網際網路專家系統於建築耐風設計規範之應用

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摘要

翻閱規範是件繁瑣的事，建物耐風設計規範內含許多的參數需要考慮，其適用的範圍與選定的時機，往往困惑著設計者；再者計算過程中容易因為遺漏與疏忽而發生錯誤。倘若一風工程觀念薄弱之設計者，耐風設計規範的解讀及設計風載重的計算、組合有其困難度與耗時性。有鑑於此，本研究依據耐風設計規範、及其計算邏輯流程，將之編纂為法則，發展出一套可以在網際網路上使用的專家系統。本系統之應用範圍包括了兩個部分，一個是主抗風系統設計風力之評估，另一個是被覆物設計風壓之計算，而其中主抗風系統之風力分析對象又分為高、低層建築物、屋頂、女兒牆以及開放式結構物；而被覆物表面風壓值的評估、則包括有建築物的外牆和屋頂兩個部分。

關鍵字: 耐風設計規範、專家系統、設計風力、設計風壓、網際網路。

The Application of Web-Based Expert System to Building Design Wind Code

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ABSTRACT

It is a tedious task to refer to wind code while performing structural building designs because lots of parameters need to be considered. The decision of their suitable ranges and application conditions can be very confusion sometimes. Moreover, the process of wind load calculation is prone to mistakes because of omitting or negligence. The comprehension of wind code and calculation of design wind loads are difficult and time-consuming for designers that have weak wind engineering concept. Therefore, Taiwan's new wind code and the logic flow of calculation were coded in rules, and a rule-based web-enabled expert system was developed. Users only need to input the basic building data to get design wind pressure and wind load as well as the parameters and coefficients used during calculation. The application areas of the system covers the evaluations of design wind loads for structural systems and design wind pressures for claddings. The subjects of building design wind load analysis include high-rise, low-rise buildings, roofs, parapets and open structures. The cladding wind pressure analysis takes account of exterior walls and roofs.

Keywords: Wind Code, Expert System, Design Wind Load, Wind Pressure, Internet