

Thesis Title	Electrical Management in Secondary Schools in Bangkok
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Candidate	Mr. Aneg Testong
Supervisors	Assoc. Prof. Dr Chullapong Chullabodhi Asst. Prof. Warunee Tia
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Abstract

The aim of this research is to study electricity consumption and energy conservation measures for secondary schools in Bangkok. The study focuses on 21 schools, which are divided into two groups, the large schools and the extra large schools. They are used to represent all secondary schools in the intimation of energy indices and conservation measures in school buildings.

From the study, it was found that the schools of both sizes have concrete structures and brick walls faced with mortar. The divided rooms were all of the same size in the large schools. The average area of all building was about 8,499 m² per school. Out of this, the working area was about 82% and air conditioned area, as compared to the working area, about 8%. The total installed capacity in building was 116.37 kW per school. with 49% being lighting system. The power of installed electricity per unit of building area was 7.51 W/m² and 31.12 W/ student. 33% of the installed capacity was air conditioned system which had installed power of 795 BTU/m²/ unit of air conditioned area. For other systems, 18% of the total connected load had installed power of 1.46 W/m²/ unit of working area and 5.8 W/ student. The total use of electricity was 54 kWh/head/year and 13 kWh/m²/year. For the extra large schools, the average area of all buildings was about 10,735 m² per school. The working area constituted about 88% and air conditioned areas, as compared to the working area, about 8% The total power of installed electricity in buildings is 169.63 kW. with 54% of proportion between light system, The power of installed electricity per unit of building area was 8.69 W/m². 26% being air conditioned system which had installed power of 824.1 BTU/m²/ unit of air conditioned area. For other systems, 20% of the total connection load installed power of

For other systems, 20% of the total connection load installed power of 1.92 W/m^2 / unit of working area and 6.38 W/ student . The total use of electricity was $75.7 \text{ kWh/head/year}$ and $24.3 \text{ kWh/m}^2/\text{year}$.

In the study 3 conservation measures are proposed, namely :

1. reduce installed capacity of some electrical equipment such as electric bulbs, refrigerators, television sets etc. and increase efficiency of electric light by using high efficient electric lamps, which can reduce electricity power of 10 ,9 ,13 and 33 percent/unit.

2. reduce the operating time of some equipment. Some controlling accessories can be used for the measure, for example: use timer switch or ON - OFF switch to control electric lights in toilets, use photo switch to control electric lights on passageways, use timer switch or thermostat to control air conditioned systems and unplug the refrigerators during weekends and holidays, etc.

3. adopt some operating practice in certain equipment, such as computer, photocopiers, electric kettle and electric drill.

If the schools in the two groups adopt the three measures, the total electricity expense of secondary schools average into 21 case study will be reduced by $37,375 \text{ kWh/year}$, which result in $61,668.75 \text{ baht}$ saving or 23% compared to the use of electricity in 1996.

Keywords : Electrical energy management / Electrical energy conservation in secondary schools in Bangkok. / Electricity consumption in secondary schools. / Electricity indices.