

Dental Sustainability Case Study: Honeycomb Dental Clinic

Project Description

Background

Honeycomb Dental Clinic is an independent general dental practice in Winscombe, Somerset with a strong environmentally sustainable ethos. The setting is a detached house with 5 surgeries, 1 staff room, 1 decontamination room and a large office/ front-desk/ patients' lounge area. The practice was taken on in April 2015 by practice principle and dentist Miguel Colaco, who has gradually implemented many changes to develop a more efficient and environmentally sustainable practice.

Approach

Power generation and Energy sourcing

- 32 Solar Panels (8kW) installed between 2015 and 2018 to generate own energy
- Air Source Heat Pump installed in 2018 - absorbs heat from the outside air to be used to heat radiators,, underfloor heating system and hot water
- Electricity and Gas supply by Good Energy since 2016 (a UK energy supplier which sources energy from 100% renewable sources)

Electricity usage, Energy management, Lighting and Insulation

- All the building's bulbs are LED.
- Light movement sensors installed in areas like staff room, toilet and corridors.
- With exception of the main server computer (which has to be on standby in order to back up the dental software system overnight), appliances are turned off out-of-hours;
- Computers have sleeping features activated;
- When buying electrical equipment, low energy appliances are considered;
- Eco-efficient Combi Boiler (installed in 2016), controlled by central thermostat that allows uniform room/building temperature during the day and automatic features that reduce temperature at night (when the Clinic is closed);
- Thermal insulation has been installed on behind radiators;
- Implemented Roof Insulation of 270mm recycled wool with boards (*Carbon dioxide savings 990kgCO₂/year, Information from Energy Saving Trust*);
- Double glazed windows throughout the building;
- The new build was planned and constructed with the highest standards for wall and roof insulation;
- Hand air drier in the public toilets (uses electricity from our solar panels and cuts the use of paper);
- The new build was designed with many glass roof top features and large sash windows, so to allow natural lighting in and reduce the use of artificial lighting;

- Underfloor heating with Thermostat – allows more efficient dispersing and maintenance of heat in the public spaces and staff room (powered from Solar Panels).

Water usage/efficiency

- The usage of water is monitored through the water bills/invoices;
- Quality systems and equipment are in place to ensure the clinic avoids contaminating the water systems. Tap water gets tested regularly;
- Staff are encouraged to check taps are turned off;
- Waterbutt - rainwater is collected to be used in the garden and for indoor plants.

Recycling, Re-usage and Resources Management

- A system has been implemented to enable all staff to recycle our domestic waste: paper, plastic, packaging, metal cans and aluminium, domestic batteries, cardboard and organic waste.
- Waste gets segregated in the staff room and disposed of accordingly at designated recycling points.
- Domestic organic waste and garden waste are both disposed of in the Clinic's compost bins. Compost is then made available for either our garden or staff members.
- Whenever electrical equipment, furniture and/or unused goods/devices require disposing of, this is announced/advertised on local shops mailing lists for their re-use or they are disposed of in the recycling centre.
- Office waste recycling: office paper is shredded and segregated; ink cartridges are returned in appropriate packaging to be re-used/re-filled by the manufacturer.
- Cardboard boxes that arrive at the Clinic are selected and re-used where possible; 'Jiffy bags' and mailing envelopes are stored and re-used.

Products and Consumables

- Printers are set on Low Ink Mode, in order to consume less ink.
- The team is encouraged to print documents double-sided and on grayscale.
- Hand washing soap, kitchen washing up gel and surface cleaners are biodegradable and bought in large refills and regularly fed into dispensers, to reduce the use of plastic bottles.
- Flooring in public areas is Reclaimed Wood (thus re-using wood resources) and in the staff area is Bamboo (bamboo is the most sustainable source of wood).
- The new build was designed and constructed with FSC wood.
- The main indoor reception logo and the front-desk were built using flooring off-cuts, as well as the surgery door signs.
- Much of the practice furniture is second-hand, reclaimed, upcycled.

Purchasing Policy

- Where possible, the Life Cycle impacts are considered when purchasing equipment and resources.
- When purchasing a good or service first the practice considers doing business locally in the following order: local shops, local area, county and nationwide.
- Websites such as GumTree, eBay and FreeCycle are used to look for second hand items when considering the purchase of domestic items such as Furniture, Gardening tools or some electrical goods.
- All paper used at the Clinic has been carefully selected to be either 100% recycled, non-chlorine bleached or non-BPA. Even the purchased Jiffy-bags are 100% recycled and recyclable (by not containing plastic bubble wrap).
- Only original HP (branded) printer ink/toners are purchased. HP has a strong Environmental Policy and makes clear to the public their commitment to the Environment.

Biodiversity

- Green (living) Roof installed: allows storage of water resources that gets converted into plants and oxygen, whilst trapping CO2. It is also habitat for insects and wild life alike.
- Insect and bumblebee boxes, bird feeders, two bird baths and bird houses positioned throughout the gardens. There is a wild life corner where vegetation and bushes are left to grow wild in order to create shelter for little insects and animals
- The Clinic also has an apple tree (of the Discovery variety - as kindly identified by one of our patients) with edible apples. Every year we share them amongst staff and patients. The non-edible apples are disposed in the compost bins.
- The flowers planted in the upcycled wood planters at the front of the Clinic are purposely chosen to be Bee friendly/

Clinical Equipment

Clinical facilities and equipment have been developed in order to increase efficiency whilst promoting sustainability:

- Fully computerized digital system (digital charting, notes recording and reminders sent by email and text) – heavily reduces the usage of paper and postage whilst increasing systems efficiency.
- Installation of Clinipad (digital tablet) - enables patients to introduce their details (including Medical History) without the use of paper.
- Fully Digital Radiography - complete elimination of harmful developing chemicals.
- Installation of four 'new' re-conditioned (instead of brand new) high-end Dental Chairs.
- Installation of four new LED Operating Lights - reduces energy consumption whilst giving clinicians a clearer operating field.
- Installation of a full operating Decontamination/Sterilization Room – allows the use of materials, tools and instruments that can be sterilized (in accordance to HTM-0105 decontamination standards), thus replacing plastic disposable ones. We have a dedicated Decontamination Operator, Policies and Protocols to assure and record the quality of the Decontamination process.

- Installation of a Mercury Separator – (Currently, there is no law in place which requires dentists to purchase a mercury separating machine. These machines separate the mercury from the amalgam fillings and it can then be recycled and reused. Installing mercury separating machines would help to reduce the amount of mercury discarded into the water system by around 3.7 tons per year).
- Installation of a Reverse Osmosis System (ROS) – Autoclaves (to sterilize instruments) require distilled water. Regularly heating water to boiling point can require large amounts of electrical energy: distillers can use more than 600 watts of energy to produce one litre of water. An ROS does not require electricity (energy) to produce deionised water.

Community and Charity

- The local community is supported by keeping in close contact with the public (listening to and considering their suggestions) and the village shops (the practice is part of a local shops mailing list that update on events and charities).
- The Clinic has a purpose-made reused-cork ‘Community board’ on the Patient’s Lounge where local businesses and people can advertise their services and events.
- Specific charities are supported: the PDA card machine was carefully selected enabling each transaction made to contribute a donation of 1p to Bridge to Aid; a dental aid NGO organisation providing dental training, treatment and education in Africa.
- The practice contributes to Marine Megafauna - marinemegafauna.org; Natural Beekeeping Trust - naturalbeekeepingtrust.org/; The Grand Appeal, the Bristol children’s hospital charity - grandappeal.org.uk.
- The practice is also committed to donate £50 every year to each of the following:
 - National Trust - nationaltrust.org.uk
 - The Bee Cause @ Friends of the Earth - www.foe.co.uk/page/bee-cause
 - Marine Conservation Society - mcsuk.org

Future Planning:

- Water saving devices are being considered: efficient Toilet Flushes (low flow, dual-flush).
- Water meter is being considered.
- Promote the Recycling of toothbrushes, interdental brushes and toothpaste tubes.
- To set up a Charging Station to re-charge batteries.

Benefits

Patient outcomes

Example: the use of digital radiography produces faster and clearer results, improving the diagnosis, reducing chair time, promoting comfort to the patients.

Financial

- Not quantified, but having invested in more autoclavable instruments (against disposables) will save money in the long run.
- Printing both sides has resulted in savings on paper purchasing. A dental business consumes a lot of paper.
- Saving on Electricity bills: the practice is definitely paying less for energy bills and is also getting paid via the 'Feed In Tariff'

Social

- Has resulted in a good feeling in general, sending out a positive message
- Charity work is beneficial to their community

Environmental

- Savings in energy and carbon emissions, reduced consumption of materials (paper, equipment), minimising pollution of the local environment (land and water).

Dis-benefits

In the view of the practice, this is a 'win-win' situation with few dis-benefits. Perhaps the initial investment involved as being green could be expensive in the short term whilst initiatives are being started.

Barriers

- Feeling isolated at times in this quest.
- Breaking old institutionalised habits.
- HTM 01-05 is a big barrier, I feel more consideration should be given to sustainability from their side
- Policies in general can be a setback as often do not consider sustainability.

The practice principle says, "I don't think that the physical space of dental practice is a barrier, there are many things that can be implemented that can result in change without having to change the facilities."

What the team had to say

“With the over consumption of fossil fuels and a less than ideal environmental future for generations to come, it is nice to be involved in a practice that is contributing to sustainability, even if on a small scale”

“More likely to recommend to friends because of our green values”

“Advantages of this is to improve our health, less pollution and gain a better life for the future generation”

“Living in a sustainable way and making lifestyle changes to help preserve our natural environment and reduce carbon footprint is something that is very important to me. It is great to be part of a team that shares these values. Trying to work in an ecologically friendly way, particularly in healthcare, has its challenges but it is the small things that make a difference”

“Progressive. Compassionate towards people and the planet”

“Proud. In line with my personal views on eco/sustainability”

Key Aspects of the Project

The practice holds a **‘Green Achiever Accreditation Gold Award’**, and is currently the **only** dental practice in the UK to have this.

<http://www.greenachiever.co.uk/gold.htm>

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