



**Technical Visit to the Energy Commission Diamond Building**

by Dr Siow Chun Lim, Grad. IEM

Dr Siow Chun Lim, Grad. IEM is currently the Associate Editor of Journal of Engineering Science and Technology and is also an active reviewer for several conferences and journals.

A technical visit to the Energy Commission Diamond Building took place on 23 February 2016 with a group photo taken (Figure 1). Participants were exposed to various energy-saving innovations embedded in the building via a brief video presentation (Figure 2).

In line with the concept of sustainable building, the building was designed to accomplish two goals: to enhance energy efficiency; and to improve water efficiency.



Figure 1: Participants of the technical visit



Figure 2: Presentation at the beginning of the visit



Figure 3: Briefing session of the participants

Energy efficiency enhancement was achieved through the following means:

1. optimization of the utilization of natural lighting from the Sun
2. roof and floor slab cooling using flexible 22mm PERT chilled water pipes (embedded in the RC slabs) which in doing so, reduces the dependence on conventional air-conditioning systems
3. high efficiency lighting systems using CFL, T5 with electronic ballast and LED lights
4. building integrated photovoltaics of 71.4kW (peak) rating
5. passive solar shading via the tilted façade of the building
6. incorporation of Advanced Demand Control System which optimizes the air conditioning and lighting usage using motion sensors as triggering devices.
7. comprehensive energy management system for daily monitory of energy usage with the display board (Figure 4)



Figure 4: Display screen of the energy management system

On the other hand, water efficiency was achieved via water wastage reduction initiatives such as:

1. rainwater harvesting system with the harvested water being used for toilet flushing
2. recycling of grey water collected from the wash basins to irrigate the gardens

At the end of the trip, a token of appreciation from IEM was presented to the trainer of the day as shown in Figure 5.



Figure 5: A token of appreciation from IEM