



Audio in Health Care

Audio installation within health care infrastructure serve critical functions. Even in the best hospitals, there are significant challenges faced by both the specifier to resolve the complex problems, and the end user who would benefit from better technology, if it was only available. To date, only standard cone type speakers have been specified with without regard to the inherent problems they create.

Revolution Acoustics re-invents health care specific audio solutions and renders difficult problems easy and cost effective to solve in ways competing solutions can not match. By way of this our dealers are distinctly differentiated over their competitors and are positioned to win business. Some benefits include:

- Ultra fast installation
- Far fewer drivers needed with better coverage
- Perfectly even SPL and frequency response everywhere
- Extremely high STI performance
- Invisible
- Vastly improved Sound Masking capabilities

General paging is a required subsystem of any hospital. Sound masking is also helpful for privacy requirements in the admissions and reception areas where confidential personal information is transferred to hospital staff. In the US, HIPPA has legislated privacy parameters to protect confidential personal information.

Presently paging systems use point source cone shaped speakers to perform these functions. These speaker drivers are typically installed into the ceiling plenum and by way of this holes transpiercing the habitable envelope are required. An important fact is this creates numerous significant problems in healthcare environments in that air exchange between the habitable envelope and air exchange plenums is a result promoting germ propagation, creating a significant problem.

Antibiotic resistive stains of viruses such as C. Difficile have found their homes in the infrastructure of many hospitals worldwide and are responsible for a 24% mortality rate¹. These strains as well as others emergent viruses are now present in hospitals

¹ The Infectious Diseases Society of America, *Recurrent Clostridium Difficile Colitis*, Clinical Infectious Diseases, Oxford Journals, August 12, 2002.

around the world where the hospital must be at times, be shut down and disinfected at significant cost. Speakers piercing the habitable envelope have contributed to the spread of these viruses in that the speaker hole create a pass through for he viruses to travel into the plenum where environmental control infrastructure assists in spreading the virus throughout the hospital.

There is a solution. Revolution Acoustics SSP6 Multiducer™ is installed on the inside of the plenum or walls where there is no possible air exchange and as a result the contagions can be contained and controlled. Design and construction of health care facilities are now migrating to this type of thinking so as to improve patient safety. The SSP6 Multiducer™ used for general and emergency paging forms a corner stone of that strategy.

Equally, cone type speakers are a contributor of yet another problem. They propagate high sound pressure levels (SPL) local to the speaker. In an environment such as a hospital where space is at a premium, listeners are always close to the speaker and often subject to overly aggressive high SPL pages. Moving away from the “hot” zone, the effective and useful range (sweet spot or near field) is in fact very limited, and very soon thereafter SPL drops off very quickly at a logarithmic rate. The result is a page message that is either too loud close to the speaker or missing authority and accuracy between speakers. More speakers have to be installed to help reduce this compromise and with that a value proposition is lost.

Further, all cone shaped speakers propagate a very narrow “beam” of higher frequency content. If a listener walks through the space, they will be subject to a manic experience of full content below a speaker propagated aggressively, or only partial content between speakers as the listener steps out of the higher frequency “beam”.

The solution to these inerrant problems is the SSP6 Multiducer™ which creates very large planar acoustic radiating surfaces. Polar dispersion is significantly wider than that of a conventional speaker and the wattage being driven is dispersed over the large surface resulting is a even and human experience. The sound wave of the SSP6 is planar and propagates orders of magnitude deeper into space as compared to a cone speaker who’s SPL diminishes at a very rapid logarithmic rate.

The problem of content “beaming” is equally resolved as the ceiling or wall being excited emanates full frequency audio at all points on the panel using bending wave physics. As the listener walks through a hallway for example, the response is surprisingly consistent. The SSP6 is able to produce even, accurate and comfortable levels of sound throughout the space, and by way of this delivers an *Ergonomic Audio*™ experience optimizing the interface between the listener and the speaker for the first time.

As noise masking is also required in reception areas of all heath care facilities in the United States, the Revolution Acoustics CR2™ and CR4™ ceiling radiator speakers resolves this problem set. These products can drop into existing 2’ x 2’ and 2’ x 4’ T-

Bar drop ceiling structures (or metric equivalents) permitting large areas of consistent coverage at optimal SPL. Far fewer speakers are needed as the polar radiation patterns lend to very wide coverage at perfect SPL everywhere. The CR2™ and CR4™ ceiling radiator speakers which use the SSP6 Multiducer at its core allow installation in seconds by simply replacing any ceiling tile in a suspended drop ceiling arrangement with the CR2™ or CR4™. Any sound masking pink noise generator such as those offered by Rane Corporation, pair very well with the acoustic radiator panels

The cost of healthcare has been increasing steadily. Having patients accelerate their recovery is a focal area where economies can be gained or profits rendered. Sound coupled with light has been proven to relax patients and encourage faster recovery and healing. This is an additional adjunct benefit of the Revolution Acoustics products. Patient care is at its core, with large cost reduction benefits being the resultant.

In summary, the real needs of hospital environments have not been served to the full potential with cone type speakers. Revolution Acoustics is offering the only optimized and tailored solution for the health care sector today where the significant issues tied to cone type speakers are solved. Hospitals and their users will all be able to benefit from the simple and effective new solutions offered.