Sound Principles

Important Questions to Ask BEFORE Selecting a Microphone

This month we share some of the important questions to ask BEFORE selecting a microphone.

In any application, audio quality is always necessary. Today, video communication such as Skype, Zoom, Bluejeans, etc., are constantly trying to improve the audio processing of their products. Meanwhile, software codecs are becoming more prominent in the AV business as end users are turning to a technology that is easier to install and operate. Nonetheless, the intelligibility of speech in conference rooms or huddle rooms, (which are rapidly growing in popularity), still depends on the quality of the microphone.

We all know that when the intelligibility of speech is compromised, words and their meaning can sound quite different and often can be misinterpreted.

Selecting the right microphone is imperative to each application. Understanding the intention for the room's use and any restrictions that might be present is also important. To obtain optimal sound quality and aesthetics, end users often turn to savvy AV professionals, consultants, designers, and integrators.

Consider asking the following each time you consider specifying a microphone.

What type of room is this and what is its use?
This question will give you direction as to what level of quality of sound the end user requires.

What are the dimensions of the room?
This will be relative to understanding the number of microphones needed when covering the whole room.

How high is the ceiling?
This will give you an idea of the room's reverberation as a higher ceiling leaves more space for sound waves to bounce around and to be perceived as echo.

Are there highly reflective surfaces?
This gives you an idea of how much reverberation participants during the meeting will have in the room.

What is the noise level of the room?
Depending on the level of noise that is generated by any mechanical equipment in the room, like ventilation or motorized lifts or window shades etc.

Is there already sound treatment, such as acoustic paneling?
Attenuating the bouncing sound waves is the goal in making the room quieter. If needed, installing acoustic panels may deserve some consideration.

Will there be sound reinforcement/voice lift?
This is important to know because suspended cardioid microphones will perform better in attenuating sounds coming from the ceiling speakers.

In a quieter room, table microphones are the best solution when low profile is wanted. They stand approximately one inch tall and are unobtrusive and not cumbersome to the user. Their sensitivity is a little higher than goosenecks or suspended microphones, as they use the reflected wave from the surface in front of the capsule, adding a few dBs to the signal.

A higher noise level of the room will call for proximity, that's when goosenecks are the preferred choice. A gooseneck can be installed in the same location as the boundary microphone, but the stem will bring the capsule closer to the participant's mouth, and effectively offer more gain on the desired source.

Is it a brand-new install?
This is an opportunity to set up the room correctly right from the start.

Does it have a fixed conference table or modular furniture you can move around?
An important detail to know from the start of the questioning, if it wasn't addressed with the type of room inquiry.

How many seats to the table?
Crucial to the number of table/gooseneck microphones needed, for either 1 for 1, or 1 mic per 2 participants.

Is drilling holes in the table an option?
Once in a while an end user will want to avoid drilling the very expensive table they just bought, or the existing table already has holes cut out and you have to deal with them.

What material is the table made of?
Hard surfaces, such as marble or glass, are not as easy to drill as wood, therefore, people will turn to a suspended solution, or use table top stands and not risk damaging the table in the process. Usually,

with a high-end room and system, leaving the mics to hang or exposing wires on the table is often deemed as a no-no.

Are there cable cubbies, a trough, or any obstructions to installing through table mics or shock-mounts?
Sometimes the table's structural reinforcements will hinder your mic placement planning. You can always cheat a little, but not by much. Symmetry must be kept in mind. Ideally, having a custom table manufactured to all specifications is what should be done at the beginning of a project. In addition, selecting a table designed with the function of the mic placement in mind is also a good approach.

So far, table manufacturers have considered wire management, with troughs and access doors for floor monuments, and surface bays for power outlets and AV interface cables (cable cubbies), but have not quite yet fully considered that microphones will be installed in their tables.

Is there a preference to goosenecks over boundary mics, or vice versa?
Unless specified by the end-user, most of the time, the designer of the room has the last word on what goes in and what is exposed.

Do you require control devices for each mic? (mute switch)
These rooms are operated with a control system via an interactive panel on the table. The option to mute your own microphone is often considered in many designs. All Clockaudio microphones can be paired with a touch-sensitive switch or a mechanical button, to either signal the DSP to mute that microphone channel's output or mute it locally.

Remember, the best-looking rooms with the best-sounding systems are usually the result of a collaboration of both the designer, the manufacturer and the project managing team.

All in all, the capture of the participants is what needs to be done, and to do this adequately, there are rules of thumb to follow in capturing speech. These rules of thumb will be covered in another newsletter.

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