

Impacts of Building Design Factors on Auckland School Energy Consumptions

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Abstract : This study focuses on the impact of school building design factors on winter extra energy consumption which mainly includes space heating, water heating and other appliances related to winter indoor thermal conditions. A number of Auckland schools were randomly selected for the study which introduces a method of using real monthly energy consumption data for a year to calculate winter extra energy data of school buildings. The study seeks to identify the relationships between winter extra energy data related to school building design data related to the main architectural features, building envelope and elements of the sample schools. The relationships can be used to estimate the approximate saving in winter extra energy consumption which would result from a changed design datum for future school development, and identify any major energy-efficient design problems. The relationships are also valuable for developing passive design guides for school energy efficiency.

Keywords : building energy efficiency, building thermal design, building thermal performance, school building design

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