LATEST UPDATE!

CONTRIBUTION TO IEM BUILDING FUND

RM533,364.00 from IEM Members

RM331,502.00 from Private Organisations

TOTAL
RM864,866.00

(ANOTHER RM12,635,134.00 IS NEEDED)

IEM wishes to take this opportunity to thank all members who have contributed and would like to appeal for support from members who have not yet contributed

HELP US TO PROVIDE BETTER SERVICES TO YOU AND THE FUTURE GENERATION

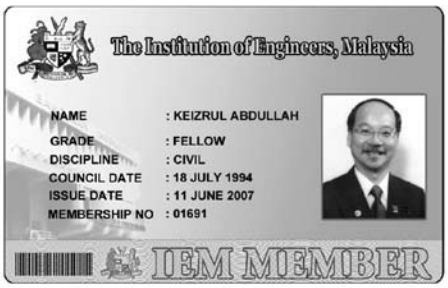
DONATION LIST TO THE NEW IEM BUILDING FUND

10th Announcement

The Institution would like to thank all contributors for donating towards the new IEM Building Fund. Members and readers who wish to donate can do so by downloading the form from IEM website at http://iem.org.my or contact IEM Secretariat at 603-79684001/79684002 for more information. The list of the contributors as of 30 November 2008 is as shown in the table.

NO.	MEMBERSHIP NO.	DETAILS
1	M03427	LEE SAY CHONG
2	–	SEMENANJUNG RUNDING S/B
3	–	AZMAN,LIM& ASSOCIATES S/B

IEM NEW MEMBERSHIP CARD



With effect from 1 January 2008, IEM has introduced a new IEM membership card for all Members. The new card had been designed to include bar code features as provision for future expansion. It is hoped that this new card would assist IEM to provide better and more efficient service to our Members.

Members who have not collected the card can submit a "scanned" passport sized photograph (softcopy) in JPEG format and then e-mail to iemphoto@gmail.com. Kindly indicate your name, membership number and grade upon submission.

You may also contact the IEM Secretariat at 603-79684001/2 for an appointment for your photos to be taken.

Thank you for your co-operation.

RECOGNITION/BENEFITS LIST FOR DONATIONS OR LOAN TO IEM BUILDING FUND

1. LOAN

Members may give out loans to IEM in the following denominations:

	Loan Amount	Entitlement
(i)	RM1,000 – RM2,000	Talk voucher worth RM100. Discount vouchers worth RM50. Valid for five (5) years.
(ii)	RM2,001 – RM5,000	Talk voucher worth RM200. Discount vouchers worth RM100. Valid for five (5) years
(iii)	Above RM5,000	Talk voucher worth RM200. Discount vouchers worth RM200 to attend IEM courses/seminars.

From year 6 onwards, IEM can begin to repay members' loan and withdraw the privileges accorded but maintain the recognition awarded.

2. DONATIONS FROM MEMBERS

	Donation Amount	Recognition
(i)	RM1,000 – RM2,000	Talk voucher worth RM100. Discount vouchers worth RM50. Valid for five (5) years. 12pt sized Engraving on the Donation Board.
(ii)	RM2,001 – RM5,000	Talk voucher worth RM100 and Discount vouchers worth RM100 to attend IEM courses seminars. Valid for five (5) years. 14pt sized Engraving on the Donation Board.
(iii)	RM5,001 – RM10,000	Talk voucher worth RM200 and Discount vouchers worth RM200 to attend IEM courses/seminars. Valid for five (5) years. 16pt sized Engraving on the Donation Board. Naming of one Division of Secretariat office.
(iv)	RM10,001 – RM20,000	Talk voucher worth RM200 and Discount vouchers worth RM200 to attend IEM courses/seminars. Valid for five (5) years. 18pt sized Engraving on the Donation Board. Naming of small Meeting room.
(v)	RM20,001 – RM50,000	Talk voucher worth RM200 and Discount vouchers worth RM200 to attend IEM courses/seminars. Valid for five (5) years. 18pt sized Engraving on the Donation Board. Naming of medium sized Meeting room.
(vi)	RM50,001 – RM100,000	Talk voucher worth RM200 and Discount vouchers worth RM200 to attend IEM courses/seminars. Valid for five (5) years. 18pt sized Engraving on the Donation Board. Naming of large sized Meeting room.
(vii)	RM100,001 – RM150,000	Talk voucher worth RM200 and Discount vouchers worth RM200 to attend IEM courses/seminars. Valid for five (5) years. 18pt sized Engraving on the Donation Board. Naming of Resource Centre/Library.
(viii)	RM150,001 – RM200,000	Talk voucher worth RM200 and Discount vouchers worth RM200 to attend IEM courses/seminars. Valid for five (5) years. 18pt sized Engraving on the Donation Board. Naming of Conference Room.
(ix)	RM200,001 – RM300,000	Talk voucher worth RM200 and Discount vouchers worth RM200 to attend IEM courses/seminars. Valid for five (5) years. 18pt sized Engraving on the Donation Board. Naming of Auditorium 1.
(x)	RM300,001 – RM500,000	Talk voucher worth RM200 and Discount vouchers worth RM200 to attend IEM courses/seminars. Valid for five (5) years. 18pt sized Engraving on the Donation Board. Naming of Auditorium 2.

(IEM is currently looking into applying for Tax Exemption status for the IEM Building Fund)

DONATION/LOAN REPLY FORM

Chairman
IEM Fund Raising Committee (Building Fund)
The Institution of Engineers, Malaysia, P.O. Box 223, (Jalan Sultan), 46720 Petaling Jaya, Selangor Darul Ehsan

Date: _____/_____/2008

Dear Sir,

IEM BUILDING FUND

☐ LOAN ☐ DONATION

(Please indicate ✓ where applicable)

☐ Enclosed herewith a Cheque/Bank Draft/Money Order/Postal Order* No.....
for RM..... for the abovementioned made payable to **'IEM Building Fund'** Account.

☐ Please charge to my credit card the amount of RM ..... for the abovementioned.

Card: ☐ Visa ☐ MasterCard

Expiry Date: M M / Y Y

Card Number: ☐☐☐☐ / ☐☐☐☐ / ☐☐☐☐ / ☐☐☐☐

Name: _____

Address: _____

_____

Contact No.: _____

Email: _____

_____
Signature

To All Members, Date: 15 December 2008

CANDIDATES APPROVED TO SIT FOR YEAR 2008 PROFESSIONAL INTERVIEW

The following candidates have been approved to sit for the Professional Interview for 2008.

In accordance with Bylaws 3.7, the undermentioned names are published as having applied for membership of the Institution, subject to passing the year 2008 Professional Interview.

If any Corporate Member of the Institution has any reasons as to why any of the candidates is not a fit and a proper person for election, he should communicate in writing to the Hon. Secretary. Such communication should be lodged a month from the date of publication.

Engr. Assoc. Prof. Dr Jeffrey Chiang Choong Luin, MIEM, P.Eng.
Honorary Secretary, The Institution of Engineers, Malaysia

TRANSFER APPLICANTS

Membership No	Name	Qualifications
CHEMICAL ENGINEERING		
16425	CHUAH TEONG GUAN	BE (HONS) (UTM) (CHEM, 94)
CIVIL ENGINEERING		
18216	MOHD. ROSDIANSYAH BIN MOHD. AMIN	BE (HONS) (UTM) (CIVIL, 99)
8193	MOKHTAR BIN MOHD. YUSOFF	BSc (HONS) (BRIGHTON POLY) (CIVIL, 83)
20159	NG KIM GUAN	BSc (HONS) (MALAYA) (CIVIL, 02)
21494	POK SEE HOW	BE (HONS) (UTM) (CIVIL, 00)
20519	TEE SWEE TIT	BE (HONS) (UM) (CIVIL, 98)
24337	TENGKU ANITA BINTI RAJA HUSSIN	BE (HONS) (UITM) (CIVIL, 97)
ELECTRICAL ENGINEERING		
28993	MOHD. YAAKOB BIN JAAFAR	BE (HONS) (UiTM) (ELECT, 03)
15584	SHIM HUI CHIN	BSc (HONS) (SOUTH DAKOTA STATE) (ELECT, 93)
32623	ZAFENDI BIN MOHD. ISA	BE (HONS) (GANNON UNI) (ELECT, 93)
ELECTRONIC ENGINEERING		
26383	BHUVENDRA A/L RUDRUSAMY	BE (HONS) (UTM) (ELECT-MECHATRONIC, 04)
21868	NOOR IZIDDIN ABDULLAH BIN GHAZALI	BE (HONS) (UNITEN) (ELECT & E'TRONIC, 04)
MECHANICAL ENGINEERING		
24549	ALEXON JONG SZE CHIEN	BE (HONS) (UNIMAS) (MECH, 03)
25788	VENOTH KUMAR A/L GOVINDASAMY	BE (HONS) (UNITEN) (MECH, 04)

NEW APPLICANTS

Name	Qualifications
CIVIL ENGINEERING	
HASLINA BTE MAT ISA	ADV. DIP (UiTM) (CIVIL, 86)
HII HAU TONG	BE (HONS) (UNI OF CANTERBURY) (CIVIL, 97)
KHOR WOON KAI	BE (HONS) (UPM) (CIVIL, 99)
NOOR ROHIMI BINTI SALEH	BE (HONS) (UTM) (CIVIL, 00)
NOR FARDZILAH BINTI ABDUL RAHMAN	BE (HONS) (UTM) (CIVIL, 00)
SHAMSURI BIN SALLEH	BE (WOLLONGONG) (CIVIL, 90)
ELECTRICAL ENGINEERING	
CHEE SENG HIUNG, TONY	BE (HONS) (MULTIMEDIA UNI) (ELECT, 02)
GEORGE JR G.J. KIMSIN	BE (HONS) (UMS) (ELECT & E'TRONIC, 02)
MOHD. NOOR AZHAR BIN KAMAL	BSc (UNI OF EVANSVILLE) (ELECT, 97)
SHURIATY BINTI SHAFIE	BE (HONS) (UTM) (ELECTRICAL, 00)
SUBRAMANIAM A/L SOCKALINGAM	BE (HONS) (UTM) (ELECT, 97)
WONG YU KIONG	BE (HONS) (THE NOTTINGHAM TRENT UNI) (ELECT & E'TRONIC, 95)

NEW APPLICANTS

Name	Qualifications
ELECTRONIC ENGINEERING	
KOO PUI PUI @ JENNY KOO	BE (HONS) (UMS) (ELECT & E'TRONIC, 00)
MECHANICAL ENGINEERING	
ADAM BIN GANI	BE (HONS) (UPM) (MECH, 99)
ISMAIL BIN MUSA	BE (HONS) (UTM) (MECH, 00)
KHAIRUL NIZAM BIN MOHAMED SUTTAN	BE (MINNESOTA) (MECH, 97)
LIM SAM LIONG	BSc (PURDUE UNI) (MECH, 99)
MOHD. FADZLILLAH BIN MOHAMOOD	BE (HONS) (UiTM) (MECH, 00)
NORHAFIZ BIN JAAFAR	BE (HONS) (UM) (MECH, 03)
SHAHRIL IZWAN BIN ABAS	BSc (GEORGE WASHINGTON) (MECH, 99)
SHAMSUL AKMAR BIN AB. AZIZ	BE (UNI OF YAMANASHI JAPAN) (MECH, 03)

IEM DIARY OF EVENTS 2009

For further enquiries on the events below, please visit IEM Homepage at http://www.iem.org.my or contact IEM Secretariat for further information and forms.

Agricultural and Food Engineering Technical Division
24 JANUARY 2009
Time: 9.00 a.m. – 11.00 a.m.
Talk on 'Technology and Global Warming'
Venue: 2nd Floor, Conference Hall, IEM
Speaker: Engr. Ooi Ho Seng
(Invitation to register)

24 JANUARY 2009
Time: 11.00 a.m. – 1.00 p.m.
10th AFETD AGM
Venue: 2nd Floor, Conference Hall, IEM
(Invitation to register)

Electrical Engineering Technical Division
18 FEBRUARY 2009
Time: 9.00 a.m. – 2.00 p.m.
A Half-Day Seminar on Power Protection Strategy: "Comparing UPS System Design Configurations"
Venue: 24, Jalan Pengacara U1/48, Temasya Industrial Park, APC Solution Center, Shah Alam
Speaker: Mr. Danny Phang
Fees: (a) IEM Member – RM150
(b) Non-IEM Member – RM200
(Invitation to register)
(Limited to 30 participants)

26 FEBRUARY 2009
Time: 8.30 a.m. – 5.30 p.m.
One-Day Seminar on "EMF: Is There a Health Hazard?"
Venue: 2nd Floor, Conference Hall, IEM
Speaker: Engr. Mohamed Fuad bin Faisal
Fees: (a) IEM Student Member – RM160
(b) IEM Graduate Member – RM200
(c) IEM Corporate Member – RM300
(d) Non-IEM Member – RM400
(Invitation to register)

Engineering Education Technical Division
20 FEBRUARY 2009
Time: 5.30 p.m. – 7.00 p.m.
Talk on Product Design 101: Steps for Creating Marketable Products
Venue: 2nd Floor, Conference Hall, IEM
Speaker: Engr. Dr Faris Tarlochan
(Invitation to register)

21 FEBRUARY 2009
Time: 8.30 a.m. – 1.00 p.m.
Technical Visit to Petronas Penapisan (Melaka) Sdn Bhd
Venue: PETRONAS Penapisan (Melaka) Sdn Bhd
Fees: RM30.00
(Invitation to register)
(Limited to 40 participants)

MAJOR EVENTS 2009

2-4 MARCH 2009
10TH INTERNATIONAL CONFERENCE ON CONCRETE ENGINEERING AND TECHNOLOGY 2009 (CONCET 2009)
Venue: Shah Alam, Selangor
Organiser: Faculty of Civil Engineering, Universiti Teknologi MARA, IEM and UM
Tel: 603 5543 3311/6163/5256/6426
(Ms. Che Maznah/Ms. Lee/Ms. Norliyati)
Fax: 603 5543 5275
Email: concet09@gmail.com
(Invitation to register)

23-25 MARCH 2009
International Conference on Engineering and Education in the 21st Century (ICEE 2009)
Venue: Crowne Plaza Riverside, Kuching, Sarawak
Organiser: IEM Sarawak Branch
Fees: (a) RM700 (before 23 January 2009)
(b) RM850 (after 23 January 2009)
(c) RM550 (International/Local Students)
(d) RM550 (Accompany Spouse programme)
(Invitation to register)

CONFERENCES & SEMINARS 2009

MALAYSIA

19-20 JANUARY 2009
BEYOND MAINTENANCE
Venue: PWTC, Kuala Lumpur
Organiser: Asia IKnowledge Sdn Bhd
Tel: 603 7805 7905
Fax: 603 7805 7906
Email: info@iknowledge.com.my
Website: www.iknowledge.com.my
(Invitation to register)

2-4 JUNE 2009
NATIONAL CONFERENCE ON AGRICULTURAL AND FOOD MECHANIZATION 2009: MECHANIZATION-LED AGROBUSINESS TOWARDS SUSTAINABILITY
Venue: Renaissance Hotel Melaka
Tel: 603 8943 7041/6077
Fax: 603 8941 3512
Email: ncafm@mardi.gov.my
(First announcement and call for papers)

SINGAPORE

11-12 MARCH 2009
EFFECTIVE PROJECT MANAGEMENT
Tel: (65) 65368676 Ext: 114
Fax: (65) 65364350
E-mail: weny.thong@abf.com.sg
Website: http://www.abf-asia.com
(Invitation to register)

HONG KONG

25 FEBRUARY 2009
SEMINAR ON 'THE STATE OF THE ART TECHNOLOGY AND EXPERIENCE ON GEOTECHNICAL ENGINEERING IN MALAYSIA AND HONG KONG'
Venue: Room 401, Hong Kong Convention and Exhibition Centre
Tel: 2796 1638
Fax: 2104 0052
E-mail: info@crpd-hk.com
(Invitation to register)

ARGENTINA

18-21 OCTOBER 2009
9TH INTERNATIONAL CONFERENCE ON CONCRETE BLOCK PAVING
Venue: Buenos Aires Sheraton Hotel and Convention Center, Argentina
Tel: 54 11 4812 3444
Fax: 54 11 4813 0073
E-mail: info@rsanti.com.ar
Website: www.rsanti.com.ar
(Invitation to register)

KENYA

22-24 APRIL 2009
INTERNATIONAL CONFERENCE ON FOOD, WATER AND ENERGY SECURITY, ENGINEERING CHALLENGES FOR 21ST CENTURY
Venue: Hotel Intercontinental Nairobi
Tel: 254 20 2716922/2729326/2059350
Fax: 254 20 2716922
E-mail: iek@iekenya.org
Website: www.iekenya.org
(Invitation to register)

KUWAIT

2-6 NOVEMBER 2009
ALTERNATIVE ENERGY APPLICATIONS: OPTION OR NECESSITY?
Venue: Hotel Intercontinental Nairobi
Tel: + 965 2247 2255
Fax: + 965 2247 0055
E-mail: info@ec2009kuwait.org
Website: www.ec2009kuwait.org
(Invitation to register)

Personal Experience and Observations of the Development of Engineering Education and Professional Practice in Malaysia for the Past 50 Years

by **Engr. TT Chiam,** FIEM, P. Eng.

Preamble: This is a record of my personal experience and observations of the development of engineering education and professional practice in Malaysia for the past 50 years. The aim is to record our country's development in engineering education and professional development and it is not to be a critical analysis of the development perse.

Please do not take the observations/remarks given herein personally nor as criticism of the development of engineering education and/or professional practice in Malaysia. This is only a record of my personal observations/remarks and my sincere apology in advance to all those who may be offended by my observations/remarks.

1.0 INTRODUCTION

This paper attempts to trace 50 years of the development of engineering education and professional practice in Malaysia – since Malaya (now Malaysia) achieved her independence in 1957. At the time of independence, there was no institution of higher learning which offered degree courses in the country. However, a technical college, which was established in 1949, offered sub-professional courses in engineering which allow graduates to join the government service as 'technical assistants'.

In 1957, a 'virtual' the University of Malaya (UM) was established in Kuala Lumpur, and it offered art courses taught by 'flying' lecturers from the UM in Singapore, who shuttled between Singapore and Kuala Lumpur. In 1958, the Faculty of Engineering, the UM in Kuala Lumpur, became the first institution of higher learning in Malaysia (then Malaya) to offer courses in civil engineering.

Currently, there are 20 public and 536 private institutions of higher learning (IPTS) which offer various courses at professional and sub-professional levels. Of the 536 IPTS, 39 offer courses at the university level, ranging from arts, science, medical and dental, pharmaceutical and technological courses.

Truly, the country has come a long way in terms of tertiary education since independence; progressing by leaps and bounds with public and private universities and colleges sprouting up like mushrooms! Nevertheless, are we producing products that meet the needs of the customers?

2.0 BACKGROUND ON TECHNICAL EDUCATION

Perhaps it can be said that the foundation for education in Malaysia began in the early part of the 19th Century when the first English medium school, the Penang Free School was founded in 1816. This was the first trust school to be established and, subsequently, two other trust schools were established, namely, the Singapore Free School (renamed Raffles Institution) in 1823 and the Malacca Free School (renamed Malacca High School) in 1836.

Technical education in Malaysia began in 1906 when the Teacher Technical School was formed in Kuala Lumpur to train technicians for the government's technical departments. The technical college in Kuala Lumpur had its beginnings in the Public Works Department (PWD) Technical School which opened in 1925. It provided facilities for the training of technical apprentices for the PWD, the Malayan Railway Administration and later, the Survey Department.

The Coales-Watson-Worley Report, which recommended the establishment of technical schools to train sub-professional manpower for the public and private sectors, was delayed in its implementation and later postponed due to financial difficulties during the recession period in the 1930s.

A scheme for a technical college was drawn up following the recommendations of the Technical School Advisory Committee and the Department of Education in 1941. This project suffered another delay with the Second World War and was finally launched in 1949 following the generous grant of $4.8 million by the British Government. Construction of the new technical college buildings started in October 1951 and the buildings were opened in March 1955.

The establishment of the technical college in 1949 provided, for the first time, an opportunity for Malaysians to obtain sub-professional technical education locally. Many of the technical college graduates were subsequently sent overseas for training at the professional level. However, a large number was also trained locally with in-service training to sit for the UK Professional Examinations. This was the Government's effort then to increase technical manpower at the professional level effectively without losing the services of its sub-professional staff whilst under training.

Even after the Second World War, there were very few Malaysians who were trained as engineers. The number of Malayan engineers in those years were as follows:

Graduates prior to 1945	–	<89
Graduates between 1945-1950	–	122
Graduates between 1951-1955	–	187
Graduates between 1956-1959	–	328
Total		**726**

3.0 ESTABLISHMENT OF THE FACULTY OF ENGINEERING, UNIVERSITY OF MALAYA IN KUALA LUMPUR

University of Malaya was founded in Singapore in 1949 after the Second World War with the amalgamation of two pre-war colleges in Singapore, namely, the King Edward VII College of Medicine founded in 1905, (offering medical, dental and pharmaceutical courses); and the Raffles College founded in 1929 (offering arts and science courses).

The Professional Engineering Course was established at the UM in Singapore in 1955 with the setting up of a Department of Engineering within the Faculty of Science. It was housed at staff quarters with two army Nissen huts built behind the staff quarters to serve as lecture rooms and engineering laboratories.

Following the establishment of the Faculty of Engineering in Kuala Lumpur in 1958, the UM was then divided into two divisions, the UM in Kuala Lumpur and the UM in Singapore. The UM in Singapore became University of Singapore in 1962 and, in 1980, became the National University of Singapore when it merged with Nanyang University. In 1962, the UM in KL retained its original name, and was offered courses in engineering, arts, science and agriculture.

Formal professional engineering education started in Malaya (now Malaysia) with the establishment of the Faculty of Engineering in Pantai Valley, Kuala Lumpur in 1958. The Government of Malaya wanted an institution of higher learning to be established in Malaya before independence in August 1957.

Initially, arts courses were offered in Kuala Lumpur at the technical college campus with 'flying' lecturers from the UM shuttling between Singapore and Kuala Lumpur during the academic session. The arrangement was unsatisfactory and university authorities decided to terminate the arrangement after one year until a more permanent establishment could be arranged.

Following the decision to move the arts course back to Singapore, the Government of Malaya decided to offer any department/faculty at the UM in Singapore to move to Kuala Lumpur 'lock, stock and barrel' with an 'attractive' offer of an endowment fund for the department/faculty.

The Professor of Engineering in the Department of Engineering, Faculty of Science in Singapore, the late Professor CAM Gray, with the support of senior lecturer, the late Tan Sri Prof Chin Fung Kee (then Mr Chin), took up the offer.

Prof Gray and Chin were asked to meet the First Prime Minister of Malaya, the late YTM Tunku Abdul Rahman Putra in early 1958 to make the necessary arrangements. When they met the Tunku, the first question raised by Tunku was the amount they wanted for the endowment fund. They were stumped for a moment because they were not prepared for the question; after regaining their composure, they suggested a sum of RM1.5 million.

YTM Tunku granted the amount and requested for them to see the Minister of Finance, the late Tun HS Lee for the money. They were also directed to see SE Jewkes, Director of Public Works, (now Jabatan Kerja Raya [JKR]) to prepare a programme for the construction of the new buildings required to accommodate the teaching of the engineering courses. When they received a cheque for RM1.5 million, they immediately put the money in a fixed deposit to earn interest.

There was no design or any plans available then for the construction of the new Faculty of Engineering buildings at Pantai Valley and it was decided that the existing designs of completed educational institutions available from the JKR design office would be used.

The design of the main office building of the faculty was taken from a newly constructed school building in Northern Road, Penang and the design of the laboratories and workshop buildings behind the main office building were taken from the newly constructed Technical College at Jalan Gurney (now Jalan Semarak). The only structure that was designed for the project was the two-pinned parabolic arch for the car porch in front of the main office building. This was designed by Chin when he was on site to assist JKR to sort out many of the site problems.

There was not enough time to call for tenders, thus a prominent contractor at that time, Messrs KC Boon and Cheah, was appointed for the construction of the project on a cost plus basis, using an agreed Schedule of Rates. Clearing of the site commenced on April 1958 and construction work began immediately with Chin moving to Kuala Lumpur to stay on site in his 'Trump Mayflower' car, to be on hand to assist JKR in the supervision of the project and to decide promptly on site, the location and design size of the various buildings.

The project was completed in a record time of four months and laboratory equipments, which were transported to Pantai Valley during the academic recess, were installed in the new buildings to enable courses to continue without a break from the previous academic session.

The new academic session 1958/59 commenced at the Pantai Valley campus in October 1958 without delay of the start of the new academic session. The access road from Jalan Pantai to the faculty buildings within the campus was not even completed, and students and staff had to walk in from Jalan Pantai for the first few weeks before the access road was properly constructed. The engineering students were accommodated at the Technical College hostel in Jalan Semarak.

Five final year engineering students completed their final examinations in May/June 1958 in Singapore, with the submission of their project theses, followed by a viva voce examination by an appointed external examiner, a professor of Civil Engineering from the University of Sydney.

Immediately after the final examinations in Singapore, the students were all ready to pack up and go home. But Dr Ting Wen Hui and I were called in by Prof Gray and Chin to return to the department in Kuala Lumpur to help setup the laboratory equipment in the new faculty buildings in Pantai Valley.

The first batch of graduates from the faculty (then the department of Engineering) who graduated in Singapore was five out of a total of 23 students admitted in the first year; and the second batch of graduates from Pantai Valley was eight out of a total of 40 first year intake; the third batch was 21 out of a total of 36 first year intake; and the fourth batch (being the last batch which started in Singapore) was 23 out of a total of 40 first year intake.

It was necessary at that time, when the Department/Faculty was being established, to maintain high standards so as to ensure that the course would be recognised by the professional bodies in the UK when the students graduated.

With the establishment of the Civil Engineering course in 1955, the Mechanical Engineering course started in 1960 with the first batch of three graduates in 1962; the Electrical Engineering course started in 1961 with the first batch of six graduates in 1963; and the Chemical Engineering course started in 1972 with the first batch of 18 graduates in 1974. The total number of graduates in Session 1974/75 was 131.

The Chemical Technology course conducted at the Faculty of Science could not obtain recognition from the Institution of Chemical Engineers in the UK, and university authorities decided to transfer the course to the Faculty of Engineering, since the faculty had high standing with professional bodies in the UK back then. The Department of Chemical Technology

was then transferred 'lock, stock and barrel' to a new Chemical Engineering building constructed at the Faculty of Engineering in 1973.

3.1 BUMIPUTRA NUMBERS IN THE FACULTY OF ENGINEERING

A government policy stated that all university intakes of students should reflect the racial composition of the country. At the Faculty of Engineering, even by taking into consideration all STPM bumiputra applicants, we were not able to reflect the racial composition. This was because many bright bumiputra students were offered scholarships overseas even before STPM results were announced.

In order to overcome this great disadvantage, a scheme was devised to take in bumiputra students at the SPM level into the faculty as 'pre-engineering' students and train them for one year before they were admitted to the first year engineering course, if they passed the faculty examination, thereby bypassing the requirement to sit for SPTM.

When I was the Dean of Engineering, I resisted very strongly against a subtle suggestion to lower the passing marks for bumiputra students in order to increase their numbers; and even in the face of insinuations that the Faculty of Engineering could be closed down if we could not increase bumiputra numbers.

Fortunately for me, the university authorities were very sympathetic towards my suggestion of giving special tuition to bumiputra students as an alternative. A grant was given to enable the faculty to arrange special tuition for all bumiputra students. The aim was to raise the students' standard up to par to meet the minimum passing requirements of the faculty. This request was not unusual as after the war, the Australian government also granted Colombo Plan overseas students special tuition to bring them up to par with the local students in Australia.

I did not want a repeat of the experience of Malayan graduates from Taiwan universities who were not recognised by the professional bodies in the UK and in Malaya because some of the universities in Taiwan had double standards for passing marks, one for their own local undergraduates and one for overseas Chinese. The reason given was that they were sympathetic towards the overseas Chinese and granted them lower passing marks; thus destroying their careers when they returned to Malaya. Once the standard of a course is lowered, it is practically impossible to raise it again.

3.2 GOLDEN ANNIVERSARY CELEBRATION OF THE FOUNDING OF FACULTY OF ENGINEERING IN KUALA LUMPUR

The Faculty of Engineering of the UM celebrated its Golden Anniversary on 18 October 2008 with the delivery of the 18th Professor Chin Fung Kee Memorial Lecture by its first graduate Er Lee Ek Tieng from Singapore. Many engineering alumni from overseas also participated in the celebration. This was followed by a Golden Anniversary dinner at Eastin Hotel, Petaling Jaya.

When I left the Faculty of Engineering in 1975, all engineering courses conducted at the Faculty of Engineering of the UM received full professional recognition from all professional institutions in the UK. The Faculty of Engineering was originally designed for 800 undergraduates with 200 intakes a year, and now the Faculty has an enrolment of over 3,000 students with 130 academic staff. The Department of Engineering Design and Manufacture was added in 2000 and the Department of Bio-Medical Engineering in 2001.

To further enhance the strong relationship between the faculty and the industry, a Faculty Centre for Research was setup. This was in line with the Government's policy to designate the UM as one of the four research universities in the country. I understand that in 2007, revenue amounting to RM7.8 mil was generated through consultancy projects in the faculty. The faculty also received research grants amounting to RM8.6 mil from the Ministry of Science, Technology and Innovation (MOSTI) and the United Nations Development Programme - Global Environment Facility (UNDP-GEF).

I understand that the Faculty of Engineering has six departments offering 10 programmes. The annual intake was about 650 undergraduate students and they have, at present, 680 postgraduate students. In the past five years, the faculty produced 2800 graduates through the 10 programmes offered. It has also produced 37 postgraduates in 2007 and 32 in 2008.

4.0 RECOGNITION BY PROFESSIONAL BODIES

The pass degree of the Bachelor of Engineering from the UM was continuously monitored from the very beginning of the course by the UK professional body, the ICE. Immediately after the final year engineering examination results were announced, ICE gave full recognition to the pass degree of the Bachelor of Engineering from UM.

Graduates from the faculty were permitted to apply to the ICE for admission to Graduate membership, meaning that the engineering qualification was recognised by ICE in the UK. Subsequently, the pass degree of the Bachelor of Engineering was also accepted for admission to Master's courses in Australia, the UK and the US.

It is to be noted that one of the conditions for appointment as the Professor of Engineering by the University of Malaya Council back in 1955, was that the former must be a Corporate Member of a professional institution in the UK. The late Emeritus Prof CAM Gray, who was then not a Corporate Member of the UK professional institution, had to appear for a professional interview in Sydney for admission to ICE Corporate Membership before he could take up his appointment.

It is important that professional courses being created by any institution of higher learning must liaise with relevant professional bodies to ensure that as soon as the students graduate from the institution, they are immediately recognised for admission to graduate membership of that professional body.

The Malayan graduates from the Faculty of Engineering of the University of Hong Kong had suffered for many years when they returned to Malaya after graduation. The Faculty of Engineering of the University of Hong Kong refused to seek professional recognition from any of the recognised professional institutions in the UK.

Consequently, their courses were not formally recognised by professional bodies in the UK, and the Hong Kong engineering graduates who returned to Malaya could not be appointed as pupil engineers and were instead appointed as technical assistants. They had to sit and pass Part II of the Professional Examinations conducted by professional bodies in the UK before they could be appointed as pupil engineers in the government service.

One of the Hong Kong graduates who were affected was the late Ir Ow Yang Hong Chiew, founder member and Past President of IEM, who had to undergo the hassle of another examination locally before he could be appointed as pupil engineer in the government service. He was

the first Malaysian Director General of DID (now JPS).

Another case of professional recognition was that of the Town Planning course conducted by University Sains Malaysia (USM) in Penang in which the professor was adamant that he need not seek the local professional body's recognition for his course. Subsequently, the Government Evaluation Committee rejected the course for recognition and admission to government service in the division one category in spite of the fact that USM is a government sponsored institution of higher learning.

Many institutions of higher learning offering engineering courses in Malaysia at the later stage of their development heeded my advice to seek professional recognition before their students graduated. These institutions had no problems getting their courses recognised by IEM immediately after their students graduated from the institutions.

One such example was that of Universiti Technology Malaysia (UTM), formerly a technical college. The UTM authorities were not at all keen to seek professional recognition from IEM. However, I spoke to my old colleague, who was Deputy Vice Chancellor, telling him that it was not possible for IEM to visit UTM and evaluate their courses without an invitation because 'your campus was your own castle'. I also explained to him the experience of Malaysian graduates from the University of Hong Kong and the USM case. On his own accord, he sent an invitation to IEM to evaluate UTM's courses immediately.

4.1 THE FOUR-YEAR ENGINEERING COURSE DURATION VIS-A-VIS 120 CREDIT HOURS

In late 1996, the Government decided to 'recommend' that all four-year courses at IPTA be shortened to three years to reduce the financial burden of running the education institutions on the basis that, in the UK, many of these courses were on a three-year duration, including engineering courses.

IEM felt that it was wrong to shorten engineering courses to three years because, globally, except in the UK, all engineering courses were on a four-year duration, and in France, it was five years.

IEM, being the professional body that evaluates engineering courses in the country, approached the Minister of Education on the proposed change. The reply given was that it was not an instruction but only a suggestion given to IPTA. However, except for UiTM, all IPTA and even IPTS followed the Government's 'suggestion' to shorten engineering courses to three years.

In order not to confront the Government's decision directly, IEM decided that all courses for proper recognition for admission to Graduate Membership of IEM requires 120 credit hours, in line with accepted practices in the world, such as Australia, Canada and the US. Consequently, most universities found that they were unable to meet the 120 credit hours requirement within the three-year period and had to revert to the four-year duration.

In the UK, in order to comply with the admission requirement for the Euro Engineers Registration, universities had to conduct an additional year of engineering course and they designated the course as 'Master of Engineering' (MEng), which is basically an undergraduate course 'for face saving'. The ECUK has also terminated the recognition of three-year courses, which have to be upgraded to MEng, if the universities want the course to be recognised by ECUK for registration as Chartered Engineers. In Europe, most engineering courses are of five-year duration and for admission to the Euro Engineers Registration, UK engineers must also possess chartered membership of their respective professional institutions in the UK.

5.0 THE FUTURE OF ENGINEERING EDUCATION IN MALAYSIA

In 2006, a study on the 'Future of Engineering Education in Malaysia' (FEEM) was conducted under the auspices of the Ministry of Higher Education. It was estimated that in 2005, there were 80,000 engineers in the country and, based on a population of 25 million, the engineer-population ratio was only 1:312. Most advanced countries have an engineer-population ratio ranging from 1:75 to 1:141 (Ref: FEEM 2006).

The study recommended that the Government could set an 'advanced nation benchmark at an engineer-population ratio of 1:100'. I fully and wholeheartedly support the recommendation. I am of the view that we can never have an overproduction of the engineering population because engineers are such a different 'breed of creatures' that they can immerse themselves into any employment environment. It is not a waste of national resources to train more engineers than the country needs. As a matter of fact, many engineers also go into other professions like law, finance and management, or migrate to more advanced countries. Consequently, we have to train more to allow for these losses or leakages which are estimated at not less than 20%, especially with globalisation.

I always told my students in the old days that they need not work as engineers when they graduate. I always remember what my professor told me: 'if you were a good engineer, you would not be practising engineering proper after five years because you would be promoted to management'. The response from the students was, 'Isn't it a waste of their time and training not to use their skills in engineering after graduation?' The answer is an emphatic 'NO!'

Engineering courses are the best education investment a country can make. If the engineering courses are properly conducted with diverse management subjects besides engineering, the graduates can fit into any employment environment. It is a well known fact that in China, the current top leaders are engineers. The work of engineers has a direct benefit on the people and it is only through engineering can a country bring rapid transformation of the livelihood of the people.

Engineers are duty bound to eradicate poverty through their planning and design. The ICE UK has stated in its Charter 'to promote sustainable development, manage climate change and eradication of poverty'.

It is a pity, however, that many institutions of higher learning in this country are creating early specialisation of engineering courses to suit the specialisation of their lecturers, I suppose, in a very narrow field and neglecting the more important general management courses to be included in the curriculum.

With such narrow fields of specialisation, would we not be creating a society of discontented, frustrated and dissatisfied intellectuals who are not employable because they are too highly specialised? In Australia, at one time, all aeronautical engineering students must obtain their employers' sponsorship before they could be admitted to the course.

This is not to say that I dispute the fact that the country must also have sufficient advanced training in postgraduate courses to provide future teaching staff for the next generation of engineers. However, the teaching staff must consider the kind of graduates the country needs and advance the education system, if possible, based upon the concept of 'outcome-based engineering' (OBE) education model which has been in the development for the past 10 years. The teaching staff must always resist the temptation to introduce his area of specialisation in undergraduate courses. ■

This article forms the first part of a three-parts article.

Will LEED Lead Malaysia Anywhere?

by **Engr. Prof. Dr Ruslan Hassan,** FIEM, P. Eng.

THE ideal assessment methodology development envisages migration from prescriptive to performance criteria. Due to the complexity of applying true performance assessment, most methods are feature-based and use checklists that grant credits according to the adoption of design strategies or equipment specification.

This approach assumes that a collection of strategies and equipments would probably lead to some performance improvement even though this shift cannot be estimated. There are renowned methods such as BREEAM, GbTool and Leadership in Energy and Environmental Design (LEED). They are naturally different, as sustainability agendas vary across countries, as are design and construction practices, traditions and market friendliness to the introduction of assessment practicing.

The LEED method is currently showing a high growth rate. It has a checklist prompting designers to reduce impacts in five categories related to site planning, energy consumption, water usage, indoor environmental quality and building materials.

The central methodology basis of LEED rests upon the point system (prescriptive, feature-oriented, non-weighted, flexibly chosen), which ultimately allows for a myopic twist in the design process when focus is shifted from building performance to certification, as all credits are equal, even though some of them demand more effort and money to be accomplished, or have greater environmental benefits than others.

There are two factors to be considered when applying LEED to the Malaysian situation, namely cost burden and uncertain contribution to real market transformation. The associated costs of pursuing LEED certification are real. This is partly due to the lack of familiarisation with the subject, with the referred standards and services required.

Scoring successive points beyond the standard practice design can considerably increase design effort and capital costs for construction particularly if the assumed standard practice as defined by the American market is not really the local standard. The LEED system makes commissioning a prerequisite, which indeed can bring substantial savings during an operation. Yet, it adds significant upfront costs, not necessarily recoverable by those who invested in it.

Secondly, the use of a point system tailored for a different market leaves room for (local) market confusion on sustainable buildings and risks to institutionalise green wash instead of green design. Credits that address global environmental issues such as the ozone layer or the green house effect will, of course, be relevant for all projects, in all locations. However, those that essentially address local or regional issues, such as land erosion, water conservation or waste management, are likely to have a different relevance in each circumstance.

Some strategies are simply not applicable to certain building programs. Moreover, goals are established according to the local construction context and improvement envisaged. In overlooking a whole set of conditions which are diverse from the ones that shaped LEED, there probably lays the major fragility of its wider use in Malaysia. Contexts are different, so should the environmental assessments.

Many requirements to score LEED points are prescriptive in nature and require the implementation of a given product or technology. Whereas performance based requirements relate directly to the intent of the credit and award points based on the extent it is met, prescriptive requirements give a point for implementing a specific solution or technology and their performance value is considered fixed and implicit.

Abstraction of a mitigated environmental impact by a strategy into a point is a loss of information through rationalisation. Being indirect measures, prescription should be reduced to the minimum possible extent and carefully chosen to effectively be the closest translation or performance intents and goals, even if it is unavoidable in practice.

Points are awarded for adding bike racks or parking spaces in towns where crippling bikeways, the urban sprawl and security concerns make cycling and carpooling inadvisable or unfeasible, which meet prescriptive requirements without addressing the intent behind them.

The point system may give the impression that it is better to use low voc materials than no voc emitting materials. If no carpet or paints are used, the low voc-emitting points are not granted. The same applies to (certified) wood. Lining up for certified formwork or other construction elements may take several months, thus jeopardising the building schedule.

Finally, all existing assessment systems essentially focus on the environmental impact of buildings. There is a need to shift from environmental to the sustainability assessments of buildings and also to encompass social and economic aspects related to the production, operation and modification of the built environment.

Malaysia needs to undergo the same maturation process that the rating systems of other countries have undergone before finally reaching an agreed assessment framework to start with. Nevertheless, we can learn from previous experiences. LEED, however, helps to reduce upsetting green washing, to consolidate experience, to make many innovations as well as environmentally preferable materials mainstream or more widely accepted at lower costs. ■

NEWS FROM STANDING COMMITTEE ON WELFARE AND SERVICE MATTERS

BENEFITS/SERVICE PRODUCTS FOR IEM MEMBERS

IEM Members,

CALL FOR SUPPORT FROM IEM MEMBERS

Please be informed that IEM will receives a commission/rebate for the following:-

- IEM-Direct Access Co Brand Card
- MAA Assurance Berhad on 'IEM Smart Protection Plan' Life Insurance
- General Insurance - IEM Motor Vehicle Insurance Policy
- AON Insurance Brokers (M) Sdn Bhd on 'IEM Professional Indemnity Insurance'

We appeal to IEM members to utilise these services to enable IEM to earn revenue that can be used to fund the Institution's activities. The details of the services and products are available in IEM website http://www.iem.org.my and also in JURUTERA Bulletin. For details, please contact IEM Secretariat, En. Ahmad Tarmizi at 03-7968 4019 or e-mail at mizi@iem.org.my .

Your support is greatly appreciated.

Thank you and we hope to hear from you soon.

Best Regards,

Honorary Secretary
The Institution of Engineers, Malaysia

The following are some of the benefits/service products currently available to IEM members:-

IEM-DIRECT ACCESS CO BRAND CREDIT CARD (MASTERCARD ONLY):

We are pleased to inform members that you may apply for the main and supplementary Direct Access Platinum/Gold MasterCard with DIRECT ACCESS. The good news is there is no joining fee or payment of annual subscription for life. Both Platinum and Gold cards are issued based on the level of annual earnings. These cards will be issued to members who are interested to take advantage of the offer.

This will enable members to charge the IEM Annual Subscription Fee through your Direct Access Platinum/Gold MasterCard.

We appeal to you to use this card as it not only benefits you, it will also benefit IEM who will get a commission from your payment.

EXCLUSIVE PRIVILEGES, BENEFITS AND ENDLESS REWARDS

- **2% Petrol Rebate**. Enjoy an exclusive 2% rebate at any petrol station nationwide and save! Rebate is subject to a maximum spending of RM2,500 at all petrol stations or rebate of RM50 per card per monthly statement and is applicable to Direct Access MasterCard only.
- **Mortgage Home Loan** with attractive interest rates, flexible payments, MRTA insurance, redraw facility and automatic loan payments through Direct Access Premier plus Account;
- **Premier Plus Account (Current Account)**. A combination of current, savings and money market account complete with 'autodebit and autosweep' facilities;
- **Personal Overdraft**. A hassle-free overdraft facility that does not require and collateral and guarantor.
- **Internet Banking**. Enjoy banking facilities and fund transfers via the internet;
- **24-hour Direct Banking**. Direct Access team of professionals will assist in all banking needs 24 hours a day, 7 days a week;
- **iPay Plan**. A flexi payment plan that allows you to enjoy repayment on retail purchases by installment of up to 20 months;
- **0% Interest Balance Transfer**. Enjoy 0% interest for 6 months, when you transfer your balance from other credit cards. Applicable to new card members only;
- Up to RM1 Million Travel Insurance;
- Live celebrity concerts discounts;
- Exclusive gift redemption;
- No Joining or Annual fees, EVER.

Additional PLATINUM CARD exclusives – Platinum Indulgence (Pamper your exquisite desires from a fine selection of preferential privileges, catered exclusively for Direct Access Platinum card members).

All these exciting specials, plus other rewarding treats await you!

All you need to act is to return the 'IEM-Direct Access Credit Cards Application Form' and all relevant documents (non-returnable) for processing to the IEM Secretariat or fax/scan the completed application form [together with your enlarged I/C (front and back) and business card] to the following:-

Direct Access Customer Service Tel. No.: 603-6204 7878
Application form to fax to: 603-2381 5533 or email : mktgda@cimb.com
Direct Access Mailing Address
Direct Access P. O. Box 11751
50756 Kuala Lumpur

The application form can be obtained from IEM Homepage; http://www.iem.org.my

We look forward to your support.

INSURANCE SCHEME

1. IEM-MAA Smart Protection Plan (Life Insurance):

IEM and MAA Assurance is pleased to announce a new insurance product, the IEM Smart Protection Plan, which offers coverage at special low rates established exclusively for engineering professionals. Think how useful this money could be if you were diagnosed with life-threatening cancer, heart attack, stroke, kidney failure or other common covered conditions. With this coverage, you can gain access to the treatment you need, when you need it.

IEM Smart Protection Plan offers members a number of benefits. These include:-

- Comprehensive Coverage such as Critical Illness, Natural Death, Personal Accident;
- Accumulated Cash Benefits;
- Low group rates in comparison to similar individual plans. In general, because of the high volume and low overhead administration of the scheme, premium rates rank among the lowest available;
- Exclusive eligibility. Only members and family can apply for coverage;
- Provides 24 hours World WIDE COVERAGE.

As an economical means of meeting temporary financial needs, especially during family dependency years, the IEM Smart Protection makes it possible to obtain large amount of protection at minimal cost. IEM Smart Protection Plan is value-added benefits to your membership in the Institution. **DO ACT FAST TO TAKE ADVANTAGE** of this attractive plan.

For Free Consultation and Enquires on IEM-MAA Smart Protection Plan.

Telephone	:	603 – 2146 9030 (MAA) 603 – 7968 4019 (IEM)	MAA Call Centre	:	1-300-888-622
E-mail	:	iemsmartprotection@smart2u.com (MAA) mizi@iem.org.my (IEM)	Fax	:	603 – 2146 9260 (MAA) 603 – 7957 7678 (IEM)
Website	:	www.maa.com.my (link with IEM Website; http://www.iem.org.my)			

2. IEM-ING Critical Cover Insurance Scheme (Life Insurance):

IEM Critical Cover Insurance Scheme designed for IEM members by ING Insurance Berhad has been established since 1 April 1999. The Scheme will pay upon diagnosis of any of the 36 Dread Diseases and will paid an amount equal to 100% of the sum insured in a direct, lump sum cash payment to the insured or your designated beneficiary.

3. IEM Professional Indemnity Insurance Scheme (IEM-PII):

IEM launched the 'Professional Indemnity Insurance (PII) Scheme for IEM Members' on 1 July 1997. IEM, with the assistance of AON Insurance Brokers (M) Sdn. Bhd., has continued the IEM-PII Scheme for the benefit of members.'Professional negligence' is the failure of a professional to meet the standards of cares to be expected from the average competent and experienced practitioner in carrying out his duties, thus rendering the profession liable in law to a client or some other third party who suffers a loss due to the negligent acts, errors or omissions of the professional, albeit there must be actual loss and such loss has to be proven.

The PII is designed to respond to legal liabilities and the costs of defense rather than any moral liabilities or strictly commercial considerations. The PII indemnifies the insured in case of a loss which the policy has been made but he cannot recover more than the actual loss or for pure economic loss. An employer is liable for the negligent acts, errors or omissions of his employees and a principal for the negligence of his agents. Where two or more professionals come together in a partnership, all the partners are jointly and severally liable to others for the liabilities of the partnership. Although a body corporate has limited liabilities in contract, they should still carry PII coverage to safeguard their long term prospects and the goodwill earned, and to protect their director's liabilities in tort.

Members should take note that the extent, terms and conditions of PII insurance coverage offered by the insurers had gone through scrutiny and negotiations by the PII Committee for the Member's benefit. Each application for the IEM-PII Scheme is considered on its merits by the insurers. The insurers are able to offer the PII coverage under the IEM Scheme at annual premiums that are considerably lower than corresponding PII coverage obtained in the open market. Members wishing to purchase PII under the IEM Scheme should contact the Secretariat for more details.

For Free Consultation and Enquires on IEM-AON Professional Indemnity Insurance.

AON Professional Risks	Tel. No.	:	603-2095 6628 (AON) / 603-7968 4019 (IEM)
AON Insurance Brokers (M) Sdn Bhd	Fax No.	:	603-2095 6618 (AON) / 603–7957 7678 (IEM)
7th Floor, Bangunan Malaysian Re	Email Add	:	charles_perera@aon-asia.com
No. 17, Lorong Dungun, Damansara Heights 50490 Kuala Lumpur	Contact Person	:	Mr. Charles Perera (AON) / Mr. Lim Khin Yeng (AON) / En. Ahmad Tarmizi (IEM)

4. IEM Corporate Agency – Motor Vehicle/General Insurance Policy:

IEM is pleased to announce that the Institution has registered as a Corporate Agency with the Malaysian Alliance Assurance Berhad (MAA) and ACE Synergy Insurance Berhad. Members are strongly urged to purchase their Motor Insurance with IEM Corporate Agency and in return, IEM will receive 10% of commission from the premium paid. Therefore, IEM members support is crucial for the SUCCESS of this unit.

Please be informed that the operations office of IEM Corporate Agency is under the IEM Training Centre – Insurance Office. Kindly contact or submit your application at the following contact details:-

For purchase or renew your motor vehicle insurance (IEM Corporate Agency)

IEM Training Centre Sdn Bhd	Tel. No.	:	603-7958 6851
No. 33-1A (1st Floor), Jalan 52/18	Fax No.	:	603-7958 2851
P.O. Box 224 (Jalan Sultan P.O.)	Email Add	:	iemtcsb@gmail.com/iem.insurance@gmail.com
46720 Petaling Jaya, Selangor Darul Ehsan	Contact Person	:	Pn. Wan Rohaizah/Pn. Haslinda Abd. Aziz

The application form for the above insurances can be obtained from; http://www.iem.org.my

BENEVOLENT FUND

Past and present members, including their spouses, children and other dependents can apply to IEM for financial assistances when:-

- Incapacitated by sickness, age, accident or other infirmity and who are unable to provide for their own care;
- In a distressed circumstance.

JURUTERA WARGAMAS SCHEME

This Scheme subsidies the annual subscription of members who continuously meet minimum IEM Membership requirements and who are not permanently employed by any company and are unemployed and recognised to be in Senior Citizen or Disabled category. Members who are unemployed due to health reasons are also considered. Members who are eligible and wish to apply for this concession shall write to IEM by filling up the 'Jurutera Wargamas Scheme Application Form'. The application form and its condition can be obtained from IEM Homepage: http://www.iem.org.my.

EXEMPTED FROM SUBSCRIPTION

Any member who have fulfill Article 4.7 of the IEM Constitution and Bylaws will be exempted from the Annual Membership Subscription Fee, which states as follows:-

"Any Corporate Member who has reached the age of sixty-five (65) years on 1st of January of the year and who has paid his Annual Subscription Fee for a period of not less than twenty-five (25) years preceding shall be exempted from payment of further subscription, provided that he is no longer in gainful employment."

WAIVER OF SUBSCRIPTION

Members other than student members who have been retrenched from employment and are in financial distress can apply for waiver of subscription.

HEALTH AND EXERCISE – WAI DAN GONG

Wai Dan Gong health exercise classes are conducted in the IEM Penthouse every Monday and Wednesday evening from 8:15 p.m. to 9:15 p.m. Members including spouses are welcome to join this classes which are FREE.

NOTE: Please refer to the IEM Secretariat for specific details, terms and conditions of the respective benefits.

Job Vacancy Advertisement at IEM's Website and Notice Board

Please be informed that IEM provides job vacancy advertisement through the IEM Website and Notice Board to its members and non-members who are looking for engineers on a full time/contract or on part-time basis to fill job vacancies in their respective companies. The 'Job Vacancy Advertisement Form' and 'Its Terms and Conditions' are available at the IEM website, *www.iem.org.my* or you may contact En. Ahmad Tarmizi, the IEM Secretariat at 03-7968 4019 for more details.

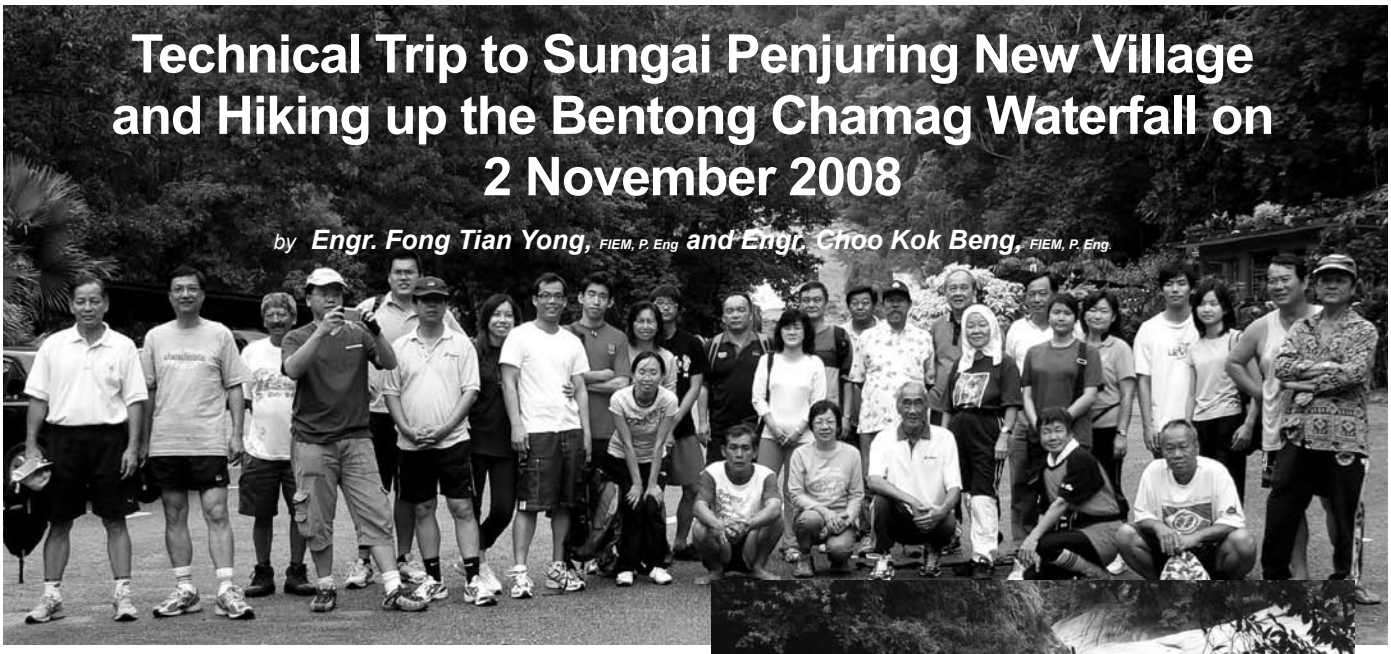
Job seekers can search for their desired employment in the IEM Website under 'Job Gallery' section for the latest job vacancy advertisements.

Thank you and best regards,

Chairman
Standing Committee on Welfare and Service Matters
The Institution of Engineers, Malaysia

Technical Trip to Sungai Penjuring New Village and Hiking up the Bentong Chamag Waterfall on 2 November 2008

by *Engr. Fong Tian Yong,* FIEM, P. Eng *and Engr. Choo Kok Beng,* FIEM, P. Eng.



Participants and guides assembling at first level fall before the climb

The top falls with the swirling pool – 5 km from the first level fall

Lunch at Village Developer Officer's house

Photo taken at the Rain harvesting site

THE hiking group comprising of 28 participants from IEM team and TAM team set off from KL at 7:30 a.m. and stopped over at Bentong for breakfast. It was raining since the early morning. The group assembled at Chamag Waterfall foothill at 9:30 a.m. Six local guides gave a short briefing at the first level fall where participants were given leech-repellent lotion before moving up in a convoy.

It was a 5 km climb along a jungle trail with parts of slope rather steep and slippery. About 3 km up the hill, there was an old relic of water works structure consisting of old concrete structures and one meter diameter steel pipes that are badly corroded. The local guide informed that it was built in 1917 for electricity generation. There was a big arch way carved into a huge rock for the laying of the steel pipes. There were traces of drill holes and one wonders how they managed to construct such work at that period.

The IEM team took a keen interest of some other details such as rock valve which is still inside the old steel pipe.

After a total of two hours of hiking, the group finally reached the top falls. It was a spectacular view with water pouring from steep rock face onto a big swirling pool. The guides warned that it is too dangerous to swim even for the strong swimmers. The cool jungle surroundings display a rich variety of fauna and flora amidst the roaring rapids.

The way down took us only an hour as members have learned the way to track in hilly areas. We were given light refreshment by the local guides who dared us for the next challenge – to climb Bentong Hill. Our group leader, Mr. Fong thanked them for the hospitality and reciprocated our invitation to them to climb Gasing Heights, Petaling Jaya. The group left the site at 1.00 p.m.

Apart from the hiking activity, the IEM team lead by Engr. Choo Kok Beng, Engr. Fong Tian Yong, Engr. Yim Hon Wa and Engr. Ishak Abdul Rahman made a technical visit to the Sungai Penjuring New Village to offer technical advice on installing rain harvesting system. The team met with the village head and elders and had advised them on the best way to install a rain harvesting system for their multi purpose at the community hall measuring about 30m x 60m. About 3000 litres of rainwater stored will be used for the toilets, washing the hall, watering plants, car washing and other not portable usage.

The cost of material is provided by funding from the Government. Labour will be provided by the villages with adhoc supervision from IEM Team. The villages were very appreciative of the assistance and treated the team with a sumptuous lunch. IEM Team covered their own cost of travelling and there was no cost to the Standing Committee on Welfare and Service Matters. The trip was indeed a very successful and hopefully the team will return one day to see the result of the pilot project. ■

Half-Day Seminar on Waste Management

by **Engr. Tang Boon Heng,** MIEM, P. Eng.

THE Environmental Engineering Technical Division of The Institution of Engineers, Malaysia, had organised a half-day seminar on waste management at the conference room of Bangunan Ingenieur, Petaling Jaya, on 25 October 2008. The seminar was attended by 31 participants.

Waste management has been a hotly debated subject in recent days. This is basically due to the fact that waste management directly affects our daily lives. Poor waste management will result in pollution to the environment, which will ultimately affect our survival on this planet.

In Malaysia, there are various types of waste generated by various types of human and economic activities. The most common type of waste that we encounter daily is municipal and industrial waste. Municipal waste is generated by the population of this country, while industrial waste is generated by our industrial activities.

With this in mind, the Organising Committee invited speakers who are experienced and competent in this field to present the topic to fellow engineers. The first two invited speakers, Engr. Lee Heng Keng and Prof. Agamuthu Pariatamby focused on scheduled waste and municipal waste management, respectively, while the third speaker, Engr. Tony Liew, focused on technological development for the conversion of biodegradable waste into organic fertiliser and other end products.

The first speaker, Engr. Lee, gave a presentation on dealing with scheduled waste management. He first introduced some past statistics on scheduled waste produced in Malaysia in terms of quantity as well as the various methods used to manage such waste. He further touched on the existing regulations and acts governing the management of scheduled waste, namely, the Environmental Quality Act 1974 and the Environmental Quality (Schedule Waste) Regulation 2005 (enforced since 15 August 2005) which replaced the previous regulation enacted in 1989. Engr. Lee summarised the scheduled waste categories as follows:

i) Group 1: Metal and metal bearing waste (10 categories, from SW 101-110)
ii) Group 2: Waste containing principally inorganic constituents (7 categories, from SW 201-207)
iii) Group 3: Waste containing principally organic constituents (27 categories, from SW 301-327)
iv) Group 4: Waste which may contain either inorganic or organic constituents (32 categories, from SW 401-432)
v) Group 5: Other wastes (1 category-SW501)

Engr. Lee explained the responsibilities of the scheduled waste generators, which is notification, inventory recording, packaging, labelling, consignment noting, safe transportating of waste, waste treatment and disposal, training and spillage/accidental discharging.

Engr. Lee subsequently discussed the current issues, enforcement and problems associated with scheduled waste management faced by the various parties; the waste generator, the enforcement authority and the general public. He completed his presentation by discussing the possible countermeasures that can be adopted such as enhancing enforcement, stiffer penalty for offenders and act/regulation amendments to overcome the current shortcomings in existing scheduled waste management.

The second speaker, Prof. Agamuthu, presented his paper on municipal solid waste and the implication of the solid waste bill on recycling. He stressed on the urgency to address the issue of municipal solid waste management as the problem is gaining more prominence due to a steady increase in waste generation as well as the ineffectiveness of the mechanism to solve the problem. The various problems faced by municipal solid waste management are the rapid increase in waste generation, highly mixed waste, lack of a proper/effective waste management action plan, public awareness on proper waste disposal and lack of suitable space.

Prof. Agamuthu highlighted the proposed Solid Waste and Public Cleansing Management (SWPCM) Bill 2007 which had been delayed for a long time and was finally tabled in Parliament in May 2008 and subsequently approved in July 2008. The Bill called for high quality services in managing solid waste by adopting good management practices from Japan, Denmark, Switzerland, Germany and the United States. Key features of the SWPCM Bill includes shifting the solid waste and public cleansing authority from the state government to the federal government and the sharing of waste management cost between the federal and local government. The Bill covers all types of waste from commercial, public sites, construction sites, household, industrial activities as well as imported waste.

Currently, Malaysia disposes most of her solid waste through the landfill method. This method is far from ideal as the disposal process is not properly executed, hence causing environmental pollution due to the uncontrolled flow of leachate, and scavengers mishandling the collected waste at the disposal site. Some of the alternatives to landfill disposal are composting, anaerobic digestion, recycling, refuse-derived fuel (RDF) conversion and others.

An effective solid waste disposal management should include all the relevant alternatives as mentioned. However, waste separation will be of paramount importance to ensure successful implementation of the plan. Prof. Agamuthu concluded his presentation by dealing with the direct implications of the SMPCM Bill, which encourages the adoption of the 3R principle (Reduce, Reuse and Recycle), and dealing with unauthorised movement/storage of municipal solid waste thus creating a clean and hygienic environment, the removal of scavengers and enhancing the public awareness on municipal solid waste management.

The third speaker, Engr. Liew, presented his paper on the organic waste disposal technique, which manages to convert waste into a harmless yet useful organic product like fertiliser.

He discussed about the two methods of composting, namely, the aerobic and anaerobic processes. Factors that enhance the aerobic process include plenty of air supply, an optimum temperature of 65 degrees Celsius and churning of the waste.

The aerobic composting process is exothermic, odourless and a reduced C/N ratio from 40 to 15, yet the entire composting process takes 45 to 60 days. On the other hand, the anaerobic composting process is actually the opposite of the aerobic process. It does not require air supply and is endothermic with an optimum temperature of 55 degree Celsius. The anaerobic process produces CH_4 and CO_2, odourless gases like H_2S and NH_3, and the anaerobic compost produced is smelly.

Based on the principle of the aerobic process, Engr. Liew proceeded to discuss the HIWAVE COMPO technology (Aerobic Thermophilic Fermentation ATF) which adopted the infra red and microwave heating technology. The entire fermentation process is closely controlled and monitored, which takes only three days to complete. Blending nutrients like NPK may be added to convert the end product into an organic fertiliser.

Engr. Liew continued to present the HIWAVE STP, HIWAVE COMPO organic fertiliser factory and PE*GRE-ENERGY system (PEGES). All these technologies are an integrated system which involves the organic waste degradation process and converts the products into useful end products.

During the question and answer session, all the speakers satisfactorily answered all the questions raised by the seminar participants. The seminar chairman, Engr. SL Khew, presented momentos to the three distinguished speakers of the seminar. The half-day seminar ended at 1.00 p.m. ■

Talk on Environmental Monitoring and Compliance: Things the Industry Needs to Know

by ***Engr. Mohamad Fadzil bin Adnan,*** *MIEM, P.Eng.*

THE talk on 'Environmental Monitoring and Compliance: Things the Industry Needs to Know' was conducted at the IEM Conference Hall, Bangunan Ingenieur, Petaling Jaya, on 24 October 2008. It was attended by 37 participants.

The talk was delivered by Engr. Zaki bin Zainudin, a lecturer at the Faculty of Chemical Engineering, University Teknologi MARA (UiTM) Shah Alam. He obtained both his B.Eng. (Hons.) in Chemical Engineering and M.Eng in Environmental Engineering from Universiti Teknologi Malaysia (UTM) and has previously worked in a prestigious environmental consultancy firm prior to joining UiTM.

As an introduction to his talk, Engr. Zaki shared an analogy, that earth is like 'an island' and there is an urgent need to protect the island as man has nowhere to go. Thus, it is crucial that we take great care of the 'island' environment as resources are limited and it takes time to regenerate as the population increases.

Engr. Zaki discussed the Environmental Laws which are widely relevant to the industry, namely, the Environmental Quality Act (EQA) 1974, Environmental Quality (Sewage and Industrial) Effluents Regulations 1979, and the Environmental Quality (Clean Air) Regulations 1978. These regulations ensure that activities conducted by the respective industries do not adversely affect the environment throughout the construction, operation and decommissioning phases of their respective premises.

He then elaborated on the breakdown of the various standards such as the difference between Standard A and Standard B for the EQA and the different classes from I to V for the water quality standards.

Engr. Zaki stressed on the importance for the industry to engage an accredited laboratory from SAMM for the monitoring as it is part of the requirements of the Department of Environment (DOE). Failure to do so would result in additional costs, not to mention the fines imposed by the relevant authority.

In conclusion, Engr. Zaki highlighted the importance of having performance benchmarking of the industry and the industry's awareness on environmental monitoring methods such as sampling points, monitoring equipment and general monitoring requirements.

During the question and answer session, the participants queried Engr. Zaki on a number of issues. There were queries on the Environmental Impact Assessment (EIA) and why the Malaysian Environmental regulations are more stringent than others in the region.

Engr. Zaki answered that even though some of the regulations are more stringent than others, the most important thing is to uphold the ethics of the industry in protecting the environment as the authority could only partially monitor and enforce them. Addressing the EIA issue, he said the requirements to be a consultant for the EIA is more stringent than being a professional engineer as certain parties had abused the guidelines given by the DOE previously. ■

Half-day Seminar on New Technologies for Energy Saving with Central Air Handling Unit

by **Engr. Gary Lim,** MIEM, P. Eng.

FROM 7 March to 21 March 2008, Henry Moehnle, Sales Director of Robatherm Germany, had visited the IEM Headquarters and the Penang branch office respectively to present the new technologies for energy saving with central air handling units. Robatherm was established in Germany in 1853 and have been producing air handlers for 40 years. In 2002, Robatherm setup its factory in Thailand to be closer to the Asian market. Robatherm is one of the leading European manufacturers of customised air handling units. Although the company is a specialist, it is not limited to sectors such as electronic and semiconductor, pharmaceutical, automotive and hospitals.

Moehnle explained the position of AHU standards in Europe, *i.e.* EN13053, EN13779, VDI 3803, VDI 6002, EN1886 and DIN1946-4. The importance of these standards towards energy saving is shown in many ways such as the condensate prevention factor, fan classes, heat recovery system efficiencies and Fan Specific Power (SFP). He stated that these standards have not been widely used by consultants in the Asian market. There is a need to enthuse engineering designers and to emphasis on the potential. Moreover, he mentioned that the Classification of Energy efficiency by the EUROVENT organisation, every AHU sold in European market shall be classified this way and will deliver its rated energy consumption. Class A will stand for the state-of-the-art of unit design.

Plug fans are one of the highlight technologies to reduce energy consumption and to increase the efficiency of the entire unit. Moreover, its cleanability and hygienic performance support the function of clean rooms, hygienic installations, hospitals, etc. Moehnle compared the efficiency of a forward curved fan, a backward curved fan and a plug fan. Plug fan has shown to be the preferred choice in terms of performance.

Heat recovery systems were emphasised during the seminar as well, namely, heat recuperation, plate heat exchangers and run-around coils. Finally, he gave his opinion on the future trends of air handling units in the Asian market. For example, he drew attention to life cycle cost (LCC) and the improvement of air quality through hygienic matters. ■

EUROVENT

Energy Efficiency Classification

Class	Type of Unit	Air Flow-Class	HR-Class	Max. Power Consuption [kW]
A (EUROVENT - AIR HANDLING UNITS ENERGY EFFICIENCY CLASS)	Units w/o Thermodynamical Treatment	V4	---	0,95 x $P_{Input\ max}$
	Units c\w with Heating	V3	---	0,95 x $P_{Input\ max}$
	Units with additional Components, such as Cooling, Air Flow < 3 m³/s	V3	H2	0,95 x $P_{Input\ max}$
	Units with additional Components, such as Cooling, Air Flow < 3 m³/s	V2	H2	0,95 x $P_{Input\ max}$
B (EUROVENT - AIR HANDLING UNITS ENERGY EFFICIENCY CLASS)	Units w/o Thermodynamical Treatment	V5	---	1 x $P_{Input\ max}$
	Units c\w with Heating	V4	---	1 x $P_{Input\ max}$
	Units with additional Components, such as Cooling, Air Flow < 3 m³/s	V4	H3	1 x $P_{Input\ max}$
	Units with additional Components, such as Cooling, Air Flow < 3 m³/s	V3	H3	1 x $P_{Input\ max}$
C (EUROVENT - AIR HANDLING UNITS ENERGY EFFICIENCY CLASS)	All Others	No requirement		

$P_{Input\ max} = [\text{Delta } p_{stat}/450)]^{0,925} \times [q_v + 0,08]^{0,95}$ in [kW]; Delta p_{stat} in [Pa]; q_v in [m3/s]

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OUR APOLOGIES

In a report entitled 'Talk on Tunelling Practices in Malaysia using NATM' published in the November 2008 issue of Jurutera, NATM stands for New Austrian Tunnelling Method instead of as published. We apologise for the error.