Heating and cooling

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Mayor's Business Climate Challenge

Introduction

Heating and cooling are the UK's largest sources of emissions, accounting for 37% of the UK's overall carbon footprint (BEIS, now DESNZ, 2020). To reach net zero, emissions from heating need to be reduced by 95% (Energy Saving Trust).

Heating and cooling accounts for 30-50% of a building's total energy use, depending upon the building type *Building Energy Efficiency Survey (BEES)*. We need to heat and cool our buildings more efficiently and stop using fossil fuels like natural gas and oil, (which emit greenhouse gases when burned), and shift to low-carbon sources of heating and cooling.

How to manage your building's temperature more efficiently

Match demand with occupancy

Buildings are often heated or cooled when they are unoccupied. Check the temperature controls and the energy management platform and adjust to correspond to areas of the building and times that the building is occupied.

Temperature settings

Set the temperature to a comfortable level for an office environment (between 21°C to 23°C in winter and 22°C to 25°C in summer*). The minimum temperature should be 16°C. Use automatic sensors and controls, rather than allowing employees to adjust the thermostat manually. **CIBSE Guide A [Jan 2021]*

Zoning

Not all rooms have the same heating and cooling needs. In larger buildings, consider using a **building management** system (BMS) to zone heating to correspond with occupancy. In smaller buildings, you can adjust the temperature of individual radiators using **thermostatic radiator valves** (TRVs), or turn them off completely when not in use. To cool smaller rooms, consider opening a window or using a fan.

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Draft-proofing

Prevent heat escaping through windows or doors that are open, or that have gaps. Keep them closed when the heating is on. If doors are regularly opened, use signs or controls so that they are closed quickly. Keep the building cool by ensuring windows and doors are closed when the cooling systems are in use. This prevents cool air escaping and the cooling system over-operating to compensate for the lost heat.

Insulate

Where possible, insulate walls, roofs, floors and draughty windows to reduce heat loss. A lack of insulation can also cause the building to heat up more quickly in hot weather, increasing the need for cooling. Insulating walls and roof space reduces heat transfer and helps the building maintain a more comfortable internal temperature.

Low carbon alternatives

Explore what low carbon heating and/or cooling sources are best suited for your building. This can include heat pumps, heat networks, solar thermal and electric heating (e.g. infrared). Learn more here: HVAC

Behaviour change

Allow employees to hot desk and select which parts of the workspace they would prefer to work from – some may prefer a warmer or cooler area! Also consider relaxing dress codes to allow staff to wear warmer or cooler clothing. Let staff know about your efforts to improve energy efficiency in the workplace, and why it is important they don't make manual adjustments to controls or use personal heaters.

Tip 1

Make sure the heating and cooling systems are not operating at the same time. These systems work against each other, consuming unnecessary energy. Avoid this by using your controls to create a **dead-band** - a temperature range (about 2°C) where neither heating nor cooling system turns on.

Tip 2

An energy management platform can show you how much energy your building is using and how this corresponds to the outdoor temperature. This allows you to analyse how much energy your building uses for heating and cooling.

Tip 3

Check your energy management platform to see if you are using energy out of hours on heating. If so, adjust your controls and save money and carbon.

Tip 4

You can reduce your carbon emissions by switching from a gas boiler to an electric boiler or heat pump.

Further guides can be found here