

Colorado Symphony Orchestra and Minnesota Public Radio Enhance Workflow with Neumann Digital Microphone Technology

Denver (CO), Minneapolis (MN), 9 July 2012 – Recording a large orchestral performance can involve extreme dynamic level changes, highly reverberant

environments and dozens of channels of microphones, cables and associated electronic circuitry. Using traditional analog equipment, controlling these factors can be cumbersome, and maintaining a simple, agile workflow is often difficult. Using several



dozen analog microphones onstage significantly raises the noise floor, and may introduce distortion during loud passages. Now, with Neumann's pioneering range of digital microphones, users can experience an all-digital workflow — dramatically increasing signal integrity and user controllability.

A "Twenty-First Century Orchestra" Goes Digital

Since returning to the Colorado Symphony Orchestra (CSO) to take up the position of President/CEO, Gene Sobczak has begun to modernize the organization with an ambitious program of performances featuring pop and rock artists, recordings, webcasts and educational outreach. Sobczak has also forged relationships between Mike Pappas, a Denver-based recording engineer, and Sennheiser Electronic Corporation to ensure that every nuance of the orchestra is captured with innovative digital microphone technology from Neumann.

The CSO has already shared the stage this year with Trey Anastasio of the rock band Phish, Denver-based multi-instrumentalists DeVotchKa, and Boston-based alt-rockers Guster. In his role as volunteer engineer for the CSO, Pappas captured all three of these shows with an arsenal of Neumann digital microphones.

Realizing Agility and Simplicity

Pappas used 56 KM D series Neumann digital mics in a variety of omni-directional, cardioid and hypercardioid polar patterns. The mic list also included a Neumann

KU 100 dummy head binaural stereo microphone for hall ambience, and a KMR 82 D shotgun for spot miking.

When using analog microphones and mixers, self-noise causes the noise floor to become more audible as channel counts increase. This is not the case with digital microphones however, which maintain a consistent noise floor whether one is using a



single unit or three dozen units. "In a conventional analog mic setup," says Pappas, "mix 24 channels together and the noise floor comes up by 15 dB. Now, take 56 analog microphones and you're looking at the noise floor coming up by 20 or 25 dB. This is significantly lower when using digital microphones. With a Neumann digital microphone you go from capsule to A-to-D converter in less than an inch. What that means is that you don't have this low level analog signal running through hundreds and hundreds of feet of cable, and then into your preamps. In the end, all the cable does is add more noise."

Simple Workflow, Astounding Results

Pappas' workflow is typically very simple: Neumann mics plugged into Neumann Digital Microphone Interface (DMIs), with the signals converted into MADi for transport to a DiGiCo mixing console for monitoring while recording into a computer running Apple Logic software. "The workflow is easier because there's less stuff you need to worry about when you use digital mics," Pappas observes. "You plug them in, fire up the software and the system pretty much runs itself. Plus we don't have problems with things like hums and buzzes."



"We recorded analog for many years with some of the best gear on the planet," says Pappas. "When we switched over to full digital, the first thing we noticed was that

we could hear the hall very clearly. We couldn't hear this with analog gear because the noise floor of the gear was significantly greater than the noise floor of the hall." Since Pappas received his first batch of Neumann digital mics back in 2004, he hasn't looked back.

A Leading Broadcaster Forays into Digital Mics

Minnesota Public Radio (MPR), which established itself in 1967 as a classical music station, has grown to become one of the United States' premier public radio entities and currently operates a 43-station radio network. American Public Media (APM), MPR's parent organization, is the nation's largest distributor of classical music programming. MPR frequently records and broadcasts the St. Paul Chamber Orchestra (SPCO) for "Performance Today," a program that reaches 1.3 million listeners on 256 stations each week.

The SPCO is a 34-piece ensemble and the only full-time chamber orchestra in the U.S. Now in its 53rd season, the ensemble enjoys a reputation as one of the finest chamber orchestras in the world.

In early April, Cameron Wiley, MPR technical director for SPCO programming, implemented an eight-channel system at a performance by the ensemble at Wooddale Church in Eden Prairie, MN. He recorded the concert to a Nuendo system using Neumann KM 183 D, KM 184 D and KM 185 D digital microphones, with the main mic array arranged in a modified Decca Tree configuration.



Since there was no rehearsal, Wiley had to take an educated guess while setting levels based on his experience recording the SPCO with his analog rig – the tympani proved troublesome. Thankfully, he recalls, the increased headroom afforded by the Neumann digital system handled the KM 143 D spot mic with no distortion. "That mic was being hit pretty hard, but it handled this very well. If we had used analog, it wouldn't have survived those levels."

As a longtime user of analog microphones, Wiley appreciates the benefits of an all-digital mic setup – especially the control provided by Neumann's Remote Control Software (RCS). "Being able to control polar patterns as well as onboard DSP can be

a lifesaver. Having that capability in a mic is fantastic and it certainly makes workflow much easier to deal with.”

To learn more about Neumann digital microphones, please visit <http://www.neumann.com>.

The Sennheiser Group, with its headquarters in Wedemark near Hanover, Germany, is one of the world's leading manufacturers of microphones, headphones and wireless transmission systems. The family-owned company, which was established in 1945, recorded sales of around €468 million in 2010. Sennheiser employs more than 2,100 people worldwide, and has manufacturing plants in Germany, Ireland and the USA. The company is represented worldwide by subsidiaries in France, Great Britain, Belgium, the Netherlands, Germany, Denmark (Nordic), Russia, Hong Kong, India, Singapore, Japan, China, Canada, Mexico and the USA, as well as by long-term trading partners in many other countries. Also part of the Sennheiser Group are Georg Neumann GmbH, Berlin (studio microphones and monitor loudspeakers), and the joint venture Sennheiser Communications A/S (headsets for PCs, offices and call centres).

You can find all the latest information on Sennheiser by visiting our website at www.sennheiser.com.

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Image captions:

CSO_1.jpg: Resident Conductor Scott O'Neil conducting the Colorado Symphony Orchestra with a Neumann KM 133 D capturing the sound (photo credit: Darius Panahpour)

CSO_2.jpg: The Neumann KM D digital microphones feature extended dynamic range and an extremely low noise floor, making them perfectly suited for orchestral recordings (photo credit: Darius Panahpour)

Neumann_KM D_family.jpg: The Neumann KM D family of digital microphones features an agile selection of omni, cardioid and super-cardioid polar patterns

Neumann KM 184 D.jpg: The Neumann KM 184 D was used during a recent recording by MPR