

PRODUCT TESTS

VTC PRO AUDIO ELEVATION SERIES SPEAKER SYSTEM

by Don Barber

VTC Pro Audio recently launched its new line of speaker systems at Mississauga, ON's Living Arts Centre. The demo started with a video roll introducing the product with a short explanation of the technologies involved and a nicely co-ordinated lighting show highlighting the various components. We were then presented with the live band Brass Transit, a group of seasoned local players doing some killer renditions of a few Chicago tunes. With drums, bass, electric guitar, sax, trumpet, trombone, and lead and backing vocals, there was a lot of content with which to evaluate the system.

The centerpiece of VTC Pro Audio is the Elevation Series line array comprised of the EL210 medium-format line array enclosure and the ELS212 tapped horn subwoofer. The line array configuration has been developed by numerous suppliers over the last number of years, but the VTC offering is not just another "me too" system. The Elevation Series is based on the application of three new technologies invented by Tom Danley (of Danley Sound Labs) licensed to VTC Pro Audio and manufacturer Yorkville Sound. All VTC products were designed by VTC Head Speaker Designer Todd Michael.

The EL210 top end enclosure is comprised of a patented wave shaping lens assembly called a Paraline Element mounted on a patent-pending Synergy Horn.

Conventional horns emit a spherically-shaped wavefront – somewhat like blowing a bubble – which, when combined with other horns, produces interference and phase cancellation in the combined wavefront over distance. In order for a line array to work, it must have a narrow vertical dispersion pattern and a flat (or

slightly curved) wavefront that combines constructively with the adjacent enclosures. In order to achieve this, many manufacturers use a number of long horns with a very gradual flare rate. In theory, these long horns keep the wavefront from expanding too much, but in practice they sound pretty much like a pipe.

The patented Paraline Element is only about an inch thick. It is constructed of a number of laser-cut steel plates that are stacked and bolted together. The various signal paths are only a few inches long, but the result at the horn throat is that everything is time aligned as a flat wavefront – actually, there is a bit of curvature to allow the line of cabinets to be curved slightly to broaden the vertical coverage as required. Two BMS Neodymium 1" drivers from Hanover, Germany provide the drive component.

The Paraline Element is coupled to the Synergy Horn, which is also loaded with two B&C 10" cone speakers. The back of the cabinet is a sealed enclosure. The speakers are mounted to the side wall of the horn with only two small exit holes for each speaker. The exit holes are physically positioned to time align with the high-frequency entrance at the crossover point. The result is a smooth combining of the full frequency range into the same horn, with minimal disturbance of the high-frequency path and without the destructive interference exhibited in designs that simply have the two cone speakers cross-fired at each other.

The bottom end of the Elevation Series is the ELS212 Subwoofer, which employs a patent-pending tapped horn design. The two Eighteen Sound 12" speakers are mounted so that the front side is loaded into an 8" folded horn path. The rear side of the driver is positioned along the horn path (tapped) so that it provides additional output in phase with front side of the speaker.

That's the technology, very simply put. How does it work? Really well.

The rig at the Living Arts Centre had 12 top elements and eight subwoofers per side. The line array was divided into four zones with the DLMS 4080 4-in/8-



out Digital Loudspeaker Management System to allow separate control of the floor and balconies coverage areas in the theatre. The subs were also configured in four zones to allow for horizontal beam steering of the bass response.

I measured a consistent 104dB SPL C-weighted throughout the theatre (under 100dB SPL A-weighted). It got up to 106dB right in front of the subs and 107dB in the first row of the balcony, but by that time the band had kicked into its final number. You would expect that "25 or 6 to 4" with drum and guitar solos would have a little more punch than "Saturday In The Park." The coverage was smooth and even with a clean cut-off outside the horizontal pattern. The bass was very musical with no thumps or bumps – to use some technical terms.

The full VTC line is solidly constructed with 5/8" (15 mm) 11-ply Russian birch plywood with heavy-duty 5:1 rated rigging fittings, and yet the EL210 weighs in at only 89 lbs.

The VTC Pro Audio Elevation Series employs advanced technologies that have overcome some of the problems in trying to get a large number of components to work coherently together. The driver elements have been carefully selected from a number of component manufacturers based on thousands of hours of evaluation. The construction is solid with detailed attention paid to the hardware – providing quick assembly and transport. What I heard sounded excellent. The system is surprisingly inexpensive relative to equivalent products – and it's proudly Canadian, eh!

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