

Buying column loudspeaker arrays

Community's Entasys 200 enclosures



What considerations go into selecting a column array system for fixed installation in a house of worship? **Frank Wells** offers a number of factors to be pondered

PERMANENT FIXED-INSTALLATION OF

loudspeaker systems in a house of worship should rarely be performed by the facility's personnel on their own, and those same staffers should also rarely make the final system selection by themselves. The old adage is that a house of worship typically buys three systems – one they select themselves, one where they work with a retailer to try and fix what they bought, and, finally, the one they buy in consultation with, and installed by, an experienced A/V contractor. While skipping to that final stage is preferable when budgets allow, self-education and initial research can and should be done by a house of worship staff in any case.

The decision to select a column loudspeaker array for the main sound system in a house of worship, whether passive or steerable, includes a number of considerations. One such factor for many facilities will be aesthetics. It's one thing to hang large arrays or speaker clusters in a facility adapted from industrial usage, or that has more of a music performance vibe. It's another thing altogether to employ such systems in a house of worship where pleasing visual aesthetics are crucial, where the loudspeaker system cannot be a visual distraction, and where historically significant architecture must be protected.

As this issue's companion technology story points out (p48), column loudspeaker systems employ fundamentals developed many decades past – the use of a number of relatively small transducers in a linear column (not curved like most touring line arrays). The tall, narrow physical characteristics of column loudspeakers lend themselves particularly well to unobtrusive installation on support column and pillars, or otherwise worked into a room's architectural elements. Such speaker systems can be further disguised with custom matched paint colours, or hidden behind camouflaging fabric. Aside from colour-matching, Renkus-Heinz tells WAVL that it has used a faux marble finish on columns, while Fohhn



Column speakers can be easily hidden, as with these Pan Beam speakers in Budapest

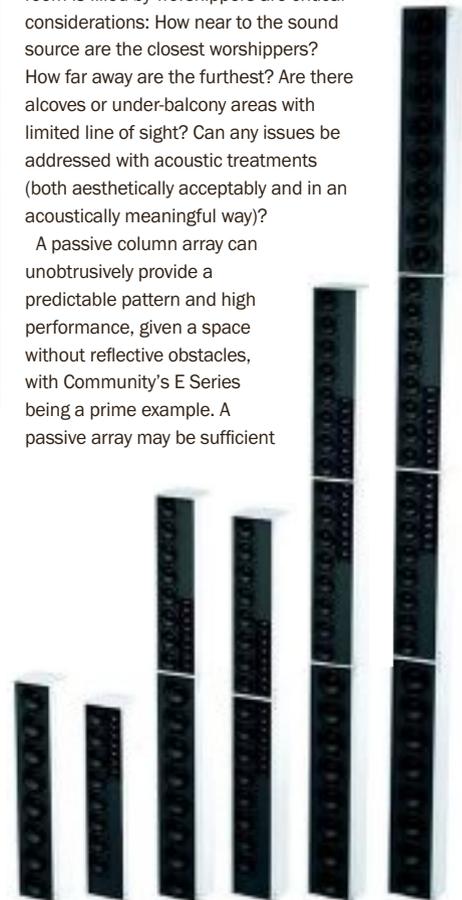
shares that it has painted a simulated wood grain on cabinets and hidden arrays behind fabric with a custom painted stone and mortar pattern simulating an adjacent wall.

Choosing the right contractor involves its own set of issues, but for our purpose here, let's look at the questions the contractor should be asking, and that a facility might be able to ask on its own to narrow its system search: What is the system application? What type of services are being held in the facility? What, if any, regular special events take place in the space? Is there music? If so, what type with what instrumentation (which translates to, what are the frequency bandwidth, volume and dynamic performance parameters demanded by the music)?

Next, a contractor could be expected to consider the physical attributes of a space. Aesthetics plays a

part here, but also to be considered are acoustical anomalies and room reverberation (in terms of both the way sound bounces and reflections decay within the room, and in terms of physical obstructions). The physical size of the space and the way the room is filled by worshippers are critical considerations: How near to the sound source are the closest worshippers? How far away are the furthest? Are there alcoves or under-balcony areas with limited line of sight? Can any issues be addressed with acoustic treatments (both aesthetically acceptably and in an acoustically meaningful way)?

A passive column array can unobtrusively provide a predictable pattern and high performance, given a space without reflective obstacles, with Community's E Series being a prime example. A passive array may be sufficient

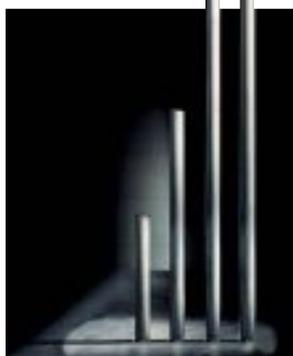


Tannoy's QFlex loudspeaker array

to address issues with musical fidelity and speech intelligibility. The simplest solution that meets a facility's needs is typically the best choice.

A space with numerous acoustic issues to address – acoustic reflections from balcony fascia, from columns, from rear or side walls with adjacent seating – may require more sophisticated pattern control. The number of elements within an array column and the ability to control those elements individually help determine to what degree coverage patterns can be tuned. Some column arrays, and certainly early examples, use a number (eight is a common starting point) of vertically spaced drivers of equal size (4-inch components also being common). Even passive column arrays frequently mix component sizes like the Community ENT-FR, a 1.13m tall column utilising six 3.5-inch LF drivers (effective down to 200Hz, below that you'll want to add a sub), 18 2.35-inch mid-range drivers, and six HF drivers (each being seven-element 'planar-coupled Compact Ribbon Emulators').

With digitally steerable arrays, that add amplification and processing, more components and elements can mean more control points, and there are a number of unique approaches to speaker layout. Fohhn's Focus modular system demonstrates some of the



Fohhn's Linea Focus speakers

potential of a column array. It offers its I-400 long, full range column (1.64m) with 32 drivers controlled by 16 DSP channels and powered by 16 amplifier channels. This column can develop two independent beams for coverage of a balcony as well as below the balcony seating. It can be cascaded with additional columns, or paired with eight or 16 element mid-high columns (top and/or bottom of I-400s). The sophistication possible is further demonstrated by the Iconyx Gen5 from Renkus-Heinz which, in the case of the IC8-RN, can produce four steerable beams from each 1m column – each column loaded with eight coaxial drivers that each mate a 4-inch woofer with three stacked 1-inch tweeters. Obviously, there are a

lot of varied approaches and capabilities between various column approaches and configurations. This brings up another point – complexity. Particularly with DSP-



Renkus-Heinz' Iconyx Gen5 columns

controlled systems, the initial setup and configuration can require training to properly implement; the placement, installation and set-up is best left to professionals.

The cost of DSP-laden column loudspeakers with built-in amplification is typically higher per column inch than with a passive column speaker system, and comparable to a similarly capable amplified installation line array system that includes amplification and processing. But the full system costs must be considered. Installation costs are comparably lower than with a line array system, are more easily hidden and require fewer or no architectural changes. Even when compared to a passive column system, the costs of external amplification, processing and wiring (speaker wiring versus audio and/or networking cables) must be considered when comparing overall system costs. If substantial low end is a necessity for a given application, the costs of companion subwoofers should also be considered when pricing a system of any cost.

In the not-too-distant past, column systems weren't a viable option for powerful, full bandwidth installations. With today's systems, there are few practical limitations, but as we've seen, there are a lot of factors to weigh in system selection.



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