

# ACOUSTICAL CONSIDERATIONS

## WHEN PURCHASING A CHURCH ORGAN

*A statement often made by knowledgeable organists and pipe organ builders is: "The acoustic is the number one stop".* Simply put, this means that no matter how good an organ may be, its success depends very much on the acoustic of the room in which it is installed. All too often churches purchase expensive, well-made organs (both pipe and electronic) only to be disappointed after installation due to an acoustic that fails to enhance church music. When the room acoustic is right an organ of inferior tone quality can even sound acceptable while an organ of outstanding tonal quality will sound absolutely thrilling.

### What are 'Good Acoustics'?

*Churches are often presented with totally opposing views* on what is considered 'good acoustics' by church music experts and P.A. experts. It is sometimes confusing for committees who are given the important task of making a set of decisions that will influence the success of music in the church for decades to come. The advice of those with knowledge and experience in the traditional church music field should always be taken seriously. While a 'good' acoustic in a theater is one thing, it is an entirely different matter in a church. The former is usually 'dry' due to a great deal of sound absorbent material on all surfaces within the room (no reverberation), while the latter will be a 'live' room with more than 2 seconds of reverberation. A church with a high ceiling and all surfaces sound reflective is by far the best for organ and choral music. Time and time again it has been proved that both organ and choir sound better in the right acoustic as it carries and blends the tone, making it more musical. Wall-to-wall carpet is one of the worst enemies of church music. It is not even necessary to carpet aisles with the aim of deadening the sounds of footsteps as there is now available a great variety of excellent types of tile and other types of flooring that are not slippery when wet and are easy to keep clean. If there must be carpeting in a church, make it hard short twisted pile, with no underlay and restrict the area where it will be installed as much as possible. Never put carpet in the organ or choir area as this absorbs a large percentage of the sound before it gets a chance to travel anywhere. Without a reverberant acoustic it is like trying to play a piano without any sustain pedal! It is dry and dull. A good architect, who is sensitive to providing a good acoustic for organ and choral music, can design a room that works well for both music and speech. In our experience P.A. technicians will most often say that any 'echo' needs to be removed with the addition of as much sound absorbent material as possible. In this case, spending a lot of money to purchase a top-notch organ or piano, or putting a lot of effort into building a good choir will always result in second rate music. The shape of the room is best if it is rectangular and the ceiling should be high. It is generally easier to project sound into a room with a high ceiling than in one which is low. Materials covering walls, ceiling and floor should be reflective, but limiting the numbers of flags and banners also helps. The frequencies of organ stops cover the widest spectrum of any musical instrument: from 16 to 20,000 cycles, and the materials used on these surfaces play a very important role in governing the amount and rate of sound reflection or absorption.

### Artificial Sound Fields

*While many electronic organ companies rely heavily on digital reverberation* systems to mask the actual tone quality of their instruments, there is no need for electronic reverberation in an organ that is placed in a good church acoustic. Phoenix Organs use Lexicon Reverb systems to help poor acoustic situations such as in small churches and homes. Lexicon is one of the few electronic reverbs that closely simulates a church acoustic without the objectionable 'ping-pong' effect so often heard. A sound field may be created that may be quite satisfying to the organist himself - he may think he is playing in Westminster Abbey at times - but what about when there is a choir and congregation? They are left singing in

whatever acoustic that the room has with no benefit from the artificial reverb. As good as electronic reverberation systems have become, they are usually of little use in church and attempts to create artificial sound fields are almost never successful from the viewpoints of choir and congregation. When an organ is used for practice at home, a good reverb system can enhance the sound to the point of making it a pleasure to play. This, again, is due to the usual dry acoustics of small carpeted rooms.

### **Speaker Placement**

*The room in which an organ is placed becomes an integral part of its sound system*, much as the sound board of a piano is an integral part of that instrument. The organ builder is, in a way, only adding the strings and mechanism to the sound board. It is extremely important that not only the best possible acoustic environment be attained for the organ, but that the best possible placement of the organ's speaker system be found. So, in addition to choosing a suitable organ specification, no matter what size the instrument is, two further elements must be placed high on the list of prerequisites: the room must carry the sound of the organ well and the placement of the organ speakers must be favorable. All too often, electronic organ installers are not aware of the importance of this factor or they don't care. Getting the organ 'in' and the check in hand is all that too many organ sales people care about and the resulting complaints from organists, clergy, congregation and choir then fall on deaf ears. The organ should ideally speak directly down the main axis of the building and the speakers should be situated close to the singers, preferably behind and above their heads. Because most organs are installed in existing buildings, there are normally limitations placed on the ideal situations described above. For this reason we recommend a serious consultation with an acoustician or at least an organist or organ builder with good knowledge and recognizable success in church work. This is a complex but important matter that with the correct decisions will be appreciated for generations to come.