Case Studies
Hull City Council
Streetlife Museum of Transport

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 CO_2 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. 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 identified for improvements is the Streetlife Museum of Transport. It is a purpose-built transport museum, which consists of five galleries sharing a variety of historic transportation vehicles and settings.

Project:	**Streetlife Museum of Transport**	
Savings:	£12,000 energy spend reduction per annum identified Energy savings of 22% (gas) and 21% (electricity) per annum	56 tonnes of CO_2 per annum saved
Value:	£80,000 investment of retrofit works	Simple payback of 6.8 years
Timescale:	Installation to commence summer 2017	

The Kingston upon Hull tramway was a network of 4ft 8½in (1,435mm) tram lines following the five main roads radially out of the city centre.

"This Re:fit project is helping Hull Council in its ongoing commitment to achieve real savings with reduced energy consumption and CO_2 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
The varied lighting within the museum offered potential for savings. The high-ceiling main display areas were inefficient and the museum also lacked controls with its existing lighting systems. The lighting solutions are LED upgrades, where appropriate, and new LED installations. A number of passive infrared sensors (PIRs) are to be installed as well to assist better lighting control, particularly in the back of the galleries' corridors.

Destratification
The building has a problem where temperature difference occurs between floor and ceiling, resulting from heat rising and cold air falling. To counteract this, a range of very efficient destratification fans will be installed to achieve a heat balance within the building.

Voltage optimisation
The new unit will help manage the site's inductive load and make savings with the existing infrastructure. The iVolt unit is a variable-voltage reduction and stabilisation solution and is based on solid–state technology. It has no moving parts, so is maintenance free.

Insulation
Exposed uninsulated pipework can generate high surface temperatures. This wastes energy and cost via wasted utilities, can have detrimental maintenance effects on other plant equipment (shortening the design life of electronic components) and is a health and safety risk if touched. Dependant on the application, a range of valve jackets and pipework insulation will be retrofitted to exposed plant.

Boiler optimisation
The proposed 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 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.

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.