

Overview

Hull City Council is committed to reducing its energy use and costs. It has a strategy to reduce its carbon emissions by 34 per cent by 2020.

Under the National Re:fit Programme, the Council is delivering a phased retrofit of improvements to 10 of its buildings. This will save 20 per cent on energy costs across the buildings, equivalent to 846 tonnes of CO₂ per annum and the energy bill reduced by more than £190,000 per year. The project's planned investment is £1 million, with an agreed payback period of seven years.

The Council, supported by Local Partnerships, ran a mini-competition under the Re:fit programme and Mitie was identified as preferred bidder in February 2015. Following changes in the Feed-in Tariffs (FITs) and subsequent negotiations with Mitie, Hull decided to split the programme into two tranches, the first one of which includes five buildings.

Investment Grade Proposals for Tranche One by Mitie were completed in 2016 with installation works for the five buildings commencing during summer 2017.

One of the buildings to be retrofitted is Stockholm Road Depot. It is used to store equipment for the maintenance of the highways, footways, traffic islands, street lighting as well as verges within the adopted public highway.

Project:	Stockholm Road Depot	
Savings:	£41,490 energy spend reduction per annum (48%) Energy savings of 2% (gas) and 57% (electricity) per annum	162.2 tonnes of CO ₂ per annum saved (33%)
Value:	£184,503 investment of retrofit works	Simple payback of 4.5 years
Timescale:	Installation to commence summer 2017	



“This Re:fit project is helping Hull Council in its ongoing commitment to achieve real savings with reduced energy consumption and CO₂ emissions. Local Partnerships’ professional support helped deliver a tailored approach, which is a tried and tested solution. It also provided the technical expertise to help review the differing approaches for energy reduction and help select the most appropriate for the Council.”

Martin Budd, Environment and Climate Change Strategic Advisor, Hull City Council

Summary of Energy Conservation Measures (ECMs)

Lighting

Three areas of lighting are being addressed at the depot:

- external floodlights
- main warehouse lighting
- small areas of corridors and communal areas.

The existing external lighting is made up of 28 fittings of 2,000W plus car park floodlights. These fittings represent a huge load for the site and during the winter nights they represent a large proportion of the site's consumption. LED replacements would greatly benefit and cut consumption levels. This solution will also include a controller module with a time clock, allowing each of six light masts to be dimmed by 30 per cent between the hours of 11pm and 5am every day.

The other major element of work is to remove and replace the 400W high-bay lighting fittings in the main warehouse with LED fittings. Forty six new LED fittings will be installed based on a point-for-point replacement. The remainder will consist of bay wall lights and stores upgraded to LED lighting as well as passive infrared sensor (PIR) detection lighting controls fitted in common and circulation areas, such as toilets, stairwells and corridors. These lighting controls will operate the luminaires on an on/off basis only.

Solar PV and PV monitoring

The south-west-facing, elevated, roof-mounted 400 solar PV solution involves a 50kWp-sized system, which will provide 24.7kWh annual output. This solution will save £8,100 per annum.

Boiler optimisation

The solution will save natural gas by avoiding dry cycling of the boilers. Dry cycling occurs when the boilers operate to compensate for the heat lost mainly through radiation rather than to satisfy the building's heat load. The solution uses two non-invasive digital temperature sensors to measure and calculate the temperature profile of each boiler and has the functionality and compatibility to be integrated with existing control systems.

Voltage optimisation

Voltage optimisation units are being fitted to site in this tranche. The solution will manage the voltage by reducing it through a transformer mechanism and also stabilising the voltage to plus or minus 1.5 per cent. This reduction in voltage will have a positive impact on the site's inductive loads.

Refrigeration controls

Sava-control optimisers are pieces of equipment that can be fitted to an AC induction motor. They reduce the amount of energy used by reducing the power when the motor is under part load but still maintain the same speed, offering substantial savings, while enabling instant power availability should full load be required. It was identified that these new devices are to be installed on the large fridges and freezers in the kitchen areas.

Energy efficiency and financial savings through Re:fit

Re:fit is a procurement framework and support service available to all public sector organisations in the UK. Since 2009 it has been helping organisations to deliver "spend-to-save" environmental retrofit projects that both improve their buildings and, importantly, make substantial guaranteed financial savings.

For more information about the National Re:fit Programme, contact robert.mckinnon@local.gov.uk or phone 07920 702 297.