Cooling System Maintenance Requirements

All central heating systems need to be maintained to ensure they operate effectively and efficiently and have a long operational life, most of these maintenance requirements pertain to the cleanliness and filtration of the system water and the cleanliness of the heat source heat exchangers. Little maintenance is required within the heat emission systems.

Central heating systems that also provide cooling to a home will require a number of additional maintenance tasks that are completed by the home owner and/or service agent, this document outlines some of these considerations.

All Hydronic Cooling Systems

Any type of hydronic cooling system will use pipe work to transfer chilled water to the various emission systems throughout the building, all pipe work, fittings and valves must be insulated to eliminate/minimise the formation of condensate and any damage that could be caused by this condensation building up within/on elements of the building.

As part of the servicing of these systems the service agent should review the state of all exposed insulation making sure there are no gaps and making any required repairs to ensure the system is well insulated. They should also check for any signs of dampness or water damage around any wall, floor, or ceiling penetrations and if found investigate and resolve the source of water, the pipe should be insulated through a penetration, not just have insulation applied on each side of this.

Radiant Cooling Systems

A Radiant Cooling system is generally designed to operate at above the dew point so after the primary delivery pipe work and any manifolds the remaining system aspects (floor, ceiling, and wall) should have no condensation formed, this should be visually inspected and confirmed with the occupants that they have not noticed this. If there is any evidence that the radiant system has caused condensation to form on the active surfaces the system controls should be checked to confirm they are programmed suitably to prevent condensation – if this is the case this issue should be referred to the CHNZ Aftersales team to investigate further.

All other maintenance components of these systems should be the same as a Radiant Heating system with a review and confirmation of flow rates and control operation.

Active Cooling Systems

An active cooling system using fan coils to provide cooling of the home has a number of additional maintenance considerations compared to a more traditional heating only central heating system. There are two key differences with these systems from radiant heating and cooling systems and these each require additional maintenance steps;

1. These systems move large volumes of air around the home, as part of this process any particles in the air needs to be filtered out to prevent these building up in the systems and to also improve the air quality.
2. These system remove moisture from the air that is circulated in cooling mode, this moisture forms as condensation on the heat exchanger and is drained from the unit with a suitable drainage system.

These two main functional differences require a number of additional system maintenance requirements, and these are listed below:

- **Air Side Filters:** removable filters are installed on the return air systems and these filters must be thoroughly cleaned to maintain correct system performance. The service technician should remove, inspect, and then clean or replace all filters at the annual service. Further to the annual servicing the users are advised to provide monthly cleaning of the filters during the period of use (i.e. if cooling only cleaning only required during the Spring & Summer).

The following process should be used for cleaning the filters:

1. Switch off power supply or controller for the fan coil.
2. Locate and remove all filters.
3. Inspect ductwork on clean side of filter and confirm that there are no particles passing the filter into the ducting or machine.
4. Inspect filters and confirm that the filter material and frame are not damaged. If the filter material is torn or the filter frame damaged replace the filter with a new unit of the same specifications.
5. Clean the filter with a vacuum ensuring to draw air through the filter in the opposite direction to the normal air flow. For heavily soiled filters wash the filter under warm water with a mild detergent soap and then rinse thoroughly, then leave in a warm place to dry.
6. Once the filter is clean and 100% dry re-fit the filter taking note to ensure it is installed to prevent air being able to bypass the filter cartridge.
7. Turn on power supply and demand to the fan coil and check air flow is established again.

For the occupant cleaning of the filters a monthly vacuum of the filter cartridge is sufficient and the unit should be switched off while this cleaning is performed.

- **Unit Cleanliness:** additional to the filters the machine where accessible should also be cleaned on an annual basis. Any air supply grilles should be cleaned with a brush and/or a vacuum and where the heat exchanger of the unit is accessible this should also be check for cleanliness and any debris/ particles cleaned off the heat exchanger with a soft bristled brush and/or vacuum taking care not to damage the aluminium fins.
- **Condensate Drain:** the drain pan, and drain pipes of the condensate system should be checked for water tightness and any signs of leaks inspected and repaired. The free flowing of the drain should be confirmed by pouring water down the drain ensuring this flows freely and there is no leakage. Where drains do not flow freely, they should be cleaned out, some drains will have vent or inspection points where a suitable brush can be used to clean the drain line, where drains have glued joints the drain can be flushed out with water, compressed air, or with a wet vac by connecting this to the drain outlet.

Where drains and/or drain pans are showing signs of slime or similar contaminants building up, AC drain tablets and cleaning products can be purchased and used to clean and keep drains clean.

Where the condensate drainage system uses condensate pumps check these also for cleanliness and test the operation of these.

- **Fan Group:** all units use self-lubricating bearings, so no lubrication of the fan bearings, shaft, or motors are required. Where fans can be inspected, isolate the unit and check the fan blades for cleanliness and as required clean using a soft brush and/or vacuum ensuring that the blades are not damaged. Run the fan and ensure that it operates with no abnormal noises or vibrations.
- **General Checks:** check that any electrical enclosures and connections are sealed and tight. Check the tightness of any nuts, bolts, and fixings to ensure these have not been loosened from vibrations, where these are found apply a light thread sealant to prevent this occurring further. If there is ducting used in the system to distribute air around the home, ensure that all ducting is securely fastened to appropriate components, there is no kinks or crushed sections in the duct work and that insulation is in good condition and covering all ducting.

Cooling System Maintenance Schedule

The following table lists the recommended maintenance tasks along with the recommended frequency:

System Aspect	Maintenance Overview	Who	Frequency
Pipe Insulation	Check joints are sealed and all aspects insulated	Service Agent	Annually
Water Damage	Check for signs of water damage from leaks or drips	Service Agent	Annually
Surface Cooling Condensation	Check that surface cooling systems have not formed condensation and controller settings	Service Agent	Annually
Air Filters	Surface clean of return grilles	User	Monthly (during use of fan coils)
Air Filters	Remove, inspect, and clean or replace air filters	Service Agent	Annually
Condensate Drains	Check condensate drains run freely	Service Agent	Annually
Fans	Check fans operate and run freely	Service Agent	Annually
General Condition	Check unit fixings and inspect unit cleanliness	Service Agent	Annually

Including these steps in the annual maintenance of a central heating system where cooling is also provided is vital to ensure these systems have a long and efficient working life.

Where there are any problems found or advice is needed our experienced aftersales team can be contacted to provide you with guidelines or spare parts.