



Aermec's UK Service division have produced a new Series of articles on How to Improve the efficiency of Existing Air Conditioning Equipment.

Part 1. Reduce energy consumption from your Air-Cooled Chillers & Condensers by 30% by Ensuring External Coils are kept clean.

Common Issues

Condenser Coils on Air Cooled Chillers and Condensers are parts of the Cooling system where the heat transfer takes place and a blocked coil will form a barrier to heat transfer – effectively insulating the coil and stopping it working efficiently. Heavy dirt build-up can also reduce air flow.

As the air moving over the coils contains dust, dirt, pollen, moisture and other contaminants, the coils get dirty and become less efficient.



As you will probably know, **most Chillers and condensing units are mounted in** poorly accessible areas, like rooftops. Also cleaning these components is not a particularly pleasant job. When the maintenance team is overstretched, condenser coil cleaning being put-off are common.

Dirty Condenser Coils are a fact of life. The condenser fans are pulling external air through the coils and its not surprising that they frequently get blocked by all manner of Airborne contaminants. The problems are made worse when cuts in Maintenance means that this is often overlooked.

The coils on external Condensers are prone to blockage and must be kept clean. Frequently Contractors cut corners by not cleaning them as part of a regular planned Maintenance regime to keep costs down.

Dirty, clogged coils can cause many varied problems, including:

- Reduced heat transfer.
- Reduced cooling capacity.
- Increased energy consumption.
- Increase in operating pressures and temperatures.
- Increased wear and tear on the system, which leads to component damage, equipment failure and reduced life expectancy.
- Reduced energy efficiency.

Dirty coils increase operating pressure and temperatures that break down the compressor's lubricant and can result in equipment failure. A failed compressor means no cooling and a costly repair, as well as downtime in a production environment.

Keeping Condenser Coils Clean should be included within a standard Planned maintenance regime.

At Aermec Service, our Service technicians use simple non-invasive processes to keep Condenser Coils clean, you can ensure that you will keep Energy bills as low as possible, especially if you are an Occupier or Operator of an Air-Conditioned Commercial property, with Air-Cooled Chillers or Dry Coolers and are responsible for paying the bills.

How often Should Coils be cleaned?

A coil cleaning programme should be included as part of the equipment PPM programme and ideally starting when the coils are new, the objective being to prevent coil deterioration and maintain equipment performance. Annually is usually sufficient, however in highly contaminated areas, it can be as often as four times a year.

How to Clean Coils

If the coil is contaminated with a light dust or dirt not adhered to the fins, you might be able to blow the coils through with low pressure compressed air use of a soft brush may be sufficient. Other ways are using water or adding a using mild detergent solution and allowing it to work for a short while before rinsing. However heavier deposits will need stronger cleaning solutions or solvents as required.

Avoid Using Pressure Washers

It's a mistake if you are considering using a Pressure washer. These should not be used to clean air conditioning coils. The high-water pressure can easily damage the coil's delicate fins, and it can also push some of the dirt further back into the coil, making it much harder to remove.

A far better method is to use a garden-type pump sprayer to apply special foaming chemical to the coil surfaces. The foam is allowed to rest on the surface to saturate the fins. The foam is then vacuumed up and the process repeated. Finally, rinse the coil with clean water.

Chemical Cleaners

There are several types available ranging from mild solutions to more concentrated solutions for heavily contaminated coils. With any Chemical cleaners it's recommended to start at the bottom of the coils and work across and up with a proprietary Sprayer. Many people make the mistake of starting at the top, the foam would naturally run down the coil making it hard to tell what has or hasn't been cleaned.

Once these cleaners have been applied you should wait at least ten minutes for the foaming action to do work. Once the chemical reaction takes place, the foam will develop as it pushes the dirt and debris from the centre of the coil outwards.

There are also available some ready mixed foaming aerosol types which could be used on smaller coils, otherwise they can become expensive. As with all Coil cleaners they should be thoroughly washed away after use.

Once the coils have been cleaned and left to dry, you could consider a mould inhibitor that can help prevent the growth of organisms such as mould, mildew, and fungi.

In Summary

Some companies have ignored the dirt on their condenser coils because of resource constraints. Ignoring maintenance of condenser coils in air cooled systems is a risky affair that not only increases the odds of equipment failure, but also puts a dent in the Energy Efficiency.

Cleaning condenser coils in air-cooled systems offers many economic benefits. It will also save you money and keep the chiller running for longer. We recommend that you clean the coils at least annually, but it might need to be done more frequently depending on local conditions. If you have any questions about this important maintenance procedure, contact our specialists.

Many older Commercial buildings with HVAC equipment continue to use older less efficient Chillers rather than having to buy brand new equipment. Often a more cost-effective option is to upgrade many of the components rather than replace the entire machine. Check out our forthcoming articles on what and how this can be achieved.

Keep your eyes open for Part 2 in the series. Upgrading Condenser and AHU fans.

Why wait? Click [here](#) to request a free site survey for your sites and understand how an EC upgrade could save you money on your energy bills or you can call us on

0203 008 5940