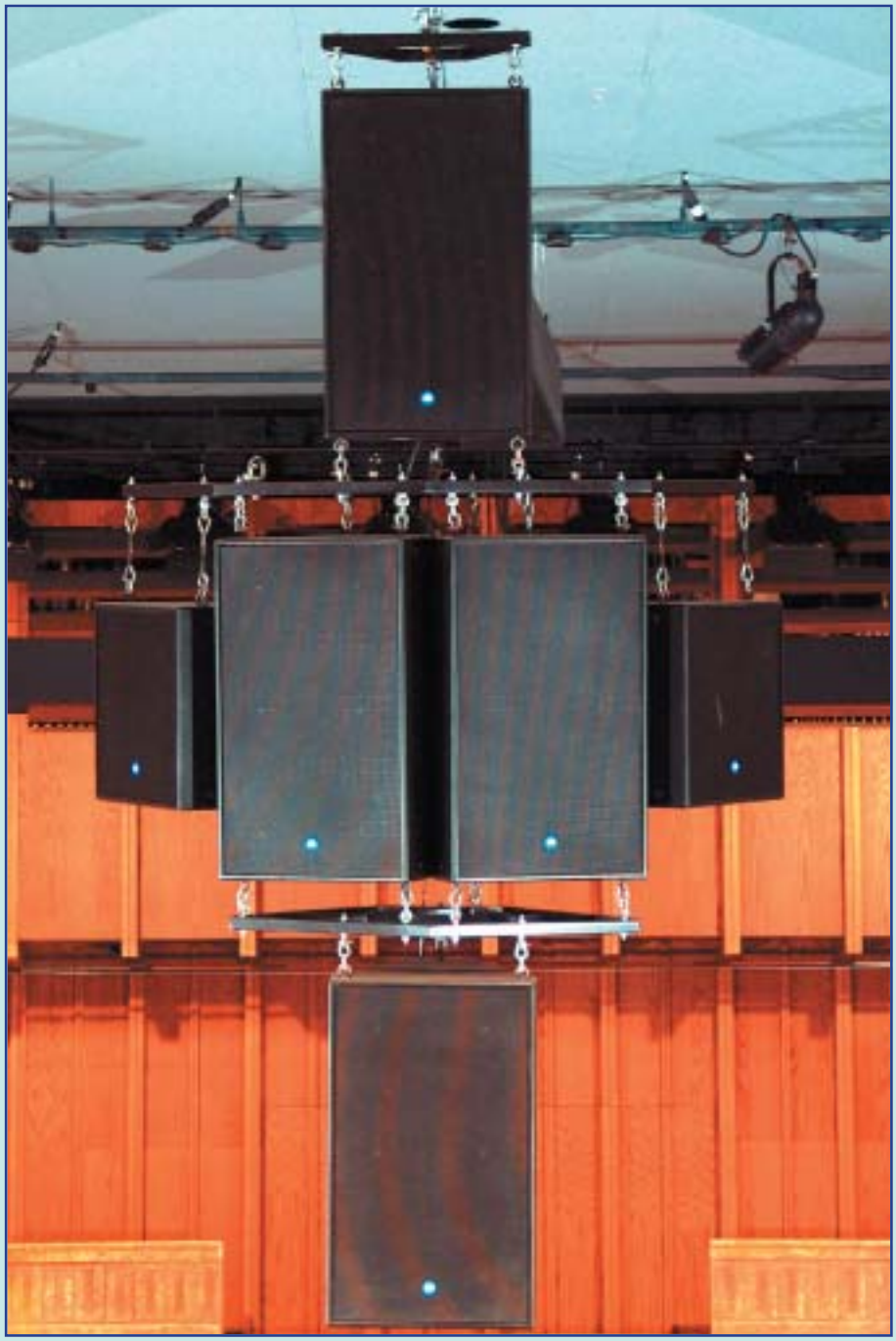
CALVARY TEMPLE
WINNIPEG MB

by Mike Lethby

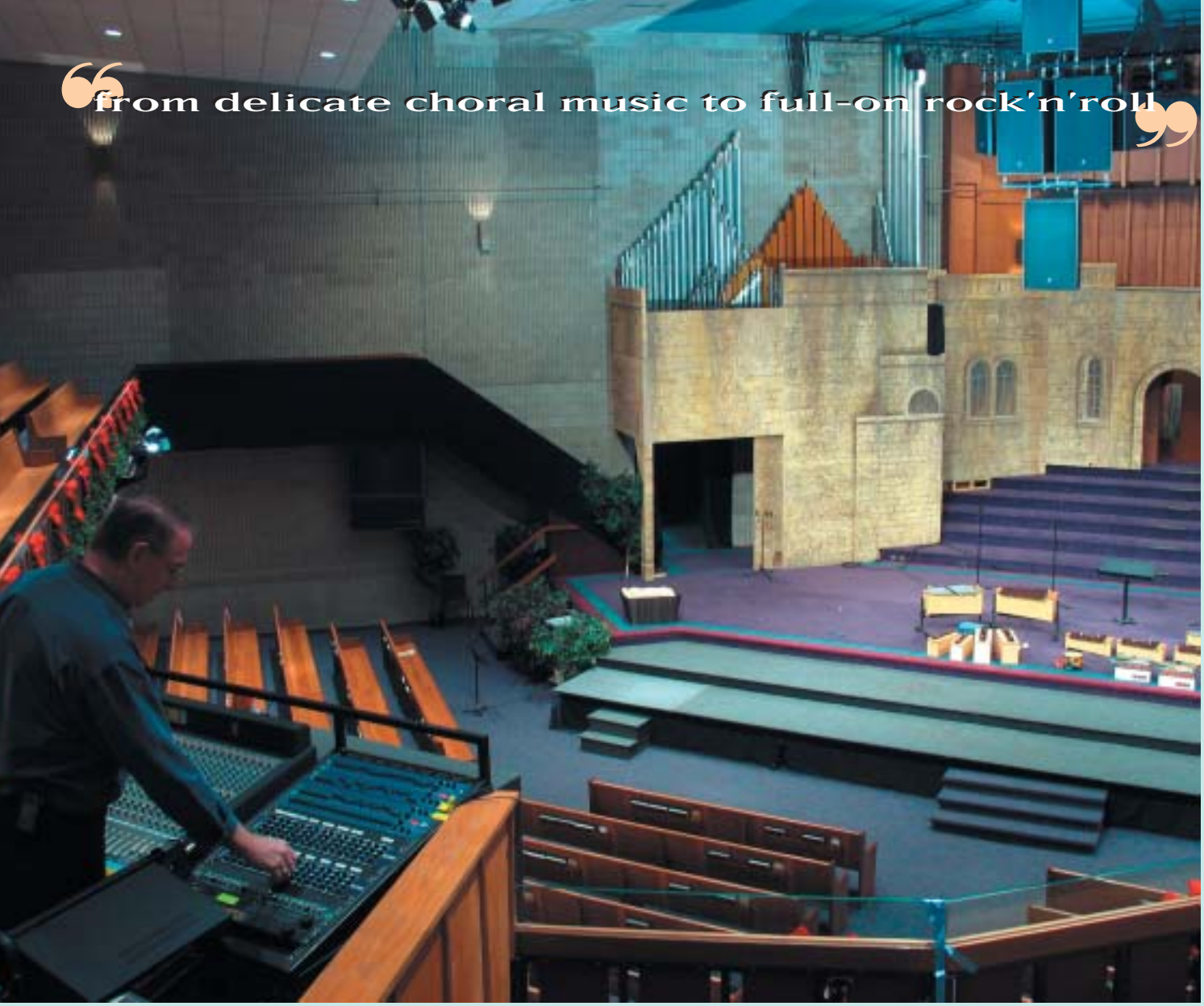


The 2,500-seat Calvary Temple, Winnipeg's largest house of worship, a modern building in the heart of downtown, recently underwent the fourth audio refit of its 25-year life. The latest challenge was to install an audio system that would meet the building's increasingly varied (and loud) types of service.

Around two years ago, a traditional worship program based mainly around choral music and speech had evolved into a fully amplified band featuring a wide range of contemporary instrumentation including electronic keyboards and guitars, as well as the original choral and speech content.

To advise on a new system and implement the installation, Calvary Temple turned to Head of Audio Duane Tabinski, who observes: "The move to the band was what changed their sound system requirements – we found they couldn't change their program without changing the audio infrastructure, because the existing system simply couldn't deliver the louder and more complex music with any real clarity, and speech intelligibility needed to be improved anyway."

This Pentecostal church is not an overly problematic space in terms of acoustics, with a relatively tame reverberation time (RT) of 1.6 seconds at 250Hz, its walls surfaced in corrugated concrete which, although not acoustically treated, have a porous



and uneven surface texture that diffuses the sound quite nicely. The large, three story concrete style structure is clad in decorative brick; the floor is carpeted throughout the building; the ceiling is faced with acoustic tile; and seating is traditional wooden pews.

The altar/stage is set in one corner and plays out to seats in a fan shape, overlooked by a balcony and an overflow high up in the form of a second, upper balcony, and Tabinski’s goal was to significantly improve speech intelligibility and create consistent performance throughout the building.

“It’s full on rock’n’roll, and the sound system had to be capable of delivering concert quality audio while still keeping speech intelligibility up for the spoken word. It was a long process, entailing two years of discussion and meetings which involved showing the people in charge why they needed such a system and what it could do for them.

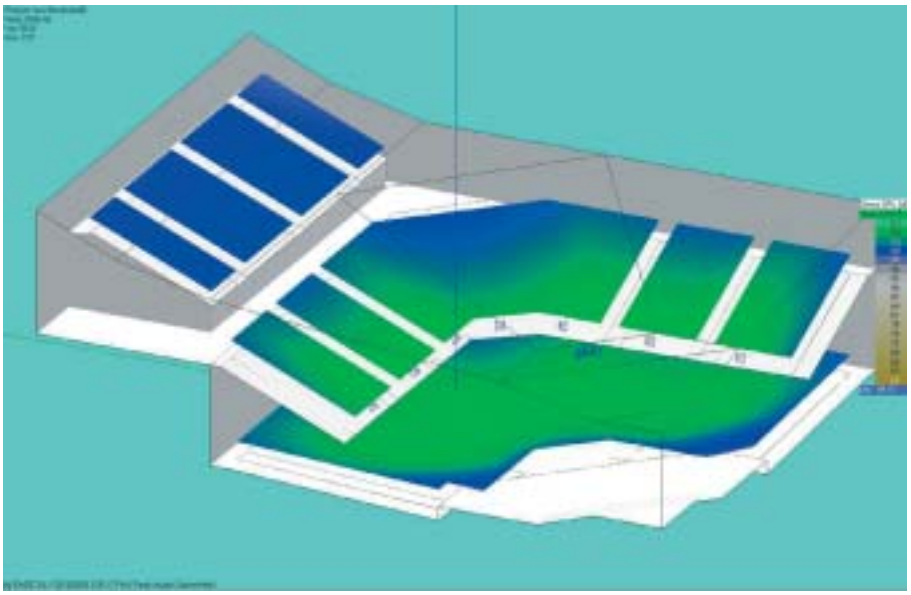
“The way the previous PA had been laid out, there was no pattern control and the speakers were virtually omni directional, which added up to zero control of sound in the room.”

To quantify the ideal positions for loudspeaker locations and identify reverberation ‘hot spots’, acoustic modelling was carried out by Peak Audio Consulting of Denver, CO using EASE (Electro Acoustic Simulator for Engineers) predictive software. Further fine tuning was carried out post-installation by Ray Rayburn from Peak Audio with Tabinski, studying the new equipment’s interaction with the room using a TEF analyser and fine-tuning settings to perfect the results.

Tabinski then turned to the California-based manufacturer Renkus-Heinz and its Canadian distributor, Contact Distribution of Toronto, for the system’s main speaker enclosures.

The heart of the system is a central, flown loudspeaker cluster, consisting of two CT8 subwoofers, a pair of CT7215/64’s and a single CT7M

you need to get the sound to where you want it to be and nowhere else—not on the walls or any of the other hard surfaces



Showing the 2 kHz direct sound and total sound including wall bounce. The second balcony seating area is covered by a high density of 2-way overhead loudspeakers and they are not in the model, but are delayed in multiple zones to match the arrival time of the main cluster.

downfill enclosure to cover the front rows. The CT7215/64 feature Renkus-Heinz's patented CoEntrant CDT-2 2"/10" mid/hi drivers, Complex Conic horns and a dual 15" doublet source for low octave vertical pattern control and utilizing True Array Principle technologies reducing comb filtering in multiple box applications. The CT7M downfill also uses C.C. horns and CoEntrant drivers to ensure similar performance characteristics.

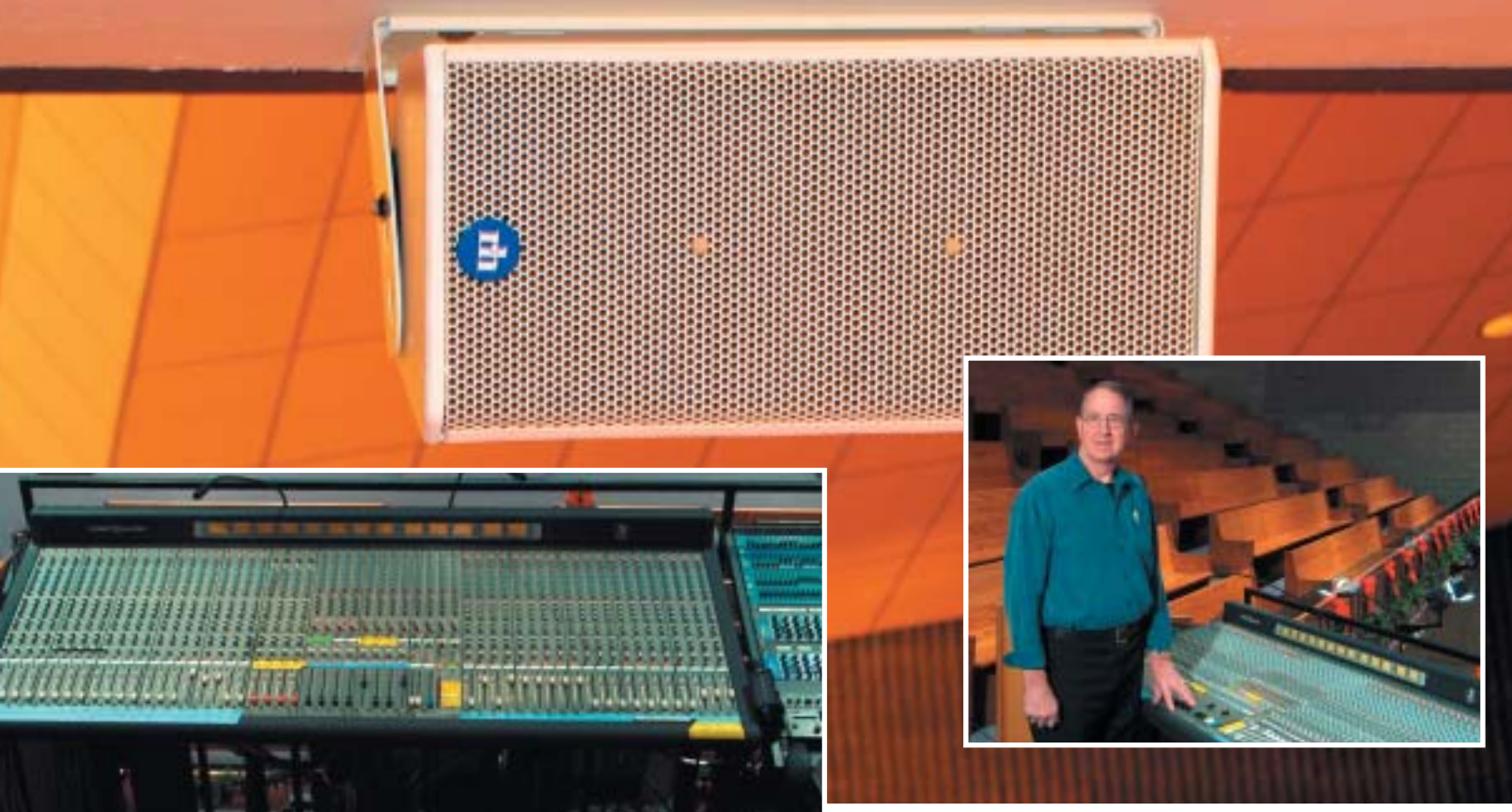
"The CT Series are very focused, high Q boxes," adds Tabinski, "which is ideal when you need to get the sound to where you want it to be and nowhere else - not on the walls or any of the other hard surfaces. Not only does the cluster give us a seamless 160 degrees of coverage, but the purpose-built 15" section really reduced objectionable low frequencies below the cluster on the altar and stage, which in these types of set-ups is critical."

Garret Maki, Senior Designer for the project had this to add: "Using speakers with horns effective down to 350 Hz which are specifically designed to array well together provided excellent consistency from seat to seat with very little speaker to speaker interference. The subwoofers were designed into the array to work to extend the low frequency pattern control by crossing over mirror image pairs of low frequency drivers in an attempt to create a null at 90 degrees from the on-axis of the speakers. This proved to provide very consistent sound from seat to seat while reducing sound washing onto the stage from the array."

Seven small Renkus-Heinz TRX81 – 1"/8" full-range cabinets were installed under the balconies and time-delayed to the central cluster to maintain a coherent wave-front. The upper overflow balcony is covered with 40 8" Radian ceiling loudspeakers.

A 1"/12" RH TRX121 speaker is flown from the ceiling above the choir loft as monitor and 'fill', along with four Radian RMW-1122 Microwedge stage monitors. Additionally, there are 12 sets of Shure PSM600s wireless in-ear monitor systems for the band. There are Countryman E6 'earset' miniature headsets microphones to further increase system gain before feedback.

Providing control of the loudspeaker systems' crossovers, internal processing and time alignment is a 32-channel



Peavey MediaMatrix system and a MediaMatrix Miniframe 208NT processor rack. The full compliment of sources are mixed on a Crest X8 40-channel front-of-house console matched to a Crest 8 32-channel monitor desk.

Amplification is Crest Audio CA9s for the main cluster; a pair of CA-4s for the under-balcony delay speakers and a CKV400 for the overflow balcony, while the stage monitors are biamplified with Crest CA-12s and CA-4s. Completing the equipment list are a dozen Shure Beta 87 hand held wireless microphone systems.

Says Duane Tabinski: "The clarity at every seat in the house has improved radically. The system really can take anything anyone can throw at it from delicate choral music to full-on rock'n'roll. The congregation thinks it's truly wonderful – and the best thing is that no one complains about the sound any more." ◆

Photos were taken by Dave McKnight www.davemcknight.com

INSTANT ACCESS

Consultant
PEAK AUDIO CONSULTING
www.peakaudio.com
303-466-5228
info@peakaudio.com

Distribution
CONTACT DISTRIBUTION
www.contactdistribution.com
416-287-1144
info@contactdistribution.com

CT8, CT7215s, CT7M, TRX81, TRX121 speakers
RENKUS HEINZ
www.renkus-heinz.com
949-588-9997
info@renkus-heinz.com

8" Ceiling Loudspeakers, RMW-1122 Microwedge stage monitors
RADIAN AUDIO ENGINEERING INC.
www.radianaudio.com
714-288-8900
info@radianaudio.com

PSM600s wireless in-ear monitor , Beta 87 hand held wireless
SHURE INCORPORATED
www.shure.com
847-600-2000
info@shure.com

E6 headsets
COUNTRYMAN ASSOCIATES INC.
www.countryman.com
800-669-1422
info@countryman.com

32-channel MediaMatrix system, Miniframe 208NT processor
PEAVEY
mediamatrix.peavey.com
601-483-5365
MediaMatrixInfo@peavey.com

X8 40-channel front-of-house console, 8 32-channel monitor desk, CA-9, CA-4, CA-12, CKV400 amplifiers
CREST AUDIO INC.
www.crestaudio.com
201-909-8700
marketing@crestaudio.com