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Midnight
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Horror stories from the air conditioning vaults

With a team of inspectors currently visiting hundreds of firms across the south, energyTeam has a unique perspective on the common mistakes and omissions that are compromising air conditioning efficiency and costing British business dearly, according to **Brian Rickerby**

TYPICALLY, we find a lack of understanding of the importance of maintenance in systems that rely on effective and unobstructed heat transfer and that people do not recognise the potential of taking command of the system using the controls that are already installed.

Examples of actual faults found by energyTeam inspectors include:

Blocked filters



This ducted fan coil filter was so blocked with dust that it is being sucked back into the fan motor. This prevented the return air from the room being conditioned effectively so the unit had to work harder to reach its target temperature. In addition, the fan motor would have consumed more power due to the resistance caused by the blocked filter, resulting in premature failure of the fan motor.



Air leakage

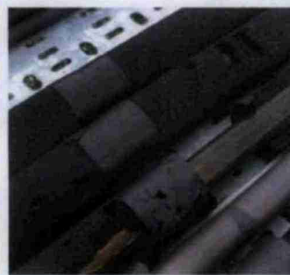
The ducting in the ceiling void has been torn away from the supply grille, subsequently expensive conditioned air was being lost into the roof space instead of serving the the room below.

Blocked and corroded condenser coils



With the condenser coils on this system so blocked with dirt and feathers, the efficiency of the air conditioning system in dispersing the heat from within the building was reduced drastically. The system had to work harder to reject the heat due to the lack of airflow through the coil resulting in excessive energy loss.

Insulation



Torn insulation was reducing the ability of these pipes to maintain desired temperature levels within the building.

Wet and worn insulation loses its ability to maintain the set temperature within the ductwork. Temperature losses between the unit and the conditioned space in this system were causing the system to use more energy than necessary to condition the building.

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Un-insulated valves on chilled water components.



This valve was uninsulated resulting in continuous condensation and corrosion. At best, the owners are in line for an expensive drain down and repair; at worst, they are at risk of catastrophic failure of the whole system.

Heat rejection

Obstruction by bird netting on top of units was making the con-

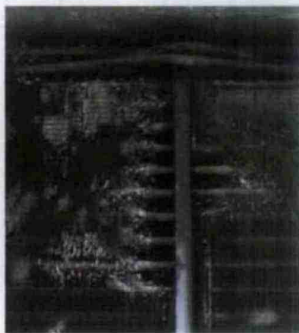


denser and fan motor work excessively hard to remove the heat from the building, leading to more energy use than necessary.

Refrigerant leakage



These oily stains could be the sign of a refrigerant leak. It is illegal to knowingly allow refrigerant to escape into the atmosphere and leaks should be repaired by a



qualified engineer. F-gas refrigerant systems such as R22 should have their refrigerant quantities recorded as well as any leak repairs for systems over 3kg of refrigerant. All details should be retained in the building log book.

Another company's system had condenser coils so corroded that the refrigerant would soon leak out if repairs were not made and efficient heat exchange would become impossible.

Controller giving clues



A system set to run at 16 deg C for a normal office environment suggests that the system is undersized for its application. Here was one case where the remedy was going to involve the building owner in more than a new maintenance regime.

// The author is a director at energyTeam //

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