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KEY WORD: ICE STORAGE

WATTANA SRIVAJANA : A FEASIBILITY STUDY ON USING THE ICE STORAGE SYSTEM FOR COMMERCIAL BUILDINGS. THESIS ADVISOR :

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The feasibility of using the Ice Storage System in commercial buildings in Thailand has been studied. The results show that the full storage for an on peak period only is the best design strategy. Other types of design strategy are not suitable for Thailand if the rate structure (TOD rate) does not change. The calculated pay-back periods for the model office building are between 4.4 to 6.5 years depending on the type of the system used. The calculated pay-back period depends greatly on the incremental initial cost of the system. From the study, the incremental operating cost is about the same for all 4 types of system studied; therefore the calculated pay-back period will not be affected very much by the type of the system used.

The incremental operating costs various systems were obtained using BLAST runs with and without ice storage. The actual hourly weather data for Bangkok in 1991 is used in the simulation, and the energy audit for a model office building has been done to calibrate the computer model before the ice storage runs.

The results obtained for the model office building were extended to investigate the feasibility on using the Ice Storage System in department stores, hospitals and hotels. The results show that these three types of buildings always have a longer pay-back period because the ratio of the area under cooling load curve to the peak kW for these building is always higher than the same ratio for an office building.

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