

Taking the heat out of Humidity

In the 1980's offices were only moderately populated. Computers were mainly used by secretaries and perhaps a few senior managers. Energy was cheap and no one had heard of global warming. This was the time when chiller systems only worked hard in the summer and humidification systems were steam.



30 years later and office use has changed dramatically. It is now the norm to have a computer on every desk. The drive for ever increasing efficiency has lead to large increases in building populations, quite often far beyond the projections of the building designers. Once adequate chillers are now working hard and in many cases have been upgraded to cope with the increasing heat gain. Against this back drop, the use of steam humidification, which puts a large amount of energy into the building is beginning to look increasingly unattainable.

So how do we tackle the challenge?

A possible solution would be to increase the amount of fresh air into the air handling unit. Certainly, increasing the amount of cool air into the system would take load off the chillers. The problem with this solution is that in winter, the outside air is very dry. The humidifiers would have to work harder and pump considerably more energy into the building and that energy has to be paid for.

Increasing the loading on the steam humidifiers (particularly electric steam humidifiers) will in most cases, make them less reliable and increase the maintenance bill.



Atomiser heads

Gibbons' rotary atomiser system gives manufacturers and end users a very efficient and cost effective method of humidification. The system comprises atomiser head's, UV steriliser, water filter, drain valve and the appropriate atom series controller.



Atom Series Controller

The system does not require air compressors, water compressors, RO plant, large electrical supply or large gas supply. It only requires softened water at standard mains pressure, and a small electrical supply.

The design offers a modular approach to humidification. The number of atomiser heads can be varied to match the required humidification rate and the size of the air handling unit (AHU). There is no installation too large for the system.

Who to contact ?

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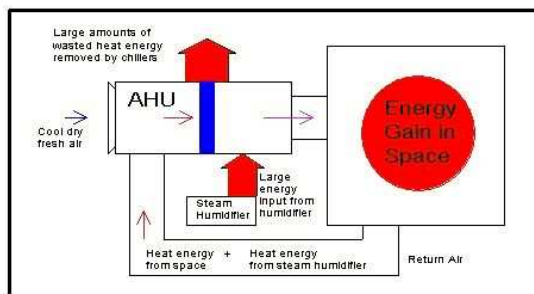
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How does it work?

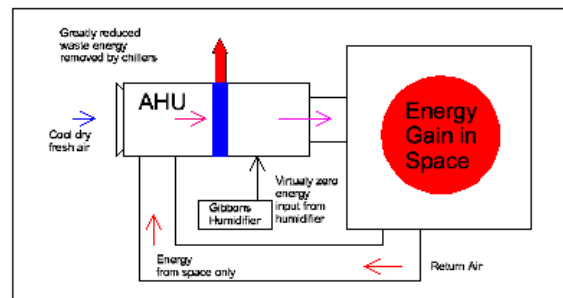
The system operates by introducing water into the atomisers, which rotate at high speed. The water passes through the atomisers diffuser system and leaves as an ultra fine low impact mist, which evaporates into the passing air.

The system is designed to readily interface with a building management system (BMS) or operate as a standalone system. Control inputs and status outputs are provided which make the system easy to install, as a new system or to replace older technology humidifiers. The controller is mounted on or adjacent to the AHU and the atomisers are mounted on simple supports inside the AHU. The only connections needed between the AHU and the controller is one cable for the atomisers, one cable for the drain valve and one water pipe.

Before:



After:



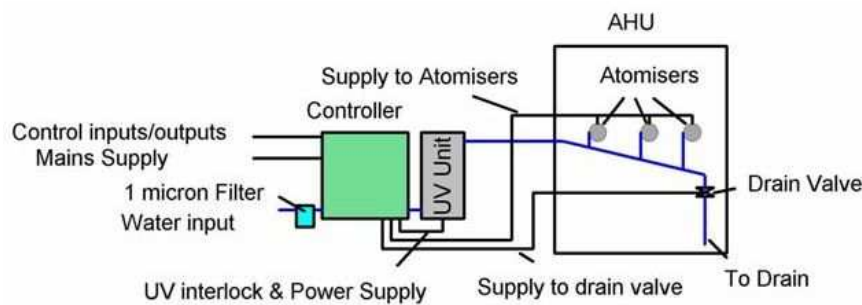
What are the Benefits?

Low maintenance costs:

- ◆ Controller and atomiser heads are designed to give a virtually, fit and forget system.
- ◆ Large reductions in the maintenance bill can be achieved with the system, ensuring humidification without draining the maintenance budget.

Highly accurate:

- ◆ The system is inherently highly accurate with humidity levels being controlled to +/-1% relative humidity.



What are the benefits?

User-friendliness:

- ◆ Designed to readily interface with the BMS or as a standalone system.
- ◆ Control inputs and status outputs are provided which make the system easy to install as a new system or to replace older technology humidifiers.
- ◆ Designed to allow easy installation into new systems or retrofit existing duct work.

Energy saving:

- ◆ Each atomiser head requires less than 200W to operate at full load (50 kg/hr per head).
- ◆ The Gibbons system consumes less than 1% of the energy required by an equivalent electric boiler steam system at full load.
- ◆ If there is a cooling load throughout the winter, the energy that would have been put in by the steam system no longer has to be taken out, significantly reducing the load on the cooling system.
- ◆ If a steam system has a power consumption of 100 kW, replacing it with the Gibbons system reduces the energy consumption to around 1 kW.
- ◆ A chiller system with efficiency of 75% would have to remove 99kW less, giving a saving to the running of the chiller of almost 25 kW. Total power saving 124 kW.
- ◆ For almost all re-circulated air systems, the energy saving will be transferred to the total energy bill creating very large savings.
- ◆ The system gives powerful adiabatic cooling, reducing the load on the chiller systems and saving more money.