香港高等教育科技學院
Technological and Higher Education Institute of Hong Kong

Bachelor of Engineering (Honours) in Building Services Engineering

BSE Applied Research Project (2018-2019)

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Project Title: Energy Audit and Retro-Commissioning for Existing Buildings in Hong Kong

Summary:

Building energy efficiency has emerged as one of the major concerns by building owners in Hong Kong, especially when the electricity charges in Hong Kong are claimed to be unreasonably high.

Energy audit and retro-commissioning are two effective measures for improving building energy efficiency. In this project, Central Plaza was chosen as the target building for carrying out energy audit and retro-commissioning. Practical experience on building energy system operation and building energy efficiency was gained.

This project began by summarizing how energy audit and retro-commissioning should be done by going through literature review. Then through the real practice of energy audit, three main energy conservation opportunities were clearly defined. From the information gained from energy audit, retro-commissioning for the building was finished by proposing some methods for rectifying the deficiencies on the operation and maintenance of the building.

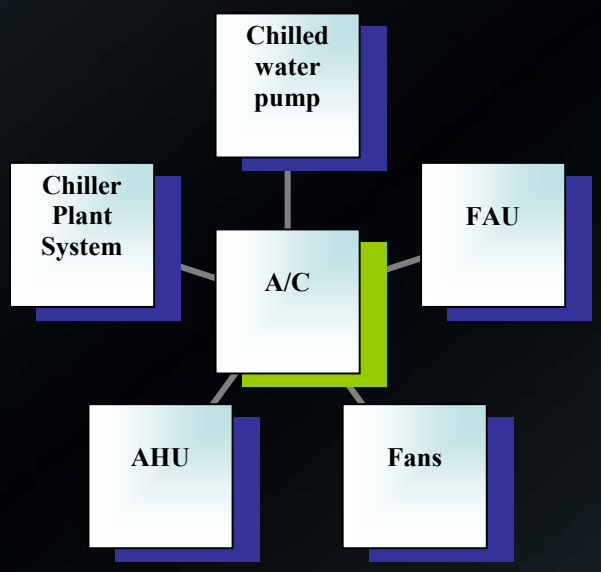

Figure 1. Components of air-conditioning energy consumptions

Figure 2. Instruments for energy audit

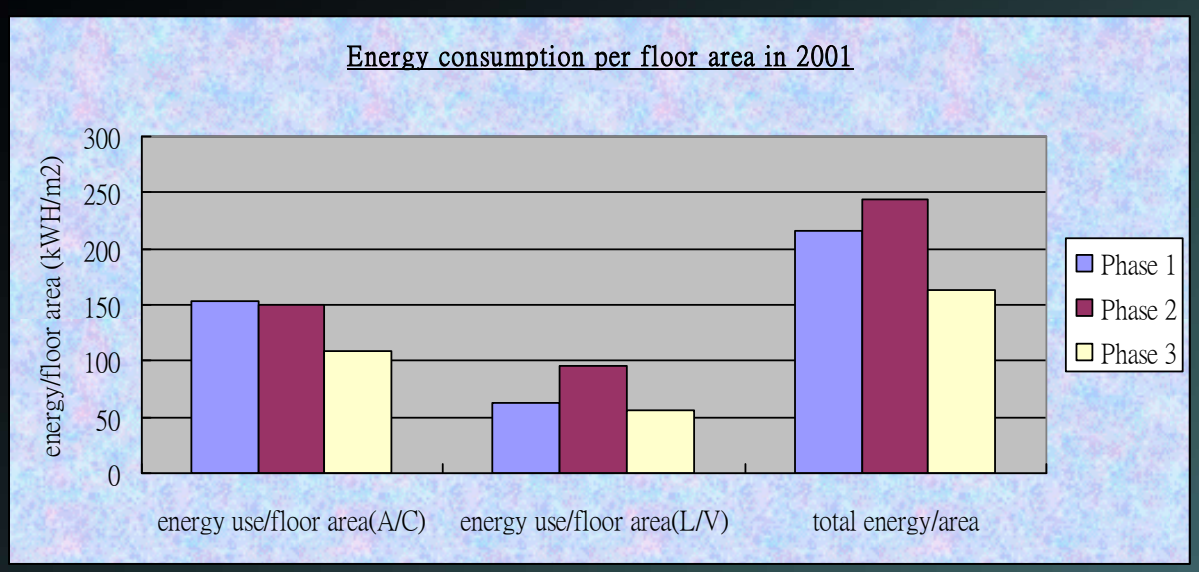

Figure 3. Energy consumption per floor area in 2001

Table 1. Summary of energy consumption indicators

	Energy indicator ($kWh/m^2/annum$)	Energy indicator ($MJ/m^2/annum$)	Percentile (approximation)
Phase 1	216.68	773.55	60^{th}
Phase 2	244.19	871.76	70^{th}
Phase 3	163.72	584.48	35^{th}
Whole Building	202.9	724.36	55^{th}