

Assignment (2003-2004)

Instructions: Your assignment report should not be more than twenty (20) A4 pages. You may use charts, diagrams, tables, graphics, etc. to help explain your ideas. You are encouraged to use your own words for the writing. Any information taken from other sources must be fully referenced. The assignment might be submitted via e-mail and an acknowledgement by a reply e-mail will be sent to the student for confirmation.

1. Briefly explain how the following factors affect energy efficiency in buildings and suggest strategies to ensure good energy performance in building design.
 - i) Climate
 - ii) Building envelope
 - iii) Building services systems
 - iv) Human factors

(4 marks)

2. Building energy standards and codes is an important policy measure for promoting energy efficiency and assessing energy performance of buildings. Briefly describe the following documents and comment on their significance in the respective society.
 - i) EU Directive on Energy Performance of Buildings
 - ii) The building energy codes in Hong Kong

(3 marks)

3. What is energy performance contracting (EPC)? Briefly discuss the benefits of it and the barriers affecting its development in Hong Kong.

(3 marks)

4. Briefly describe the major elements of building energy simulation and the typical procedure for carrying out the simulation analysis.

(2 marks)

5. What are the common methods for building economic and financial analysis? Briefly explain the principle of life cycle costing (LCC) and its application to building energy analysis and study.

(2 marks)

6. Energy Audit for Your Home

Carry out an energy audit to study the energy consumption at your home and evaluate the major factors affecting the energy performance. A typical process looks like this:

- Collect information about the energy use and survey the energy systems and equipment
- Examine the utility bills (including electricity, town gas and other fuels) to assess the consumption levels and patterns (preferably over one year)
- Estimate the energy use indicators such as average energy use per person and per floor area
- Assess the important factors affecting the energy consumption
- Identify potential areas for applying energy saving measures
- Prepare a summary report for the energy audit

The following websites contain useful information and may be used during your study:

- <http://www.hec.com.hk/hec/customer/using.asp>
- <http://www.chinalightandpower.com.hk/clpgroup/home/efficientTips/?lang=en>
- http://www.emsd.gov.hk/emsd/eng_source/pee/em_pub_codes.htm

(6 marks)