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Ir. Prof. Dr. Ow Chee Sheng,  
IEM President for 2005/2006



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Tel: 03-7968 4001/4002 Fax: 03-7957 7678E-mail: sec@iem.org.my Homepage: <http://www.iem.org.my>**Technological Revolution –  
Do We Deserve To Be Left  
Behind?****By: Ir. Loh Lim Huat**

There have been a lot of initiatives by our country leaders in pushing the nation forward. Some of these initiatives are Multimedia Super Corridor, Cyberjaya, Kulim Hi-tech Industrial Park and so on. It is very clear that our country is really serious in acquiring technological know-how and to remain in the forefront of technological changes.

The mobile services and devices are definitely undergoing revolutionary change. Today, with the advancement of technology, one can get many mobile services such as banking, accessing news and information, downloading software and games, getting entertainment of new full-motion video and audio and other information from the Internet that make life very different than it used to be, much more convenient and easier.

Beside the services, there are many such mobile devices that can equally bring about these services. There are the smart cellular phone, palm PDA with wireless modem, pocket PC with wireless modem or a combination of these devices. Many manufacturers are bringing to life the true benefits for subscribers with the availability of smart phones for use on networks. One manufacturer is making advanced, high-quality mobile services available for both work and play. The smart phone is an example of a full featured device that allows users to customize their mobile experience with applications that fit their particular needs and take some of the best of the Web with them while on the go – all in a true high speed mobile environment.

With such devices and services, it can definitely satisfy business travelers with all sorts of information such as time zones, weather conditions and currency conversion; serious people with high productivity on the go by having word processing documents, presentations and spreadsheets; sports fanatics by updated scores, standings, news, streaming video highlights and live professional football and basketball games.

The Institution of Engineers, Malaysia (IEM) has to seriously think of its direction especially in a world of fast changing lifestyle with the availability of technological revolutions in the Information Technology (IT) and Electronic Engineering field. It ought not to be left behind but to put together a picture of the future world and with this, lead the engineering fraternity so that engineers can better prepare themselves for the changes that is about to happen. In doing so, engineers would also be in better position to tap new business opportunities that will be presenting themselves along with the change. There exists already many new ways of doing old things. As an example, a company became successful by offering hotel rooms to prospective guests at the eleventh hour with high discount on price through the Web. We should be asking ourselves. "Do we deserve to be left behind?" ■

## New IEM President – His Vision for the Institution

By: R.G. Candiah

The Institution of Engineers, Malaysia's (IEM) new President, Ir. Prof. Dr Ow Chee Sheng is no newcomer to the Institution. Over the years, having served in the different positions of Council member, Honorary Treasurer, Honorary Secretary, Vice President and subsequently Deputy President, this learned individual is geared to implementing some new and vibrant ideas into this organisation.

Humble in nature, Dr Ow, as he is fondly referred to, declined to reveal his many achievements and went straight to outlining his goals for IEM during his tenureship as the President.

According to Dr Ow, IEM's role has changed tremendously since its birth in the beginning after Malaysia's independence and there is a need to recognise the paradigm shifts which have since taken place and take steps to address these challenges in order to remain relevant.

Amongst these steps include several local and regional initiatives which IEM should undertake as well as existing initiatives that need to be further strengthened.

### Rating of Engineering Faculties

Dr Ow believes that engineering education is one of the major regional challenges facing the ASEAN Federation of Engineering Organisations (AFEO) and IEM and there is a need to rate engineering education establishments regionally and locally so that a degree of comfort is provided to the public as to which engineering faculty is best for a particular discipline for students to begin his or her pursuance of an engineering career.

"Historically, due to the practice of sending students to universities overseas, a level of comfort is achieved when such graduates returned to work within the country. This de-facto recognition grew out of respect for such qualifications due to the remarkable performance of overseas returning graduates," he said.

"Such is no longer true when commercialisation of education is in place as seen today. Whilst universities still provided the necessary education for



Ir. Prof. Dr Ow Chee Sheng, IEM President for Session of 2005/2006

those who qualified and needed it, the comfort level one has with these are no longer benchmark-able. Henceforth there is a dire need for rating to be conducted by professional bodies which are independent and not influenced by any party," he said.

"The spirit of this rating includes employing a standard set of criteria agreed by members. AFEO, for example, should set the benchmark for the region. The comfort we gain from such an exercise would be similar to the Washington Accord whose purpose is to provide mutual comfort in each participating signatory's accreditation methods and standards to be achieved for graduate engineers. This exercise is one which is continuous, requiring long term commitment on the part of all signatories," he said.

### Role of Regional Registers

The role played by IEM at regional and international forums is very important, according to Dr Ow. "The Standing Committee for Corporate Affairs was created to undertake this job and under this Standing Committee, the register for ASEAN Engineers, Asia Pacific Economic Cooperation (APEC) and

Engineers Mobility Forum (EMF) have been developed. The ASEAN Engineers Register (AER) being a trade register for professionals within ASEAN was set up by AFEO in which IEM is a founder member. The APEC and EMF registers are separate registers set up respectively by APEC economies, namely countries which reside around the Asia Pacific rim, and from the Washington Accord countries. The aim of these registers is to benchmark professionals within each region as having substantial equivalence."

Dr Ow said that these regional benchmarks should be maintained so that a regional level of comfort can be assured when clients utilise services of professionals in these registers.

"A system of maintenance and continuous recognition of competency should be instituted so that those who are no longer in active engineering practice should be gracefully phased out," he said.

### Position Statements

During the era of past president Dr Gue See Sew, many Position Paper Committees were set up to address current and future issues facing the profession.

There are presently more than 15 Position Paper Committees working within the IEM set up, the latest being on Design for Earthquake. The purpose of such documents is to express IEM's position on various issues which affect



Countless of Presidents have moulded the IEM into being the backbone of the Engineering Profession in Malaysia

the nation and the engineering profession. Members of the Position Paper Committees are drawn from IEM's membership as well as from those having the expertise outside IEM.

"As these are statements of support for certain technical issues, they also provide necessary data for writers of policy papers to quote when needed. This is an ongoing process in which reviews shall be carried out at regular intervals to update the document, albeit another long term commitment which IEM has undertaken. We have seen that some of these Position Statements have served its purpose by providing the much needed professional stand of engineers to those who needed it to make policy decisions," he said.

### Meeting the Realistic Challenges

Every non-profit society faces external and internal threats. For IEM in particular, the internal threat sometimes overwhelms the external threat via differing views amongst Council and Executive Committee members with secretariat staff caught in the middle.

"I would like to put forth the idea that key positions within the IEM structure should seek the person instead of the present method of the candidate seeking the post for whatever reasons," he said.

"What are the tools available for the membership to identify future leaders and yet at the same time train the younger members to become future leaders as well? We have a constitution which is sufficiently flexible for this to be implemented but then the will to do so must prevail. How do we enhance technical relevance and competency and look after the professional well-being of our members?" he asks.

### Initiatives Taken by IEM Council

According to Dr Ow, there are five pressing needs that need to be looked into, namely, to orientate new Council members, provide leadership training, identify new leaders and to promote fellowship and build teamwork amongst Council members.

"The last IEM Council had gone for a brainstorming retreat to address the above issues. The major issues discussed at the October '04 council brainstorming could be divided into four major areas although there are more issues facing the IEM council at present. Further similar activity shall target towards addressing the remaining issues in the near future," he added.

The objectives of the brainstorming were fourfold: addressing IEM's value to the general membership, IEM's leadership and the competition, IEM's nimbleness and responsiveness to current issues and IEM's issue of volunteerism, education, marketing and certification. The topics discussed included:

- Future role of IEM as a membership driven society
- Empowerment and delegation
- Council effectiveness and governance
- Products and services to meet membership/society needs

"On the future role of IEM as a membership-driven society, the questions addressed included how IEM fared in the past, its present performance and how it should fare in the near future. The reality is that our membership has stagnated (number of delinquents equals the number of new members) and that is an immediate challenge for the IEM Council to address," he said.

"To make the society more nimble and responsive to current issues, a certain degree of empowerment and delegation is needed," adding that it was always easier said than done.

"However, with such empowerment, there must also be in place a reliability centre scheme so as to ensure that such delegation of Council's authority does not lead to lengthy litigious issues," he said.

"The Council should also address the issue of Council effectiveness and governance by the Council. Is the Council and its Executive Committee into too much micro-managing whilst missing the 'Mega' issues facing IEM? Are we providing the right kind of products and services for the members so as to retain membership loyalty? Even the more successful societies of the West do face the question of ageing membership and the loyalty of its current crop of members," he said.

Dr Ow is of the opinion that volunteerism is very much alive amongst IEM's membership both new and old.

"We need to address the role of our Past Presidents more effectively and orientate new volunteers so that they know when and how to steer clear of issues of conflict of interest," he added.

"Arising from the brainstorming, an action plan has been drawn out. I hope



*On a lighter note, Dr Ow in a traditional costume with two of his daughters on the occasion of his eldest daughter's wedding*

we can fulfil 30% of the identified critical areas, within the year," he said.

### Speed of Change and Advocacy

Change is constant and if IEM is aware of the changes which surround it, it can advocate suitable responses to meet these challenges.

"A particularly important area which IEM can look at is the realm of advocacy. Engineers need to face the challenges of advocacy to achieve one's eventual objectives. Again being a learned society the issues in advocacy runs contrary to our very existence. This is another issue for the Council to address," he said.

### Benchmarks

Serving the needs of members first and society second, IEM is faced with major challenges ahead, some of which require the review of existing strategies and benchmarks.

"The benchmark of engineering education standards need to be looked at. Through our accreditation practices of the past and our present involvement with the Engineering Accreditation Council (EAC) hosted by the Board of Engineers, efforts toward maintenance of minimum engineering academic achievement have been made," he said.

Dr Ow said that with the world trend of moving towards an outcome based evaluation of engineering programmes, universities will have to closely monitor the performance index of their products even after the student graduates so as to see their competitiveness and relevance to the industry.

He added that in addition to serving as a partner in the Engineering Accreditation Council (EAC), IEM should also work closely with overseas learned societies to directly accredit

engineering programmes requested by local and regional universities so as to complement the EAC's effort.

Dr Ow however is of the opinion that the EAC would be redundant if it fails to get Malaysia into the Washington Accord as a full member within a specific timeline.

"IEM has with the BEM been conducting an annual examination for the working technical sub-professional to acquire the basic qualifications for becoming a professional engineer. In this respect, the Engineering Council of UK (EC) examinations for which we adopted as a ready benchmark have served its useful purpose. With the recent sub-contracting of EC examinations to City and Guilds, a profit body with some conflict of interest, it would be wise for IEM to develop its own local benchmark with the assistance of local Institutions of Higher Learning of acceptable standards," he said.

"On the professional inter-view for corporate membership of the institution, there is a need to define the benchmark which corporate members needed to meet and not leave it to be benchmarked against the experiences of the professional interviewer so appointed," he added.

### Targeting of Non-Corporate Members

Dr Ow said that the non-corporate members' category of the recently amended IEM Constitution needed to be addressed.

"We have a larger body of engineering-based workforce which IEM should embrace so that they too have a platform to voice their priorities. In the UK two models are available. The Chartered Technician and Incorporated Member category is spelt out within the Institution of Civil Engineers Charter (ICE) whereas a new Institution of Incorporated Engineers (IIE) is formed specifically to cater for members of non-civil disciplines," he said.

"The IEM has followed the ICE model in as far as the incorporated member category is concerned but much effort needs to be done to get this category of membership expanded in our register. Perhaps with the active participation of the Graduate and Student's Section we can see some movement of membership in this category," he concluded.

### Diversity

Due to the diverse membership categories which form IEM, there is a need to constantly safeguard against fragmentation.

"As such it had been a gentlemen's agreement to rotate the Presidency amongst the 3 major disciplines, a practice in place in the past and until the present. Recent trends have tended to lean more towards Civil Engineering due perhaps to the larger number of active civil engineers within IEM's membership. We need to safeguard that the Council and Excomm speaks and expounds the views of all engineers and not one discipline alone. Our strengths and weaknesses lie in our diversity," he said.

"If we do not duplicate efforts by the formation of more institutions each representing a different discipline, we somehow have to respect the aspirations of all members other than the majority," he added.

### Role of IEM and BEM

Although IEM assisted in the setting up of the Board of Engineers with the enactment of the Registration of Engineers Act, 1967 which has since been amended, the role of these two bodies are significantly different, one addressing the issue of public safety whilst IEM is the society representing the engineers themselves.

"Complementary rather than competitive functions are seen here and sometimes these functions appear to overlap. I do see the need for IEM and the BEM to work together towards fulfilling the aspiration of the nation but sometimes it is the players who need to be reminded regularly," he said.

"IEM is merely a vehicle, the subscriptions being payment for its fuel, to be steered by its membership and I wish to reiterate that one should not ask what IEM can do for you but what you can do for IEM to make it a worthy body which represents the engineers here," Dr Ow concluded. ■

*The text of this article is based on an interview with Ir. Prof. Dr Ow and on the text of Ir. Prof. Dr Ow's Presidential Address delivered at the recent IEM AGM.*

### A BRIEF PROFILE OF DR. OW

Dr Ow graduated from the University of Canterbury (New Zealand) with a BEng (Hons) in 1972 and holds a PhD from Imperial College, London (1980).

The 56 year old father of three girls has been with the Universiti Teknologi MARA (UiTM) since 1973. Prior to that he served as a Research Assistant in the Mechanical Engineering Department, Faculty of Engineering, University of Canterbury, New Zealand.

He has contributed well over 60 papers in journals, proceedings and seminars and currently is an authority on Marine Growth Prevention in Malaysia. He is behind numerous Malaysian inventions in the field of marine growth prevention and these inventions are used worldwide by large conglomerates and governments. To the uninitiated in this unique field, the field of marine growth prevention and research saves oil and gas companies millions through the pioneering of unique marine growth control solutions for marine structures.

His area of expertise is the breaking down of the marine colonisation process by preventing the formation of microbial slime or micro fouling. Hard fouling organisms such as barnacles, oysters, and tubeworms, together with soft fouling organisms such as anemones, hydroids, and sponges are denied an environment of nutrients in which to breed and develop, resulting in a zero-growth surface finish.

Dr Ow is behind the development of "fins to drive", a specially designed apparatus, powered solely by natural ocean forces and their own buoyancy which provides continuous rolling actions over submerged structures. The repeated up and down sweeping motion prevents the settlement of micro fouling, and maintains the surface free of marine growth, thereby protecting offshore installations.

He is currently involved with the IEV Group of Companies which holds the patent in this unique marine growth control solution for marine structures.

# Mobile Phones – Health and Safety

By : R.G. Candiah

The mobile phone industry is one of the most buoyant industries in Malaysia. Due to the fast changes in the development of mobile technology, capital expenditure on communication services for the local telcos is expected to grow from the current RM17 billion to RM22 billion by year-end. By 2010, this capital expenditure is expected to grow to RM34 billion.

This growth is expected to continue for the foreseeable future, especially with the introduction of the 3rd Generation (3G) mobile technologies.

With this growth comes the inevitable increase in the number of base station sites, accompanied by public concern for possible impacts of these communication systems.

This feature seeks to address such concerns by providing background information on the operation of mobile communication systems as well as touching on aspects of health and safety.

## What is a Cellular System?

Mobile communication networks are divided into geographic areas called cells, each served by a base station (Figure 1). Mobile phones are the user's link to the network. The system is planned to ensure that mobile phones maintain the link with the network as users move from one cell to another.

To communicate with each other, mobile phones and base stations exchange radio signals. The level of these signals is carefully optimised for the network to perform satisfactorily. They are also closely regulated to prevent interference with other radio systems

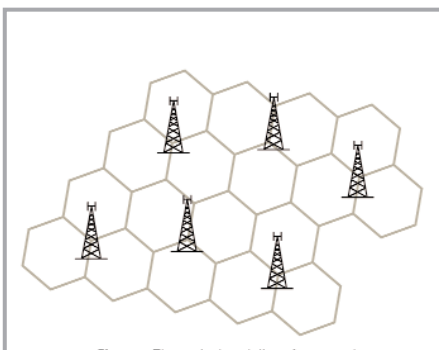


Figure 1 : Theoretical modeling of a network

used, for example, by emergency services, taxis as well as radio and television broadcasters.

## How a Cellular System Works

### Mobile Phones

When a mobile phone is switched on, it responds to specific control signals from nearby base stations. When it has found the nearest base station in the network to which it subscribes, it initiates a connection. The phone will then remain dormant, just occasionally updating with the network, until the user wishes to make a call or a call is received. Mobile phones use automatic power control as a means of reducing the transmitted power to the minimum possible whilst maintaining good call quality. For example, while using a phone the average power output can vary between the minimum levels of about 0.001 watt up to the maximum level which is less than 1 watt. This feature is designed to prolong battery life and possible talk time.

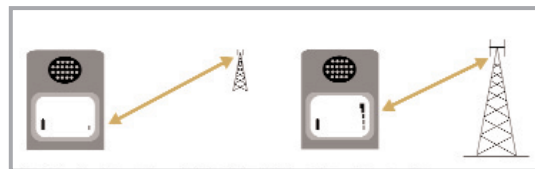


Figure 2 : Signal strength is impacted by a number of factors but proximity to a base station is one of the most important

Another aspect of a mobile network is that as the user is moving while talking, the network needs to be able to pass the call from one base station to another. This process is called a 'handoff' – literally where the network hands over the call from one base station to another, and it is undertaken seamlessly and without the caller being aware of the change.

### Base Station Sites

Transmitted power levels from base stations vary considerably depending on the required area or cell that they are providing coverage for.

Typically transmitted power from an outdoor base station may range from a few watts to about 100 watts, while the output power of indoor base stations is even lower. For comparison purposes,

100 watts is equivalent to a standard light bulb used in our homes.

A base station comprises several different components – including an equipment shelter, a tower or mast which provides the necessary height to give better coverage, and the transceivers and antennas which sit on top of the tower or mast – or in some cases are attached to the top of buildings, where the building itself provides sufficient height. The antennas are typically about 15–30 cm in width and up to a few metres in length, depending on the frequency of operation.

These antennas emit Radio Frequency (RF) electromagnetic energy (also called radio waves) in beams that are typically very narrow in the vertical direction (height), but quite broad in the horizontal direction (width). Because of this, the RF energy at ground level directly below the antenna is very low.

To help assure that public exposure to EM radiation remain within established limits, antennas are typically elevated, and where necessary, fences or other means to restrict access are used

together with appropriate signage to ensure that only authorised personnel can access the area immediately around a base station. The consequence of these measures is that in areas around base stations that are accessible to the public, the RF levels are typically many times below international safety limits.

There is a common misconception that emissions are stronger directly under antennas which partly explains some of the concerns about antennas placed on schools or on residential buildings.

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The ICNIRP guidelines have been widely adopted internationally and turned into national safety standards.

The guidelines apply to mobile phones as well as base station sites and incorporate wide safety margins to protect against all established health effects of RF exposure. There are no known adverse health effects at exposure levels below these guideline levels.

There are over 1300 peer-reviewed publications in the research database relating to the biological effects of RF fields. Included in these 1300 papers are more than 350 independent, peer-reviewed studies conducted at frequencies used by mobile communications. Over half of these have looked for associations between cancer and radio waves.

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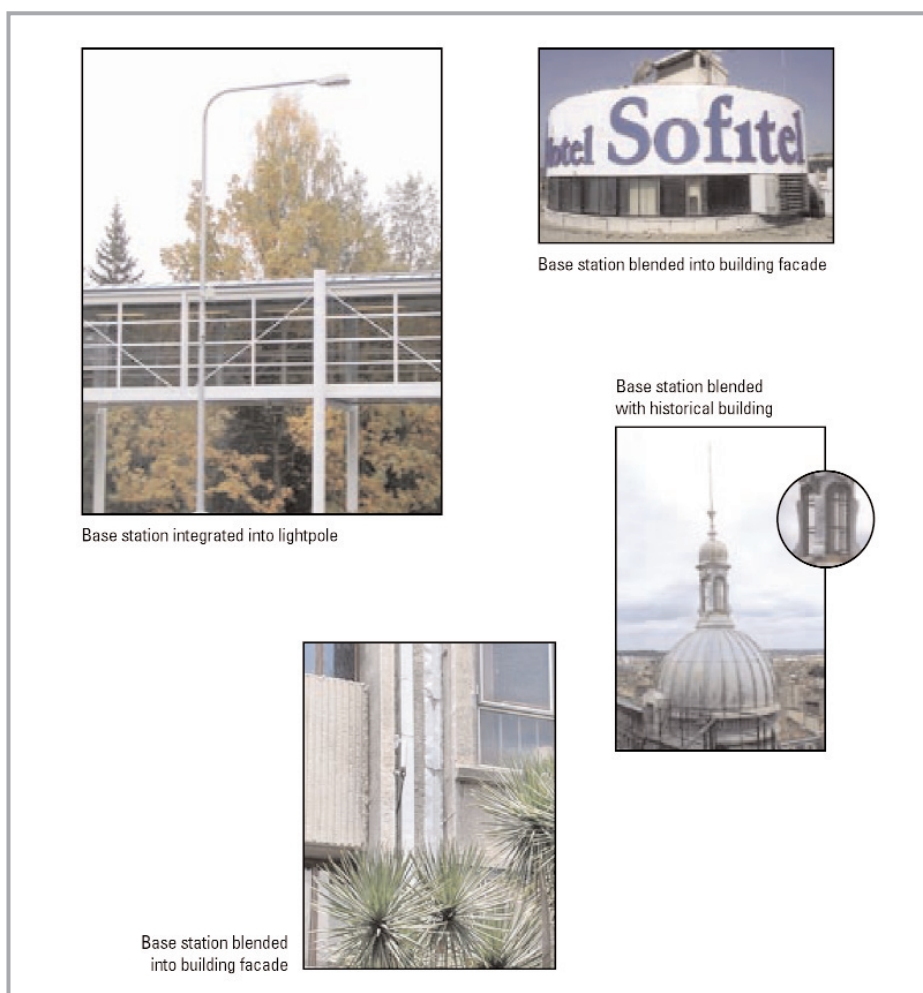


Figure 3 : Examples of reducing the visual impact of base stations

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The views of the industry concerning the health effects of RF exposure from mobile phones and base stations are based upon the conclusions of many expert review panels established by official national and international entities. These panels have reviewed the scientific literature over the past 10 years

and have consistently concluded that there is no credible or convincing evidence that RF exposure from mobile phones or base stations operating within ICNIRP exposure limits causes any adverse human health effects.

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Even though today's mobile phones only emit, on average, a maximum of a few hundred milliwatts, they are held in close proximity to the body and, therefore, expose the user to local levels of EMF exposure that are relatively higher than those from base stations.

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is operated inside the model and a 3 dimensional measurement takes place to determine the highest SAR and verify that this is below the limit.

With respect to base station sites, the simplest RF propagation model is the 'free-space' model, whereby the intensity decreases to one quarter when the distance is doubled. As mentioned previously though, in reality, it drops much faster than that due to loss of signal strength caused by absorption in trees, buildings and the earth itself.

To measure the RF levels for compliance purposes, one takes the highest transmitted power and the maximum antenna focus, and uses both of these to calculate the RF energy levels at any given distance from an antenna. Generally, due to the height of antenna masts, the antenna focus and other factors, the RF emissions from base station sites are lower than the ICNIRP guidelines. In areas accessible to the public, measurements and calculations have found that the exposure levels to be far below international guidelines, typically by a factor of 500 or more.

### Site Design Considerations

During the last decade, the design of mobile communications equipment has matured rapidly, with a general trend to smaller equipment offering equal or greater functionality.

In Malaysia however, the antennas of base stations have tended to remain visible, as radio engineers can achieve optimum performance when antennas are mounted on high ground or the top of buildings, away from physical obstruction (such as other buildings, trees, etc.)

Creative antenna and mast tower design is capable of significantly reducing the visual impact of mobile communications infrastructure equipment. Local state governments need to look into this. Examples of some of these creative solutions are shown in Figure 3.

### Community Consultation

Despite the ever increasing use of mobile communications, the placing of communications infrastructure equipment within communities or in a visible rural location has tended to generate strong responses.

# Mobile Phones – Health and Safety

By : R.G. Candiah

The mobile phone industry is one of the most buoyant industries in Malaysia. Due to the fast changes in the development of mobile technology, capital expenditure on communication services for the local telcos is expected to grow from the current RM17 billion to RM22 billion by year-end. By 2010, this capital expenditure is expected to grow to RM34 billion.

This growth is expected to continue for the foreseeable future, especially with the introduction of the 3rd Generation (3G) mobile technologies.

With this growth comes the inevitable increase in the number of base station sites, accompanied by public concern for possible impacts of these communication systems.

This feature seeks to address such concerns by providing background information on the operation of mobile communication systems as well as touching on aspects of health and safety.

## What is a Cellular System?

Mobile communication networks are divided into geographic areas called cells, each served by a base station (Figure 1). Mobile phones are the user's link to the network. The system is planned to ensure that mobile phones maintain the link with the network as users move from one cell to another.

To communicate with each other, mobile phones and base stations exchange radio signals. The level of these signals is carefully optimised for the network to perform satisfactorily. They are also closely regulated to prevent interference with other radio systems

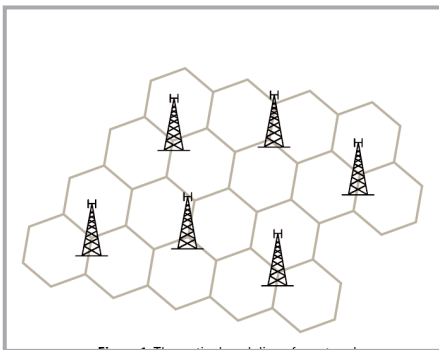


Figure 1 : Theoretical modeling of a network

used, for example, by emergency services, taxis as well as radio and television broadcasters.

## How a Cellular System Works

### Mobile Phones

When a mobile phone is switched on, it responds to specific control signals from nearby base stations. When it has found the nearest base station in the network to which it subscribes, it initiates a connection. The phone will then remain dormant, just occasionally updating with the network, until the user wishes to make a call or a call is received. Mobile phones use automatic power control as a means of reducing the transmitted power to the minimum possible whilst maintaining good call quality. For example, while using a phone the average power output can vary between the minimum levels of about 0.001 watt up to the maximum level which is less than 1 watt. This feature is designed to prolong battery life and possible talk time.

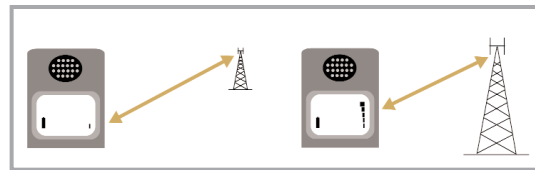


Figure 2 : Signal strength is impacted by a number of factors but proximity to a base station is one of the most important

Another aspect of a mobile network is that as the user is moving while talking, the network needs to be able to pass the call from one base station to another. This process is called a 'handoff' – literally where the network hands over the call from one base station to another, and it is undertaken seamlessly and without the caller being aware of the change.

### Base Station Sites

Transmitted power levels from base stations vary considerably depending on the required area or cell that they are providing coverage for.

Typically transmitted power from an outdoor base station may range from a few watts to about 100 watts, while the output power of indoor base stations is even lower. For comparison purposes,

100 watts is equivalent to a standard light bulb used in our homes.

A base station comprises several different components – including an equipment shelter, a tower or mast which provides the necessary height to give better coverage, and the transceivers and antennas which sit on top of the tower or mast – or in some cases are attached to the top of buildings, where the building itself provides sufficient height. The antennas are typically about 15–30 cm in width and up to a few metres in length, depending on the frequency of operation.

These antennas emit Radio Frequency (RF) electromagnetic energy (also called radio waves) in beams that are typically very narrow in the vertical direction (height), but quite broad in the horizontal direction (width). Because of this, the RF energy at ground level directly below the antenna is very low.

To help assure that public exposure to EM radiation remain within established limits, antennas are typically elevated, and where necessary, fences or other means to restrict access are used together with appropriate signage to ensure that only authorised personnel can access the area immediately around a base station. The consequence of these measures is that in areas around base stations that are accessible to the public, the RF levels are typically many times below international safety limits.

There is a common misconception that emissions are stronger directly under antennas which partly explains some of the concerns about antennas placed on schools or on residential buildings.

Whatever the equipment, the radio wave intensity decreases rapidly as it travels away from the antenna. In free space, the intensity decreases to a quarter when the distance is doubled. In reality, the intensity reduces much more quickly than that due to the loss of signal strength (also known as 'attenuation') that is caused by having to pass through obstacles such as trees and buildings.

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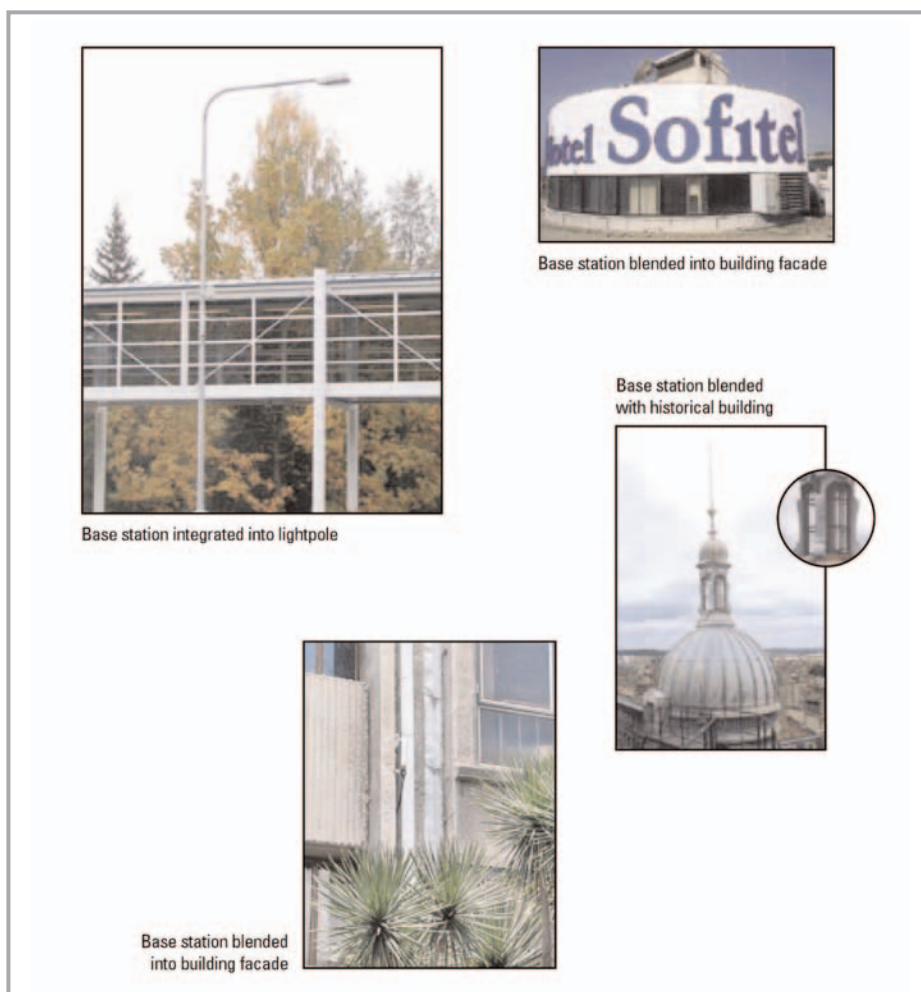


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Despite the ever increasing use of mobile communications, the placing of communications infrastructure equipment within communities or in a visible rural location has tended to generate strong responses.

Predominately, concerns relate to the landscape being spoiled, nearby property values being negatively affected and speculation that operating the equipment will lead to illness.

In some areas, public feelings have been further heightened by real or perceived lack of consultation and factual information.

When considering the placement of communications infrastructure, it is suggested that:

- Community representatives are invited to view plans and are provided with independent factual information relating to health concerns.
- In areas of visual sensitivity, adoption of visually appealing solutions should be considered. It is important that the public is aware of such installations in order to avoid concerns that the equipment is being 'hidden'.

Sensibly designed equipment deployed after open consultation is more likely to meet the demands of the public, operators and local authorities and minimise unnecessary delays and concerns.

### WLAN, Wi-Fi and Health

Wireless Local Area Network (WLAN) seems to have caught on in Malaysia as seen in cafes such as Starbucks and Coffee Beans recently.

WLAN is a flexible data communication system implemented as an extension to, or as an alternative for, a wired network within a building.

WLAN technology is being widely used to provide wireless internet access in public places like airports, hotels, and shopping centres, but it is also increasingly used in the home and office to allow computers to access the internet and network without the need for cabling. To connect and communicate, WLANs use radio waves in the 2.4 and 5 GHz range to transmit and receive data over the air.

Several studies that record the measurements of radio waves used by WLANs have been conducted by some foreign governments and by their respective industries. These studies have measured radio waves from WLANs in places where they are most commonly used, such as schools, bookstores, and office places. All these studies have shown that the radio waves used by WLANs are substantially below the required international safety limits.

When thinking about WLANs, it should be remembered that the products operate using radio waves which are the same radio waves that are a common, though sometimes overlooked, part of our everyday lives. Radio waves provide the benefits and enjoyment of television and radio as well as an increasing range of mobile communications services.

The safety of radio waves has been extensively studied for more than 50 years. This large and growing body of research has been regularly reviewed by numerous independent scientific expert panels, government agencies, standard-setting organisations and health authorities from around the world. These organisations have reached the same general scientific conclusion that there is no established evidence of any adverse health effects from exposure to radio waves when present at or below the recommended limits applied to wireless communications systems.

WLAN products are subject to the same standards that are applied to other radio products used near the human body. The standards themselves are established by independent scientific organisations, such as the International Commission on Non-Ionising Radiation Protection (ICNIRP). These standards have been widely adopted by governments and health agencies around the world, including the World Health Organisation (WHO). The standards establish exposure limits, to which products must comply, and include substantial margins of safety to protect both users and the general public.

### Wi-Fi Devices

All Wi-Fi wireless products are required to be evaluated to ensure they conform to the RF emission safety limits adopted by agencies around the world before being placed on the market. These evaluations are done in accordance with the various regulations and guidelines adopted or recommended by regulatory agencies around the world such as the Federal Communications Commission.

The Wi-Fi Alliance (the Wi-Fi Alliance is a global, non-profit industry association of more than 200 member companies devoted to promoting the growth of WLANs) is currently conducting additional studies to confirm, in a variety of settings, that the radio wave exposures to Wi-Fi products consistently fall well below the international exposure limit. ■

## 22nd Conference of the ASEAN Federation of Engineering Organisations (CAFEO)

By: *Sdri. Kee Wai Fun and Sdr. Ngeow Yen Wan*

**M**ingalarbar! This traditional greeting of Myanmar was the first words that greeted the delegates of CAFEO 22, when we were warmly welcomed by the hosts of CAFEO 22 at Yangon International Airport. From 18-19 December 2004, more than three hundred engineers from 10 ASEAN countries and 8 non-ASEAN countries gathered in Yangon, Myanmar for the 22nd Conference of the ASEAN Federation of Engineering Organisations (CAFEO). The conference was hosted by the Myanmar Engineering Society (MES) at Sedona Hotel, Yangon. The Myanmar Engineering Society only became a member of the ASEAN Federation of Engineering Organisations (AFEO) in 2000 and was hosting the conference for the first time.

Briefly, the ASEAN Federation of Engineering Organisations (AFEO) is a non-governmental body and its members are the national institutions or organisations of engineers of ASEAN countries. In order to attain AFEO's purposes and objectives such as the promotion of goodwill, understanding, cooperation and the exchange of ideas and experiences, a conference is held every year, hosted in rotation by each member organisation.

For CAFEO 22, Malaysia was represented by a 52-member delegation led by IEM President Ir. Prof. Abang Abdullah Abang Ali. The conference also

had participants from non-ASEAN countries such as Australia, Canada, Hong Kong, Japan, Korea and the United States.

The theme of the conference was "Engineering Capacity Building for ASEAN Integration and Global Competitiveness." According to MES President, Prof. Dr Sein Myint, the theme was in line with the ASEAN Vision 2020, where:

- We envision our rich human and natural resources contributing to our development and shared prosperity.
- We commit ourselves to moving towards closer cohesion and economic integration, narrowing the gap in the level of development among Member Countries, ensuring that the multilateral trading system remains fair and open, and achieving global competitiveness.

The opening ceremony of CAFEO 22 began with the parade of AFEO member countries and placement of ASEAN national flags on the stage, followed by an engaging cultural dance, with each dancer costumed in the various ASEAN countries' national costumes. Following



*Ir. Prof. Abang Abdullah Abang Ali, President of IEM during the Parade of AFEO Member Countries at the Open Ceremony*

tradition, the AFEO Distinguished Honorary Fellow Awards were conferred during the opening ceremony, with the absentee recipients being ex-Indonesian President B.J. Habibie and ex-Philippine President Fidel Ramos. The final AFEO Distinguished Honorary Fellow was conferred on the Prime Minister of the Union of Myanmar, H.E. Lt-General Soe Win, who officially opened the conference after his keynote address.

During the 2-day conference, parallel technical paper presentations were also held in the hotel. A total of 134 papers were presented on the following topics: Engineering Capacity Building, Human Resources Development, ASEAN



*Cultural Dance with Costumes Representing ASEAN Countries*



*AFEO-22 Delegates from ASEAN Countries*

Integration, Energy and Infrastructure Development, Attaining Sustainable Economic Growth and General Engineering.

The Young Engineers of the ASEAN Federation of Engineering (YEAFAEO) Conference was held concurrently. It was attended by delegates from Myanmar, Malaysia, Singapore, Indonesia, Brunei, Cambodia and Thailand, along with observers from Hong Kong and Japan. Each of the respective countries gave a brief introduction on their activities. Among the main issues discussed during this conference were strategic plans to enhance communication between YEAFAEO members, formation of a permanent secretariat for YEAFAEO and exchange programs between countries. After the conference, special visits were made by Myanmar's young engineers to enhance friendship between the YEAFAEO delegates, including a visit to Myanmar China Town to try their local food and see the famous ShweDagon pagoda.

The closing ceremony on the second day was officiated by Prof. Dr Sein Myint. The AFEO Flag was officially handed over by him as the outgoing AFEO chairman to the incoming AFEO Chairman, Mr. Khampong Phanvongsa, President of Lao Union of Science and Engineering Association. This was further followed by exchange of gifts between all the ASEAN delegates before the CAFEEO-22 conference was officially ended.

**Myanmar – “The Golden Land”**

Myanmar is the name which has long been used by its people to describe their

hometown which the British called Burma. It is also known as the Golden Land not only for its Golden Pagodas, but for its rich land and the wealth of its agriculture and precious minerals. Geographically, Myanmar is the largest country in the South-East Asian Peninsula, sharing borders with Bangladesh, India, China, Laos and Thailand. It has a total land area of 676,557 square kilometers and is roughly twice the size of Malaysia (which includes the land areas of Sabah and Sarawak.)

The climate of Myanmar is dominated by a tropical climate with three general seasons. The rainy season is from mid-May to mid-October, the cool season (winter) is from mid-October to mid-February and the hot season (summer) is from mid-February to mid-May. The best time to visit Myanmar is during the cool season, which is from November to February.

Many CAFEEO delegates took the opportunity to enjoy some city sightseeing as most have never set foot in Myanmar. Special tour packages were arranged for delegates that arrived earlier. Tour packages for delegates' spouses were arranged as well. Some of the city sights includes the Shwethalyaung, one of the world's most beautiful reclining Buddhas, as well as the Shwemawdaw Pagoda, one of the most venerated pagodas in Myanmar. For bargain hunters, souvenirs were aplenty at the Scotts' Market, with most delegates wishing they had more time to shop!

According to our tour guide at the National Races



*AFEO Flag Hand Over Ceremony by Outgoing AFEO Chairman Prof. Dr Sein to incoming AFEO Chairman Mr. Khampong*



*Exchanging Gifts Between Delegates During the Closing Ceremony*

Village in Yangon, the Myanmar people come from more than 100 different races, with the main race being the Bamar, Kayin, Mon, Rakhine, Kachin, Chin, Shan and Kayah races. Due to the diversity of its people, the country celebrates more than 30 festivals, with a public holiday occurring almost twice monthly.

**The People of Myanmar**

This story would not be complete if mention is not made of the warmth and charm of the people of Myanmar. The organizers of CAFEEO-22 had recruited many English-speaking young engineer volunteers for the conference, whose warm hospitality never failed to touch our hearts. From the time we arrived at the airport till the time we departed, we were constantly amazed and touched by their sincerity and courtesy. Thus, the authors would like to thank these young volunteers for making their visit to CAFEEO-22 and YEAFAEO-11 such an unforgettable experience. ■



*Malaysian Delegates to CAFEEO-22, Myanmar*