



3c. *How to:* Monitor overheating and insulate your building

Why is it important?

Heating a dental practice consumes a substantial amount of energy, produces carbon emissions and is costly.

Improving energy efficiency by monitoring overheating and improving insulation is not only good for the environment but in many cases will save the practice money.

Within the UK properties which are constructed, sold, or let require an Energy Performance Certificate (EPC). Insulation increases the EPC rating of the practice building, which can add to its re-sale or rental value.

Monitor overheating

Dental practices should consider room thermostats, timers and thermostatic valves to improve energy use and prevent over-use of energy when not needed. This can save domestic users £150 on their gas bill and attendant carbon emissions.

It is also possible that there may be areas in the practice which are over-heated. Staff need to be encouraged to report such occurrences to improve energy efficiency. Automatic door closures can reduce the amount of heat loss/gain in rooms. Air conditioning can also be an intensive use of energy so monitoring its use and employing passive cooling measures (such as closing window blinds and opening/closing windows appropriately) are important. Make sure that thermostats are not set to trigger heating and air conditioning at the same time!

Insulation:

Loft insulation:

One of the most cost effective ways to improve energy efficiency is to insulate the loft. Dental practices should increase their insulation to at least 270mm to improve their EPC rating by 10-15 points (possible costs £292 with £20 annual savings).

Cavity wall insulation and solid wall insulation are other options, increasing the EPC rating by 5-10 points however it is also a more expensive choice, with proportionately less attractive annual savings (possible costs £4283 with £89 annual savings)

Insulating the hot water cylinder:

Approximate cost: £16; annual savings £29, EPC rating a few points.



Insulation continued:

Double glazing:

Increases the EPC rating several points.

Installing energy efficient lighting

(£14 cost; £15 annual savings)

Sealing around windows, and doors using products such as 'caulkor' weather stripping can slightly improve energy efficiency.

This draught proofing (£107 cost, annual savings: £12) can also increase your EPC rating. Make sure that adequate ventilation is maintained.



What does a Sustainable Practice look like?

Modelled example:

Amber is a practice owner of a mixed NHS/private practice which is in a mid 1930's semi-detached house. To save money and become more sustainable, she decided to install loft insulation 9 months ago, at the end of last summer. It was completed during 1 week.

200mm of glass fibre insulation added to existing 100mm from when the house was built, costing £150.

Everyone in the practice is encouraged to be involved in saving energy in the practice and monitoring overheating. This is part of the practice's sustainability policy and is discussed at each practice meeting. There are thermometers in each room so that the room temperature can be monitored. There are posters displayed in the practice to remind all staff to use the thermostats to reduce amount of energy used for heating and turn off air conditioning when not needed.

It is now Spring and on reviewing the practice energy bills for the winter period, she is pleased to see there has been a significant decrease, by approximately 20% which is very promising. The practice is now being assessed for cavity wall and solid wall insulation to provide further insulation and cost savings.



Actions

KEY:

Implementation: Easy = Less Easy =

Investment Cost: Low = High =

Financial return on Investment (ROI): Low = High =

Environmental benefit: Small = Large =

- Insulate your water cylinder
- Insulate your loft (if you have one)
- Seal off draughts
- Double glaze
- Close your doors, blinds and curtains as appropriate to let heat In or keep it out
- Review thermostat position and timer settings
- Bleed and externally clean radiators regularly; do not cover them
- Minimise use of air conditioning, and close doors to air conditioned areas

You can calculate both the money saved and carbon saved

•**Money saved:** compare costs of waste collection fees and purchasing of goods costs each month before and after implementation

•**Carbon saved:** Carbon calculator
<http://c.environmentalpaper.org/home>



Resources

Case studies:

Energy Saving Case Studies:

<http://www.energysavinghomes.org.uk/case-studies/energy-saving-case-study-8>

More links:

Energy Saving Trust: Insulation

<http://www.energysavingtrust.org.uk/home-insulation>

Duane. B, Ramasubbu. D, Harford. S, Steinbach. I, Stancliffe. R, Croasdale. K, Pasdeki-Clewer. E. (in press). Environmentally sustainable Dentistry: Energy use within the dental practice. British Dental Journal.

Dental Susnet, online network for improving the sustainability of dental services:

<https://networks.sustainablehealthcare.org.uk/dental-susnet>