them anything less.



The view from the judge's bench. Note the control panel on the near left and the many microphones used throughout the courtroom.