

## LIFE CYCLE COST ANALYSIS IN DESIGNING A SUSTAINABLE COMMERCIAL KITCHEN

Kurniadi Setiono,  
Faculty of Engineering, Kasetsart University, Thailand

Sasivimol Meeampol,  
Faculty of Business Administration, Kasetsart University, Thailand  
fbusbsas@ku.ac.th

Pornthep Anussornnitisarn,  
Faculty of Engineering, Kasetsart University, Thailand  
fengpta@ku.ac.th

### **Abstract:**

The purpose to use life cycle cost analysis (LCCA) in designing a commercial kitchen is to estimate the overall costs of commercial kitchen equipments, to select type of equipments, and to select the design that ensures the facility will provide the lowest overall cost of ownership consistent with its quality and function. The LCCA should be performed early in the design process while there is still a chance to refine the design to ensure a reduction in life-cycle costs (LCC). The first and most challenging task of an LCCA or any economic evaluation method is to determine the economic effects of alternative designs of an equipment or equipment system and to quantify these effects and express them in Thai Baht amounts. As the tables below illustrate of equipment's life in 5 years for both economic and quality equipments. The present value of maintenance, operations, and utility costs are greater as the initial project costs. There is always an issue during the selection of type, number, and quality of commercial kitchen equipments between owners and operators since they always have different concerns. The owners want to have the initial investment cost as low as possible and the tendency is that they buy the number, type, and quality of commercial kitchen equipments at the lowest purchase cost. On the other hand, the operator wants to have flexibility during the operation but it still maintains high quality of service so they request to have a full set of quality equipments to make the job done quickly and professionally. Cost effectiveness is a very important aspect in designing a commercial kitchen during the selection and arrangement of the equipments in the kitchen and how they are related to other mechanical, electrical and plumbing (MEP) supporting facilities. To improve the cost-effectiveness of commercial kitchens, it is necessary to invest in designs and systems with improved long-term performance. As a result, LCCA need to consider not only the initial costs of an equipment but also long-term costs, including utilities, operations, and maintenance as a whole package in a certain period of time.

*Keywords: life cycle cost analysis, cost-effectiveness, long-term costs, equipment*