Development of energy benchmarking of Malaysian government hospitals and analysis of energy savings opportunities

ABSTRACT

There has been a growing interest in the Malaysian government on the issue of energy efficiency and the environment. This study presents the investigation and analysis of electrical energy performance characteristics of government hospital buildings in Malaysia. A generic questionnaire was developed to collect energy data of all government hospital buildings and a regression analysis was performed based on the feedback to predict the annual energy consumption of a Malaysian hospital building. Using the available surveyed data a generic hospital energy benchmark in Malaysia was developed and the surveyed data was also used to construct a typical base-case hospital building model using Energy Plus software. Using building simulation method with local weather data, areas of energy savings opportunities and its cost effectiveness are investigated. Simulation using selected cost effective energy savings measures suggests that the Annual Electrical Energy Use Index (EEUI) of the base-case hospital building model can be significantly reduced to as much as 28.85% with a simple payback of 3.7 years by applying energy saving measures such as improved glazing, lighting as well as optimization of ventilation and cooling system.