

Most building managers know that 50% or so of all energy consumed by a commercial building is dedicated to running the heating, ventilating, and air conditioning system.

There is no doubt that energy is one of the premier contributors in building operational expense. Anything that can be done to reduce consumption, even by a few percent is a valid undertaking.



Influence of Cooling Coils In Energy Consumption

The cooling coil represents the sole source where cold energy is put into the air stream to cool the building. Anything that insulates the coils reduces heat transfer, just like a coat one puts on in the winter insulates him from cold. Cold just doesn't get imparted too well to building air when the coils are insulated or packed with insulating material.

What Causes Coils to Become Insulated

Coils start out clean - they have the best transfer of cooling at that point.

In running the HVAC unit though, fresh outside air is pulled in. This air contains millions of small particles of dirt, usually below human visibility.

Along with this dirt, there may be grease or oil vapors - for example from exhaust fumes of diesel trucks or cars. It may be kitchen exhaust gets pulled into the HVAC system. Sometimes the moisture discharge from industrial or commercial cooling towers gets pulled into the HVAC unit as well.

Since each bit of air passes through cooling coils, a percentage of pulled-in dirt, oil vapors, and other materials normally deposit on cooling coil surfaces.

The air conditioning system is a constantly pulls in millions of cubic feet of air in per day, and coils start losing efficiency the day after they are new. Engineering studies at a major University show that as coils become fouled with deposits and these are not removed, the pressure drops increases geometrically. Power draw increases. An increase of 10% to 20% is common in neglected systems.

Addressing the Issue

It is difficult to obtain good efficiency without addressing coil fouling with dirt and other material.

Old methods called for periodic cleaning of the coils at the discretion of the maintenance department. Since today's buildings tend to operate without an excess of maintenance staff, coil cleaning is normally put off for years. Unfortunately, the next day after cleaning, the cycle starts again of deteriorating efficiencies.

A KEY TO ENERGY EFFICIENCY - CONTINUOUSLY CLEAN COOLING COILS

Filters

Filters on incoming air play an important role in maintaining coils clean, but it is impossible financially to filter out all small particles from entering. Small particles of 1 to 10 microns (30 microns is the lower limit of human visibility) represent the majority of the fouling particulates. It is also impossible to filter out oil vapors unless special filtration is used. Coils still become fouled and efficiencies reduce.

Coatings

In an effort to handle fouling, some innovators tried coating the coils with epoxies or other type of a paint coating. Although this was somewhat effective, it itself increased the insulating effect on the coils just due to its' thickness.

Another innovator used a antimicrobial spray to apply to the coils. This ignored the fact that grease vapors and dirt are the primary reason for coil fouling. It also had to comply with EPA restrictions in use.

Still another innovator chose to use a Teflon-based liquid to spray on the coils, not knowing the actual mechanics of water flow on cooling coils. While it seems like a good idea, the Teflon actually causes water to have a high profile or "bead" on the surface.

Incoming air traveling at 400 to 500 feet per minute rips the condensate drops off of the coil, and sends them down the air stream, where they alight on internal duct surfaces, creating ideal conditions for mold growth and exasperating air quality. At other times, the moisture just causes property damage.

Continuously Clean Coils - 24/7

Controlled Release Technologies research and development labs patented First Strike MicroCoat (r) which is not subject to the above issues.

It does not cause water beading. There is no reduction of cooling transfer as measured by the most modern equipment. It is easy to apply by in house staff, and works without attention for a year or more to maintain coils at peak efficiency.

You can read more about the technology behind First Strike MicroCoat at our website at www.cleanac.com, or on our bulletin for this product.