

Gearing towards energising initiatives

THE Energy Commission is going through an exciting time right now with recent developments in the energy sector. The first change currently taking place in the industry is the focus towards sustainable energy.

The Commission has been involved in promoting numerous development projects in this relatively new field in Malaysia. Some of the innovations, which saw a helping hand from the Energy Commission, include photovoltaic systems (solar panels) in homes, commercial units and buildings.

"We are involved in the Malaysian Building Integrated Photovoltaic (MBIPV) project. We have funded RM16.15 million between 2006 and this year. A large portion of the RM16.15 million went into subsidising the installation of photovoltaic systems in buildings through Suria 1000 programme," says Energy Commission's CEO, Ir Ahmad Fauzi Hasan.

"Owners of homes have to bid for this subsidy and if successful, they only need to pay a smaller percentage, about 25 to 60 per cent, of the total cost of integrating the photovoltaic system," he adds.

Besides residences, private and public buildings have also benefited from the MBIPV programme.

One of the buildings that has successfully integrated sustainable energy into its design is the Energy Commission's new headquarters, the Diamond Building.

Built with sustainability in mind, it is one of the most unique and energy-efficient buildings in Malaysia. The Commission receives many groups visiting the building to learn about the sustainable

Vision

The Energy Commission strives to be a highly recognised and effective energy regulator as well as the authority on energy matters.

Mission

The Energy Commission aims to balance the needs of consumers and providers of energy to ensure safe and reliable supply at reasonable prices; protect public interest; foster economic development and competitive markets in an environmentally sound manner.

features of the building.

Places that have benefited from the MBIPV are Monash University Sunway campus and Sekolah Menengah (P) Sri Aman, Petaling Jaya.

The programme has so far generated 1,000kW of solar power, thanks to the integration of the solar panel into the building design. The solar panels are installed on the rooftop, as well as part of the building façade and other suitable places in the building so that it becomes a part of the building structure.

On a larger scale, the government is also finalising a Feed-In Tariff (FIT), which will encourage the private sector to embrace renewable energy. Under the FIT, utility companies such as Tenaga Nasional Berhad (TNB) will buy back electricity generated from renewable sources such as solar, mini-hydro or biomass at a premium tariff.

Meanwhile, the government's focus on sustainable energy is a boost for the Energy Commission's effort to promote

energy efficiency to the general public.

Energy Efficiency

"Over the years, we have received assistance from various international bodies such as DANIDA from Denmark and Energy Conservation Centre of Japan (ECCJ) for capacity building in energy efficiency. The assistance enables the Energy Commission to build knowledge and expertise of our people and the industry players to spearhead the energy efficiency programme," says Ir. Ahmad Fauzi.

"The government has enacted the Efficient Management of Electrical Energy Regulations 2008. These new regulations apply to any installations using electricity at or more than three millions kilowatt-hour in total for any six consecutive months. Owners of such installations are required to appoint electrical energy managers and to submit reports on the energy performance," he says.

Ir Ahmad Fauzi adds that under these regulations, the Commission regulates electrical energy managers.

"Those who wish to become energy managers have to prove to us through submission of documents and interviews that they have the necessary knowledge and experience before they can be registered as electrical energy managers."

Currently there are about 120 registered electrical energy managers in the country. Since the regulations were implemented in January last year, the Energy Commission has been embarking on awareness programmes to disseminate information on electrical energy management requirements as stipulated under the regulations.

Apart from the new regulations, the Commission has also introduced rating and labelling systems for electrical appliances commonly used in residential and commercial premises.

The labelling system works with the awarding of a 1 to 5 star-rating for each appliance. The more efficient appliances have a higher star-rating on the label. This tells the consumer which product is the most energy efficient. Consumers can check the list of energy efficient appliances at the Commission's website, www.st.gov.my

"So far, appliances that have



Photovoltaic solar panels on rooftop.

been labelled are refrigerators, air-conditioners, TVs and fans," says Ir Ahmad Fauzi.

"At the moment the implementation of this rating and labelling system is voluntary. However, even though it is voluntary, there is a motivation for manufacturers and importers to obtain the star-rating for its products as it would enable them to receive incentives from the government."

The Energy Commission advises the government on the technical aspects of products and projects for energy efficiency and sustainability. If the products or projects meet the criteria for energy efficiency or sustainability, approved companies will qualify for energy efficiency incentives such as sales tax and import duty exemptions, investment tax allowances and pioneer status. These incentives need to be applied for from the Malaysian Investment Development Authority (MIDA).

Besides that, the Energy Commission has also established energy performance standards for motors for commercial and industrial sectors, and promotes the use of High Efficiency Motors. This programme was started in 2005.

When quizzed over the public's reception towards this, Ir. Ahmad Fauzi admits that it all boils down to ringgit and sen.

"At the moment, the motivation to save electricity is not that high. Maybe it is because we don't feel the financial burden of using less efficient products to the extent that we want to go for energy-efficient products. The other factor is the high upfront cost, or initial investment, so people are not willing to invest. Besides that, the number of energy efficient appliances that are available in the market is still quite limited."

However, people's perception of energy saving and efficiency is changing through the efforts of the government, the Energy Commission and industry players.

"We have been doing our part since the establishment of the Energy Commission in 2001,"



Energy efficient light bulb.



Tannenbaum reflector panel on levels 4 and 5

adds Ir. Ahmad Fauzi.

"The energy price crisis in 2008 has increased public awareness of the need to be more efficient in the energy usage. The government has also taken steps to gradually reduce the energy subsidy, and is targeting the subsidy at deserving people like the poor and the disadvantaged."

The next few years will be more challenging for the government in its sustainable energy development efforts, and the Energy Commission will be there to support it.

Anyone who is interested to know more about the work of the Energy Commission, and get updates on the latest laws and regulations concerning electricity and piped gas, is invited to visit the Energy Commission's booth at the IGEM, which begins tomorrow.



Roof light trough.

A gem in the city

THE Energy Commission's efforts in energy efficiency and renewable energy is reflected in its new headquarters in Putrajaya. The diamond-shaped building is integrated with energy efficient and sustainable features.

In spite of just starting operating in June this year, it has earned acclaim for its innovative approach towards sustainability. This building was recently certified Green Mark Platinum label from the Building and Construction Authority (BCA), Singapore.

The Diamond

The idea for the building was mooted by the Energy Commission when it was conceptualising a new iconic office building to be set as a benchmark in building efficiency.

The diamond was selected for its philosophical and practical values. Principally, explains project manager Ir Mohd Fadzil Bin Abdul Rashid, the diamond was selected because a diamond is valuable, and also long lasting, symbolising the aim for the building.

Design-wise, the unique shape is a passive design approach to achieve energy efficiency.

More importantly, there are practical reasons behind the tilting facade. As the facade largely consists of low-emittance glass, this provides for maximum sunlight without direct exposure, reducing radiant heat infiltration.

The slanting facade also results in a smaller building footprint which allows for more area for landscaping. This in turn will reduce heat gain into the building.

The actual creation of the Diamond Building was much more complicated than it



seemed. Extensive computer simulations were needed to calculate the degree of sunlight to ensure adequate and well-distributed sunlight without retaining excessive heat.

The top of the 'diamond' – the dome – is designed to allow in natural daylight, which penetrates through the hollow centre so that it reaches all seven floors.

With light penetrating through from the exteriors as well as the centre, the building makes full use of natural lighting, thus saving on electricity.

Installation of integrated photovoltaic solar panels on the rooftop of the building contributes

to the use of alternative sources to generate electricity. The electricity generated by the solar panels is transmitted to the grid. The usage of sunlight and solar generated electricity contributes to substantial cost-saving.

The building was designed with the consumption of Building Energy Index (BEI) of 85kWh/m²/y compared to normal conventional office building with BEI of 294kWh/m²/y.

Putting recycled materials to use

For the interior, sustainable building materials such as recycled steel bars, recycled-contained materials for floor carpets, recycled wall plasterboards, and low volatile organic compound paints were used in keeping with the concept.

Besides the natural lighting, a visitor who enters the building will also notice the distinctive

fresh air circulating the building – a far cry from the stuffy air-conditioning of normal office blocks. This is made possible through the circulation of chilled water inside pipes through floor slab cooling, as integrated into the air conditioning.

Additionally, carbon dioxide sensors provide information on the flow of fresh air, to ensure it is circulated to all occupants in the building.

For water efficiency, rainwater harvested within the building, is channelled for toilet flushing and landscape irrigation. Grey water collection from washbasins by filter is supplied to the landscaped mini wetlands' irrigation systems.

The building is equipped with energy efficient appliances and lightings.

Since this building is designed as a green office building, it is relatively more worthwhile as the cost is only 6 per cent more

than similar conventional building without green features.

Philosophies behind the 'diamond-shaped' building:

- Diamond as a precious substance that is very much sought after – this translates to a building that is equally valuable, as a design icon for the city.
- A substance that is eternal – the sustainability of the architecture makes it long lasting. It is a permanent solution for the hot and humid climate of Malaysia.
- Diamond symbolises transparency – the Commission hopes to emulate the values in its service to the people.
- The unique shape attracts and reflects light – similarly the diamond-shaped building absorb indirect light from many angles, making the interior bright from natural sunlight.

Features at a glance:

- Optimal building shape for sunlight absorption
- Innovation of the atrium and dome, which maximises natural sunlight penetration into the interior office space.
- Radiant Slab cooling using chilled water, which is the best medium of cooling transport to cool the insides of office spaces.
- Installation of building integrated photovoltaic solar panels on the rooftop of the building by generating electricity connected to the grid.
- Use of energy efficient systems such as artificial lighting systems, high efficient electrical and mechanical equipment and energy management control systems.
- Water conservation by rainwater harvesting and grey water recycling for toilet flushing and landscape irrigations.

Meanwhile, the staff are happy with the new office, particularly the energy and sustainability features in the building. "Prior to the move, the Commission prepared its staff with a series of awareness programmes and embarked on seminars and training for the staff to adapt and adopt a new green office working environment," explains Ir Fadzil.

The building has had an overwhelming response from the public, receiving visits from groups of visitors particularly for technical reasons. The visitors come from Malaysia as well as from overseas. Most of the visitors are interested in identifying and learning the new green technologies incorporated in the building.

With the success of the Diamond Building, many more sustainable building are planned or currently undergoing construction to help reduce energy wastage and dependence on renewable energy in the future.



The introduction of voluntary energy efficient rating and labels

The labeling programme was introduced to promote the use of energy efficient electrical appliances covering domestic refrigerators and fans, televisions and wall mounted split unit air conditioners. The rating is shown in the number of STAR from 1-STAR for the least energy efficient to 5-STAR for the most energy efficient products.

