

# Convenience retailing: Energy conscious -consumer oriented approaches

The average of convenient store's Energy Use Intensity (EUI) is 1501 (kWh/m<sup>2</sup>/ year) (Cho& Hung, 2013) which is 3 times higher than department stores, 7 times higher than central air conditioning office buildings and 38 times higher than housing in Taiwan. The building's envelope is predicted to be responsible for up to 22% of the building's cooling loads. The energy consumption and thermal environment of convenience stores vary widely and are dependent on different factors. Some of the important factors include the size of the convenience store, its geographic location, the outdoor climatic conditions, the available environmental control systems, and the sale practices in the particular store. The study sought to investigate the energy consumption and thermal environment of convenience stores.

This study utilised a sample of consisting of 251 convenience stores in Taiwan the largest leading retailer to obtain data on the physical and construction elements and siting of convenience stores. Building performance simulations were used to model a number of building fabric interventions to decrease cooling demand. Further, this study also monitored two convenience stores in Southern and Northern Taiwan to calibrate the simulation model. This study used Google Earth street view to understand prevailing urban street settings, determining the road classification, adjacent and surrounding building's height. The dynamic software (IES-VE) was using simulated different envelope improvement techniques to understand the cooling load and indoor thermal performance.

The study found that the building type features such as window orientation, the number of overhangs, and wall-to-window ratio are primary factors behind the energy consumption of a convenience store and the reasons behind the energy consumption of convenience store equipment are compressor type, equipment type, the lifeline of the equipment, and the staff using behaviour or equipment management. Moreover, the study indicates that store structures with more envelopes reduce indoor temperature which increases the satisfaction levels of the consumers.