

The importance of acoustic design of rooms for speech and music



The Challenge

Both amplified music and speech clarity is affected by reflected sound (reverberation and room acoustics) and noise which impacts on people's listening experience, comprehension, understanding, learning, orientation and comfort in a space.

Architectural preference for hard finishes (glass, steel, concrete, plaster), open space planning, and the competing need to activate surfaces for branding, advertising and signage, have made it more challenging for architects and designers to achieve inherently good acoustic conditions in rooms. Specialist advice has become crucial to the success of designing informal as well as formal spaces for speech and music.

Rooms for Speech



The acoustic environment has a critical impact on users in rooms for speech. Whether it's being able to understand intelligibility of natural speech or via loudspeakers or enjoy a conversation in a crowded space. In public spaces it's important to ensure that people with special hearing needs are not disadvantaged by the acoustic environment, to comply with the Equality Act. Even when speech can be reasonably well understood by people with normal hearing, listeners are likely to be putting in extra effort which diverts from memory, attention and other processes essential for comprehension and learning. The room must also be comfortable to speak in, without causing vocal strain.

That's why rooms for speech need to be designed with good acoustic conditions. And it's not just formal spaces (like classrooms/schools, seminar rooms, meeting rooms, conference facilities, offices, theatres, auditoria, cinemas, courts and worship spaces), the room acoustics play a critical part in the success and usability of informal listening spaces (like bars, cafes and restaurants, retail outlets, sports halls, pools/spas, museums and event venues). In the workplace, enhanced sound absorption needed for team conference calling, now ubiquitous for global and remote communication and no longer restricted to the board room.

Public buildings including stations and airports are also increasingly reliant on the use Public Address/Voice Alarm (PA/VA) systems for evacuation, which requires careful room acoustic design to achieve intelligibility requirements.

Rooms for Music



Most people are aware of the crucial role that room acoustics plays in the success of performance venues, particularly for unamplified orchestral and choral music, for great listener experience as well as performer comfort and support. Virtual acoustic modelling is a must for these complex spaces to ensure the precise orientation, profile and material finish of each surface is optimised for an excellent blend of sound quality and provide variable acoustic conditions for multipurpose use.

Even greater provision of sound treatment is required for amplified sound at live music venues and clubs, to achieve good sound clarity and protect staff hearing in relation to The Noise at Work Regulations. We also advise on design of sound studio, control room and production facilities for optimised reproduced sound.

Multipurpose spaces



From community centres, to hotel facilities, museums, conference centres and major event venues, these spaces may need to accommodate both music and spoken word performance (amplified and unamplified), spoken presentations and discussion. Each use needs different

acoustic conditions which can be achieved by providing flexible acoustics where the extent of acoustic treatment can be varied to suit the listening mode.

Event spaces for receptions, banqueting and dining also need to support comfortable conversation and we can investigate acoustic capacity (the number of people who can hold a reliable information conversation in the space), to check it matches the proposed capacity of the space. Atria are often overlooked spaces where extensive acoustic treatment is necessary to enable truly multipurpose use. In multipurpose spaces where different activities are being carried out in an open plan space simultaneously, it may be necessary to ensure that conversations are not overheard.

Solution and service

We guide you through your room acoustic project from start to finish, from setting acoustic criteria, to calculating the extent and type of acoustic treatment required. For more complex projects we can create a virtual model of your space to ensure that the acoustic finishes are designed as efficiently as possible, saving money and precious space. The virtual model can also be used to build a sound simulation or 'auralisation', to demonstrate how your space will sound, before it is built, helping you decide where to spend your budget effectively.

We work with you to offer advice at the design stage of your project, as well as devising retrospective solutions by troubleshooting existing spaces or making improvements to refurbishments (including historic buildings).