This app note provides recommendations on how to eliminate the dirty sock syndrome through the use of the RH-Cube 18 and adjusting the air conditioner's operating dewpoint.

Eliminating the Dirty Sock Syndrome

What is Dirty Sock Syndrome?

Loosely defined, dirty sock syndrome is a smell that comes from an evaporator coil, especially when it first comes on, or shifts from heat to cool. The smell comes from dry biological material (biofilm) on the coil that gets moistened when condensation on the coil first begins to appear. The best way to prevent dirty sock syndrome is to prevent evaporator coil condensation.

This app note describes how to incorporate an RH-Cube 18 into an HVAC system so that it takes over all dehumidification and eliminates condensation on the air conditioner's evaporator coil and ducting, thus preventing the build-up of contamination on those parts.

To eliminate contaminant build-up on the RH-Cube 18 itself, it can be ordered with a coating that prevents biofilm from attaching to its coil, and there are also after-market UV lamps which are readily available and can be easily installed.

Adjusting Air Conditioner Evaporator Dewpoint

In order to prevent condensation from occurring on the air conditioner evaporator coil, the operating temperature of the coil must be raised.

Typical air conditioning coils operate at around 55°F dew point where condensation will begin to occur at 75°F / 50%RH. Raising the coil's operating temperature to 65°F will eliminate all condensation except for extreme conditions, and as a side benefit, will dramatically increase the air conditioner's operating efficiency.

RH-Cube 18 Capacity

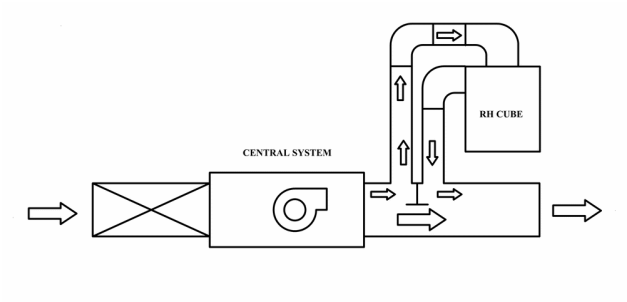
Eliminating the air conditioner's capacity to dehumidify only works if the RH-Cube 18 has sufficient capacity to handle the total humidity load. The RH-Cube 18 has the equivalent dehumidification capacity of a 7.5 Ton air conditioner, and can remove up to 11 pints of water per hour. If your humidity load exceeds this, doubling up RH-Cube 18's is often the solution.

Ducting Configuration

There are two recommended duct configurations: Cascade and Parallel. Of the two, Cascade increases the RH-Cube 18's capacity by a further 10%. The details of these two configurations can be found in Dewair *Application Note 2 – RH-Cube 18 Duct Configurations*.

▪ Cascade Configuration (Patent Pending US 62974082)

In the Cascade Configuration, the RH-Cube 18's return air is taken directly from the delivery air of the central system, dehumidified and then recombined with the central system's delivery air.

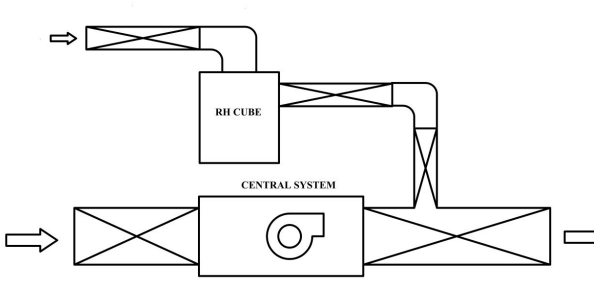


Cascade Installation Details

- Controlled by a humidistat
- Delivery air dewpoint is between 44°F and 48°F with air conditioner off and 36°F and 40°F with the air conditioner on.
- An interlock with central system's heater and fan is required.
- Central fan must be on while RH-Cube 18 is running.

▪ Parallel Configuration

In the Parallel Configuration only the RH-Cube 18's delivery air is combined with the delivery air of the central system.



Parallel Installation Details

- Controlled by a humidistat
- Static pressure must be kept below 4 inches.
- Typical delivery air dewpoint is between 44°F and 48°F.

- An interlock with central system's fan is required.
- RETURN AIR:
  - For safety there should be at least three feet of ducting.
  - For noise reduction, 10 ft of insulated ducting with one elbow is recommended.
- DELIVERY AIR:
  - A baffle is required to direct the RH-Cube 18's delivery air in the same direction as the central system's air flow.
  - The RH-Cube 18's air volume (600 cfm typical) must not exceed 20% of the central system's return air.