

How do I make my speech more understandable?

written by [Markus](#)

Imagine being in a room with several people and giving a speech. After a few words, unrest spreads through the audience, and someone calls out to you that they can hardly understand and that you should speak more clearly! You then try hard to articulate your sentences loudly and clearly, but the apparent frustration in the audience remains - why is that?

In practice, there could be a number of causes:

- A poorly-designed or adjusted PA (Public Address) system (if available)
- The background noise levels are high (from the audience, a faulty air-conditioner, loud neighborhood noise, etc.)
- Unfavorable acoustic properties of the room, i.e. the direct sound is too low compared with the reflected sound.

What can you do to improve the situation? The first step is to precisely record and analyze the location. This usually begins with the determination of the typical background sound spectrum and speech intelligibility STI (Speech Transmission Index).

The measurement of the background sound level takes some seconds to minutes and is performed during the usual operating hours of the venue; that is, with an audience present. The level thus determined is a close reflection of the normal state.

Next is the determination of speech intelligibility. In addition to a suitable measuring device, we need a generator to transmit the normalized test signal. This signal is reproduced acoustically, either through the generator itself or, if available, through the PA system.

Now the STI measurement can begin. To avoid distortions of the result due to external noise, the measurement usually takes place when the room is empty and the background noise level is as low as possible. Measurements are taken in several positions across the room, chosen as the positions people usually occupy. Averaging the data obtained gives the STI of the whole room on a scale from 0 to 1. Lastly, this value is offset with the previously-determined ambient noise level in order to obtain a result that corresponds to the realities in the presence of an audience.

Now it is important to analyze the speech intelligibility and derive conclusions from it. If the result is between 0.5 and 1, then the speech intelligibility is sufficient to very good. At lower STI values, however, the exact causes have to be determined and countermeasures initiated.

One possible reason is loud ambient noise, which you may not be able to adequately drown out with your voice. If these noises come from the audience, the solution may be intuitively obvious; you can simply ask them to keep quiet. If the noise comes from outside the room, a better soundproofing of the walls, windows and doors may provide the solution.

Another potential reason for poor speech intelligibility can be the room acoustics. In particular, the reverberation time RT60, which is influenced by hard, sound-reflecting surfaces such as walls, windows, tables, etc., is of great interest here. If the reverberating sound is too dominant compared with the direct sound, the intelligibility of the speech suffers. In such a case, two counter-measures may be helpful:

- a) Reinforcement of direct sound: this can be by the appropriate placement and directivity of loudspeakers or sound-reflecting surfaces.
- b) The reduction of the reverberation time: this can be achieved by the addition of sound absorbing elements such as curtains, upholstered furniture, carpets or special panels.

In implementing these measures, it is recommended that you refer to an acoustic expert to carefully consider all options and make appropriate choices.

After taking steps, it is recommended to measure the speech intelligibility again. This will ensure that the intended improvement has actually been achieved!

Links relevant to this topic:

- [Why Do Some Rooms Feel Noisier Than Others?](#)
- [Objectively Measure Noise Annoyance](#)

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