



Energy

by Phil Sprague

Coil cleaning can save up to 20% in heating/cooling energy cost

*Another great article from The Rooms Chronicle, the #1 journal for hotel rooms management! ***Important notice: This article may not be reproduced without permission of the publisher or the author.*** College of Hospitality and Tourism Management, Niagara University, P.O. Box 2036, Niagara University, NY 14109-2036. Phone: 866-Read TRC. E-mail: editor@roomschronicle.com*

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Regardless of size and type of hotel, almost every lodging property has some type of heating and cooling coil system. Coils are similar to the radiator in your car; they are used in thru-the-wall units and fan coil units to heat or cool a space. A small fan continuously blows air across these coils, which are either hot or cold, depending on the needs of the space. As a result, the air in the guestroom or the public spaces is constantly re-circulated through these coils which can ultimately cause the coils to become extremely dirty and inefficient.

The cleanliness of these heating/cooling coils plays a vital role in the quality of the air that the building's occupants breathe. Keeping these coils clean can reduce heating/cooling costs by up to 20% and improve overall system efficiency.

Change air filters

The first step in keeping coils clean is to change air filters in all heating/cooling air distribution equipment at least four times per year. A visual inspection usually reveals the condition of the coils; wiping them with a white paper towel will also provide maintenance personnel with a measure of cleanliness. If the coils appear to have the grooves between the fins filled with dirt, and wiping the coil with a paper towel reveals they are very dirty, the coils should be cleaned immediately. This inspection should be conducted at least once per year.

Clean condensate drain pans

Another aspect associated with keeping coils clean is related to the condensate drain pan located under every coil. The condensate drain pan collects moisture that is condensed out of the air during cooling season. Each condensate pan typically has a drain to the outside of the building or the building's sewer system. The drain in the condensate pan can become plugged frequently because of dirt from the coil.

While this water and dirt remains in the pan over time, mold and bacteria begin to grow in this area. Because the fan continuously recirculates air to the room, this bacteria and mold can be distributed to the room itself. In some cases, this has been the cause of Legionnaires' disease in larger air conditioning systems.

It obviously is not a good idea to distribute mold and bacteria throughout the area of the guestroom or the public spaces. For this reason, the drains should be kept clean on these condensate pans and the pans should be provided with biocide tablets. Brand names include Pan Guard, Accepta, and Aerisguard™. This concept is true for small thru-the-wall units and large air handling units throughout the hotel. Adding these biocide tablets to condensate pans can also significantly improve odors in guestrooms caused by this problem.

Cleaning coils

Before starting a coil cleaning program, conduct a survey of all coils located throughout your hotel. Conduct a sample investigation of heating/cooling coils in guestrooms to obtain an overall idea of their condition. Fans and air handling units that serve public spaces, meeting rooms, swimming pools, kitchens, bathrooms, etc., should all be individually inspected. The initial survey will allow management to determine the condition of the coils in the hotel and how aggressive its coil cleaning program needs to be.

There are several levels of cleaning coils which can be applied, depending on the condition of the coils. The first method is to simply use a compressed air bottle with an air nozzle to blow debris out of the coils. This is the most common method observed, but also the least effective.

When a technician is cleaning coils in your equipment, it is a good idea to have a fine comb along for straightening bent fins during this procedure. A fin comb can be obtained from any local mechanical contractor. This action will increase air flow and improve overall system efficiency.

The second method of cleaning coils is perhaps the most traditional of methods used today. For cleaning of common dust and debris on coils, a balanced pH coil cleaner should be used. Because coils are very delicate and thin and caustic cleaners can actually damage and pit the coils, it is important that only coil cleaning solutions be used for this purpose. Typically, the cleaning solution can be applied to the coil with any type of spraying device, such as a Hudson sprayer.

If the mechanical coils have unusual conditions, such as grease and oil buildup, an alkaline coil cleaner can be used to clean them. After the coil cleaner has been applied to the coils, it is recommended that the cleaner be allowed to soak in for five to ten minutes to break down the dirt embedded in the coil. The last step of this process is to use a pressure washer to completely wash down the coil and blow out the condensate pan.

For guestroom PTAC units, it is recommended that they be completely removed and taken to a remote location where the dirt and water can easily be disposed of. As an alternate to a pressure washer, a standard garden hose with a sprayer on it will also work for most cases.

Remember, it is always recommended that only cleaning products marked as coil cleaners should be used for this purpose. At a minimum, safety goggles should be worn when using any chemicals, and be sure that all Material Safety Data Sheets are clearly understood before using any cleaning chemicals.

The third method of cleaning coils in hotels is a relatively new concept. Nalco Company, a nationally known water treatment service company, is offering a portable cart for cleaning coils in place. The cart contains all cleaning materials and a pressure washer for convenient and thorough coil cleaning. Additional information on this concept can be examined at www.nalco.com on the Internet. This coil cleaning cart concept also addresses issues related to smoking rooms and odor neutralization throughout all areas of the hotel.

Savings

A recent study conducted by major HVAC manufacturers identified approximate energy savings from a comprehensive coil cleaning program. The study assumed that the fans in the typical hotel's air handlers are normally in operation about 25% of the year. The table below reveals the annual energy savings potential that can be saved in a commercial hotel by addressing this problem. ✧

Catagory		Annual Savings
Catagory #1	Under 3 ton load, typical of guestrooms	\$75.00 to \$100.00
Catagory #2	5 ton range of sustem, typical meeting rooms, lobby and other public places	\$175.00 to \$200.00
Catagory #3	Large system, 10 to 15 ton range, typical of ballrooms and other similar large areas	\$500.00 to \$600.00

Note: Some technical information for this article provided by Nalco Company.

(Phil Sprague is a member of the AH&LA Executive Engineers Committee and president of PSA Hotel Energy Consultants. Based in Minneapolis, PSA Hotel Energy Consultants assists lodging companies and individual properties to develop effective, cost-saving energy strategies by auditing and assessing all energy consuming devices and appliances, and delivering comprehensive, customized recommendations in an actionable format. They can be reached at 952-472-6900.)