

Monday, October 17, 2016

Load Calculation using Dristeem DriCalc: Humidification Basics (Part 7)

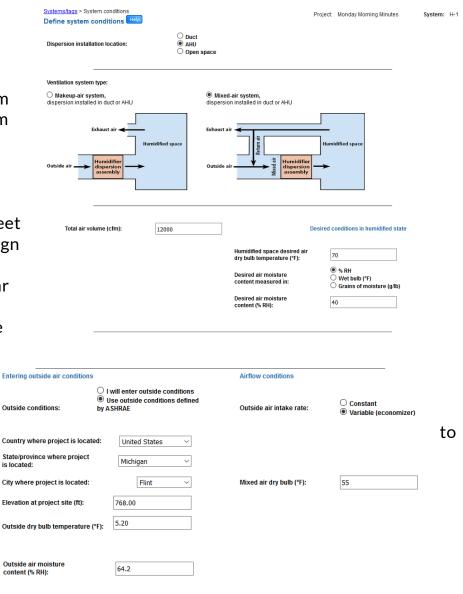
The past couple of blogs used the <u>psychrometric chart and formula</u> to calculate the loads in humidification buildings and processes. This week we look at a valuable shortcut for determining these loads: the Dristeem DriCalc selection program.

Let's use an example of a humidification load requirement for a school in Flint, Michigan, on an economizer cycle. Let's assume we have a ducted system with 12,000

CFM of air flow and a requirement in the room of 40% RH at 70°F.

Next, let's allow the program to use the location data from ASHRAE. We enter the economizer calculation choice and the 55°F mixed temperature. The program tells us that Flint is at 768 feet above sea level and the design outdoor air temperature is 5.2°F. If the job site was near Flint but on a hill (not many mountains in Michigan!), we could change the elevation.

Now we choose whether use the 30-year typical numbers or the 30-year extreme numbers for our load calculation.



If this were a museum or process application where the required RH was critical and constantly needed, we would choose the extreme. In the case of buildings, we will use the 30-year typical numbers.

The program calculates the load at a variety of outdoor temperatures and percent of outdoor air. That data is displayed in a table and the design load is the maximum shown in the table.

Our example indicates a need for 89.61 PPH when the outdoor temperature is 40°F and the makeup air is at 50%.

Systems/tags > L The chart shown above Determine lo would be different if we had chosen the "30-Year Extreme" to calculate the design load rather than the 30-Year Typical. A measure of reasonableness for your clients first cost is what is applied here. It is rare that the temperatures will be in the extreme range, and it will cause a much larger load and first cost. ASHRAE and Dristeem apply this logic for you to choose or change.

Load Dad Help Entering air RH value:	Help: Use 30 year to Use 30 year to		Project: Monday M	orning Minutes	System:	H-1
	Selected load from the list below					
	Outside air dry bulb temperature (°F)	Outside air intake (%)	Load (ibs/hr)			
	5.2	23.1	69.64			
	10	25	73.28			
	15	27.3	77.05			
	20	30	80.59			
	25	33.3	83.8			
	30	37.5	86.46			
	35	42.9	88.62			
	40	50	89.61			
	45	60	88.01			
	50	75	81.08			
	55	100	62.54			
	Calculated load (lbs/hr):	89.61				
	Use calculated load:	● Yes ○ No				
	Back	Next				

We have a load, we have documentation for our files, and we never looked at a psych chart. Not a bad few Monday Morning Minutes. You can <u>download the Dristeem</u> <u>DriCalc program here</u>.