

Creating an Energy Efficient Future

With the recent increase in fuel prices, energy efficiency has once again become a hot topic. The use of all forms of energy permeates every aspect of our daily lives from improving our living conditions to the running of our industries for economic development.

The efficient and productive use of energy from non-renewable sources has become an important consideration in ensuring the sustainability of our energy system. Our reliance on energy generated from non-renewable sources is evident. About 92% of the electricity generated in Malaysia is currently from non-renewable sources.

We are still heavily reliant on depleting resources such as petroleum, natural gas and coal, the use of which leads to environmental pollution and global warming. And the list goes on. Time and again we have been reminded of the urgent need to adopt energy efficiency initiatives. The adoption of such initiatives would help reduce the need to use up natural resources, and preserve the environment for future generations.

However, the effort seems to be slow in coming. Although the use of energy efficient appliances and equipment have been encouraging, the overall drive as a nation is somewhat lacking. JURUTERA talks to Engr. Dr Philip Tan and Engr. G. Lalchand, two engineers who are passionate about energy conservation and the adoption of energy efficiency initiatives.

What is the adoption rate of energy efficiency initiatives in Malaysia?

Tan: When we talk about the efficiency level of power generation, it is important for us to be aware that there are different types of power generation, namely, gas turbine, conventional power plant, etc, and each type has its own level of efficiency.



Engr. G. Lalchand

The level of efficiency for each type of energy will change with the developments in each industry.

Presently, the adoption rate of energy efficiency initiatives in Malaysia is low because electricity, which makes up the bulk of energy use, is heavily subsidised. This creates a situation where there is no incentive for people to adopt such initiatives. When we opt for the latter, we have to first consider the cost of investment versus the operational expenditure. If energy, in the form of electricity, is cheap, the investment cost is still the same whether the energy cost is high or low.

Do we have the infrastructure to support energy efficiency initiatives on a bigger scale?

Lalchand: Malaysia has had energy efficiency policies since the Seventh Malaysia Plan. However, the amount of money allocated to implement such policies has been very small. Resources in terms of personnel are also limited. The Energy Commission in Malaysia has a



Engr. Dr Philip Tan

team of five, whereas in Thailand, there are 600 people involved, out of which 300 are focusing solely on energy efficiency. There is also no coordination of effort in Malaysia as different universities are asking for the same funds to do the same thing.

Tan: The short answer is yes, we do have the personnel and infrastructure to adopt such initiatives on a bigger scale. However, the main issue here is about getting the right people to lead the way. Of course, the other problem that we face is the engineers that are trained in this field do not stay long enough to see to the implementation of these initiatives. But what we are seriously lacking now is a proper implementation process that is well thought out and put in place.

Energy efficiency is an issue that has been brought up since 15 years ago. Since then, the authorities have implemented various policies on energy without due consideration of what should be implemented, when to meet such targets and who is the right people to implement such policies.

Why is the adoption of energy efficiency initiatives on a large scale important?

Tan: In the years to come, not only will the cost of energy continue to escalate, the availability of energy from non-renewable sources, of which we are very reliant on, may soon cease to exist. Even though Malaysia has its own natural energy resources, it will soon be depleted. If we adopt energy efficiency initiatives on a large scale, we can reserve and extend its use for future generations.

What can the government do to promote the adoption of such initiatives?

Lalchand: Last year, Singapore allocated about \$850 million to promote the use of clean energy. For them, clean energy is basically the utilisation of photovoltaic technology as they do not have natural resources like palm oil, bio-waste and so on. Just last week, I read that they have allocated \$130 million for research into solar photovoltaic technology over the course of two years.

In Malaysia, there is a five-year photovoltaic technology project which costs about RM80 million, out of which RM20 million is sponsored by the United Nations Development Programme (UNDP). The question is, how does the government decide where should the money go? This is a clear case where advice to the government is not reaching the right ears for decisions to be made.

Tan: The government has been promoting energy efficiency for a very long time. However, I do not believe that these efforts are adequate. The government should actually think through the implementation process thoroughly. Merely promoting its use is not enough as the effect is not there.

To create public awareness on the urgent need for energy efficiency, the government must introduce either an incentive or a regulation towards its adoption. The incentive would attract the people to consider the savings they can get. On the other hand, a regulation would require people to adopt energy efficiency initiatives to avoid being penalised.

How does our efforts compare with other countries?

Lalchand: I have been involved in energy efficiency since 1973 when the first oil shocks occurred. With the increase in fuel price, there is now more incentive for the users to adopt energy efficiency initiatives.

However, to answer that question, let us look at what other countries are doing. Japan and Korea have invested very heavily in photovoltaic technology because they do not have indigenous energy and they do not want to depend on imported energy which will be costly. Today, Japan is one of the most efficient countries in the world in terms of energy use. However, despite this achievement, they are still imposing a mandatory requirement for industries to cut down 1% of total energy consumption every year.

Thailand has also achieved a lot in terms of energy efficiency compared to Malaysia. The main reason for Thailand's achievements is because they have the funds to support the adoption of energy efficiency initiatives. In Malaysia, there is no fund to support such activities.

One of the proposals to the government is to create a fund to support these activities. For example, Thailand has given out cash grants to buy energy efficient refrigerators, air conditioners as well as high efficiency motors. Malaysia can do something similar to this.

Tan: One of the ways to push for a more widespread acceptance of energy efficiency initiatives is by implementing a regulation for industries to improve energy consumption yearly just like in Japan, failing of which there will be a penalty.

We are certainly not taking advantage of our renewable sources of energy. Take, for example, the low utilisation of solar power in the country, which is available all year round. Instead, the country who is leading the use of solar power is Germany, followed closely by Spain. Right now, there is very little commercial interest in solar power in Malaysia as most research for the technology is taken up by academicians in laboratories.

We should start concentrating our resources onto photovoltaic technology. However, the effort must first come from

the government. Research into renewable sources of energy requires deep pockets, and the industry does not have that kind of resources.

Is the industry willing to embrace energy efficiency?

Tan: The Federation of Malaysian Manufacturers (FMM) is always trying to be energy efficient. It is part of their competitive edge as most of their products are exported. The question is, what is the incentive for them to do so? As business operators, they need to consider the cost of investment versus the savings they can get. They need to balance the two needs.

This becomes a problem when there is a big change in government policy. For example, many people are now rushing to install Natural Gas for Vehicle (NGV) tanks in their vehicles as the price for natural gas is cheap at RM0.635 per litre. However, the government may change their policy overnight and the price may increase to a point where it is no longer economical to use natural gas.

In the past, coal generators had suffered such a fate due to a change in government policy. Prior to 1997, the difference between the gas price for the power sector and the industry was only about 3%. However, when the price was fixed at RM6.40 per mmBtu for power generators in 1997, the price of gas for the industry was doubled. The difference in price jumped from 3% to about 100%. What was formerly economically viable for coal generators suddenly became no longer viable all due to a change in government policy.

With the price increase of gas effective 1 July, the power sector is paying about RM14.31 per mmBtu, while industry users who consume above 2mmscfd are paying RM32.56 per mmBtu, up from RM11.32 per mmBtu previously. This is a price jump of about 300%.

What was formerly economical has now made the investment no longer attractive. When the industry hears of news like this, they become more hesitant to invest in any form of energy. That is why it is important that the kind of policy that the government adopts must be for the long term and not be changed every three to five years. ■