

**CITY UNIVERSITY OF HONG KONG**

**香港城市大學**

**Developing and Implementing an  
Energy Conservation Model for the  
Facilities Management Industry  
in Hong Kong**

**開發及實施適合於設施管理行業的  
節約能源模式**

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## ABSTRACT

Producing the energy consumed by buildings is the largest contributor to greenhouse gas (GHG) emissions in Hong Kong. As more and more investment is made into developing “green buildings,” the facilities management industry will become the key driver in lowering GHG emission and ensuring that facilities are both well-maintained and sustainable. Therefore, it is increasingly important that facilities managers acquire the proper skill set and technical knowledge to manage, operate and maintain sustainable modern buildings. That would be a complex challenge by its own right, but it is all the more difficult because the current energy conservation model used in Hong Kong is based on the Building Energy Codes (BECs). Unfortunately, as the early part of this research reveals, the BECs focus only on hard-side energy management. It is therefore not easy for local facilities managers to adapt and adopt them, but institutional facilities management operations need to adhere to them nonetheless.

This EngD thesis is dedicated to the development of a modified energy conservation model that fits Hong Kong’s typically less-than-perfect contemporary facilities management services, yet also meets the building owners’ requirements. Current challenges and problems concerning energy conservation in the local facilities management industry are identified and analyzed herein by means of literature review, exploratory case study, and in-depth interviews with facilities management experts. The findings form the basis for the development and implementation of a modified energy conservation model for Hong Kong’s facilities management industry. The process began with a comparative review of the current building energy codes applied in Hong Kong and other developed countries. The review identifies factors critical to the successful implementation of an energy conservation programme for the facilities management industry. Alongside the literature review, an

exploratory case study and a series of in-depth interviews were conducted. These three sources of information help to pinpoint the gap in the existing energy conservation practice in the facilities management industry and form the foundation of the development of a modified energy conservation model.

The modified energy conservation model was implemented on a trial basis in the candidate's workplace. Together with the proposed model, the measurement metrics that complement the model implementation have also been put forward. The results of this case implementation verify the validity of the modified energy conservation model. Furthermore, it shows that the metrics used within can be standardized as a universal measurement tool in support of the modified model implementation. The application of the modified energy conservation model and standardization of metrics would also help to educate and inspire the public about green awareness and environmental sustainability of Hong Kong.