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# Women in Engineering



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August 2011 Reduce, Recycle and Reuse (Rethink) (Submission by June 1, 2011)

September 2011 Remediation and Management of Contaminated Land-Focus on Asia (Submission by July 1, 2011)



October 2011 Geotechnical Engineering (Submission by August 1, 2011)

# ADVERTORIAL

# Addressing Issues of Safety and EMF Exposure to the Public

How aware is the public on issues of safety and electromagnetic field (EMF) exposure? There have been concerns on safety and health effects due to close proximity of transmission lines to housing estates and commercial centres. The public generally accepts the fact that electricity is essential in their modern and daily lives but having a transmission pylon close to them has in some way created scepticism and discomfort.

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In addition, TNB also carries out EMF level testing within our high tension reserves (right of way) that lie directly under the transmission conductors. Readings are consistently recorded between 13 to 30 mG (milliGauss) on average which are well below the maximum level of 1,000 milliGauss (or 100 microTesla) as recommended by World Health Organisation (WHO) and International Commission on Non-Ionizing Radiation Protection (ICNIRP).

WHO has concluded that there is no substantial evidence for claims of adverse health effects due to EMF at levels generally encountered by members of the public. The distance between our high voltage transmission conductors to the nearest permanent structure is also in compliance with the Electricity Supply Act 1990. Additionally, TNB's philosophy in design, construction, operation and maintenance of high voltage transmission lines strictly complies with international safety standards.



It is vital for the public to be aware that EMF is and will be present whenever there is electricity, be it at extremely high voltage or at low voltage. Based on a quote, "EMF is strongest close to the source and diminishes with distance" (WHO fact sheet No. 322, June 2007). EMF is present in our daily surroundings, including our homes and offices. Hence, it is important that we understand how electricity can be useful and not detrimental to our health.

The limit recommended for the exposure to EMF is 1,000 milliGauss (or 100 micro Tesla). Here is the EMF data measured on everyday electrical appliances for comparison:									
In front	1 foot	2 feet							
477.0 mG	49.4 mG	11.8 mG							
80.0 mG	7.2 mG	2.4 mG							
52.6 mG	2.7 mG	1.6 mG							
48.0 mG	2.6 mG	1.3 mG							
33.0 mG	1.4 mG	1.4 mG							
19.6 mG	2.0 mG	1.6 mG							
11.4 mG	1.8 mG	1.5 mG							
9.0 mG	1.4 mG	1.3 mG							
8.1 mG	5.1 mG	1.6 mG							
6.6 mG	2.1 mG	2.0 mG							
4.1 mG	1.9 mG	1.2 mG							
Directly under	Edge of I (TNB's re at transn	Edge of HT reserve (TNB's restricted zone area at transmission lines)							
30 mG	13 mG	13 mG							
	d for the exposure F data measured or In front 477.0 mG 80.0 mG 52.6 mG 48.0 mG 33.0 mG 19.6 mG 11.4 mG 9.0 mG 8.1 mG 6.6 mG 4.1 mG Directly under 30 mG	In front       I foot         In front       I foot         477.0 mG       49.4 mG         80.0 mG       7.2 mG         52.6 mG       2.7 mG         48.0 mG       2.6 mG         33.0 mG       1.4 mG         19.6 mG       2.0 mG         11.4 mG       1.8 mG         9.0 mG       1.4 mG         6.6 mG       2.1 mG         4.1 mG       1.9 mG         Directly under       Edge of I (TNB's reat transmost)         30 mG       13 mG							



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# Women in Engineering

by Ir. Lau Yuk Ma, June Chairperson of the Sub-Committee on Women Engineers

**THE** earliest women who took up engineering studies in Malaysia did so during the 1970s. Between the 1980s and 1990s, the percentage of women in engineering studies were within the range of 0% to 15% out of the total enrolment of engineering students in universities. Since 2000 however, the percentage of women in engineering has increased to about 50%.

Women who studied engineering have always excelled in their respective fields of achievement, and many are excellent award recipients, first class degree holders or top students.

However, according to the database of the Board of Engineers Malaysia and The Institution of Engineers, Malaysia (IEM), the registration of women engineers is less than 20% of the total number of engineers registered. What about the industry? The percentage of women in employment in the engineering industry does not reflect the number of graduates. What could be the possible missing link?

In our country, there is equal opportunity for a fair education for both genders, yet we are losing a huge proportion of our human assets as a large number of women engineering graduates gradually disappear from the engineering industry.

IEM WE, the Women Engineers Group of the IEM, was formed in 2000 under the leadership of Ir. Toh Yuan Kait and 12 committee members to promote the participation of women in engineering and IEM. This year, IEM WE celebrates its 10-year anniversary. The IEM WE's mission is to build a large network of women engineers, to embrace and deliver the "Results of Living on Purpose". In the divine heart of every woman, their love and attention naturally goes out to their loved ones - the importance of life and family first, self second and profession last. IEM WE promotes the idea of having a balanced life while giving our very best in the profession of our choice.

The balanced formula is to raise our self-esteem, have compassionate communication among family members to reach an understanding, and reach the destiny of our magnificent purpose in life. IEM WE and IEM is the best platform for women engineers to come forward, to appreciate life and its purpose, to move on without fear; the secret within is to "serve with your heart, and give all you can; you will have no regrets, as the returns will be enormous".

In this journey with all the IEM-WE committee members, we celebrate our success at every moment, we all support each other, we clear every doubt, we fulfil every need, we give every direction, we gain every breakthrough; therefore, we invite everyone to join us in this journey to celebrate our life and living – as Women in Engineering. Our contribution to the profession and to our family is significant, so let us record this in the IEM WE website – (www. IEMWomenEngineers.org.)

IEM is 100% supportive of all women engineers. The choice is, therefore, in the hands of all women engineers. The typical stereotype should not be an obstacle in our pursuit of achievement and life fulfilment.

In June 2012, IEM WE invites everyone to join us in receiving women engineers from around the world to our international conference. We also welcome those who are interested to participate in our organising committee.

In this issue of JURUTERA, we are pleased to present the achievements and views of several prominent women engineers from different disciplines in the industry. If you want to be our next interviewee, please help us get in touch with you.

# **Women Engineers To The Fore**

**THEY** have showed incredible strength and persistence to overcome the numerous challenges in their lives. JURUTERA met up with four outstanding women engineers who related their stories. They are Ir. Prof. Dr Siti Hawa binti Hamzah from the Faculty of Civil Engineering, Universiti Teknologi MARA (UiTM); Ir. Assoc. Prof. Dr Marlinda binti Abd. Malek, Director of Research Management Centre at Universiti Tenaga Nasional (UNITEN); Ir. Assoc. Prof. Hayati binti Abdullah from the Faculty of Mechanical Engineering, Universiti Teknologi Malaysia (UTM); and Ir. Magdalene Tan Lee.

# WHAT MAKES A GOOD WOMAN ENGINEER?

Ir. Magdalene Tan Lee describes a good woman engineer as one who is competent in her work, competitive and conscientious, yet remains compassionate when the situation calls for it. She stated that, besides juggling between personal needs and time for her family at home, a woman also has to give her best when she is at work. She said, "I believe in plain hard work and in a woman's natural ability to multitask. It is also important to have good time management and avoid procrastination, but sometimes, as women, we just need to go with our gut feelings."

Ir. Prof. Dr Siti Hawa pointed out that it was very important for a woman to balance her responsibilities. She said, "When my children were younger, I dedicated my time to them. Now that they are all grown up, I have become more active in IEM. It is simply a matter of establishing one's priorities." She added that, besides being committed, women engineers also needed to strike a good balance in their lives if they want to move forward in their career. It also helps if they have an understanding life partner who can provide moral support.



Ir. Assoc. Prof. Hayati

According to Ir. Assoc. Prof. Hayati, she admits that being visible can be a challenge for women engineers in general. As such, they must have the right attitude, leadership qualities, technical expertise and be skilful and competent in their respective areas. She said, "Currently, I am the Honorary Treasurer and Executive Committee



Member of the IEM Southern Branch, the first woman to hold these two positions. Someone asked me if I intended to become the first female chairperson. I told them that I would do my best and let the members decide based on my performance and not just because I am a woman."

# WHY SHOULD A WOMAN JOIN A MALE DOMINATED INDUSTRY SUCH AS ENGINEERING?

Ir. Magdalene Tan Lee answered, "I come from a small village in Taiping where, in the 1960s, public amenities such as roads, drainage and buses were almost nonexistent. The train was the major mode of transport then. I wanted to have my own car because it was so much more convenient, but then I realised we needed to have good roads and electricity. That was when I realised that by being an engineer, I could improve the standard of living for myself and for others."

For Ir. Assoc. Prof. Dr Marlinda, she was first interested in the construction industry when she was just a young girl. She said, "At that time, I was curious and wanted to



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# **COVER STORY**





know how a building was constructed. That was why I studied engineering. I did not know then that it was a male dominated industry until I attended university and realised there were very few female professors around. However, I decided to put that aside."

Initially, Ir. Assoc. Prof. Hayati wanted to be an English teacher. However, when she was offered a chance to study mechanical engineering in the United States, she decided to give it a try. She said, "When I was there, there were only three women, including me, in a class of about 25 people. It was daunting at first, but then I slowly became inspired by my professors who were practising engineers. They made lessons interesting by sharing and relating their work experience with what we learned from the textbook."

When she became a lecturer herself, Ir. Assoc. Prof. Hayati began adopting the same teaching method with her students. She added, "My philosophy is I teach what I practise and practise what I teach. I take my students out of the classroom and familiarise them with the industry. I also assign projects that are relevant to the industry."

# WHAT KIND OF CHALLENGES DOES A WOMAN ENGINEER FACE?

Ir. Magdalene Tan Lee said, "I was quite lucky in the sense that throughout my career, I had good bosses who were supportive of my work and did not treat me differently just because I am a woman. I believe that as long as we remain competent and deliver the right results, there should be no issues regarding gender."

Ir. Prof. Dr Siti Hawa, who was awarded the IEM Lady Engineer Award Winner 2007, felt that gender was not really an issue for her even though she was among one of the very few women engineers back in the 1980s. She said, "I can associate well with other engineers regardless of their gender. Thus, I did not face any problems when I got involved in consultancy work. I think what is important is for women engineers to act professionally and be adaptable to any situation."

On the other hand, Assoc. Prof. Dr Marlinda revealed that, before she became a lecturer, she worked at an engineering consultancy firm for about 10 years. At that time, among the consultants, all the women engineers refused to go to the project site. She said, "I actually did the opposite by grabbing the first opportunity to go." One of her most unforgettable experiences involved working from 6.00 p.m to 6.00 a.m to supervise the laying of pipes across highways.

She said, "At that time, I just ended my confinement period after delivering my second baby. Thankfully, my husband was very understanding. Through this experience, I learned a very valuable lesson, that is to get my work done without any excuses. Thus whether you are a male or female engineer, I think it is important to differentiate yourself from the crowd. You need to prove to your employer that you are reliable regardless of your gender."

For Ir. Assoc. Prof. Hayati, it all boils down to simple common sense. She said, "In the past, I had to travel from Johor Bahru to Pulau Pinang every weekend to take care of my mother who was suffering from cancer as I was the only daughter among my siblings. People have asked me how did I manage to do it. I told them that when you have no choice, you would find a way to do it. That is basically what engineers do, they solve problems that come their way."

# THE GOVERNMENT HAS SET AN OBJECTIVE FOR 30% OF DECISION-MAKING POSTS TO BE HELD BY WOMEN. IS THIS ACHIEVABLE IN THE ENGINEERING INDUSTRY?

Ir. Magdalene Tan Lee felt that such a target was quite achievable, especially when more women engineers are allowed to work from home. She said, "I have heard of

# **COVER STORY**



many women doing so and I think that it is a great encouragement. In fact, we can start from the IEM Council itself. Perhaps one day, a woman may be elected as the IEM President. However, we should not rush into such matters. We need to do it step by step, make sure we have a good foundation and that everyone has the right mindset."

Ir. Prof. Dr Siti Hawa binti Hamzah concurs that the target is certainly achievable. She said, "I have no doubts that we will achieve that target in the near future. At UiTM's Faculty of Engineering, the ratio of female to male students is about 50:50. So it is definitely not impossible to achieve that target."

Ir. Assoc. Prof. Dr Marlinda point out that, among the IEM Women Engineer members, many of them were already directors of their companies. She said, "I really look up to some of these women; they can manage a big company, procure good jobs both locally and at the international level, and fulfil their duties as wife and mother all at the same time." She added that the government should encourage such achievement by providing women with more opportunities.

Ir. Assoc. Prof. Hayati binti Abdullah stated that, if the Government was serious about achieving such a target, they needed to come up with a proper mechanism to make it happen. At the same time, she felt that women engineers needed to come together and support each other. She said, "It is no longer enough to be a good engineer, we have to be great engineers. Women are natural performers, thus we need to aim for greater heights to achieve our goals."

On this note, Ir. Magdalene Tan Lee would like to encourage more women engineers to join the IEM Women Engineers group. She said, "Our main function is to provide a platform for women engineers to network, and to share our fun, joy, challenges and successes together." Ir. Assoc. Prof. Dr Marlinda added, "When I decided to study for my Masters and PhD, I switched to lecturing because I thought it was more relaxing. I found it enjoyable even though it has its own set of challenges. Today, I am grateful to the IEM Women Engineer for providing the support that I needed; they understood what I was going through."

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# Creating a Platform for Advancement of Women Engineers



by Ir. Assoc. Prof. Dr Marlinda binti. Abd. Malek

**WOMEN ENGINEERS** first engraved their presence in IEM under the tutelage of Ir. Toh Yuan Kait in 2000. Raising a family and trying to build a bridge all at once? That was what seven professional women engineers in the Lady Engineers Sub-Committee of IEM were out to convince women of their unique capabilities. This pioneer group worked hard to change the perception that women, especially those with families, were unsuitable as engineers.

With the opinion and belief that "Times are changing, and prejudices and stereotypes can no longer keep women away from the profession", the Sub-Committee members of 2004, comprising of Ir. Chin Lee Ling, Ir. Rosaline Ganendra, Ir. Magdelene Tan Lee, Ir. Kumari Nalini, Ir. Aminah binti Abdullah and Ir. Assoc. Prof. Kartini binti Kamaruddin paved their ways into the women engineering fraternity.

Parked under the IEM Standing Committee of Welfare and Service Matters, the Lady Engineers Sub-Committee crafted further waves with its deliberated mission and vision. The Lady Engineers Sub-Committee headed by Y.Bhg. Datin Ir. Prof. Dr Siti Hamisah binti Tapsir in 2004 to 2005, Ir. Chin Lee Leng in 2006 to 2007, Ir. Toh Ai Ching in 2008 to 2009 and Ir. Lau Yuk Ma, June in 2010, established its Mission to build a large network connecting Women Engineers and to embrace and deliver the results of Living on Purpose, based on courage and joy. The members of this Sub-Committee has increased from 48 in 2009 to 150 in 2011, in line with its Vision to ensure that the engineering profession values, supports and celebrates the contributions of Women in Engineering, Science and Technology.



With support and encouragement, engineering is a profession that women can excel in, say IEM's Lady Engineers Sub-Committee

The Institution of Engineers, Malaysia has exhibited its recognition to successful women engineers who have made major contributions to the community. The IEM Lady Engineers Award recipients were



The Aims of the Sub-Committee are to encourage women in the profession of Engineering, Science and Technology, to participate in IEM Activities, to recognise and utilise the IEM platform for self-development, continuous learning, networking and contribution to the society.

Nevertheless, a major challenge to the IEM Lady Engineers Sub-Committee is to increase the number of female Professional Engineers (PE) in the country. Currently in Malaysia, approximately 3.8% of PE are females ("Engineers and Society" report, UPM, 2011). On this note, in 2011, the Sub-Committee was renamed to Women Engineers (WE) Sub-Committee, to better reflect the strong and positive qualities of female engineers. Objectives of this Sub-Committee are to encourage female students to pursue engineering studies leading to a career in engineering, to encourage women engineers to continue practising engineering, to inform practising women engineers of IEM activities and encourage participation in the activities and to support women throughout their engineering careers and to celebrate the achievements of women in engineering.

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With those objectives in mind and to encourage the sharing of experiences in the 'male dominated' professional arena, and the application of engineering knowledge to serve the society, community and nation, the Sub-Committee has generously organised activities such as evening talks, workshops or training classes, corporate connections, motivational talks and membership drives at universities and schools, annual tea parties, overseas fellowships and charity projects.

Another pertinent initiative the Sub-Committee has implemented was the establishment of Women Engineers of Southern Branch and IEM Women Student Section in UTM, Johor chaired by Ir. Assoc. Prof. Hayati binti Abdullah. The Sub-Committee most welcomes volunteers to chair its branches in Negeri Sembilan, Terengganu, Penang, Sabah, Melaka, Perak, Eastern, Kedah/Perlis and Miri.

In order to overcome the challenges faced by the IEM Women Engineers Sub-Committee, a significant Strategic Plan was initiated. The plan aims to connect 5000 women engineers through IEM WE's email correspondences list, to achieve a target of 100 Corporate Members in IEM WE, to obtain active support from strong 100 Corporate Members in all IEM activities, to achieve at least 2 women engineers providing voluntary service in each Standing Committee or Technical Division, to organise at least 52 activities (talks or workshops) for Session 2010/2012, to



Tea Party Gathering: Let's Party at IEM Penthouse on 14 March 2009

structure a standard operation procedure and systematic recognition for IEM WE, to promote interest and value in participation of members in events and activities to promote expansion to other IEM Branches and to develop leadership qualities in Women Engineers.

The Strategic Plan described above will not be successful without the full support of women registered as both Graduate and Professional Engineers in IEM. The Women Engineers Sub-Committee hereby wishes to take this opportunity to thank all women members of IEM for their tireless commitment and contributions through the years of its establishment.



Talk on 'Clean and Green Technologies – What is the Fuss All About' on 13 October 2010



Women Engineers Fellowship Trip to IES on 16-17 December 2010 (Left photo) Er. Jee Yi Yng, IES Asst. Hon Secretary (left) presenting a token of appreciation to IEM's Chairperson, Sub-Committee on Women Engineer – Ir. June Lau (Right photo) Group photo taken with IEM Women Engineer's delegates



Charity Project visit at Sri Ragharendra Divine Society Orphanage Home in Kajang, Selangor on 25 November 2006



Talk on "Engineering as a Career" at Sekolah Seri Aman, PJ, 2008



One Day Workshop on 'Professional Photography' at Wisma IEM on 18 December 2010



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# Condition Monitoring of Power Transformers



by Engr. Mohd Raffi bin Samsudin and Mr. Yogendra Balasubramaniam

**POWER** transformers are used to step up or step down the voltage in power systems. A step up transformer will increase the voltage for power transmission and ensure minimum transmission losses. On the other hand, step down transformers are used to step down the voltage for distribution uses.

Power transformers are continuously experiencing thermal, electrical and mechanical stresses. The life of a transformer is dependent on the degree of damage created by these stresses. Thermal stress comes from the heat generated by the transformer itself whereas electrical stress comes from the voltage across the insulation medium. Mechanical stress is generated from the fault downstream, lightning surges, improper design or manufacturing defect.

Incipient faults such as hotspots (thermal fault) and partial discharge (electrical fault) will accelerate insulation degradation. The degraded insulation will have higher leakage current as well as localised overheating (hotspots). The hotspots in a transformer can be generated due to stressed insulations which have lost its dielectric properties. In addition, partial discharges can be generated due to void and embedded metal in the insulation medium. Another type of partial discharge, known as corona, is generated in a transformer due to sharp edge.

If a transformer is suspected of experiencing thermal or electrical fault, the insulation medium of the transformer needs to be monitored such that the life of the transformer could be extended. This is because the transformer's life is dependent on the life of the insulation paper.

# CONDITION BASED MAINTENANCE (CBM) OF POWER TRANSFORMERS

Earlier maintenance practices of power transformers began with the "run to failure" practice. However, this maintenance practice consumes high hidden costs and affects the reputation of the utility. A failed transformer will affect the environment and the safety of the public. Thus, the failure of power transformers due to "run to failure" maintenance practice is not considered acceptable nowadays.

As an advancement of the maintenance practice, Time Based Maintenance (TBM) was introduced. TBM specifies the periodic maintenance for each serviceable component of a power transformer. The TBM practice has reduced the number of transformer failures, but it is still costly because of the redundant maintenance on less problematic transformers.

In order to better identify a problematic transformer and optimising its maintenance cost, Condition Based Maintenance (CBM) was introduced. CBM utilises condition monitoring tools to monitor the parameters in a power transformer for any significant change which is indicative of developing failure. In some utility, the CBM is also referred to as predictive maintenance. Condition monitoring allows the maintenance to be scheduled or preventive actions to be taken to avoid a failure before it occurs.

Condition monitoring of power transformers are required so that the life of a transformer can be extended and problematic transformers can be identified for close monitoring. The available condition monitoring methods for power transformers are Thermography, Dissolved Gas Analysis (DGA), Oil Quality Analysis, Windings Turns Ratio, Winding Resistance, Tan Delta (Dielectric Dissipation Factor), Acoustic Partial Discharge and Insulation Resistance.

In addition to that, the condition monitoring methods for On Load Tap Changers (OLTC), the only moving components in a transformer, are Motor Current Signature Analysis (MCSA), Vibration Signature Analysis (VSA), Dynamic Contact Resistance Analysis (DCRA) and DGA for OLTC oil. However, the condition monitoring methods for OLTC are still under development and there are many arguments on the standards related to it.

# ONLINE CONDITION MONITORING OF POWER TRANSFORMERS

The online condition monitoring tests for power transformers are Thermography, Oil Quality Analysis, inclusive of DGA, and Acoustic Partial Discharge.

# Thermography

The Thermography method is used to detect the abnormal temperature distribution of a transformer. Normally, abnormal temperature distribution in power transformers occur due to a clogged/blocked radiator fin, oil pump failure, fan failure or hotspots in the transformer tank.

# **Oil Analysis**

Nowadays, most of the transformers have been designed in such a way that an oil sample can be taken from its drain

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valve while it is online. However, extra precaution needs to be taken on the safety clearances between the live parts and the person at work before taking the oil sample. In addition, the oil level of the main tank has to be monitored before taking the oil sample too. This is because a lower oil level in the conservator tank will trigger an alarm signal or, worse, it can cause the transformer itself to trip.

The oil sample taken from a transformer can be used for two purposes. The first is to perform DGA, and the second is to perform a complete oil quality analysis. The oil test can be analogised as a blood test for humans. In DGA, there are seven key gases that will be used to diagnose the condition of the transformer. These gases are hydrogen, methane, ethane, acetylene, carbon dioxide, carbon monoxide and ethylene. These gases will be used to diagnose whether a transformer is experiencing hotspots (thermal fault), partial discharge or arcing (electric fault).

The DGA interpretation is done by using either the IEC60599 or the IEEE C57.104 standards. The IEC60599 consists of the IEC Ratio and Duval Triangle methods. The IEEE C57.104 consists of Total Dissolved Combustible Gases (TDCG), Doernensburg Ratio, Roger Ratio and Key Gas Analysis. On the other hand, the sampled oil can also be used for quality analysis. The oil quality parameters measured based on its testing standards are Dielectric Breakdown Voltage (IEC 60156), Moisture Content (IEC 60814), Dielectric Dissipation Factor (IEC 60247), Specific Resistance (IEC 60247), Suspended Particles in Oil Visual Sediment/Sludge (BS 5730), Interfacial Tension (ASTM D971), Kinematics Viscosity (ASTM D445), Color (ASTM D1500), Neutralization Value (ASTM D974), Flash Point (ASTM D92), Pour Point (ASTM D97), Particle Count (NAS 1638 and ISO 4406), Furan Content, Metal in Oil, Carbon Content and Corrosive Sulphur.

# **Acoustic Partial Discharge**

Although the oil analysis tests can identify most of the incipient faults inside a transformer, the localisation of the fault inside the transformer is still a major challenge. The acoustic partial discharge test is done to localise the electrical fault inside the transformer. The test is done online and data capturing is done from 24 to 72 hours. The localisation of the fault inside the transformer is compared with the transformer's design. This will enable the asset manager to make a decision on the repairs required for a particular unit based on the severity of the fault.

# OFFLINE CONDITION MONITORING OF POWER TRANSFORMERS

Once a transformer is suspected of experiencing a fault based on the DGA, the suspected unit will be subjected to offline tests. The offline tests consist of Winding Resistance, Insulation Resistance, Tan Delta or Dielectric Dissipation Factor, Sweep Frequency Response Analysis (SFRA), Winding Turns Ratio, Insulation Resistance and Low Voltage Impulse method (LVI). The LVI is an ongoing condition monitoring tool which is still under development. This method is said to be superior to SFRA because it does not require the historical information of the transformer winding.

## Winding Resistance

First, the winding resistance test is a DC test to measure the winding resistance for all the tap positions. The measured resistance will be corrected to 20°C. The winding resistance test is used to detect loose connection, shorted turns and opened/snapped turns. On some occasions, the winding resistance test will reveal the broken contacts in the OLTC.



# **1SUDOKU** Centerpiece "1"

## by Mr. Lim Teck Guan

### About the puzzle:

In this Sudoku variant, only 1 number is given as the clue, thus the name 1Sudoku. The rest of the clues are given in the numbered cages (the dotted frame encompassing 2 or more squares). You are to search for the right combinations to fit the total for the cages and end up with a Sudoku Grid, the 9 by 9 composite of squares where there is no repeat of the number 1 to 9 in every Row, Column or Block.

Fill in the remaining 80 squares with single digits 1-9 such that there is no repeat of the digit in every Row, Column and Block. The number at the top left hand corner of the dotted cage indicates the total for the digits that the cage encompasses.

### For tips on solving, visit www.1sudoku.com.my © Twin Tree Publishing

Solution is on Page 55 of this issue.

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# FEATURE



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# **Tan Delta/Dielectric Dissipation Factor**

The tan delta test is performed to assess the condition of the paper insulation. A degraded or contaminated paper will have a higher loss, thus this can be revealed through the tan delta test. The insulation integrity is influenced by moisture, acidity, void and particles in the insulation medium.

# Sweep Frequency Response Analysis (SFRA)

The winding mechanical integrity can be assessed using the SFRA technique. The winding of a transformer can be deformed during transportation, electromagnetic forces due to heavy fault current, lightning or defect during manufacturing. The initial signature of the SFRA will be used to compare with its in-service sister or its benchmark signature when it was manufactured. Any deviation will be recorded and action will be taken accordingly.

# **Turns Ratio**

The turns ratio test is done to check the voltage transformation ratio of the transformer. The turns ratio test can also be used to identify a loose connection, shorted turns or opened turns of the winding.

# **Insulation Resistance**

The insulation resistance test, a DC test, is used to assess the insulation integrity. This is the most basic test; however, the direct measurement of DC resistance of insulation does not reveal much information about the condition of the insulation. This method is so renowned that the polarisation index (PI) of the insulation can be obtained. The PI is defined as the ratio between resistances at 10 minutes with resistance at 1 minute.

# CONDITION MONITORING OF ON LOAD TAP CHANGERS (OLTC)

The only moving component in a power transformer is the OLTC. The tap changer experiences arcing, wear and tear, and oil degradation during tap operation. The condition monitoring of OLTC is still under development and there are many ongoing works. According to CIGRE, 41% of transformer failures are due to OLTC failure. The current ongoing developments for OLTC monitoring are MCSA, VSA, DCRA and DGA for OLTC.

The MCSA is used to assess the condition of the OLTC charging motor mechanism. If the charging mechanism is misaligned, worn out or experiencing sluggishness, a higher current reading will be recorded.

VSA is used to capture any abnormal vibration from the OLTC operation. This is done by comparing the benchmark or blueprint signature of the OLTC vibration with the signature obtained during in-service.

The DCRA is used to capture the performance of contacts during the OLTC operation. In addition, this test can also be used to complement the MCSA for the OLTC operation mechanism assessment. This test is very useful in identifying loose contacts, OLTC sluggishness as well as worn out contacts.

Finally, DGA for OLTC is done by capturing the seven key gasses mentioned earlier. This time, however, a different standard, which is the

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Duval triangle developed by Mr. Michael Duval in 2008, is used to diagnose the condition of the OLTC. The typical diagnoses in OLTC are coking and hotspots. In addition, the breakdown voltage of the OLTC oil will be measured together to assess the condition of the oil, whether it can quench the arc during the tap changing operation.

# CONCLUSION

CBM for a power transformer is driven by financial, safety and operational requirements. The condition monitoring tools must produce useful information on the transformer's condition such that cost-optimised maintenance can be done. This will also allow the maintenance resources and scheduling to be optimised. In addition, by applying the condition monitoring techniques, the lifecycle cost of a transformer can be reduced and the economic replacement of the unit can be done.

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# Safety First for Contractors



by Major Ir. Kamarulzaman bin Musa (Rtd.)

**IT** is generally known that workplaces in the construction industry are very different from workplaces in fixed location industries. Unlike the manufacturing industry, for instance, the environment of the construction industry tends to change over time, indicating the dynamic characteristic of the industry. Moreover, employers and workers move from one project site to another, which are sometimes located in different cities, states or even countries.

The construction industry covers a vast and diverse range of activities, hazards, materials, machines and equipment, workforce, contracts and other variables. In these circumstances, good management of construction projects is required from the conceptual stage to the execution stage. Construction hazards are not the biggest single contributor to Occupational Safety and Health (OSH) hazards, but it is the most noticeable, particularly when the media gives prominence to major accidents and dangerous occurrences.

# SAFETY IN CONSTRUCTION

As a major contributor to economic growth, the construction industry has always been associated with a hazardous work environment. Even though its labour force may not be as big as others, it has unfortunately, one of the highest worker fatality rates in Malaysia. This could be due to the temporary and changing conditions prevailing at worksites.

There is a need for a specific approach to manage OSH in the construction industry as the work involves risks which differ from other sectors. Therefore, occupational safety and health management at construction sites becomes extremely important. The high proportion of work-related accidents and fatalities that occur in the construction sector underscores the need for the highest level of safe practices by all parties involved especially contractors.



### SAFETY FIRST FOR CONTRACTORS

Whenever I see the slogan "Safety First", I tend to question the sincerity of the contractors concerned in managing safety issues at construction sites. Safety should be seen as the number one concern in any industry. In the construction industry, the need for such a concern is much more than in most other industries. Safety is everyone's responsibility, thus every person has a role in ensuring that the construction site is a conducive and safe environment for all (the client, the employer, the general public and the workers).

Safety First should send a strong message that whatever activity we do at work, we must have safety in mind as our top priority. This awareness should start from the individual to the management and, thereafter, set the safety culture of the company. The Safety First slogan underlines the principle that safety must begin with the commitment from top management and then go down to each individual. Once everyone becomes accustomed to it, safe practices then become a standard or "the culture" of that particular organisation.

Almost all sites have the "Safety First" slogan. However, it remains a mere slogan in most construction sites. In Malaysia, the construction industry has had a relatively high number of fatal accidents and injuries in comparison to other industries. Besides awareness, one of the reasons for this is the lack of safety budget. Safety has never been clearly 'specified' and properly 'budgeted'. Thus, it indirectly becomes one of the major contributing factors towards the high number of accident cases among local and foreign workers in this sector. Such problems deserve an in-depth study to assist Malaysia's construction industry and foreign companies which are involved in local projects.

The 'Safety First' concept must be instilled from the inception of a project. The Wedge Principle Diagram may assist in planning and incorporating the necessary safety elements into the various activities of the construction phases.

At the planning phase (construction on paper in the Wedge Principle), the client or project proponent should insist on implementation of the best safety practices by its potential contractors as one of the key requirements to reflect the commitment of the client. Once committed, the client should require the contractor to price or budget for safety and spell this out in the contract before awarding the project. All these measures should be done in the



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The Project Management "Wedge" Principle chart from TAN SRI DATO' Ir. JAMILUS HUSSEIN's Keynote Address in Seminar On Best Practices In The

Construction Industry 2008".

pre-construction phase. However, it is unfortunate that safety often 'starts' during the construction phase after the issuance of the 'Letter of Award'. At this stage, it may already be too late if safety provisions have not been unaccounted for during the pre-planning and planning phases.

It is important for contractors need to reflect on the reason for the lack of the right personnel and for failing to provide an organisational structure to plan and implement OSH effectively. Planning and implementing OSH in the construction industry requires the 'people' element. This depends on the size of the project and will require the appropriate number of safety personnel in a proper OSH organisation with the appropriate competencies. The availability of these resources and organisational setup helps the contractors to implement OSH more efficiently across geographical and cultural boundaries.



Safety Briefing for visitors

KLIA Project under construction, 1997

In order to implement the best safety practices, the 'people' factor, such as OSH personnel, may work under the umbrella of an OSH organisational structure and be involved in every phase from pre-construction and construction to the post-construction cycle. Timely inputs will be possible with their constant presence which is required at any time during the construction lifecycle. This marks the turning point of safety in any organisation to see if safety is first amongst all work, or whether it is being left behind in every work activity. The OSH organisational structure will ensure that assistance and advice are available to the top management and the workers.

Comparatively, it is clear that some organisations have not come to that extent to prevent accidents and property damages. The industry has set itself targets to reduce accidents, but is not yet on the right track to achieve these targets. We should not perceive that construction work is forever a dangerous place to work, so therefore, we allow it to remain that way. What I can foresee is that it is very important for contractors to be reorganised in terms of the adequacy of competent OSH personnel, maintaining a clear line of communication and well-defined roles and responsibilities which is essential to alleviate OSH to another level and also to meet the construction industry's targets and objectives to reduce accidents, property damage losses and interruption of business operations.

### CONCLUSION

The construction industry has earned a reputation for being a highly hazardous industry because of the high accident and fatality rates. It needs to look into new ways to improve its image. Accident frequencies and property losses create a great impact on the construction industry. Not only do these incidents cause delays in operations, but also directly and indirectly incur cost. Therefore, it is mandatory for all construction companies to provide a safe working environment for their workers and subcontractors.

For Safety to be First in an organisation, they must have the resources needed such as an adequate budget, safety organisation and a certain level of safety culture. Furthermore, the key to successful safety and health management is to engage a competent OSH officer under an OSH organisational structure which allows interaction with other divisions, who will plan and implement safety and be involved at all phases of the construction cycle from pre-construction, to the post-construction phase.

Under such circumstances, it is very important for the contractor to be better organised in terms of adequacy of qualified personnel, maintaining a clear line of communication and having well-defined roles and responsibilities to turn the concept of Safety First into reality as well as an organisational culture.

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- [5] Occupational Health and Safety in Construction Project Management, Helen. Lingard and Steve Rowlinson, Spon Press, 2005

# **Growing Demand for Modipalm Mills**

CB Industrial Product Holding Bhd is bidding for contracts for the construction of modipalm mills worth RM400 million locally and from various countries including Indonesia, Africa and Papua New Guinea. Managing director Lim Chai Beng said the company's order book stood at about RM400 million with 60% of the contracts from overseas. The new contracts the company is bidding for will be a combination of new modipalm mills and the replacement of the older mills.

Recently, Modipalm Engineering Sdn Bhd, its wholly-owned unit, has secured a RM32.28 million contract to build a palm oil mill in Sabah. For the financial year ending 31 December 2011, the full-fledged turnkey contractor for palm oil mills aims to register a double-digit growth in its net profit, riding on the favourable crude palm oil (CPO) prices and the demand for new mills. This year, the company is also planning to spend RM20 million for its capital expenditure, mainly for the cultivation in Kalimantan, Indonesia.

(Sourced from The Star)

EIA Approval for Dialog's RM5 Billion Terminal Project

.....

Approvals for the detailed environmental impact assessment (EIA) from the Department of Environment have been obtained by Dialog Group Bhd in April 2011 for its RM5 billion independent deepwater terminal project in Pengerang, Johor. Back in 2009, Dialog signed a memorandum of understanding with Dutch-based Royal Vopak and Johor State Secretary Incorporated to own and operate a deepwater petroleum terminal with port, jetty and other marine facilities for water depth of up to 26 meters. The depth of the water allows for ultra large crude carriers, very large crude carriers and other vessels to access the port, and also for tankage facilities for the handling, storage, processing and distribution of crude oil, petroleum, petrochemicals and chemical products in Tanjung Ayam and Tanjung Kapal, Pengerang.

Analysts expect the tender for the earthworks reclamation to be completed in June 2011. In a research report issued in April on the company, JP Morgan stated that it would be able to enjoy a 10 times increase in EPCC (engineering, procurement, construction and commissioning) order book from the Pengerang project, as well as recurring earnings from leasing and operating the deepwater terminal. It valued Pengerang based on the present value of cash flows throughout the 60year lease period for the terminal, and a 70:30 debt to equity ratio.

The 1.4 million tonne-capacity tank terminal project, estimated to cost RM1.7 billion, is slated for completion by end-2013 and is only the first phase of a massive project which will eventually comprise a total storage capacity of five million cubic metres, covering 500 acres of reclaimed land.

(Sourced from The Star)

# RM3.8 Billion Investment by Japanese Firms In 2011-2012

Prime Minister Datuk Seri Najib Tun Razak revealed that Japanese firms have confirmed that they will invest RM3.8 billion in Malaysia between this year and 2012 in various sectors. Between 2013 and 2015, these firms will invest to the tune of RM5.22 billion in projects related to electrical and electronics, metallics, biomass and subtrates which are used to make hard-disk drives. The long-term investments include Tokuyama Corporation of Japan's project in Bintulu, Sarawak, which manufactures polysilicon, a material used to make solar cells and electronics. The plant's first phase, comprising investments of RM3.7 billion, will be completed in 2013.

Najib, who held a bilateral meeting with Japan's Foreign Minister Takeaki Matsumoto, said that the latter had urged Malaysia to consider Japanese companies for investment in infrastructure projects including the Mass Rapid Transit system and other opportunities arising from the Economic Transformation Programme. Matsumoto also expressed Tokyo's support for the Malaysia-Japan International Institute of Technology which would be operational in September. He also said Malaysia could act as an intermediary for Japanese companies to invest in the Middle East.

(Sourced from BERNAMA)

# Ireka Corp Bhd. Awarded RM109.75 Million KL Sentral Hotel Job

Ireka Corporation Bhd has been awarded a RM109.75 million deal to build a hotel at Lot G of KL Sentral via its wholly-owned subsidiary Ireka Engineering and Construction Sdn Bhd. The latter received a letter of award from Excellent Bonanza Sdn Bhd for the contract, which involved the construction of a 25-storey hotel tower, inclusive of architecture, structure, mechanical and engineering works as well as all external works, with construction duration of 18 months.

Ireka group managing director Lai Siew Wah said this would be the third hotel in the company's construction portfolio. The company constructed the Westin Kuala Lumpur and is currently building the Four Points by Sheraton@Sandakan, which is due for completion before the end of this year.

Over the last few months, Ireka had secured three projects totaling RM370 million. Among the company's ongoing projects include the construction of a high-end condominium project, SENI Mont' Kiara, a retail mall, two office towers at KL Sentral and the Kulai-Second Link Expressway Interchange. With the latest job, Ireka's order book now stands at about RM1.14 billion, of which approximately RM513.5 million remain outstanding as at end March 2011.

(Sourced from The Edge)

# ANNOUNCEMENT

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# Where Do I Begin?

by Ir. Shum Keng Yan

**FOR** the past one-and-a-half years, we have been looking at safety fundamentals. Hopefully, through small bite-sized articles, it will be easier to understand what safety is all about. In the coming series, we will look at how to start implementing safety in the workplace (or how to improve it if you already have safety procedures in place).

Let us refer back to the January 2010 topic on "Tech Talk". You can download back issues from the IEM portal at http://www.myiem.org.my/content/bulletin-123.aspx

In "Tech Talk", the discussion was a snapshot of the Safety Management System based on Plan-Do-Check-Act. Before we proceed in the next few articles, you should have a copy of the Occupational Safety and Health Act 1994 by now or save the link to the online access at

http://www.dosh.gov.my/doshV2/indexphp?option= com\_phocadownload&view=category&id=2&Itemid=98 &lang=en

Let us summarise how we can go about to start the process. I have listed down some steps which will provide a general guide. I am sure there are better ways as we continue to innovate and improve.

- Step 1: Person-in-Charge (Safety Officer)
- Step 2: Safety Policy and Safety Management System (including Legal Register)
- Step 3: Business safety risks (Risk Management, Planning and Implementation)
- Step 4: Feedback, Monitoring, Analysis and Reporting (Records Retention)
- Step 5: Management Review and Continual Improvement

We can expand each step or break it down into more steps. However, that will complicate matters. So let us keep it simple (KISS principle). In the next few months, we will discuss each step in turn. Do share your implementation challenges with me at pub@iem.org.my.

The journey of a thousand miles begins with a single step. Are you ready to start?

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# IEM Employment Survey 2009/2010

THE STANDING COMMITTEE ON WELFARE AND SERVICE MATTERS



by Engr. Shuhairy bin Norhisham

# **OVERVIEW**

A total of 1183 responses were received out of the 15,000 forms that were sent out. The response this time was 12% lower than the survey that was done in 2007/2004. A total of 2.7% or 32 people were employed overseas during the survey period. In this survey result, Figures 1 to 4 show the distribution of responses by IEM Membership Grade, membership with the Board of Engineers, Malaysia, age and gender of the participants.

Figures 4 to 8 represent the distribution of their employment status, highest degree achieved, categories of discipline, where they had obtained their engineering qualifications and the name of the universities they studied at. Figure 4 shows a drop in the number of respondents who were self-employed, whilst Figure 6 shows that only 4.8% of the respondents had obtained a PhD degree. Figure 7 shows a 5.1% increase in the number of local graduates compared to 2007.

### **KEY PROFILES OF RESPONDENTS**

- 48.2% in civil/structural discipline
- 57.6% are members of IEM
- 60.6% are members of the Board of Engineers Malaysia
- 33.4% of respondents are between the age group of 30-39
- 92.5% are male respondents







Figure 3: Genders (%)

- 7.1% are female respondents
- 81.1% are fully employed
- 14.5% are self employed
- 0.2% unemployed
- 43.1% are overseas graduates
- 1.4% did twinning programs

A total of 51% of the respondents were of the opinion that the fundamentals of the undergraduate course are adequate for work; 45.9% were taught communication skills as part of the undergraduate curriculum; and 92.3% answered positively when asked if engineering was their own choice.

### **ANALYSES BY CATEGORIES**

Figure 8 represents the distribution of where the respondents are employed currently, whether they are working for Malaysian or multinational firms, the duration it took for them to secure a job after graduation and years of work experience.

Results shown in Figures 9, 10 and 19 represent the distribution of the number of companies respondents worked for since graduation, nature of their current jobs and their current employment sector.



Figure 2: Ages (%)







Figure 5: Highest degrees received (%)







Figure 7: Basic qualifications obtained (%)



Figure 8: Employment locations (%)

### **ANNUAL SALARY**

The analysis for the average annual salary has been capped at RM200,000.00 compared to RM300,000.00 in 2004 and 2007. Figure 11 shows a decrease in the average annual salary for engineers. In 2008, the average annual salary was only RM90,744.00 compare to RM109,295.00 in 2007.

For young engineers who have between one to five years of working experience, manufacturing offered the highest average income of about RM75,000.00 annually, while the ICT sector's average income was only RM26,00.00 (Figure 12).



Figure 10: Current employment sector (%)



Figure 11: Average annual salary of 2002,2004,2007 and 2009



Years of Experience

Figure 12: Average annual salary according to years of experience by employment sector

Table 1: Average annual salary according to years of experience by employment sector

	1-5	6-10	11-15	16-20	21-25	26-30	>30
manufacturing	75000	59500	101818.2	109285.7	154000	165000	157000
Power	37692.31	60526.32	\$3000	106000	172500	127142.9	118000
ICT	25000	90000	90000	90000	200000	200000	133333.3
Agriculture	50000	65000	70000	90000	130000	130000	165000
Construction / Properties	39821.43	54720.93	58810.34	69780	62882.35	104361.7	98148.94
Transportation	61666.67	70000	63333.33	90000	136666.7	151666.7	150000
Gov./Local Authority	39722.22	43635.36	88750	82727.27	92666.67	108000	123333.3
University/College	54117.65	62655.57	70000	114285.7	104444.4	170000	143333.3
Tradings/Services	50000	65000	61666.67	167500	80000	130000	175000
Infrastructure Project	45000	61428.57	\$5555.57	112666.7	143529.4	132500	130000
Oil and Gas	60416.67	88400	121578.9	164000	151666.7	177500	180000
Others	40909.09	78125	104000	99333.33	108750	140000	105353.6



Figure 13: Average annual salary according to years of experience by job description

Table 2: Average annual salary according to years of experience by job description

	1-5	6-10	11-15	16-20	21-25	26-30	>30
Consultancy	39130.43	61250	82857.14	105000	117368.4	126383	122400
Contracting	31333.33	60740.74	104347.8	117500	145000	169230.8	136666.7
Educational/Training	65714.29	70000	80000	112500	115714.3	123333.3	125714.3
Engineering/Technical	44000	59764.71	108545.5	122000	123793.1	146087	142916.7
Management	47500	56470.59	115833.3	128823.5	140333.3	159032.3	182916.7
O&M	77500	78888.89	70000	145000	134000	170000	170000
Sales/Marketing	50000	\$2000	100000	100000	175000	175000	160000
R&D	102222.2	50000	65000	100000	150000	155000	160000
Others	40000.00	70000.00	76000	110000	200000	124000	125000



Figure 14: Average annual salary according to years of experience by employment status



	1-5	6-10	11-15	16-20	21-25	26-30	>30
Selfemployed	110000	68181.82	92222.22	123461.5	113437.5	133243.2	122250
Partially employed	30000	70000	80000	110000	130000	150000	133333.3
Fully Employed	51290.32	62183.41	97482.01	114035.1	134090.9	149814.8	158806



Figure 15: Average annual salary according to years of experience by sex

Table 4: Average annual salary according to years of experience by sex



For engineers with about 30 years of experience, trading and the oil and gas sector had the highest average annual salary at about RM175,000.00 (Figure 12).

Figure 13 shows the average annual salary by job description. Young engineers from R&D earned the highest annual salary while, for engineers with 30 years of experience, the highest paid job description was management with an



Figure 16: Average annual salary according to years of experience by academic qualification

Table 5: Average annual salary according to years of experience by academic qualification





Figure 17: Average annual salary according to years of experience by academic qualification

47443

Table 6: Average annual salary according to years of experience by academic qualification



Figure 18: Average annual salary according to years of experience by employment location

Table 7: Average annual salary according to years of experience by employment location



annual salary of about RM182,000.00 on average.

Those who were fully employed showed more consistent increments over their range of experience compared to self-employed engineers (Figure 14).

PhD holders still commanded the highest average annual salary based on years of experience.

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# **INFORMATION**



Figure 19: Average annual salary according to years of experience by average number of companies since graduation

Table 8: Average annual salary according to years of experience by average numbers of companies since graduate







Figure 21: How does you perceive the quantum of your remuneration (%)



Figure 22: Do you receive encouragement to attain Professional Engineer status (%)



Figure 23: Do you intend move away from engineering (%)

# PERCEPTION OF REMUNERATION, JOB SATISFACTION AND JOB CHARACTERISTICS

Only 11% of the respondents replied negatively and that they are dissatisfied with how persuasive their jobs are, while 37% did not receive any encouragement to attain their Professional



Figure 24: The progression of your career in your organisation (%)



Figure 25: Oversea experience (%)



Figure 26: If not worked overseas, would you be prepared to take an overseas position (%)

Engineer status. When asked if they have any intention to move away from the engineering field, 23% replied positively to this question. A total of 27% perceived the quantum of their remuneration as poor. These results are represented in Figures 20 to 27.

On a 5-scale point, respondents were asked to describe their jobs as Challenging, Rewarding, Stress and Competitive. Figure 24 features the results, summarised as follows:

- 86% of the respondents perceive their job as challenging or very challenging
- About 59% of the respondents perceive their job as rewarding or very rewarding
- Almost 78% of the respondents perceive their job stressful or very stressful
- Almost 78% of the respondents perceive their job as competitive or very competitive

According to Figure 25, only 3% were employed overseas during the survey period, with 20% having prior experience and, as represented in Figures 26, more than 71% of the respondents are prepared to take an overseas position even though they do not have any prior experience working overseas.

# **INFORMATION**

### **SURVEY ON FEMALE ENGINEERS**

Figure 27 shows the perception of female engineers on several issues related to their job and work. The findings are summarised as follows:

- 25% answered positively that they had experienced sexual discrimination
- Only 7% experienced sexual harassment in the office or on site
- 29% of the respondents perceive that their professional opinions are sometimes not accepted because they are female
- 73% of female engineers were given the opportunity to handle high profile projects
- 95% of female engineers are confident when making decisions at meetings or giving instructions at sites







### **SURVEY ON CURRENT ISSUES**

Several questions aimed at assessing the perception of the respondents on current engineering related issues were asked. The respondents responded based on a scale of one to 10 (1 being strongly disagree and 10 being strongly agree).

Figure 28 showed more than 60% of the respondents replied positively that university syllabus are outdated and mismatched with current job requirements.

Over 41% of the respondents strongly agree and 31 agree and thought that Professional Ethics should be taught at universities.

In this survey, respondents answered affirmatively that students should master one additional global language besides English.



I (Strongly Disagree) 2 3 4 5 6 7 8 9 10 (Strongly Agree)

Figure 28: Current hot issues (%)

With regards to the shortage of engineers, overall, 11% strongly agree that there is a shortfall of employees as shown in Figure 28 and 18% agreed with the statement.

### SURVEY ON NUCLEAR POWER INITIATIVE

Figure 29 represents the distribution of the respondents' opinion on nuclear power. About 18% strongly agree and about 25% agree that nuclear power is an appropriate source to replace fast depleting fossil fuel. More than 19% strongly agree and 27% agree that nuclear power can be the safest option when adequate safety measures are applied and the right processes are used. About 60% of the respondents answered affirmatively that they would be glad if Malaysia participates in the nuclear power initiative.



Figure 29: Nuclear Issues (%)

When asked should Malaysian universities offer more courses related to nuclear engineering, only 15% disagreed with the rest of the respondents agreed.

Lastly, 25% of the respondents strongly agree that IEM should support the nuclear power initiative by forming a special interest group in nuclear engineering.

# SUBSCRIPTION REMINDER

### **RENEWAL OF 2011 MEMBERSHIP FEE**

Effective from **1** January **2011**, defaulting members in arrears of subscription will be considered as suspended members with all benefits removed. Consequently, these members will not be allowed to evening talks and will be charged the non-members' fee at the entrance. They will also not be entitled to register for visits/courses/seminars/conferences and any paid event of the IEM at members' registration fee.

To avoid this, all IEM members are advised to settle their annual subscription on time and the deadline for payment each year is on 31 January.

Thank you.

Executive Committee of the IEM Council

# "WE, Women Engineers, Make a Difference" – A Dialogue With Future Women Engineers



by Engr. Habibah @ Norehan binti Haron and Ir. Assoc. Prof. Hayati binti Abdullah

SUB-COMMITTEE ON WOMEN ENGINEERS

**ON** 9 October 2010, an event organised specially for future women engineers was successfully held at the main campus of Universiti Teknologi Malaysia (UTM) in Skudai. The event was hosted by the IEM-UTM student chapter, and attended by over 100 female engineering students from various engineering faculties in UTM and several engineering lecturers who had taken their precious Saturday morning off to be with the IEM Women Engineers (WE). Ir. Assoc. Prof. Hayati binti Abdullah was the advisor for the event.

Four speakers had kindly made their way to UTM Skudai to share their professional experiences and the route towards obtaining professional qualification, as well as the history of events and activities of IEM WE. The session successfully transmitted IEM WE's mission, vision and aspirations to the undergraduate engineering students.

Ir. Lau Yuk Ma, June (WE chairperson) began the session with an interesting ice-breaking activity focusing

on one's 'purpose' in which all the students took part. This resulted in an amazing collection of short write-ups of the 'purpose paper' by the students. Ir. Lau also conveyed key messages including IEM's functions, steps to become a professional engineer, WE Sub-Committee's role and activities, the challenges and opportunities for women as engineering students and working engineers, and the key characteristics that an engineer should develop.

Ir. Raftah binti Mahfar continued the session and shared her vast professional engineering experience and advice on how to overcome the challenge of being 'the rose among the thorns'. Next, Engr. Habibah binti Haron gave an eye-opening motivational talk to the students.

Puan Hajjah Poziah binti Sayuti, Director of Bumi Panel Sdn. Bhd. and Marbleplan Sdn. Bhd. was also invited to share her valuable experience in setting up and spearheading her engineering business. Puan Hajjah Poziah, an accomplished entrepreneur, was selected



Organising committee members finalising the event preparations



Some of the enthusiastic participants



Ir. Assoc. Prof. Hayati (far left) with the distinguished speakers



Ice-breaking session with Ir. Lau

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Ir. Raftah's stimulating talk



Audience captivated by Puan Hajjah Poziah's life journey



Good friends make great company

WE's visit to Bangunan Ingenieur IEM Cawangan Selatan in UTM

as one of the 10 best SME Managers who represented Malaysia in Korea in a programme sponsored by SMEDEC in 2005. In July 2010, Puan Hajjah Poziah received the Golden Business Excellence Award in Madrid, Spain. She impressed everyone with a narration of her remarkable journey from 'zero' to 'hero', proving that women engineers are a force to be reckoned with in the engineering profession.

What was more memorable was the fact that Puan Hajjah Poziah, Ir. Raftah binti Mahfar and Ir. Lau are all alumni of UTM. They stand for the same important mission in this event, which is to share and affirm to young women engineers of their great mission in setting their footsteps towards a career as a Professional Engineer. The route is exciting and not one to be feared, but at the same time, it should be highly inspiring as well as rewarding.

The event was indeed a successful one as evidenced from the continuous excitement and enthusiasm shown by the students throughout the half-day activity. The event ended with a good lunch and the participants mingled with one another and with the speakers. The Organising Committee of the IEM-UTM Student chapter led by Ms. Jocelyn deserved praise for the excellent organisation of the event. The next forum will certainly be an event to look forward to in the near future.

# ANNOUNCEMENT

### Advertisements on IEM Portal

### 1) Image/Banner Advertisements

A fee of RM350 per month for IEM members and RM500 per month for non-members is applicable for a six-month promotional period. The Committee will review the charges after the six-month period.

### 2) Notification of Events

A fee of RM100 per month for IEM members and RM200 per month for non-members is applicable for a standard event announcement which would include the title, venue, date and time.

For more information, kindly email to pub@iem.org.my

# Technical Visit to Pilot Scheme: Development of 2000 Houses for the National Housing Scheme of Brunei Darussalam



by Ir. Lau Yuk Ma, June

SUB-COMMITTEE ON WOMEN ENGINEERS

**ON** 4 June 2010, five members of the IEM women engineers had the opportunity to visit the project site where a pilot scheme to build 2000 homes within 24 months was conducted. The visit was through courtesy of Mr. Khor Seng Hock, the Project Director, and Mr. Guyarn Panggau, the Project Manager, of Bina Puri Holdings Berhad.

We were introduced to the project via a technical presentation given by Engr. Sandra Ligong and Mr. Ma Chong Wah. The presentation covered the project brief, location, development, challenges and success in peat excavation and replacement by hydraulic sand filling as well as design challenges to allow for the fast consolidation of the housing platform for the massive 2000-unit housing development within 24 months.

The challenge to design, build and complete the 2000 units of houses was achieved by adopting the IBS system. The project has successfully met its milestone achievement thanks to the good understanding and

<sup>(</sup>To be continued at page 38)



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(From left) Engr. Sandra Ligong, Ir. Toh Ai Chin, Ir. Rahtar binti Mahfar, Ir. Magdalene Tan, Ir. Lau Yuk Ma, June and Ir. Chin Lee Leng in front of the linked houses at the project site



(From left) Ir. Rahtar binti Mahfar, Ir. Magdelene Tan, Ir. Lau Yuk Ma, June, Ir. Chin Lee Leng and Ir. Toh Ai Chin with the "nodding donkey"



A group photo in front of the project site house with the project team



The linked houses

working relationship between the client (Brunei Economic Development Board), the consultants, the authorities and the project team despite facing difficulties in resources and the climate. This is the secret of success of what seemed to be an impossible task.

During the lively and interesting Q&A session, we were amazed by the project team's technical competence and their willingness in sharing their experiences and achievements throughout the project. By then, peat removal and hydraulic sand pumping was 99% complete whilst the progress of building works was 59% complete as of 31 May 2010. The total area measured 180 acres. At the peak of the peat excavation, there were more than 100 machines in operation at the site.

The workflow was simple: site clearance, followed by peat excavation, hydraulic sand filling, followed by housing platform, reinforced concrete raft foundation, ground floor shear wall and slab, first floor wall, roof covering, and finally architectural finishes. The challenge of this project was the construction of a large number of houses within a short time frame. This is currently the biggest housing project scheme in Brunei. After the presentation, we were taken to visit the project site.

On the way back, we had a tour of Seria, a serene and quiet town, which is the heart of the oil industry in



Billionth Barrel Monument

Brunei. We saw numerous nodding donkeys in and around the town and they have become a feature of Seria. These nodding donkeys have been pumping oil for the last 80 years. In addition to the various facilities related to the oil and gas industry, there are also housing facilities for the large number of personnel including the interesting Canadian Houses along Jalan Tengah, built in the style of Canadian log houses. The timber used to construct these houses was imported from Canada. We also stopped by the Billionth Barrel Monument which commemorated the one billionth barrel of crude oil produced from the Seria field.



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# Talk on "Malaysia's Feed-In Tariff and International Best Practice"



by Ir. Mah Soo and Ir. Lee Kok Chong

ELECTRICAL ENGINEERING TECHNICAL DIVISION

**THE** IEM Electrical Engineering Technical Division (EETD) organised a talk on "Malaysia's Feed-In Tariff and International Best Practice" at the Tan Sri Ir. Prof. Chin Fung Kee Auditorium, Wisma IEM, on 23 November 2010. The talk was conducted by Mr. David Jerome Pascal Jacobs, a "Distinguished Visitor" from Germany under the "Brain Gain Malaysia" program. Under the program, The speaker was attached for six weeks at the Institute of Energy Policy and Research, Universiti Tenaga Nasional.

Mr. Jacobs began his talk with an introduction of the international market development in Renewable Energy (RE), *i.e.* wind power and photovoltaic (PV) energy. As of 2009, RE contributed about 26% of total installed power generation capacity worldwide, fossil fuels contributed about 66% while nuclear accounted for 8%. He demonstrated the rapid growth of wind power and PV worldwide between 1998 and 2009 using graphs and charts. He forecasts that with the continuous investment in RE and increment in R&D spending, as well as the removal of subsidies worldwide, the cost of RE will reduce gradually to match the market price of electricity.

Mr. Jacobs continued his presentation on the international policies on RE and gave a comparison on RE targets between developing countries.

Besides the evaluation of renewable energy policies and the legal framework prevailing in industrialised countries, he also focused on how to transfer successful policies to emerging economies and developing countries. As a frequent speaker at international conferences, Mr. Jacobs has informed parliamentarians, public administrations, renewable energy industry representatives and international researchers about best practices for the promotion of RE.

He then presented the Feed-In Tariff (FIT) and the four main types of RE Sources/Technologies that are available in Malaysia for the initial stage, *i.e.* biogas, biomass (including solid waste), mini-hydro and solar PV. He explained that the Malaysian government has announced its plan to increase the share of RE for power generation in the coming years. In the electricity sector, the share of RE sources is expected to increase from less than 1% today to 5.5% in 2015. The government hopes to reach this target by implementing an FIT this year. FIT is the

Country	Status Quo	Short-term
Malaysia	<1% in 2009	5.5% by 2015
China	8% in 2009	15% by 2020 (final energy consumption
Egypt	13% in 2007	20% by 2020 (including 12% wind)
Ecuador	45% in 2009	90% by 2020
Spain	29% in 2009	40% by 2020
Germany	16% in 2009	35% by 2020 (80% by 2050)

Source: Kettha 2010; REN21 2010, and laws from other countries



# FORUM



Source: Kettha 2010

most successful and widely-used support instrument for the promotion of electricity generation from RE sources.

He further illustrated the methodology of FIT calculations, different FIT rates between different RE sources, tariff duration, tariff degression and financial mechanisms. He emphasised that in order to implement the FIT successfully, the FIT policy has to stress on purchase obligation on the buying utility, the fixed tariff for each technology and long payment duration.

# Additional funding options for FIT in Malaysia

- Higher increase in electricity price (2%-5%)
- Carbon tax for conventional power generation
- · Income from exported fossil fuels

The talk concluded with an actively participated 'Question and Answer' session and the presentation of IEM's certificate and token of appreciation to Mr. Jacobs in the presence of Miss Chen Wei Nee and Engr. Lalchand of Greentech Malaysia.

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# Tea Party Gathering: "Together WE Network"

SUB-COMMITTEE ON WOMEN ENGINEERS



by Ir. Sharifah Azlina binti Raja Kamal Pasmah

**ALICE** in Wonderland would have preferred to come to the tea party organised by the Sub-Committee on Women Engineers given the choice between this and the Mad Hatter's tea party. With the theme "Together WE Network", 77 lady engineers turned up at Dewan Mahligai, Hotel Singgahsana, Petaling Jaya, on 20 March 2010 for the event.

Following the very engaging welcome remark by the Chairperson of the Sub-Committee, Ir. Toh Ai Ching, Y. Bhg. Datuk Ir. Rosaline Ganendra took the floor to address the audience with her opening speech. She said, "We are here to provide all of you an avenue for networking among all women engineers." The forum also aimed to motivate all women engineers to strive towards the highest level, as well as obtain feedback on the activities that are to be organised and a wish list of women engineers in the course of their advancement in the profession.

Puan Siti Rosnah binti Ghafar was the next guest speaker, deliberating on her topic, "Balanced Approach as a Lady Engineer". The audience was gently reminded, at the end of her talk, that work-life balance is achievable if women engineers keep things in perspective and manage time sensibly; that it is not just a mission statement that they all merely aspire for but could not fulfill. Ir. Assoc. Prof. Dr Marlinda binti Abd. Malek followed suit by delivering her talk on "Satisfaction of Working" supported





Handicraft demonstration by Elly's Craft



Make-up session by Mary Kay



Ladies sashaying to the rhythm of salsa



Token of appreciation for the speaker

by statistical data extracted from studies undertaken on the subject matter.

The much-awaited highlight of the event was the salsa demonstration which saw all the ladies sashaying to the catchy tune guided by the savoir-faire of Mr. Fasilito Y. from Dance Spirit, who could not help but shake his head at how 'inept' the female-dancer-wannabes were. Nevertheless, everyone had fun and, needless to say, a good workout, commendable to the dance steps if not the hearty laughs. Concurrent to the dance, a handicraft demonstration by Elly's Craft and a make-up session by Mary Kay were also carried out.

And the reward for the good exercise was a scrumptious spread of buffet lunch typical of any Malaysian event. Food were aplenty and the company was equally pleasant. It was indeed another successful event by the Sub-Committee on Women Engineers.

# NOTICE

IEM would like to acknowledge the Faculty of Chemical Engineering of University Malaya for hosting the editorial process of the IEM Bulletin for the Editorial Board of the Standing Committee on Information and Publications.

Thank you.

The IEM Editorial Board

# ANNOUNCEMENT

Current and past issues of JURUTERA, the monthly Bulletin of IEM, may now be viewed or downloaded from the IEM portal, at *www.myiem.org.my*.

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# Half-Day Talk on "Design and Detailing of RC Slabs with Welded Steel Wire Fabric and Cut and Bent Reinforcing Steel"



by Ir. Dr Eow John Son

IEM SOUTHERN BRANCH

**THE** IEM Southern Branch recently invited Ir. Yap Kong Lim and Mr. Ong Kok Keong, technical managers at Southern Steel Mesh Sdn Bhd (SSM), to give a half-day talk on the design and detailing of RC slabs with welded steel wire fabric (mesh), and cut and bent reinforcing steel detailing to BS standards and solutions. The talk was held on 26 March 2011 at The Zon Regency Hotel, Johor Bahru. Chaired by Ir. Dr John Eow, the talk was attended by more than 40 participants.

Mr. Ong started his talk by introducing the Southern Steel Group with a technical video presentation. SSM, one of the leading regional mesh and wire product manufacturers, is a subsidiary of Southern Steel Bhd, a company listed on the Main Board of Bursa Malaysia.



the BS 4466, BS 8666 and MS 1438 for scheduling and dimensioning, Mr. Ong gave a very interesting and informative presentation on off-site cut and bent reinforcement steel detailing and solution. Off-site pre-cut and pre-bend steel reinforcement offers many advantages, such as controlled material wastage, pilferage and deterioration, improved scheduling, improved quality control especially when bending to prescribed bending standards, allows better planning of site logistic, *etc*.

By referring to standard specifications such as

Due to the increasing demand for better quality construction within a shorter time frame and the need to reduce overdependence on foreign labour, the construction industry in Malaysia is beginning to switch to more advanced and sophisticated techniques to improve construction efficiency and productivity. For example, off-site pre-cut and pre-bent steel bars for fixing at the construction job-site has been a common practice in many developed nations such as Europe, the United States and Japan for decades, and more recently, in Singapore, Taiwan and Hong Kong. Figure 1 shows the usage of precut and pre-bent bars for various building elements.



Figure 1: The usage of pre-cut and pre-bent bars for various building elements

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Figure 2: Pre-cut, pre-bent and pre-fabricated beam cages

In Malaysia, the off-site pre-cut and pre-bent services were only introduced in 1996 by individual operating companies in view of the national policy to reduce the usage of foreign construction labour, and a directive from the Ministry to establish the pre-cut and pre-bent code of practice to more effectively promote and expedite the usage of such services. The major reasons for the acceptance of such a technique are basically due to the



The second session, delivered by Ir. Yap, focused on the design and detailing of slabs with welded steel fabric (mesh) in compliance to MS 145: Welded Steel Fabric for the Reinforcement of Concrete. The wide range of available wire sizes and spacing makes it possible to furnish almost exactly the cross-sectional steel area required, therefore allowing for more economical design solutions. The ease and speed with which welded steel fabric can be handled and installed greatly reduce placing time and the cost of the installed reinforcement. Its ability to reduce construction time is also in line with the Government's emphasis on the Industrialised Building System (IBS) – prefabrication and automation – in order to solve the increasing shortage of construction workers.

Moreover, according to Ir. Yap, standard fabric types, such as A10, B7, *etc.*, have been commonly specified by engineers in the past. However, with the recent developments in new-generation fabric-making equipment, SSM has successfully developed and introduced innovatively engineered mesh designs such as Twin Wire Fabric, Special Configured Fabric (SCF) and Staggered Fabric. SCF is specially configured to suit certain design require-



Figure 3: The Special Configured Fabric/Engineered Fabric Design by SSM

ments. SCF cannot not be defined by fabric notation. Each sheet requires a fabric configuration drawing. Examples of SCF in single or double wires are illustrated in Figure 3. With these special fabric configurations, a more economical design can be produced.

The IEM Southern Branch is very grateful to Mr. Ong and Ir. Yap for their invaluable contribution to the knowledge and benefit of local practicing engineers in the field of construction engineering.

For more technical information and applications for the welded steel wire fabric, Mr. Ong and Ir. Yap can be contacted at ong.kokkeong@ southsteel.com and yap. konglim@southsteel.com respectively.

# A Two-Day Course on Project Management and Six Sigma



PROJECT MANAGEMENT TECHNICAL DIVISON

**THE** Project Management Technical Division (PMTD) of IEM organised a two-day course entitled "Project Management and Six Sigma" from 11 to 12 October 2010 at Wisma IEM, Petaling Jaya. Held in collaboration with Genexis Sdn Bhd, the course attracted 47 participants from various disciplines of the engineering fraternity, including some student members.

The course was conducted by Mr. Mahadev, a Graduate Member of IEM. Mr. Mahadev is a Six Sigma Black Belt and TRIZ (Structured Innovation) Green Belt, certified by the American Society of Quality. The course kicked off with Mr. Mahadev familiarising the participants with some Six Sigma project management jargons (language of Six Sigma).

Some of these jargons include:

- 1) CTQ (Critical-to-quality)
- 2) Process Sigma
- 3) Process
- 4) Voice of Process (VoP)
- 5) Voice of Customer (VoC)
- 6) Upper Specification Limit (USL)
- 7) Lower Specification Limit (LSL)
- 8) DMAIC

Six Sigma is derived from normal distribution used in statistics. In a normal distribution (bell-shaped curve), the mean is zero and the standard deviation (sigma) is one. In Six Sigma management, for a process shift of 1.5sigma in the mean (mean + 1.5sigma), there are 4.5 standard deviations between the LSL (mean – 6sigma) and USL

(mean + 6sigma) which will result in the worst scenario of 3.4 DPMO.

Mr. Mahadev also highlighted that to successfully implement Six Sigma Management, an organisation must evolve around a Six Sigma setup that comprises:

- 1) **Senior Executive (CEO, President)** who provides unwavering, clear and committed leadership.
- Executive Committee Member who operates at the same level of commitment as the senior executive.
- Champion member of the Executive Committee Member who takes a very active sponsorship and leadership role in conducting and implementing Six Sigma Projects.
- 4) **Master Black Belt** keeper of the Six Sigma Process who is a proven change agent, leader, facilitator and technical expert in Six Sigma Management.
- 5) **Black Belt** full time quality professional who is mentored by the Master Black Belt as well as a full time change agent and improvement leader.
- 6) **Green Belt** managers in the Six Sigma Organisation who are the workhorses of Six Sigma.
- 7) Process Owner manager of a process.

Dashboard is a macro model used by the Senior Executive in Six Sigma management. It consists of the mission statement, key objectives, key indicators and tasks/projects. Dashboard focuses the employees' effort on the mission statement of their organisation. With the cascading and interlocking system of key objectives and indicators, employees can identify his or her key objectives by studying his or her superior's key indicators.





This study identifies the tasks and projects needed to alter key objectives.

On the second day of the course, participants were exposed to the methodology or roadmap of Six Sigma management in the form of the DMAIC Model.

> Define Measure Analyse Improve Control

In the final session of the course, statistical methods integral to Six Sigma management were covered, *e.g.* enumerative and analytical statistical principles. Also,

different types of sampling methods (simple random sample, stratified sample, systematic sample, clustered sample) were discussed. Variables with graphical presentation such as bar chart, Pareto diagram, line chart, histogram, dot plot and run chart were also discussed. There were also discussions on the properties of centre tendency (arithmetic mean, median, mode, quartiles), measures of variation (range, variance, standard deviation), shape of distribution (symmetrical, right skewed, left skewed) and basic concepts of probability (Binomal, Poison, normal distribution).

It is hoped that the course has enhanced the knowledge of the participants on Six Sigma management and that some of them will pursue Green Belt and Black Belt certifications that will be organised by the PMTD in due course.

# **IEM SURVEYS ON IEM PORTAL**

IEM will be conducting the Readership Survey 2011/2012, Membership Survey 2012/2013, and Employment Survey 2013/2014 online. Kindly login to IEM Web portal at www.myiem.org.my for more information.

Thank you. IEM Sub-committee on Web portal

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# Short Visit to Meet Fellow Women Engineers of IES



by Ir. Magdalene Tan Lee

SUB-COMMITTEE ON WOMEN ENGINEERS

**A** total of five women engineers from IEM made a whirlwind visit to the Institution of Engineers, Singapore (IES) on 16 and 17 December 2010. We were warmly welcomed by IES Assistant Honorary Secretary, Er. Jee Yi Yang, Er. Chong Zheng Xia, together with the IES Secretariat staff Ms. Tan Siew Keow and Ms. Valerie Neo Karen Ng.

Immediately after our arrival, we had a dialogue at the IES office. IES presented a slideshow on their various functions and areas of achievement in the past year. It was interesting to learn that Singapore organises a National Engineers Day. IES explained that the idea of having a National Engineers Day was mooted by their deputy Prime Minister to honour the outstanding engineers in Singapore.

Many corporations were very supportive in opening up their premises to visiting secondary school students. The purpose is to arouse the interest of the students' to pursue a career in the engineering profession when the time comes for them to enter university. Through this, they hope to groom more new engineers. This is in view of the fact that the number of engineers in Singapore has been on a downtrend, much to the concern of the IES and the Singapore government. Also discussed were topics related to lady engineers in the profession and the women engineers' section of IStrutE (a chapter under the umbrella of IES).

After the dialogue, we were taken to a tour of the Urban Redevelopment Authority (URA) gallery, 'Garden by the Bay' and Marina Barrage. These were some of the major engineering projects undertaken recently in Singapore. The next day, we visited the Housing & Development Board (HDB), NEWater and Land Transport galleries. We were overwhelmed by the engineering feats of engineers in making a developed nation such as Singapore. We found this short trip a success and returned home with a more enthusiastic desire to make further contacts with other women engineers from engineering institutions within the region.



Ms. Neo, Senior Manager – Corporate Services, presenting to the Lady Engineers of IEM: (L-R) Ir. Chin Lee Leng, Ir. Raftah Mahfar, Ir. June Lau, Ir. Hajah Siti Saffur and Ir. Magdalene Tan



Ms. Ong Yan Tzu (left) briefing the IEM delegates on the concepts and development of Gardens by the Bay project at the visitor centre

### **IEM READERSHIP SURVEY 2010/2011**

Please be informed that the Readership Survey 2010/2011 is now being conducted online. Kindly visit the IEM Web portal to take part in the survey.

Thank you. Editorial Board, IEM

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# Ir. Magdalene Tan Lee

by Engr. Habibah @ Norehan binti Haron



WHEN I first met Ir. Magdalene Tan Lee, she gave me the impression of a very headstrong woman. As we serve in the Women Engineers Committee together, I gradually realise that she is a compassionate person as well. Her passion and joy in serving others really impressed me.

Ir. Tan started her career as an electrical engineer in the switchboard manufacturing field after graduating from the University of Malaya in 1975. She then ventured into electrical contracting before joining a consultant firm. In the mid 1990s, she became a project manager for electrical works in the construction of the Kuala Lumpur International Airport in Sepang. She also managed the design and construction of a 80MLD water treatment plant in Selangor. From 2004 onwards, she began to enjoy her semi retirement status. She was involved on a consultation basis for projects of which the majority are water treatment plants in Malaysia and Vietnam.

Ir. Tan has actively worked as a professional engineer in her field for almost 30 years. Moreover, she has contributed her time to serve in various engineering associations such as the Institution of Engineers, Malaysia (IEM) and the Board of Engineers, Malaysia (BEM). She was the IEM Honorary Secretary for two terms (1980/81 and 1986/87) and was elected as the IEM Vice President (1988/1990). She was the chairperson for the IEM Standing Committee on Welfare (1988/1990) and served in the IEM Council and EXCOMM for many terms.

She has served as a Professional Interview (PI) interviewer for many years. From 1995 to 2005, she was the director for the IEM Training Centre, where she devoted her time in planning the training for engineers. She continued her services as a committee member in various standing committees in IEM. In view of her excellent leadership and commitment, Ir. Tan was nominated to serve as a Board Member in BEM from 1989 to 1999. In her spare time, she looks after the wellbeing of the local communities such as doing voluntary work to help the poor, visiting orphanages, helping out in free medical clinics, visiting hospitals to calm the sick and lonely, and using her engineering expertise to assist in the renovation or building of churches or church related buildings.

Coming from a large family of 13 siblings, Ir. Tan, who was born in Taiping after World War II, said, "I was brought up in a family that was very poor." Yet, she credited all her success to her parents' foresight. They are the ones who coached her to aim for higher things and not to harbour the feeling of being deprived. They moulded her into a person with a strong character, who will fight for her rights rather than take things for granted. They know that education is the only way to breakout of poverty, and thus she was encouraged to study and was allowed to continue her higher education with a loan from the Hokkien Association in Taiping.

She had worked very hard in her career since graduation whilst raising her family at the same time. She is married with three children. She is blessed with a husband who is very supportive of her work. During the formative years of her children, she had to be away from home very often as she was involved in projects such as the Malaysia Rural Water Supply Scheme (MRWSS) which requires extensive travelling to project sites all over Malaysia. In other projects such as the KLIA and Bukit Badong Water Treatment Plant for Sungei Selangor Phase 3 (SSP3), she had worked 'as if I was running a 7-11 store'.

While she regrets some of the lost time that she had missed during her children's growing up years, she managed to take her children along with her to job sites whenever the situation permitted. She shared with them the firsthand experience of engineering works, and how an engineer contributes to nation building.





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Her children are now all grown up and are successful professionals. Her daughter is a surgeon, while her elder son is an electronic engineer and the youngest son is an electrical engineer.

Despite her busy schedule, she did not stop caring for her ageing parents. She said, "My parents stayed with me for 18 years before they passed on. During hectic times, I had to make appointments by phone and juggle office appointments so that I get to meet them for meals regularly." Today, Ir. Tan is a great inspiration to young women engineers because of her devotion to all the activities of the IEM Subcommittee on Women Engineer. She continues to encourage women engineers to strive for excellence. She asked, "We must drum up enough joy in serving so that others will nurture the desire to serve as well."

She stated that her only aspiration when she joined the Lady Engineers Sub-Committee in 2004/2005 was to encourage or groom lady engineers to be nominated as BEM Board Members. Currently, she felt that she may have lost this battle. She said, "Now that I am happily retired and cutting down on my professional commitment, I have yet to see a successor in sight. Hopefully, in my lifetime, there will be a woman engineer nominated to serve in the BEM."

She highlighted the fact that it was not easy 'to continue to maintain the passion to serve as our priority shifts with time'. Now that she has come to the 'end' of the finishing line, she is happily enjoying the simple things in life and be a dotting grandmother. She also expressed her hopes that, one day, there will be a place automatic reserved for the Women Engineer (WE) Sub-Committee chairperson to be a member of the IEM Council.

# ANNOUNCEMENT

The Travel Story Book by Ir. Chin Mee Poon in the Mandarin version entitled **"Europe and Asia by Train in 102 Days"** is now available in a professionally designed 20 x 20cm soft cover copy with 494 pages.

The book is now available in limited edition for **RM48.00**. The book can be purchased through the IEM office at 03-7968 4001/2 or email to pub@iem.org.my. Payment can be made by cheque to "The Institution of Engineers, Malaysia" by replying with the following return slip form. Every book purchased from the IEM will also contribute towards the IEM Building Fund.

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In our relentless pursuit of quality, we have established strategic partnerships with companies known for their culture of excellence. Today we distribute products of world-renowned names like Cummins, Fleetquard, Holset, TCM and Sullair. The proven reliability and quality of our products coupled with our customers. They included some of the most prestigious names in the private sector as well as government agencies and statutory bodies.

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- Fleetguard Nelson Filtration And Exhaust System Holset Turbochargers
- Cummins Valvoline Lubricant

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# **GLOBE TREKKING**

# An Iconic Bridge in Kuala Terengganu



**MUCH** has been written about the beauty and spectacular engineering creativity of foreign bridges. In Kuala Terengganu, a unique "two-arch" pedestrian bridge has been constructed to link Pulau Warisan and Kampung Cina to complement the heritage development philosophy of the area.

The steel arch forms the structural basis of a curved steel truss deck which is projected over the river like a grand balcony. The arch and the curved deck are anchored at the same abutments. The iconic curves of the structure tantalise and invite passers-by for a pleasant stroll on the bridge, rather than merely using it as a footbridge crossing.

The bridge ends are at 30.934m apart and has a width of 4.5m. The 32m curved deck (in plan) is suspended on the concave side by nine cables from the elliptical steel arch (in-filled with cement grout) inclined at 20° so as to

utilise the arch self weight to partially counter-balance the steel truss deck.

Despite the implementation of this concept, I was informed that some of the 300mm diameter micropiles for the abutment foundation system are still subjected to some residual tension force. The bridge was built under a turnkey package using the BBR Prestressing System and was opened to the public towards the end of 2010.

The bridge is best appreciated in the evening when it is lighted up. The interplay of lights and the structural lines of the arch, cables and deck result in a spectacular view of the structure against a backdrop of subdued background illumination of the river frontage area.

This pedestrian bridge may not be as magnificent as the Brooklyn Bridge (in the United States) or the Millennium Bridge (in the United Kingdom) but nevertheless, it possesses its own local iconic beauty and charm affording a grandstand panoramic view of the South China Sea.



The bridge, in time, will become an essential city landmark of Kuala Terengganu, reflecting the increasing progressiveness and development that has long evaded the east coast state of Terengganu.

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4	*9	7	1	5	6	2	8	3
3	5	2	7	9	8	6	4	1

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To All Members,

# CANDIDATES APPROVED TO SIT FOR YEAR 2011 PROFESSIONAL INTERVIEW

The following candidates have been approved to sit for the Professional Interview for 2011.

In accordance with Bylaws 3.9, the undermentioned names are published as having applied for membership of the Institution, subject to passing the year 2011 Professional Interview.

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

### Ir. Prof. Dr Lee Teang Shui

Honorary Secretary, The Institution of Engineers, Malaysia

NEW APPL	ICANTS	TRANSFER APPLICANTS				TRANSFER APPLICANTS			
Name	Qualifications	Mem No.	Name	Qualifications	Mem No.	Name	Qualifications		
CIVIL ENGINEERING MOHD KARIM BIN OMAR	BE HONS (UTM) (CIVIL, 2001)	NAVAL AI MOHD FAUZI E	RCHITECTURE ENGINE	EERING BSc (MICHIGAN)	18604	MOHD KHAIRIL BIN RAHMAT	BE HONS (SOUTHAMPTON) (ELECTRICAL, 1996)		
MOHD NADZRI BIN MOHD SOM MOHD RAUB BIN MOHAMED SHAH MOKHTAR BIN A. RASHID	BE HONS (UTM) (CIVIL, 2001) BE HONS (USM) (CIVIL, 1994) BE HONS (POLYTECH OF CENTRAL			(NAVAL ARCHITECTURE AND MARINE, 1994)	26397	NOR AZMAN BIN MOHD RUAH	BE HONS (UTM) (ELECTRICAL, 2002)		
YOW JAW PERNG	LONDON, CNAA) (CIVIL, 1987) BSc (UTAH) (CIVIL, 1999)	41173	CHIA KET YAU, VICTOR	BE HONS (QUEENSLAND) (CIVIL, 2004)	<b>ELECTRO</b> 43585	FAZLINA BINTI NGAH	BSc (SOUTHERN CALIFORNIA)		
ELECTRICAL ENGINEERING NORMIZA BINTI MOHAMAD NOR	BE HONS (CARDIFF)	21542 03158 24128	HAMIZAN BIN HAMZAH HANAPI BIN MOHAMAD NOOR LIM CHEE KAM	BE HONS (UTM) (CIVIL, 2000) BE HONS (UTM) (CIVIL, 1980) BE HONS (UTM) (CIVIL, 2003)	20932	ONG SHY BOON	(ELECTRONIC, 2003) BE HONS (STAFFORDSHIRE) (ELECTRONIC, 1995)		
NURSYARIZAL BIN MOHD NOR	(ELECTRICAL AND ELECTRONIC, 1996) BE HONS (UTM) (ELECTRICAL, 1998)	29681 32639	LIM FANG LIANG MUHAMAD TARMYMY BIN CHE ANI	BE HONS (UTM) (CIVIL, 2006) BE HONS (UTM) (ENVIRONMENTAL, 2003)	24036 45791	TWE HWEE EE WONG SEW KIN	BE HONS (UMS) (ELECTRICAL & ELECTRONIC, 2006) BE HONS (USM)		
ELECTRONIC ENGINEERING CHANG YOONG CHOON	BE HONS (NORTHUMBRIA)	21876 19404	OH CHAI LIAN RAGURAMAN RAMASAMY	BE HONS (UTM) (CIVIL, 2003) BE HONS (UPM) (CIVIL, 1997)			(ELECTRICAL & ELECTRONIC, 1995)		
KHOH SOO BENG	(ELECTRICAL & ELECTRONIC, 1999) PART II (ECUK) (ELECTRONIC, 1994) MSc (INFO TECH FOR MANUFACTURE) (1994)	33852 24893 27912	ROSMEE BIN ABDUL RAHMAN SHAMALA A/P PERAMAYAH SHAWN MCKENZIE	BE HONS (UTM) (CIVIL, 2003) BE HONS (UKM) (CIVIL, 1998) BE HONS (UTM) (CIVIL, 2007)	MECHAN 24654 17102	ABDUL HAMID BIN SULEIMAN	BE HONS (UITM) (MECHANICAL, 2007) BE HONS (UITM) (MECHANICAL, 1994)		
VISHNU MONN BASKARAN	BE HONS (UNITEN) 25846 (ELECTRICAL & ELECTRONICS, 2004) 45341		TAN CHOON LENG	ME (PORTSMOUTH) (CIVIL, 2003) BE HONS (UTM) (CIVIL, 2005)	42442 34295	AZMAN BIN SAUBIRAN MD SYAHRIZAL IZWAN BIN	BE HONS (UTM) (MECHANICAL, 1999) BE HONS (IIUM)		
MATERIAL ENGINEERING	RSCHONS (PENNYSYI VANIA)	22324 25483 27050	TEH SWEE LOON TIONG HIN HOW, ALEXIS	BE HONS (UTM) (CIVIL, 2001) BE HONS (WALES) (CIVIL, 2003) BE HONS (IMM) (CIVIL, 2005)	29613	MD YUSOFF MOHAMAD ASRUL BIN MUSTAPHA	(MECHANICAL - AUTOMOTIVE, 2006) BE HONS (UNIMAS) (MECHANICAL & MANUFACTURING, 2005)		
	(MECHANICAL, 2000)	38069	WONG LEE JOHN	BE HONS (UNITEN) (CIVIL, 2007)	37292	MOHD FARID BIN JAMLUS	BE HONS (UiTM) (MECHANICAL, 2004)		
MECHANICAL ENGINEERING MOHD ZAWAWI BIN HJ. HASSAN	BE (UNIVERSITY GADJAH MADA, JOGJAKARTA) (MECHANICAL, 1978)	<b>ELECTRI</b> 24393	CAL ENGINEERING LING SOON LI	BE (ADELAIDE) (ELECTRICAL & ELECTRONIC, 2002)	STRUCTU 39147	IRAL ENGINEERING Kang ho kiat	BE (TASMANIA) (STRUCTURAL, 2001)		

# **IEM DIARY OF EVENTS**

Kindly note that the scheduled events below are subject to change. Please visit the IEM website at www.MyIEM.org.my for more information on the upcoming events.

### **Civil and Structural Engineering Technical Division** 20-21 JULY 2011 2-DAY COURSE ON DESIGN OF STEEL CONNECTIONS **TO EUROCODES EC3 PART 1-8**

Time<sup>.</sup> 9.00 a.m. to 5.30 p.m. Venue: Glenmarie Ballroom. Holiday Inn Kuala Lumpur Glenmarie, Shah Alam, Selangor IEM Student Member- RM220 Fees: IEM Graduate Member- RM500 IEM Corporate Member - RM660

# Non IEM Member - RM1,100 (Invitation to register by 15 July 2011)

### 23 IULY 2011 25TH ANNUAL GENERAL MEETING CSETD

Time: 11.00 a.m. Venue: C&S Lecture Room, 2<sup>nd</sup> Floor, Wisma IEM, P. J. (Invitation to register)

### 25 JULY 2011

IEM-IES ONE DAY SEMINAR ON PRECAST CONCRETE FOR HIGHRISE

Time: 9.00 a.m. to 5.30 p.m. Venue: Hotel Armada Petaling Java Fees: IEM Student Member- RM110 IEM Graduate Member- RM330 IEM Corporate Member - RM440 Non IEM Member - RM880 (Invitation to register by 19 July 2011)

### **Highway and Transportation Engineering Technical Division** 28 JULY 2011

TALK ON "WATER SUSCEPTIBILITY AND FATIGUE PROPERTIES AND PERFORMANCE OF POLYMER FIBRE-REINFORCED BITUMINOUS MIXTURES" 5.30 p.m. to 7.30 p.m. Time:

C&S Lecture Room, 2<sup>nd</sup> Floor, Wisma IEM, P. J. Venue: Speaker: Ir. Dr Ibrahim Kamaruddin

### **Agricultural and Food Engineering Technical Division** 24 September 2011 TECHNICAL VISIT TO

- 'MODIPALM ENGINEERING SDN BHD' 9.00 a.m. to 1.00 p.m. Time: Venue: Modipalm Engineering Sdn Bhd, Lot 3 & 4, Jalan Waja 15, Kawasan Perusahaan Telok Panglima Garang, 42500 Kuala Langat, Selangor RM30.00 Fee:
  - (Invitation to register)

CONFERENCES & SEMINARS

For registration and more information, kindly contact the organiser occordingly.

16-19 April 2012

### 12TH ITS ASIA PACIFIC FORUM AND EXHIBITION-

- Powering Transformation in Transportation Venue: Kuala Lumpur, Malaysia
- Tel: +603 9286 1040 (ext 242) Email: enquiries@itsasiapacific2012.com
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July 2011 JURUTERA 57

# **ANNOUNCEMENT**

# DONATION LIST TO THE WISMA IEM BUILDING FUND

38<sup>th</sup> Announcement

The Institution would like to thank all contributors for donating towards the Wisma IEM Building Fund. Members and readers who wish to donate can do so by downloading the form from the IEM website at http://www.MyIEM.org my or contact the IEM Secretariat at +603-7968 4001/4025 for more information. The list of the contributors as at 31 May 2011 are shown as in table below.

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2	11243	AB. AZIZ BIN MAON	89	16514	JAILANI BIN SALIHON	181	18582	MOHAMED HUZAIR BIN	265	09497	TAN HEE WEE
3	18355 03778	ABAS BIN ABDULLAH ABD. AZIZ BIN AHMAD	90 91	23058	JAMALLUDIN BIN MAMUD JAMES BILONG	182	05102	MOHAMED ISMAIL MOHAMMAD BAHRIN BIN	266	23696 05123	TAN HENG EAN TAN HUEI MENG, VINCENT
5	24492	ABDUL AZIZ BIN MAT ALI	92	06451	JAMES PONNIAH JOSEPH			WARIN	268	15831	TAN KAI BOON
6 7	04480 38744	ABDUL JALIL BIN MOHAMMAD ABDUL ZAIRUL BIN	93	12451	JONATHAN SAWING AK GALLEH	183 184	06016 26552	MOHD ELIAS BIN BURAN MOHD FAZI Y BIN MAII	269 270	13021 12274	TAN KHOON KIAN TAN KIM TIANG
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8	10212	ABDULLAH BIN HAJI ABBAS	95	13756	KAMARUDDIN BIN ISMAIL	186	19730	MOHD REHAT BIN AHMAD @	272	16674	TAN KOK HWA
5	33027	CHE SOBRY	97	10684	KANAGARAJAH VADIVELU	187	24170	MOHD SALLEH BIN NGAH	273	04626	TAN LIAN SOON
10	13527	ABU BAKAR BIN JAAFAR	98	12366	KANG TIONG TEE	400	07000	MAT DRUS	275	01777	TAN PEIK SUAN
11	43801	AHMAD FADZLI BIN HASHIM AHMAD HOSNI BIN ABD.	99 100	16959	KASMAN @ AB RAHMAN BIN PARDI KHAIRUDDIN BIN DIN	188	01745	MOHD. AZYZUL BIN YAHAYA MOHD. MUSTAFA BIN	276	07242	TAN SEE CHEE
		MALEK	101	22477	KHAIRUL AMIN BIN NAIM			ZAHARIMAN	278	07616	TAN SEE JOON
13	03394	AHMAD HUSAINI BIN SULAIMAN	102	39074	KHAIRUL NIZAM BIN MOHAMED SUTTAN	190	19057 18015	MOHD. NASIR BIN SULAIMAN MOHD. TAJUDIN BIN REJAB	279	09122 24789	TAN SENG THIAN TAN WEE KOK
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20	03016	ANG LEE HUAT	111	01027	KOH HAN KHAI	197		MUHIBBAH ENGINEERING (M) BHD	289	20099	TEE BENG HOCK
21	00112	ARUMUGAM RAMANATH	112	18307	KOH YONG HUAT	198	24360	MUKHTAR BIN CHE ALI	291	29666	TEH ENG HUAT
22	04961	ASOK KUMAR S/O HARILAL HIRA PATEI	113 114	18849	KUA BOON SONG KUAK YONG CHEW	199 200	09016	MUSA BIN OMAR	292	24417 04077	TEH GAIK TENG TEH GEK HUAT
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26	11109	AZMAN BIN ABU BAKAR	118	15876	LAINUS ANAK LICHOK	205	03152	NG KAM WENG	297	15072	TEO CHEE KONG
27	10290	BAHARI BIN MOHAMED BAHARUDIN BIN ISMAIL	119	07826	LAU LEE YENG LAU YICK CHIANG	206	13912	NG KOON SENG	298	02548	THAM KIN YON
29	21092	BEH KOK FONG	121	21581	LAW YAN CHEE	208	01898	NG TACK YONG	300	00442	THARMALINGAM
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32	23075	CHAN CHEE SENG	124	04577	LEE CHENG SIONG	211	05709	NIK AB RAHIM BIN NIK ISMAIL	302	22412	THONG KUOK LING
33 34	37018	CHAN CHUNG WEI	125	03530	LEE CHONG TEIK	212	14359	NIZAM BIN ABDULLAH	303	00695	THONG TIN SIN, GREGORY
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36	20510	CHAN SOO HOW	128	01338	LEE KIM SENG	215	20293	ONG CHEE WEE	306	16661	TSAN NGAK SENG
37	14181	CHAN YOON FATT CHENG KEE HAUT	129	05617	LEE KOI CHIN	216	09852	ONG LYE SIONG	307	25622	FRANCIS
39	15455	CHEONG YOON KWAN	131	08741	LEE KOK AN	218	02427	ONG WAH TIONG	308	10211	VINCENT CLEMENT
40	16364	UDARBE	132	01998 01752	LEE LAM LEE LIT HENG	219	13436 04396	OOI CHONG KOOI OOI SAN KOOI	309	05599	THAMBYRAJAH WAN ABU BAKAR BIN WAN ABAS
41	12279	CHEW AI BENG	134	03427	LEE SAY CHONG	221	07431	OTHMAN BIN ABDUL KADIR	310	13448	WAN KOA YIT
42	26497	CHEW OOI TECK	135	03608	LEE SHOW KIEN, HERMAN	222	11216	OW WENG KAI PANG WENG KOK	311	09830	WAN MANAN BIN WAN ALI WAN MOHAMAD SU'UT BIN
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54	04572	CHOR HOCK LYE	147	06061	LIM AH HANG	232	22351	ROHAYA BINTI P. KAMAL	320	02208	WONG NAM YUN
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58 59	12667 14129	CHUAN YAP HAI CHUNG CHEE TUCK	151	15643	LIM KHAY HUN	236	20412	SHANMUGAM SAIFLII A AZIZI BIN MOHAMAD SAAD	324	19258 21870	WONG YANN JEH, STANLEY WOO HOOI DEAN
60	33933	DONALD ERIC CHUCHONG	153	17604	LIM MING SIN	237	07231	SAM MAN KEONG	326	39208	WOO MENG CHUN
61	24799	FADZIL HARMAN SHAH BIN	154	16723	LIM SIN POH	238	36923	SAMUEL BIN EDWARD ATIT	327	13493	WOO SOO MING
62	24059	FADZILLAH BINTI JALALUDIN	156	09666	LIM TOCK KING	240	20316	SANJAY KUMAR JOSHI A/L	329	19275	YAH KEM CHUI
63	24810	FAIRUZMARIJA BIN MERIKAN	157	00883	LIM WEN SEE		04000	TARSAIV RAI	330	02893	YAHYA BIN MOHAMED YATIM
65	10981	FONG CHOONG WAI	158	00818	LOH CHOW KHUAN	241 242	14537	SAW KONG HOOI SEE CHENG SENG	331	09625	YAP WEI LEN
66	05492	FUAD BIN ABAS	160	10697	LOH FOOK GUAN	243	02679	SEH CHONG PENG	333	27551	YASSER ASRUL BIN AHMAD
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72	06466	GUNASEGARAN S/O	166	02025	LOW BENG PEOW	240	02591	SOON YIH SIN @ SOON	339	33792	YOGESWARAN A/L GOVINDAN
70	22426	RAMACHANDRAN	167	04511	LOW CHONG YU	250	40700	NGEE SIN	340	21033	YONG CHEE YOONG
74	36662	HAMZAH BIN ADLAN	169	13723	LUA KIM HUAT	250	10134	SUH CHING HIENG	341	30640	YONG POH HING, HENRY
75	09360	HANAFI BIN NASIR	170	13589	MASLENA BINTI MELAN	252	09817	SULAIMAN BIN MOHAMAD TAIB	343	11107	YONG SIENG HONG
76 77	36364 28954	HAZRI DAHALAN BIN MD RAZIP	1/1	30054	AB AZIZ	253	34847	OMAR	344 345	29572 15362	YU KIANG HOCK
78	07357	HIEW YET KUEI	172	09020	MD. NASIR BIN HASHIM	254	08710	SYED IDRUS BIN ABD. RAHMAN	346	00684	YU WEN CHIEH
79 80	04415 01273	HING EK LEE HO BOK SING	173 174	07846 11891	MD. NOOR BIN MAHMUD MEGAT NU'MAN BIN MEGAT	255	12795	SYED MOHAMED BIN SYED JAFFAR	347 348	16967 13639	ZAIDI BIN MD. ZAIN ZAINAL BIN MOHD
81	12677	HO KONG SOON			HARUN	256	03273	SYED ZAIN AL-KUDCY BIN	349	08624	ZAKARIA BIN NANYAN
82	09696	HO SAY HAI	175	33872	MEOR HALIL BIN MEOR NAZRI	257	03363	DATO' SYED MAHMOOD	350	43072	ZAKARIA BIN SUJI @ SAUJI
84	33753	HUSSWAN HADI BIN WAN	176	01/95	MUKTI	257	04803	TAN AI TONG	351	21993	ZUKHAIRI BIN MD REDZUAN
05	07604	HUSSEIN	177	13648	MOHAMAD AZMI BIN JOHARI	259	04886	TAN CHEE KEONG, WILLIAM	353	20916	ZULKIFLI BIN ABDUL SHUKOR
00	07031	MAMAT	178	12030	YASSIN	260	09499	TAN CHIN NYAN	304	39100	ZULKIFLI
86 87	- 05891	IJM CORPORATION BHD ISHAK BIN HAJI OMAR	179	24382	MOHAMAD YUSRI BIN MOHAMAD YACOB	262	15194 08253	TAN CHUAN HO TAN CHUNG KEN			

ANNOUNCEMENT

# **LATEST UPDATE!**



RM1,731,384.20 from IEM Members and Committees

RM571,502.00 from Private Organisations CONTRIBUTIONS TO WISMA IEM BUILDING FUND

# TOTAL RM2,302,886.20

(ANOTHER RM9,847,113.80 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 TO THE FUTURE GENERATION

# **CALL FOR NOMINATIONS**

# THE SCEJ ASIA RESEARCH AWARD 2012

75th Anniversary International Symposium to be held on 15 March 2012 at Tokyo, Japan

This award shall be granted to outstanding individuals under the age of 45, at the time of selection, who contribute to the research and technological development of chemical engineering that have resulted in significant improvements within Asia outside Japan. The SCEJ Awards Committee encourages all members and Asian Chemical Engineering Institutes to nominate deserving colleagues for the award.

The nominator for the award must submit a complete nomination form together with the nominee's current curriculum vitae and five of the most significant articles,

including scientific papers or patent application, to the SCEJ Awards Committee by registered mail or electronic mail by 30 July 2011. Nomination and application forms should be submitted to:

Dr YOUICHI TOZAWA The Society of Chemical Engineers, Japan 4-6-19 Kohinata, Bunkyo-ku, Tokyo 112-0006, Japan Tel: +81 03-3943-3527 Fax: +81 03-3943-3530 Email: tozawa@scej.org Website: http://www.scej.org

# **IEM ENGINEERING HALL OF FAME AWARD 2012**

The Sub-Committee of Engineering Hall of Fame under the auspices of the Standing Committee on Professional Practice is proud to invite nominations for the IEM Engineering Hall of Fame Award 2012.

It is timely and expedient to induct and to record the accomplishments of engineers in the country who have or had demonstrated particularly outstanding professional achievements and provided excellent services to the Institution, the engineering industry and the Nation.

The IEM Engineering Hall of Fame is established with the aim to confer recognition and to celebrate the accomplishments of members of the IEM:

- Who have demonstrated outstanding professional achievements.
- Who have made significant contributions to the engineering profession, the Institution of Engineers, Malaysia (IEM) and the Nation.
- Who have rendered valuable service to the Community.

The Engineering Hall of Fame will serve as the focal point or showcase of outstanding Malaysian engineers, past and present, who had or have made great contributions to the engineering profession and to the quality of life in Malaysia. Engineers honoured in the Engineering Hall of Fame will also serve as a beacon and as role models for young engineers

as well as create greater interest in engineering in general and awareness of the contributions made by outstanding engineers in the country.

Nominations for the Award are open to Malaysian citizens who are or have been Corporate Members of the IEM:-

The closing date for receipt of nominations for IEM Engineering Hall of Fame Award is 30 September 2011.

Nomination forms can be downloaded from the IEM website (http://www.MyIEM.org.my). For further details, kindly contact IEM Secretariat at 03-7968 4001/2.

# IEM AWARD FOR CONTRIBUTION TO THE ENGINEERING PROFESSION IN MALAYSIA 2012

To encourage an interest in engineering and to recognise important services or contributions to engineering in Malaysia, the IEM Award for Contribution to the Engineering Profession in Malaysia is to be presented to the person (s), who has

- Contributed to the advancement of engineering in Malaysia, and/or
- Designed and constructed an original engineering device or system of merit and applicability to industry

This Award is open to all Malaysian citizens and permanent residents

### NOMINATIONS

- Nominations will be invited annually. The closing date for receipt of nominations for each year is 30 September.
- Nominations shall be made through a member of the Institution. Each member is restricted to one nomination per year.
- Each nomination shall be accompanied by a brief write up of the services rendered or contributions made or system designed and/or constructed together with relevant photographs and other documents.

### AWARD

- The Award is to be made by the Council upon recommendation by the Awards Committee
- The Award shall comprise a metal plaque, a scroll and a sum of RM1,000

Please submit nominations to:

Hon Secretary The Institution of Engineers Malaysia Bangunan Ingenieur, Lots 60&62 Jalan 52/4, Petaling Jaya

Nomination form can be downloaded from the IEM website at http://www.myiem.org.my.

# **CALL FOR NOMINATIONS**

# IEM OUTSTANDING ENGINEERING ACHIEVEMENT AWARD 2012

The IEM Outstanding Engineering Achievement Award is created to confer recognition to an organisation or body for outstanding engineering achievements within Malaysia. The award will be given to an organisation or body responsible for an outstanding engineering project in the country.

The basis for the award shall be an engineering achievement that demonstrates outstanding engineering skills which has made a significant contribution to the profession and to the quality of life in Malaysia. In making the selection, the following criteria will be given special consideration:

- 1) Contribution to the well-being of people and communities,
- 2) Resourcefulness in planning,
- 3) Creativity in the solution of design problems,
- 4) Pioneering use of materials and methods,
- 5) Innovations in planning, design and construction,
- 6) Unusual aspects and aesthetic values.

Engineering achievements which include, interalia, the following can be submitted for consideration:

- Bridges, Tunnels, Waterways Structures, Roads.
  Telecommunications of national/ international
- character, Power Transmission and Transportation.Dams and Power Stations.
- Ports and Harbours.
- Building and Structures.
- Airports.
- Water Supply, Waste Disposal Projects.
- Military projects, such as bases, launching units, harbour facilities.
- Drainage, Irrigation and Flood Control Projects.
- Local design and manufacture of high
- technology products.
- Energy, Heat, Mass Transfer.
- Outstanding work in engineering research and development.
- · Chemical processing of indigenous raw resources

such as rubber, palm oil and various other local plants.

- Innovative use of local engineering materials.Outstanding contribution in engineering
- education.Original discovery of useful engineering theory.

Nominations are invited from all members of the Institution. Each nomination submitted should contain a brief summary/write-up of the project in approximately 1,000 to 2,000 words together with full relevant reports on the project and three copies of supporting documentation including photographs. A project or component part thereof which has received an earlier award, from IEM does not qualify for nomination. The closing date for nominations is **30 September 2011**. Please submit nomination to:

Nomination form can be downloaded from the IEM website at http://www.myiem.org.my.

# **YOUNG ENGINEER AWARD 2012**

### On behalf of IEM, the YES-G&S Committee is proud to invite nominations for the YOUNG ENGINEER AWARD for year 2012.

The objective of the Award is to encourage interest in engineering and to recognise potential among young engineers in Malaysia. The Award will be presented to the person who has shown outstanding ability and leadership qualities, **either** 

- i) in the design and/or construction of an
- engineering device or system of merit; or
- ii) in the research and development or teaching of engineering.

In any one year, the Award may be made in either one or both of the categories mentioned above. If the Award is to be made in only one of the two category may be made in the year. The Award is open to candidate who are:-

- i) Registered member with the Board of
- Engineers, Malaysia and under 35 years of age ii) Malaysian citizens or permanent residents of
- Malaysia iii) Graduate or Corporate Members of IEM.

# Photocopies are allowed. The closing date for nominations is 30 September 2011.

The Proposer may or may not be a member of IEM. However, each nomination shall be supported by a brief recommendation from two Referees who are Corporate members of IEM. If the Proposer himself is a Corporate member of IEM (or higher), then he may also act as one of the two required Referees.

Future nomination will be invited bi-annually.

The Award will comprise a cash prize of RM500.00, a scroll and plaque, to be presented with due ceremony to each recipient of the Award.

Nomination form can be downloaded from the IEM website at http://www.myiem.org.my.

# **IEM LADY ENGINEER AWARD 2012**

The Lady Engineer's Sub-Committee under the auspices of the Welfare Committee is proud to invite nominations for the Lady Engineer Award 2012.

The primary objective of the Award is to recognise the contributions by lady engineers. This Award may also incidentally encourage interest in engineering among ladies and encourage them to strive towards greater excellence. The Award will be presented to the lady engineer who has shown outstanding ability and leadership qualities, or has been a pioneer in any one or more of the following areas:

- In the design and/or construction of an engineering device or system, structural system, planned development, environmental improvements or,
- In the research and development of engineering device, systems, processes and/ or materials, publication of paper or,
- In the teaching of engineering or,

- In the management of engineering projects,
- Entrepreneurship in the commercial sector.

In making the selection, the following criteria will be given special consideration:

- Contribution to the well-being of people and communities
- Resourcefulness in planning and in the solution of design problems
- Pioneering in use of materials and methods
- Innovations in planning, design and construction
- Unusual aspects and aesthetic values

The Award is opened to candidates who are:

- Registered members of the Board of Engineers, Malaysia,
- Malaysian citizens or permanent residents of Malaysia,
- Graduate or Corporate Members of The Institution of Engineers, Malaysia.

The closing date for nominations is **30 September 2011**. Please submit nomination to:

The Institution of Engineers, Malaysia, Bangunan Ingenieur, Lots 60/62, Jalan 52/4, P.O. Box 223 (Jalan Sultan) 46720 Petaling Jaya, Selangor

The Proposer may or not be a member of IEM or BEM, or an engineer. However, each nomination shall be supported by a brief recommendation from two Referees who are Graduate or Corporate member of IEM. If the Proposer is herself either a Corporate or Graduate member of IEM (or higher), then she may also act as one of the two required Referees.

Nomination form can be downloaded from the IEM website at http://www.myiem.org.my.



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We provide FREE training and technical support by professional engineers locally...



# MES INNOVATION SDN BHD Sales & Support Office:

119B & 119C, Jalan Kenari 23, Bandar Puchong Jaya, 47100 Puchong, Selangor. **Tel**: 03-8070 5782(2 lines) **Fax**: 03-8070 5783 **Email**: info@mes100.com Contact person **Mr. Bryan Ewe** at 016-338 4033 (bryanewe@mes100.com) **Development Office:** E-16-2, Jalan Multimedia 7/AG, City Park, i-City, 40000 Shah Alam, Selangor



Now "Urban Stormwater Design V2.0" is redeveloped and enhanced to better suit user expectations in tandem with local authority requirement and checklist. Fundamentally, this program is adhering <u>Urban Stormwater Management Manual for Malaysia</u> (of JPS). The software incorporates the IDF curve parameters, temporal pattern distribution, runoff coefficients, OSD formula and

Level pool routing method that recommended in MSMA Manual. Now, it is also built with the reference of <u>Submission Checklist</u> <u>For Stormwater Management</u> in Malaysia. Thus, it further simplified "Trial and Error Work Flow" in this application.



# Versatile Features of Earthworks V 2.1

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- 2. Slope with Retaining Wall.
- 3. Export Ground Level to other module like Sewer, Drain, Water Rec.
- 4. Cut / Fill Boundaries Plotting on Layout.
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NEW UPGRADES: Auto-Berm / Slope New Add-On: Quantity of Dry / Wet Sediment Basin Infravera - EarthWorks V2.1

\*\* Infravera—EarthWorks (ECV2) is the new generation of Earthworks Computation which can highly improve productivity of your engineers and designers !

While all efforts are made to check inf

Result accuracy and user-request features are two key façades that topped our priority in producing a professional & friendly software. Continuous support and development of the ECV2 are our commitment to all the users. There are still many features pending to be released to users once they are fully tested !

![](_page_64_Picture_15.jpeg)

dvertent errors do occur from time to time. So we reserve the right to change such errors without prior notice.