

What you should know about... Humidity Control

..in a college and university setting



When asked what makes a piano go out of tune, the average person will list moving, hard playing, and temperature as the main factors. Although these have some effect on piano tuning, it is really fairly minimal. In fact, the largest factor by far in tuning instability is humidity change.

A “normal” (in most parts of the United States) seasonal rise in relative humidity from 25% in the winter to 75% in the summer will often result in a piano rising in pitch from A 440 to A 446, 448, or beyond, with unisons that sound like a neglected barroom upright. A change in the opposite direction occurs between summer and winter. The cause of the pitch and tuning change is absorption and desorption of water by the wooden parts of the piano, chiefly the soundboard and bridges.

Repeated cycling between high and low humidity can lead to serious deterioration of instruments, particularly sound boards and pin blocks. This is not limited to pianos, as percussion, strings, and woodwinds are also impacted. Cycling above 80% and below 20% is particularly dangerous.

Unfortunately, in modern buildings with current heating, ventilation, and air conditioning (HVAC) systems, the problem becomes much worse, unless a humidity control system is included and is well maintained and calibrated. Modern building codes require that HVAC

systems replace the entire volume of air in public buildings several times per hour. As a result, the air is in constant motion, increasing the speed with which wood absorbs or desorbs water in response to change in humidity level. And the typical HVAC system pulls in a significant percentage of outside air with each cycle, thereby reflecting any weather changes outside at a much more rapid rate than, say, a normal home.

The result, as those of us with experience in the college and university environment are painfully aware, is pianos that need constant attention in order to keep them in usable musical condition. What can be done to help this situation?

The ideal solution is whole building humidity control. This is expensive to install, expensive to run, and requires constant monitoring to keep it functioning well. The results, however, are quite stunning. All of that work that went into trying to keep

pianos in tune can go to refining them as musical instruments, and all pianos can be, reliably, in reasonable or even fine tune all the time.

For most of us, this may be an unattainable dream. But there are other effective ways to deal with humidity change that will make a difference. If it becomes too expensive to run an existing humidity control system within tight parameters, those parameters

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can be loosened somewhat and still be very helpful. Allowing temperature to rise in summer and fall in winter by a few degrees will tend to ease changes in relative humidity. A system which simply maintains a lower limit of, say, 30% would be a godsend in many institutions, and adding humidity is considerably less expensive than removing it.

Individual humidity control units are available to be installed in individual pianos. These are particularly effective when installed with undercovers (grands) or backcovers (uprights). A drawback of this option is the need for personnel to keep the humidifier tanks filled with water every week or two (this can be done by a work study student under supervision). A modified installation can omit the humidifying portion of the system, and simply include the humidistat and dehumidifying rods. This can be very effective in reducing pitch rise over the summer in many situations, and is particularly effective where relative humidity rarely falls below 40%.

Another way to cope with humidity change is to schedule tuning in sync with the seasonal changes. Typically in many places, humidity will be highest at the end of summer/beginning of fall semester, and will rapidly decrease over October and November. Spring semesters will tend to be more stable in many parts of the country. So, for example, if one is limited by budget to three tunings a year for some instruments, it might make sense to do one before fall semester, one about one half to two thirds of the way through fall semester, and one a month or so into spring semester. Unexpected aberrations of extended dry or wet spells may frustrate these plans, however.

The first step in dealing with humidity

change is to know what the situation is. Ask your lead piano technician to measure humidity regularly in your facility, and to advise you on the best way to cope with humidity change. There are relatively inexpensive, programmable instruments called dataloggers available, which can track humidity and temperature over an extended period of time, taking sample measurements at programmed intervals.

The College and University Technicians web page (www.ptg.org/caut) has considerable information on humidity control in the institutional environment. There has been a great deal of discussion of the issue of humidity control (or lack thereof) on the college and university technicians listserv, and that discussion is archived and available. Classes on the topic of humidity control in the institutional environment have been held at Piano Technicians Guild (PTG) Annual Institutes. If your technician is a member of the PTG, these resources and others will be readily available.

For more information about caring for your piano and to find a Registered Piano Technician in your area, contact:

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