

Sustainability Note

8 October 2015

1. Sustainability is a key consideration in the design of a new building and the proposed restaurant has been directly influenced by the solar path. The brise soleil and top awning provide shading to reduce the impact of overheating from the sun in summer yet allow sufficient daylight into internal spaces. The height of glazing and depth of the design elements have both been developed to allow deep penetration of light into the space by low level winter sun and limiting the high, hot summer sun. This design is also benefited by internal light sensor control of the dining areas lighting which automatically switch off lights that are not required.
2. In addition to the controlled use of sun light, the areas of glazing to the elevations have been designed to maximize natural light into the back of counter areas.
3. In addition to the 100% renewable supply, all restaurants have a sophisticated building management system to operate lighting, heating and air conditioning. Low energy lighting systems form part of each new restaurant. McDonald's kitchen appliances have standby reminders and the company have introduced a metering system which measures the amount of electricity used in half hour intervals throughout the day. Restaurant Managers receive daily graphs to help them make energy saving adjustments.
4. Materials for the building have been selected to provide the required aesthetics combined with maximum durability and robustness. Whilst it could be argued that there is embodied energy absorbed into some of the products selected, it is envisaged that the requirement for replacement, maintenance and repair will be minimal during the building lifecycles, thus providing a good low level of energy input over the whole lifecycle.
5. McDonald's have developed a European wide approach to sustainable development closely linked to the European Union's ambitious "20/20/20 by 2020". The EU initiative can be summarised to:
 - Reduce overall green-house gas emissions to 20% below 1990 levels by 2020;
 - Increase the share of renewables in energy use by 20% by 2020;
 - Increase energy efficiency by 20% by 2020.
6. McDonald's have their own benchmark for incorporating energy efficiency into new and remodelled restaurants. The gold standard is now the minimum requirement for refurbished stores and new builds. The gold standard includes the following measures:
 - Lighting - rationalisation of lighting and reductions in required lux levels, including the use of LED technology for all internal and external lighting on new stores; installing sensor and photo controlled lighting both within and outside of

the buildings. This includes re-lamping existing stores with the most energy efficient lamps available for the existing fittings.

- Water - Auto shut-off taps fitted to wash-hand basins in addition to flow control limited to 6l/min; replacement of urinals with waterless units and flush reduction measures fitted to cisterns where possible (5l flush). In addition systems are leak checked with hot water temperatures reduced to a maximum of 60 degrees C. Pipes are checked for missing insulation.
- HVAC - Automatic closures fitted to all internal doors and draft-proofing fitted or repaired to all doors and windows, including the use of energy save reminder stickers in the back of house area. Fan units controlled not required to run when ventilation not required and room sensors positions checked and moved if necessary. "Free cooling" is obtained by varying fan speeds and airflow before air conditioning units are switched on, and carefully controlled air recirculation is extensively used to maintain the desired temperature without the use of excessive heating or air conditioning.
- Refrigeration – insulated door curtains are provided to freezers and chillers and "door open" alarms fitted to freezer/chillers. Also, rejected heat from chiller units is reclaimed and used to provide heating for the hot water system.

7. Additionally, the following measures are provided:

8. System optimisers - minimum two of the following three items to be installed

- Centralised electronic control panel for management of HVAC; extract fans; and internal and external lighting (including signs) all based on time, temperature and light levels;
- Gas condensing boiler with 90% energy efficiency. Electric only if gas not available;
- Air source heat pumps fitted to HVAC to provide minimum 50% of dining area demand.

9. System economisers - All of the following are being considered as part of a rolling review and will be tested in the near future, unless restricted by local regulation -

- Power factor correction equipment fitted minimising reactive energy consumption;
- WC's fitted with dual flush of 4.5l and 3l flushes (unless external drainage requires greater volume);
- Monitors fitted to plant with EFF1 rating;
- Variable speed drives fitted to HVAC plant.

10. Solar impact reducers (where average daytime temperature (May to September) exceeds 24 degrees, the following are fitted as standard -
 - 50% solar energy rejection and 90% infra-red rejection film fitted to all windows and screens.
11. Consumption reducers - fitted on a site by site basis -
 - Economiser fitted on HVAC to optimise "free heating/cooling";
 - 90mm thick insulation panels fitted between grills and reach-in freezers;
 - Natural light to back of house via windows or "light tubes";
 - Install voltage control equipment where supply exceeds required voltage.
12. In addition to the energy efficiency measures and building design, McDonald's promotes the minimisation of waste. Food wastage is minimised through the use of a computer system that monitors the amount of food served at given times of the day, resulting in the more accurate preparation and ordering of stock. The use of recycled products such as kitchen towels and toilet rolls is promoted throughout all restaurants. McDonald's also reuses delivery packaging wherever possible in accordance with food safety laws.
13. In terms of recycling, all restaurants aim to recycle 100% of their corrugated cardboard, which in itself accounts for 30% of a restaurant's average total waste. With regard to the packaging itself, 72% of all cardboard packaging consists of industrial recycled paper. Moreover, items such as drink carriers, bags, napkins and toilet paper are made from 100% post-consumer material.