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year in



**ASSIGN
BUSTER**

A measurable energy efficiency goal is important in reducing energy consumption. Building Energy Index (BEI) is calculated as the total energy consumed in a building for one year in kilowatt-hours divided by building gross floor area (GFA) in square metre (Chan, 2009; Monts and Blissett, 1982) and it is expressed in kWh/m²/year.

The BEI values of a good energy management system must range between 90 kWh/m²/year to 150 kWh/m²/year, with interval of 10 kWh/m²/year. (GBI, 2015) Code of Practice on Energy Efficiency and Use of Renewable Energy for Non-Residential Building MS 1525 Guideline has outlined that 150 kWh/m²/year is the maximum BEI value. (Department of Standards Malaysia 2007)2.

4. 1. 2 Facility Management Facility management is defined as a system for managing the facilities and energy usage of an organization where each organization has one or more operating devices that consume energy. (John W. Woolard, Dale M. Fong, Patrick L. Dell'Era & Keith E. Gipson, 2001) It gathers the information of the energy consumption and the operation of each device. Besides, it also converts the data gathered into standard format.

According to GBI 2015, organizations should ensure the designated building maintenance office is fully equipped with facilities. There are two ways in achieving successful equipment strategies, either by installing more energy efficient devices or reducing the amount of installed equipment. (Priya Gandhi & Gail S. Brager, 2016) A facility team should be established to allow building occupants to communicate on building problems.

(Lehrer, David D., Vasudex, Janani Kaam & Soazig, 2014) A smart complaint reporting approach is used to inform users if a certain issue has already been reported to the facility team. Proactive help desk allows the facility team to deal with complaints immediately (Leaman and Bordass, 2001). Building energy management system (EMS) should be implemented in larger workplaces to monitor and track energy consumption in buildings. (Ben Bedwell, Caroline Leygue, Murray Goulden, Derek McAuley, James Colley, Eamonn Ferguson, Nick Banks & Alexa Spence, 2014) The process of evaluating the energy performance can be simplified by collecting the data from sub-meters.

Hence, facility management team is able to manage energy consumption more effectively. In addition, energy waste can be identified by implementing a good energy management system as it can gather the necessary energy data. (EnergyStar Guidelines for Energy Management, 2013) Energy efficiency programs and policies can also help the organizations to improve energy performance as they identify, implement and measure energy savings.

Testing, commissioning and updating of energy schedule is one of the important facility management strategies. It is necessary to update the building operating plan regularly to identify any changes in the occupancy schedule, equipment runtime schedule, design set points and lighting levels. (GBI, 2015) This strategy is important and mainly used for all HVAC equipment and lighting levels. One of the approaches is turning off the HVAC equipment at least one hour before the end of the working day. (EECA, 2011)

Regular update of energy schedule can ensure the system is operative because the data and information are contemporary.

(EnergyStar Guidelines for Energy Management, 2013) Organizations are advised to update their energy schedule weekly or monthly to obtain the latest energy information. Antecedent tools (eg: information posters and reminder labels) and consequent tools (eg: feedback or comparative feedback on energy consumption) is one of the facility management strategies used to conduct intervention studies. (W.

Abrahamse, L. Steg, C. Vlek & T. Rothengatter, 2005) Energy labelling is useful in informing building occupants about the energy performance of various equipment and promoting energy savings and energy efficiency.

(Luis Perez-Lombard, Jose Ortiza, Rocio Gonzalez, Ismael R. Maestre, 2009) Energy feedback should be directed directly to energy managers rather than employees. (Foster et al. 2012) Feedback can be categorized into direct feedback and indirect feedback. Direct feedback is the immediate data from the metre while indirect feedback is the processed data before sending to energy users.

(Sarah Darby, 2006) According to Energy Star Guidelines for Energy Management (2013), staff or employee can be motivated to participate in achieving energy efficiency goals by always reminding them on energy efficiency information. Staff and employees are the major energy users. Therefore, the energy performance will be below average if they are not aware of energy efficiency information.