

Optimization of Energy Consumption with Various Design Parameters on Office Buildings in Chinese Severe Cold Zone

Authors : Yuang Guo, Dewancker Bart

Abstract : The primary energy consumption of buildings throughout China was approximately 814 million tons of coal equivalents in 2014, which accounts for 19.12% of China's total primary energy consumption. Also, the energy consumption of public buildings takes a bigger share than urban residential buildings and rural residential buildings among the total energy consumption. To improve the level of energy demand, various design parameters were chosen. Meanwhile, a series of simulations by Energy Plus (EP-Launch) is performed using a base case model established in Open Studio. Through the results, 16%-23% of total energy demand reductions can be found in the severe cold zone of China, and it can also provide a reference for the architectural design of other similar climate zones.

Keywords : energy consumption, design parameters, indoor thermal comfort, simulation study, severe cold climate zone

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