The 5850 uses a single nozzle? How can this work as well as a system with multiple nozzles?

The humidity in the room quickly evens out because sections with drier air act as a sponge, pulling moisture into them. The velocity of the fog discharge also mixes the air, helping to spread humidity uniformly.

In rooms with minimal external losses, humidity is very consistent throughout, with less than 1% variation. Of course, rooms with open doors or vents will show deviations where moist air is escaping and dry air entering.

What about droplet fall-out and wetting?

The system must be adjusted to deliver the proper sized droplets for the room. Large droplets add water faster and reduce system operating time, but are more likely to fall out before they evaporate. Small droplets, on the other hand, are lighter, float longer without settling, have a greater surface area and evaporate more quickly.

The 5850 provides two ways to control droplet size: a needle valve and a pressure regulator. Reduce flow to make smaller droplets. When adjusting the flow rate, trust the flowmeter, not your eyes; small droplets are almost invisible. If you can see the fog, the flow is probably too great.

Also, aim the nozzle so droplets have time to evaporate before they hit something.

Doesn't "small droplets" imply nozzle plugging and high maintenance cost?

The 5850 atomizes water with highly turbulent air, not a small orifice. The opening in the 5850 nozzle is about $^1/_8$ inch diameter, so plugging is not a problem.

However, mineral deposits can slowly accumulate on nozzle elements and reduce atomization efficiency. To clean the nozzle, put it in a bucket of Lime-Away for a day or so.

What humidity level can the system maintain?

The controller operates in the range 20-95% RH. Most wineries operate around 70-80%.

Too high a setpoint can lead to problems, for two reasons. First, since the evaporation rate slows as the humidity increases, droplets live longer and are more likely to hit something before evaporating. Second, the temperature-dewpoint spread shrinks as the RH goes up. This increases the likelihood that vapor will **condense** in cooler spots.

It's best to begin with a low setpoint and work up to higher levels as you gain experience.

How large a barrel room can one Sentinel 5850 system handle?

In our experience, the 5850 system is optimal for rooms of 1,200 - 10,000 sq. ft. We offer smaller systems for small rooms. A room larger than 10,000 sq.ft., or one with lots of air exchange, should install multiple systems in a zone arrangement.

Continued over...

What is the water delivery capacity of the system?

Maximum flow is 5 gallons per hour. Most wineries operate at 1.5-2.5 gph.

Can I control a 5850 humidifier from my refrigeration controller?

Yes, but specify the Sentinel 5850xxE ["E" for external control]. This model can take orders from any device able to close a switch. The "H" version [5850xxH] is a stand-alone system with built-in controller.

Will humidification 'play nice' with my cooling system?

Yes, providing the cooling system was designed for humidification. If not, cooling will probably *dehumidify* the room. Water draining from the condensate line is a sign of a humidity fight between the two. Here are some possible remedies to this situation:

- Deactivate the dehumidification control
- Increase coil temperature
- Disconnect (or bypass) the reheat section
- Reduce ventilation
- Raise the temperature differential to 8-12°F
- Replace the expansion valve for one designed for your operating conditions.

Where is the best place to put the blower, the controller and the nozzle?

Start with the nozzle. The best place is at the end of a major aisle to maximize the throw distance for droplets to evaporate. Put the controller where convenient so you can monitor RH, flow and status lights. The blower can go anywhere, but you will want to consider air pipe runs and electric hookup. The standard sensor and blower control cables are 50 ft long; longer ones are available.

Can I put the blower outside the building or in an adjoining room?

Yes. It should be protected from rain. You will need to cut two holes in the wall, for the discharge pipe to the nozzle; and for intake air (otherwise the blower will be adding warm – or dry – outside air to the room).

What precautions should I take when I wash down my barrel room?

The blower module can tolerate occasional spray but should not be continuously wet. Bolt it to the wall (preferred) or put it on a rigid stand. The liquid control module needs no special precautions.

What are the electrical requirements of the 5850?

The standard blower draws 10 A at 120V 1Ø. Blowers are available for 230V 1Ø (5A) and higher voltages. A qualified electrician should hard wire the blower module with a proper disconnect.

Other questions?

This Tech Note is a work in progress. Call or e-mail us with your questions. We'll get back to you, and add your question to this note to help the next person. Thanks!