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The practice research based on the POE system of environmental performance of green residential building

Liang Yu[a,*],Ran Ding[b],Wei Gao,Haixu Wang,Guohui Feng

[a]*Shenyang Jianzhu University,No.9,Hunnan East Road,Hunnan New District,Shenyang City and 110168,China*
[b]*Shenyang Jianzhu University, No.9,Hunnan East Road,Hunnan New District,Shenyang City and 110168,China*

Abstract

Based on green building development, it has become an inevitable trend to promote urban development pattern transformation and to realize the city green, ecology, sustainable development. In such circumstances, it becomes very important how to apply green building assessment system scientifically and accurately, whether green building is real energy-saving in operation stage. This paper will use the established POE system of environmental performance of green residential building. We will make a case study for a green residential building in the cold region and it aims at verifying its scientificity and rigor. After evaluation, the POE system provides technical support for green residential building in our country and so on related work.

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Keywords: Cold regions; Green residential building; POE-SGREP; Operational period;

1. Introduction

In recent years, China's green building development scale keeps rising sharply. As of December 31th, 2014, the national identity named 2538 items of the green building evaluation projects, a total construction area of 290 million m^2. Among them, 2379 designs are logo projects, accounting for 93.7% of the total evaluation projects, and construction area of 271.1 million m^2. The operation logo projects is 159, accounting for 6.3% of the total, building area of 19.5 million meters (China green building 2015)[1].The above data show that China's green building design logo is more than green building operation logo. Leading to the fundamental cause of this phenomenon is that the

* Corresponding author. Tel.: +86-15840391122.
E-mail address: sy_yuliang@163.com

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energy consumption of building operation stage is higher than other stage. The situation that Green Building Operation Logo is less also results in the phenomenon that the green building energy consumption is more and more serious. These conditions constitute the basis of development of the POE system of environmental performance of green residential building.

The POE system (POE-SGREP) is a set of applications in the green building operating period of assessment and certification system, through certain means and methods, establishing a series of evaluation index to provide technical support and guidance for the green residential building in the operation stage [2]. This paper will focus on one of the green house in the cold region and use the POE system (POE -SGREP) to make a case study. Aiming at verifying it scientific and rigorous, it is more significant of finding the problems in practice and constantly supplementing the content of the evaluation system.

2. Methods

The year of 2014 is the full implementation of the national green building action plan and there are 28 provinces publishing green building action plan. Combining the actual situation, the provinces come up with goals of mandatory implementation of the green building. On January 1st, 2015, the national standard Evaluation Standard for Green Building GB/T 50378-2014 is formally implemented. It will provide technical support for a period of green building practices and evaluation work for our country at present and even the future.

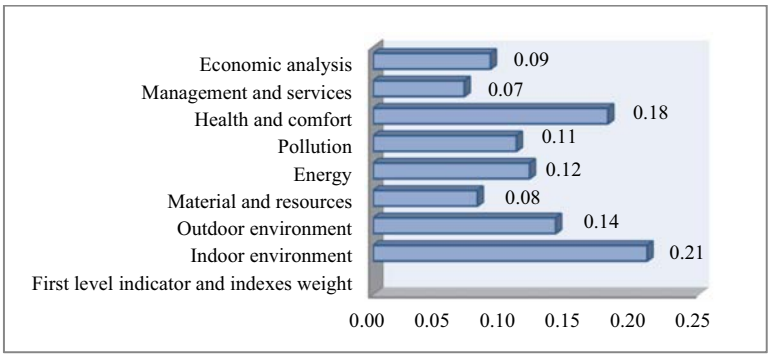

Fig.1 First-level indicators of weight

Table1 The evaluation rating of POE system of environmental performance of green residential building

The scope of assessment score	Order of evaluation	Scalar implication
[4，5]	A	To achieve high standard requirements of the green house
[3，4）	B^+	Accord with the requirement of the green house, proper maintenance and management
[2，3）	B^-	Meet the requirements of the green residential item to score low index, propose solutions and measures, improved when necessary
[1，2）	C	Just reached the requirements of the green house, weak link to be improved
[0，1）	D	Do not accord with the requirement of green residential

Through researching a large number of foreign literature and data, we analyze the characteristics of foreign green building assessment systems, for example, the UK (BREEAM), the United States (LEED), Japan (CASBEE), Germany (DGNB).And combining with the characteristics of the climate characteristics of cold region of China and energy consumption, according to the construction of index selection principle and the basis, the target item is divided into eight first-level indicators. They are indoor environment, outdoor environment, material and resources, energy, health and comfort, pollution, management and service and economy analysis. According to a total of 149 qualitative