HUMIDISTATS

by
Darcee A. McAninley, P.E., C.I.A.Q.P.
Wojcieszak & Associates, Inc., P.O. Box 2528, Stuart, Florida 34995
E-Mail: darcee@dwojo.com
(772) 286-8696

Introduction

A majority of air-cooled, direct expansion, split air-conditioning systems are capable of dehumidifying the air only when the condensing unit compressor is running and the cooling coil is cold. Some systems do not have this capability if the air temperature cannot be made cold enough to condense the water on the cooling coil. The first step is to check this temperature. The closer it is to 55˚F, the better it will dehumidify.

Humidistats

When humidistats are installed with this type of system, they are only effective if there is a means of reheat available. Typically, reheat is not available. Humidistats can be wired in series or in parallel with the thermostat. When wired in series, the air conditioner will run until either the humidity level or temperature is satisfied. Generally, the temperature is satisfied first. Temperature can be satisfied even faster if the system is not properly sized. When the system is not running, dehumidification does not take place. If the system is wired in parallel, then both temperature and humidity have to be satisfied before the system shuts off. This could cause overcooling of the space and exacerbate humidity problems. Overcooling the space at or below dew point will condense the moisture out of the air, fooling the humidistat. The humidistat thinks the air is wet and keeps the system operating, thus worsening the problem. Cooler air holds less moisture and the relative humidity levels rise.

Reheat

To effectively employ a humidistat, a means of reheat must be available. For standard air-cooled, direct expansion, split air-conditioning systems, electric reheat is usually available. Using it however can be very costly. The system will cool the air and dehumidify it, and then the air will pass over the electric heating coil. This will temper the air that is distributed to the space to prevent overcooling of the space. Dehumidification will occur.

Reheat only makes sense financially if the system can re-use the heat rejected from the air-conditioning system. This heat is “free” because it would have been rejected outside the building through the condensing unit. Since this is usually not available in standard systems, other means of dehumidification should be sought. More information for ways to dehumidify can be found in Technical Bulletin #4, Dehumidification.

Time Clocks

Another way to dehumidify a space when it is vacant is to install a time clock that will run the system continuously for two hours per day in the afternoon. This will allow dehumidification without a humidistat.