

Measurement and Research of Green Office Building Operational Performance in China: A Case Study of a Green Office Building in Zhejiang Province

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Abstract : In recent years, green buildings in China have been developing rapidly and have developed into a wide variety of types, of which office building is a very important part. In many green office buildings, the energy consumption of building operation is high; the indoor environment quality needs to be improved, and the level of occupants' satisfaction is low. This paper conducted a one-year measurement of operational performance of a green office building in Zhejiang Province. The measurement includes energy consumption of the building's one-year operation, the quality of the indoor environment and occupants' satisfaction in different seasons. The energy consumption is collected from the power bureau. The quality of the indoor environment have been measured at different measuring points including offices, meeting rooms and reception for the whole year. The satisfaction of occupants are obtained from questionnaires. The results are compared with given standards and goals and the reasons why occupants are dissatisfied with the indoor environment are analyzed. Regarding energy consumption, the energy consumption of the building operational performance is much higher than the standard. Regarding the indoor environment, the temperature and humidity meet the standard for most of the time, but fine particulate matter (PM2.5) concentration is pretty high. Regarding occupants satisfaction, occupants have a higher expectation for indoor air quality even when the indoor air quality is well and occupants prefer a relatively humid environment. However the overall satisfaction is more than 80%, which indicates that occupants have a higher tolerability.

Keywords : green office building, energy consumption, indoor environment quality, occupants satisfaction, operational performance

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