United Lincolnshire Hospitals NHS Trust
Pilgrim Hospital Boston
Accident & Emergency Department and Urgent Treatment Centre
Sustainability Statement

Introduction

The development comprises the demolition of the Support Services Building (H Block) and the construction of a new two-storey building, linked to the existing A&E building, which following decanting will be refurbished to complete the scheme.

The project target is to achieve BREEAM Excellent rating which shall aim to obtain a score exceeding 70%.

Passive Design

The design incorporates passive measures to improve the thermal performance of the building and consequently reduce the CO_2 emissions. This has been achieved by improving the U-values of the construction elements so that they exceed those stated in the Building Regulations by 25%. Additionally, the air permeability is to be 3.0m^3 / (h.m ^{2}).

Detailed thermal and energy modelling has been carried out to aid the design to ensure optimal thermal and energy performance of both the building structure and building services systems.

These models have taken account of future weather data as per the requirements of BREEAM for mechanically ventilated and mixed mode buildings. Thermal loads have been simulated under the 2020 weather files using the emission scenario High and the 50th percentile for DSY2 and DSY3.

Engineering Design

The building thermal loads are to be met by Air Source Heat Pumps. Innovative air to water 4 pipe units with inverter driven screw compressors and R134a refrigerant have been selected to meet both the heating and cooling loads simultaneously. These units incorporate Variable Volume Ratio (VVR) technology for optimised unit performances at any load and operating conditions. The control system allows the inverter to modulate the compressor speed which minimises the power consumption and noise emission at any load condition.

Both the hot and cold heat exchangers have optimal heat transfer and minimise the water pressure drops. The units have very high efficiencies, when operating under heating and cooling mode the TER cooling and heating efficiency is 8.48kW/kW.

The ventilation systems incorporate high efficiency heat recovery to reduce the air system heating and cooling loads and reduce energy losses. All pipework and ventilation systems incorporate thermal insulation to minimise energy losses in the systems.

All mechanical and electrical systems in the building incorporate metering and sub-metering to monitor the building energy usage. These are linked to the site BMS system. The BMS shall ensure all systems are operating at optimal efficiency.

The lighting design adopts high efficiency LED lighting throughout the building. These fittings have low energy consumption and a long-life expectancy minimising the electrical loads and maintenance of these systems.

An automated lighting control system will be adopted to optimise the controllability of lighting for the building user so that lighting is not used unless required.