

EN-46: An AHU temperature control example

- The AHU application has many options in the control of supply air temperature. This engineering note explores one combination of options to illustrate some of the principles of air temperature control in the Vykon HVAC AHU application
- In the example illustrated in Figure 1, the supply temperature calculation method is chosen as 'space temperature setpoint'. The option is further extended so that a 'space temperature setpoint (base)' value is adjusted from an externally derived 'space temperature setpoint' such as a + / - adjustment potentiometer. This provides the desired space temperature setpoint and in conjunction with the measured value of space temperature the resulting control loop output, suitably limited by maximum and minimum protection, is the 'calculated supply temperature'. It is worthy of note here that one consistent feature of the air handling unit control strategy is that whatever supply temperature calculation method is chosen as a strategy, such as 'space temperature setpoint' or 'extract temperature heat curve', it is always the air supply temperature that is controlled
- The heating and cooling staging strategy, illustrated by the Heat / Cool hysteresis component will determine from the *calculated supply temperature* and measured supply air temperature value whether it is the heating or cooling control loop which is enabled. Note that this illustration is vastly simplified because the heating and cooling staging strategy also has options for enabling heat recovery equipment. The enabled heating control loop always uses the calculated supply temperature as its setpoint with the actual supply air temperature as its measured value. The chilled water cooler control loop also always uses the calculated supply temperature as its setpoint with the actual supply air temperature as its measured value. However there are more options with the DX cooler control strategy. The DX cooler can be optionally controlled on space temperature, extract temperature or supply temperature but in this control illustration, the DX cooler is controlled, like the heater, on supply air temperature

