

## SOUND ADVICE

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this case, each horn's "acoustic center" should be located on an imaginary sphere. Usually the apex of the horn's side wall angles can be assumed as the acoustic center. This is the point in the horn from which sound is radiated into the coverage angle. The object is to align the acoustic centers on an imaginary sphere.

Unfortunately, most horns have different horizontal and vertical acoustic centers. In our long-throw/short-throw situation, the vertical acoustic centers would be aligned resulting in the long-throw somewhat overhanging the short-throw horn. Sound from the short-throw would then reflect off

the underside of the long-throw horn, creating wave front interference unless this surface was to be treated acoustically.

Now back to our three identical side-by-side MF horn cluster. Let's make this the MF portion of a full-range cluster. We now need to think about the HF devices. Like the MF portion of the array, we want to keep the HF components as close to each other as possible.

But there is a catch-22 here. At the MF-to-HF crossover point, some frequencies will be produced by both the MF and HF drivers. If we locate the HF array below the MF array, we'll create problems at and around the MF/

HF crossover frequency resulting from the physical distance between MF and HF drivers. We could coaxially locate the HF horn/driver inside the MF horn improving that situation, but then there'll be interference in the overlapping coverage areas of the HF horns. This compromise must be understood when designing arrays, because you can't have it both ways and there is no right answer.

Finally, we decide on the low-frequency components and locate them above the MF array. Now we have a point-source. Right? Net even!

You can imagine that the distances between the devices pro-

ducing common frequency ranges and the interference that must exist at crossover frequencies between the HF, MF and LF portions of the array cause serious aberrations in frequency response and directional characteristics. These can be improved through use of different crossover filter slopes, delays, tweaking of drive levels and bandpass filtering to individual components (frequency shading).

All this is subject material for a seminar, not a monthly column; I suggest you get to one soon if this has peaked your interest. More next time. ■

## DOWN TO BUSINESS

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rep take it to? How do they find the persons in the firm who care or, for that matter, the persons who even get it?

I guess it boils down the following nag I have: Where are the next-generation practitioners in our business who understand the technology and the convergence? The lack of pace in developing qualified individuals to participate in this current and future conver-

gent-technology workforce is quite disturbing. The time is coming when this convergence will include not just the AV/IT scenario we've been bantering around the past few years, but all building and customer services. It will then be important to be able to integrate the remote control and monitoring of Power Management and backup, Environmental Control, Facility Ac-

cess, Emergency Egress, Security Surveillance, Crisis Response, as well as all of the audiovisual services to which we're accustomed.

In the past few weeks, I spoke with a half dozen small and mid-sized systems-contracting firms in the Midwest, East and South. Each of them shared with me a general vision and direction of their company for the foreseeable

future. Surprisingly the responses were similarly narrow-focused. None of them had a horizon past the next two years. None of them had a plan to expand expertise beyond their current expertise. All of them often found it difficult to find qualified installers and technicians. All but one showed little concern. What am I missing here? ■

## HANGING HEAVY OBJECTS

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expectations to everyone involved, and then seeing to it that those expectations are met. To that end, the communication of the five issues from the assessment phase, combined with the mission, can be a great inspiration for keeping forward momentum throughout the project.

Communicating the carefully selected primary issues of the installation keeps all parties focused on the important factors. It is important for everyone involved to remain focused in order to complete the project. This results in a quicker installation without sacrificing quality or safety.

Without a doubt, the single-most influential factor within any project is the *people* involved. Educated, experienced and motivated professionals will carry a rigging project successfully through completion every time. These types of individuals simply do not give up and will not waiver from a safe and prudent approach to the project at hand.

### Verify

Progress and performance must be measured at regular intervals. This way, confidence can be generated resulting from the knowledge that primary issues sur-

rounding the rigging installation have been handled appropriately to fulfill the mission and retain safety.

Measures can be worked into the rigging design using a number of different methods, the most common indicating installer performance, project milestones and system quality. These measures are designed specifically around the top five issues for the installation. If there is a challenge with any item being measured, a quick evaluation can lead to the fast elimination of the challenge as well as a tremendous accumulation of expertise to be applied to

future projects.

In closing, I would like to offer my insight into rigging heavy objects over people's heads. Understandably, many individuals get nervous when dealing with this topic. However, when approached with care, logic, education and determination, a rigging system is not a thing to fear. A well thought out process can minimize concerns for safety and of the unknown. That being said, rigging heavy objects over people's heads is a dangerous business; if you are not comfortable with the task, ask for the assistance of someone who is. ■