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Mentoring – The Way Forward

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Mentoring Graduate Engineers – Revisited (and) the Way Forward

*by **Ir. Juares Rizal Abd Hamid***
Chairman, Sub-committee on Log Book Training Scheme

A milestone review on the Log Book Training Scheme (LBTS) participation has shown a yield of 7% between 2006 to 2012. The yield measured the (productivity) ratio, of the number of mentees completing the required three continuous years of mentoring (210) to that of intending participants marked by the number of Log Books being procured (3000). Premised against the total graduate member population of around 9400, the relatively low yield is apparently indicative of a tepid response to the scheme. Participation can be enhanced when more of the intending participants actualize their LBTS commitment and more of the remaining graduate members start appraising the LBTS as the choice route to Professional Interview (PI) candidacy. Any appraisal may want to take note that there were 609 registered mentors as at December 2012; assuming all the mentors have been and will continue to be active, with each handling between one to the limit three mentees, there can be albeit theoretically room for 600 to 1800 mentees immediately – and many more with more MIEMs and FIEMs registering as mentors.

The non-obligatory LBTS is a mentoring scheme aimed at providing guidance for a proper practical training to graduate members entering the engineering profession, and assuring that the training fulfils the requirements for Professional Interview (PI) candidacy. It can be actualized in any one of the three practical formats:

- mentor and mentee being *in-house placed* with guidance effected and learning attained *inherently on the job* (direct supervision), or
- *in-house placed* with the same objectives effected and attained but *laterally on the job* (indirect supervision),
- *ex-house placed* with the same objectives effected and attained *laterally and informed of the job* (external or distant supervision).

Mentees can opt for any one of the formats, but need IEM's prior endorsement for any change of the IEM-assigned mentors.

Participating mentor and mentee are engineers normally from the same engineering discipline and working in similar field or sharing similar background of experience and training. The mentoring "partnership" is premised on both the mentor and mentee being able to form a helpful relationship based on mutual trust and respect. A set of (guideline) roles and responsibilities each for mentee and mentor towards completing the three years mentorship will be issued by the IEM.

The mentoring process is mentee centred and driven, but with the learning process steered by the mentor and realized through progress monitoring and provision of advice and guidance toward solutions and forward planning. The elements of progressive learning will normally cover, the acquisition of engineering knowledge and relevant competencies, perceived engineers' "standard of care", demonstrated respect to employer/client/seniors/peers/charges, sense of foresight and hindsight (reflection), demonstrated integrity, ethical conduct, discoursed issues and lessons learnt (especially that concerning process, public, and environmental safety), and clear communication. The objective outcomes of mentoring may include focus on having a mindset for correcting mistakes, rebutting bad or poor practices, continually evaluating work progress and inculcating "independence".

Successful mentoring is the way forward – it means more readily trained graduate members going into the LBTS pipeline and heading towards the PI distillation tower for the MIEM product cut. ■

IEM Log Book Training Scheme – Its Relevance and Effectiveness

by Reika Kua Kee Eng

Ir. Ali Askar Sher Mohamad
Chief Operating Officer of Sustainable Energy Development Authority Malaysia (SEDA Malaysia)

ACCORDING to The Institution of Engineers, Malaysia (IEM) Log Book Training Scheme Guidelines, the Log Book Training Scheme (LBTS) was established to provide proper practical training to graduate member engineers entering the profession. IEM also plays a role in ensuring that such training conforms to the rules and regulations concerning the admission of Corporate Members and towards allowing the graduate engineers to achieve the Professional Engineers status with the Board of Engineers (BEM). Since the beginning of the LBTS, numerous graduate engineers have benefitted from the programme and have attained the status of Professional Engineers.

However, presently, there are some concerns pertaining to the relevance and effectiveness of the implementation of the LBTS from various aspects including producing sufficient numbers of qualified Professional Engineers to meet the nation's aspiration to become a developed nation, the response of young engineers and potential mentors towards the LBTS, and other related issues. To get a more objective review on these issues, *JURUTERA* conducted interview sessions with a few mentors of IEM LBTS from different fields of engineering, namely Y.Bhg. Datuk Ir. Prof. Dr Ow Chee Sheng, Past President of IEM for Session 2005/2007; Ir. Gunasagaran Kristnan, the 2013/2014 Executive Committee Member of IEM, Ir. Hj. Tunai Shamsidi bin Ahmad, Technical Director, Project Management Division of Minconsult Sdn. Bhd. and Ir. Ali Askar Sher Mohamad, Chief Operating Officer of Sustainable Energy Development Authority Malaysia (SEDA Malaysia).

THE RELEVANCE & EFFECTIVENESS OF LBTS

Ir. Ali Askar Sher Mohamad started to get involved in preparing engineers for the PI since he was a Training Manager at Tenaga Nasional Berhad (TNB) in charge of the development of training modules for engineers for specific training. Throughout his experience as Training Manager, he observed that most of the engineers had never sat for the competency examination to become a Professional Engineer (PE).

"At that time, some of the very senior engineers in TNB were not even registered with the Board of Engineers (BEM)," commented Ir. Ali. He added, "Hence, I began to organise various workshops, collaborating with IEM, to raise awareness amongst the engineers of TNB about the importance of becoming Professional Engineers. These workshops were held throughout Peninsular Malaysia; central, northern, southern and eastern region." According to Ir. Ali, such initiatives had received a very positive response from the engineers of TNB. "Those who were eligible to sit for the PI went for it while those who were not eligible, took their first step, preparing themselves to pass the requirements to achieving PE status," said Ir. Ali.

"Many years ago, when young engineers joined an engineering consultancy firm, especially smaller firms, they were usually mentored by their superior, even though the official log book system did not exist then. As time went by, the engineering field made remarkable progress where more Multi-National Corporations (MNCs) were established. The superiors no longer had time to actually mentor their subordinates due to the increased staff size and the scale of business". explained Ir. Ali. "Thus, the IEM LBTS is a good way to ensure these young engineers acquire sufficient guidance from the mentors assigned by IEM. It is quite effective."

"In the past, I had been mentor to a number of engineers for companies that did not have a professional engineer the same discipline. For example, when Proton started, its engineers did not have mentors from the same engineering discipline. So, we started off by mentoring them. I was a mentor to a number of Proton engineers who subsequently became professional engineers," said Y.Bhg. Datuk Ir. Prof. Dr Ow Chee Sheng, sharing his past experience as a mentor.

He highlighted that LBTS is also a good way to assess the knowledge and skills of an engineer. "An engineer working in any industry should be able to demonstrate the application of his/her knowledge in producing the products or facilities for that industry and so forth, developing something from scratch, from the initial to the final stage. And all these can be tracked if clearly recorded in the LBTS" said Datuk Ir. Prof. Dr Ow, who is currently mentoring three young engineers in his faculty.

"If an establishment already has professional engineers (of the same discipline with the young engineers) within its organisation, then it would not be necessary to have the young engineers in this establishment to participate in the

LBTS, as the professional engineers there would be able to provide the necessary guidance and training to the young engineers," commented Datuk Ir. Prof. Dr Ow.

He added, "On the other hand, if an establishment is similar to the case of Proton as I have mentioned earlier, where it does not have any professional engineer within that establishment, this is where IEM comes into the picture to ensure the young engineers gain the necessary training and knowledge through the LBTS".

Ir. Gunasagaran shares the same opinion with Datuk Ir. Prof. Dr Ow. He said, "Actually, if a graduate engineer works in a firm that has a professional engineer with the knowledge in the same discipline, this graduate engineer can also personally adopt the approach of the LBTS as a measure to keep track of his/her work performance and experience, as long as the professional engineer in his/her firm is willing to offer guidance. Though unofficial, it is a good way to help this graduate engineer progress in his field of specialisation".

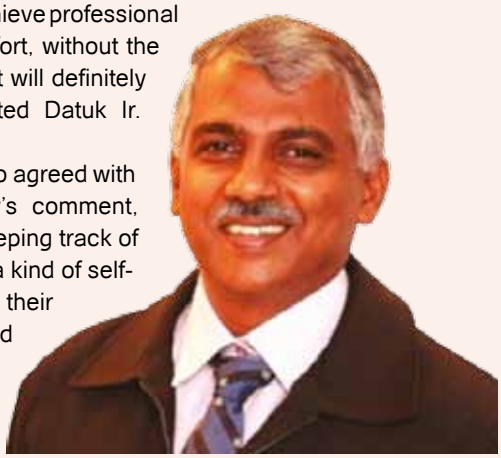
"However, presently many young engineers are assigned by their employers to work on tasks or projects without being given proper and sufficient training, and this has made them unable to cope with the tasks given to them," said Datuk Ir. Prof. Dr Ow. "Due to various limitations, sometimes young engineers have to work on a project that is less related or not-related to their field of studies, thus, in the long run, it will make them lose touch with their field of expertise, jeopardising their development as a competent engineer in that field".

> **"In order to increase the number of mentors in the LBTS, perhaps every technical division of IEM could play a role in acquiring more mentors for the LBTS"**
>
> *- Ir. Ali Askar Sher Mohamad*

Meanwhile, Ir. Ali also pointed out that in today's work environment, multi-tasking is inevitable regardless of which engineering firms that these young engineers choose to join. They will not be solely working on their related field of engineering, but are also required to perform other field of works such as those involving IT, soft skills and so forth. "In such a scenario, only the engineers themselves can decide on the direction that they desire to take in their career and make every effort to pursue their desired goals such as attaining the Professional Engineer status and not merely blaming the external factors for hindering them," said Ir. Ali.

On this note, Ir. Gunasagaran shares the same opinion as Ir. Ali. "It is important for young engineers to decide what direction they want to take when they first enter the workforce, as they need to acquire an adequate amount of experience and exposure that are consistent with the discipline of engineering that they have studied and chosen to specialise in. The frequency of the mentor-mentee meeting is set at once every three months by IEM. However, it is up to the commitment of both mentor and mentee to decide if they would like to meet up more frequently so that the mentee could progress better and a quicker pace".

"LBTS is good for young engineers in terms of guiding them towards their desired outcome. It makes the route to achieving the status of a professional engineer much shorter. If one tries to achieve professional status on one's own effort, without the guidance of a mentor, it will definitely take longer," commented Datuk Ir. Prof. Dr Ow.



Ir. K. Gunasagaran
2013/2014 Executive Committee Member of IEM

Ir. Gunasagaran also agreed with Datuk Ir. Prof. Dr Ow's comment, "LBTS is one way of keeping track of their work experience, a kind of self-tracking assessment of their work experience and performance in their specific engineering discipline. It is more than a tool for the purpose of passing the Professional Interview session. The participation of young or graduate engineers in the LBTS also allows them to develop their characters and attitude as well as work ethics in their chosen field along the way".

"In my opinion, the LBTS is effective in helping the young or graduate engineers to plan their way to reach their goal of becoming a professional engineer. It is a well-run system and it has been proven to help engineers towards becoming a professional engineer. However, to achieve that, commitment as well as unyielding determination and consistency from the mentees are crucial, as they are the ones who need to determine how good they want to be in their respective field of specialisation. With a clear direction, these mentees can then seek guidance and advice from their mentor to ensure that they do not sidetrack from their actual aim," said Ir. Gunasagaran.

However, Ir. Hj. Tunai Shamsidi seems to have a different opinion. "LBTS is a systematic way that lets the mentors assist mentees in preparing themselves to face the challenges of becoming a professional engineer. It helps young engineers to identify career plans. However, from my point of view, the current LBTS is not very effective in terms of the mentor-mentee ratio. The current LBTS has set a maximum of three mentees per mentor in a three-year mentoring duration. I participated in the LBTS as a mentor

(Continued on page 9)

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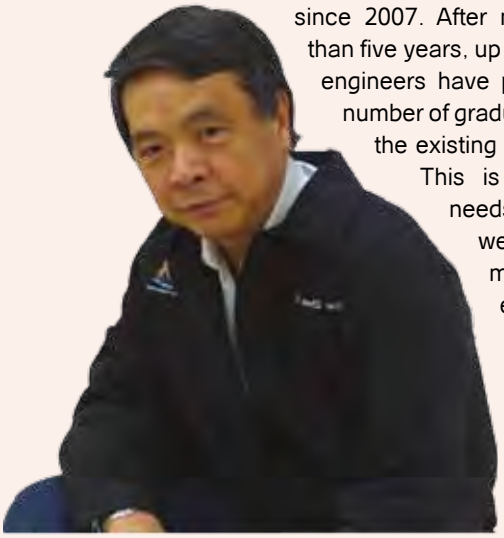


Datuk Ir. Prof. Dr Ow Chee Sheng
Past President of IEM for Session 2005/2007

since 2007. After mentoring for more than five years, up to present, only four engineers have passed the PI. The number of graduates is greater than the existing number of mentors. This is a bottleneck that needs to be addressed, if we aspire to have more professional engineers," commented Ir. Tunai Shamsidi.

Ir. Hj. Tunai Shamsidi further elaborated, "In a nutshell, the objective and concept of LBTS are good, but the execution has its limitations. I suggest that IEM reviews the implementation of the LBTS so that it can benefit more young engineers in the long run.

Ir. Hj. Tunai Shamsidi also urged IEM to review whether sufficient quality engineers or professional engineers are being produced to meet the demand of the industry. "Developed countries, for instance Japan, are producing a certain number of graduate and professional engineers annually who are usually well-recognised for their competency in the engineering field, both locally and internationally. Hence, in line with our aspiration to becoming a developed nation, are we producing sufficient quality engineers, especially professional engineers to meet an increasing demand in future? These are some of the concerns that we must look into," suggested Ir. Hj. Tunai Shamsidi.

> **"In a nutshell, the objective and concept of LBTS are good, but the execution of the system has its limitations"**
>
> *- Ir. Tunai Shamsidi bin Ahmad*

RESPONSE TO LBTS

According to Datuk Ir. Prof. Dr Ow, whether or not the LBTS is well-received among young and graduate engineers depends highly on how LBTS is marketed. He pointed out that frequent job-hopping by some graduate engineers also hinders them from making progress towards achieving the status of Professional Engineers as there could be quite a hassle for them to keep track of their own performance in the LBTS. As a result, the response towards LBTS from young engineers is not so favourable.

Both Ir. Ali and Datuk Ir. Prof. Dr Ow also pointed out that busy work schedules of most Professional Engineers is one of the reasons why they are not keen to participate in the mentoring system.

Ir. Tunai Shamsidi highlighted another probable reason. "Certainly, the stringent peer review of IEM and the strict selection process of the PI panels are meant to maintain a standard quality of the selected panel members. However, this has also led to the scenario where we are outnumbered by the candidates, which is also a concern that needs to be dealt with".

HOW CAN THE LBTS BE IMPROVED?

"Instead of the young engineers merely reporting their involvement in the project assigned by their respective engineering firms where they work, the LBTS can be improved with some assignments of tasks in the related field of the young engineers, for instance, 2 or 3 relevant projects, so that the mentors can have a better assessment on their mentees and offer the required guidance accordingly to help them progress and acquire the necessary knowledge and skills that allows them to be better prepared for their PI," suggested Ir. Ali.

ASSIGN CO-MENTORS

"The mentors assigned by IEM are usually senior engineers who have lots of experience not only in their respective field, but also in other related engineering fields. So these mentors are basically very knowledgeable and are more than capable of advising these young engineers in their chosen field of engineering," said Ir. Ali. However, he also suggested that a co-mentor be appointed in the case where the main mentor is unfamiliar with a certain part of the engineering works which requires a lot of knowledge from another more specific engineering branch that could be out of his field of expertise.

GET MORE MENTORS

When asked about the limitation of the mentor-mentee ratio, Datuk Ir. Prof. Dr Ow replied, "There is no harm to increase the ratio of mentor to mentees by IEM. In fact, there should be more flexibility on the number of mentees that a mentor could have in the LBTS, as long as the mentor is able to cope with the mentoring tasks".

"The lack of publicity of the LBTS is also one of the reasons why the number of mentors is still quite low. It is necessary to initiate more marketing activities to promote the LBTS especially to encourage more mentors to volunteer," suggested Datuk Ir. Prof. Dr Ow. He urged more professional engineers, especially retirees, to participate as the LBTS mentors, as they would be able to allocate more time for the mentees as compared to those who are currently working full-time.

PROMOTING LBTS AMONGST YOUNG ENGINEERS

According to Datuk Ir. Prof. Dr Ow, in UiTM, for the past few years, it was compulsory for their young engineering staff (TPMs) to attend a 1-year full-time training at any of their preferred company under the Vice Chancellor's (Y.Bhg. Tan Sri Dato' Sri Prof. Ir. Dr Sahol Hamid Abu Bakar) Special Project Scheme (VCSP) and to participate in the LBTS to record their training. Faculty staff requiring industrial experience and who were not able to attend training on a full-time basis, were advised to go through the training on a part-time basis until they had accumulated the required 1-year equivalent of training in a Career Roadmap introduced by the Mechanical Engineering faculty.

Ir. Hj. Tunai Shamsidi also highlighted that awareness on LBTS among young engineers should be raised, "They need to know why they should aim to become a professional engineer. What are the motivating factors that will excite them to choose the path to becoming a professional engineer?"

Ir. Hj Tunai Shamsidi Ahmad
Technical Director, Project Management Division of Minconsult Sdn. Bhd.

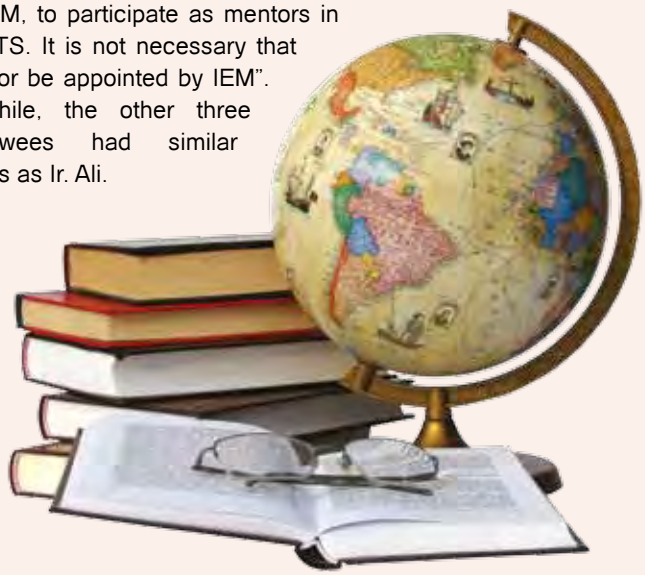
TECHNICAL DIVISIONS TO PLAY A MORE PROACTIVE ROLE

"The response to IEM's initiative to get more qualified professional engineers to participate as mentors has been less than favourable. That could be due to the busy work schedules of these professional engineers. In order to increase the number of mentors, perhaps every technical division of IEM could play its role in acquiring more mentors for the LBTS, as the divisions have access to contacts of engineers who are qualified to become mentors," suggested Ir. Ali.

He also suggested that certain points be rewarded to motivate the committee members of the technical divisions to be more actively involved in acquiring more mentors for the LBTS. Ir. Hj. Tunai Shamsidi agreed with Ir. Ali on the roles of technical divisions in capturing the attention of more professional engineers in their respective field to participate as mentors in the LBTS.

PI CANDIDACY: OPTIONAL VS. PRE-REQUISITE

Pertaining to the question making PI candidacy a pre-requisite for all graduate engineers, Ir. Ali answered, "If we want it to be a pre-requisite, we must first determine whether or not IEM has enough mentors to implement it. To make the PI a pre-requisite for all graduate engineers, perhaps IEM can consider allowing engineers with the status of professional engineers from organisations other than IEM, to participate as mentors in the LBTS. It is not necessary that a mentor be appointed by IEM". Meanwhile, the other three interviewees had similar opinions as Ir. Ali.



"The participation of young or graduate engineers in the LBTS also allows them to develop their characters and attitude as well as work ethics in their chosen field along the way"

- Ir. Gunasagaran Kristnan

CONCLUSION

When all's said and done, all the interviewees agreed that LBTS is a still an enabling tool that IEM provides to both the employers and young engineers that benefits not only the engineers but also the overall industry, if the professional engineers and young engineers are willing to be more proactive in their involvement in the LBTS, and if issues related to the execution of the LBTS including the mentor-mentee ratio, promotion of the LBTS, and selection of the PI panels are addressed accordingly by IEM.

In a nutshell, the interviewees urged IEM to review the concerning issues and to constantly come up with ideas or solutions to overcome or at least minimise the impact of these issues in order to implement the LBTS more effectively and help more graduate engineers achieve Professional Engineers status. ■

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Time for Rebranding

by Ir. Choo Kok Beng FASc

I have been visiting IEM branches all over the country to hear you out. Apart from listening to members and educating them on opportunities within IEM, I believe that now is the time for engineers to take the stage.

To refresh IEM is to refresh ourselves as individuals first and foremost, because IEM is made up of "US" – the engineers.

We need to brand ourselves more effectively. Engineers are usually regarded as quiet professionals with technical qualifications who set the stage while the "actors" get all the publicity. But it shouldn't be like that. The public should be aware that we are the ones responsible for making the stage so sturdy that the show can go on. Actions speak louder than words, so I have already taken measures to implement the branding concept.

NEW NAME-CARD DESIGN

For a start, I have redesigned the IEM name-card and made significant changes to ensure our members will be more visible. One major change is that name-cards will now no longer be exclusive to council and exco members only.

I'm encouraging all IEM members to follow the same design to brand themselves. The design changes include a more colourful layout, details of qualifications as well as clear indications of the international bodies that IEM is affiliated to.

Few people know that IEM is ISO-certified and a member of esteemed and prestigious bodies. I hope to change this through the redesigned name-cards.

We must tell people what we are good at and that we are the prime movers in nation building. We are the secretariat of regional bodies such as ASEAN Federation of Engineering Organizations (AFEO). For a small country like ours to be secretariat of a regional body like AFEO is an achievement.

We are also a member of the World Federation of Engineering Organizations (WFEO) and the Commonwealth Engineers' Council (CEC). All this will help people realise that we are a high-profiled professional body globally.

By listing all IEM's affiliations on the name-card, I hope our members will be able to network with other engineers, regionally and internationally.

NATIONAL ADVERTISEMENT

One move that I spearheaded recently was the placing of a full page advertisement in a national newspaper to congratulate the winners of the 13th General Election. Surely national branding can't go bigger than this!

There was so much positive feedback from this. People commented that we were wise to do this. We were the only professional body in Malaysia to do so. For us to be able to serve the community effectively, we must make friends with the political masters.

SPEEDIER MEMBERSHIP APPROVAL

With all these efforts to refresh and rebrand IEM, we expect a surge in membership applications. For non-corporate membership, the processing time for approval used to be one month but I have successfully shortened it to just one day!

The next step is to lessen the time taken to process corporate memberships. The six-month waiting period is far too long and can be a deterrent for those planning to sign up. With a bit of planning, we should be able to reduce the processing time for corporate membership as well.

We all go after branded goods because they are of the highest quality, they impress us and they last longer. Similarly, there's no reason why we should not brand ourselves as the best when we have every right and every qualification.

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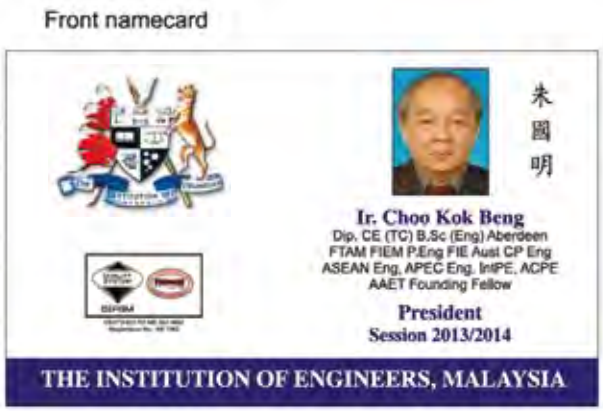
Front namecard



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Mentoring Engineers: A Critical Review of Current Practice and Suggestions for Improvement

by Ir. Assoc. Prof. Abdul Talib bin Din

MENTORING can be defined as monitoring, facilitating and advising engineers, to offer the guidance they need in order to complete their professional training and match it with the criteria required to enable them to qualify for entry into PI (Professional Interview) examination.

Mentors have a responsibility, not only to IEM but also to the nation, to ensure the level of experience and the training of local engineers meet the required standards so that the respective bodies which regulate the engineers' activities and recognitions, such as BEM and IEM, cannot be blamed for any bad reputation due to misconducts, malpractices and unethical decisions or actions that the engineers may make.

It is hard for members of the PI panel to detect any weakness in a candidate given the short period of the interview, usually one or two hours. Therefore mentors should advise, guide and facilitate their mentees so that their practical experience exposure is sufficient to qualify them for the interview.

The PI is the only authorised official screening body, so mentors are not encouraged to disapprove any application for PI. Instead, they should use their wisdom and creativity to guide their mentees and advise them to perhaps extend their training period or change their training scopes prior to completing their 3-year professional training before submitting for the PI.

The training that engineers go through after graduation is vital and necessary to not only recognise the graduate as a professional engineer but also to groom them to be anticipative engineers who are fully aware of all the possible effects their decisions and actions have on public safety.

Therefore the professional training modules should be designed in such a way that the mentee experiences the crucial professional practical aspects in order to learn the practically proven correct decision on the design and supervision of the engineering project that they are involved in.

In university, mentees learn a lot about design "factor of safety (FS)", but in the real working environment, they may not apply this, especially if they're working in an environment that does not concern public safety much.

Then, when they change their working environment to industries dealing with public safety-related engineering products, they are already appointed as professional engineer in their respective fields and would be asked to decide, supervise and subsequently endorse documents of such projects.

We have seen or heard about serious and fatal accidents involving engineers' decisions and actions such as the collapse of Highland Towers, the collapse of the cable-stayed recreational bridge in Tronoh, Perak, the Tenom-Beaufort train plunging into the river in Sabah, the electrical short circuiting of the recreational fountain pump at Taman Tasik Perdana, Kuala Lumpur, the collapse of the Jaya Supermarket building in Section 14 Petaling Jaya, the collapse of Terengganu Stadium and the crack of MRR2 pillars etc. These have resulted in the deaths of thousands of people.

We should learn from the past and carry out post-mortems to find out why these accidents keep occurring although our engineers have been consistently given a systematic professional training under the mentorship scheme. There must be something wrong somewhere in the process though we may think we have done our best.

Actually we do not fully emphasise public safety in our professional training scheme such as mentorship scheme and other formal training modules. We were not fully "public safety conscious" when setting up the professional training module or mentorship programme. In short, public safety is not the critical agenda or main theme in our master plan of activities and policies.

IEM and BEM's current mentorship programs are not geared towards producing complete and perfectly qualified Professional Engineers, especially in public and consumer safety. The professional training or experiences that an engineer goes through doesn't cover the optimum spectrum of important practical experiences required for the respective discipline.

For example, if a mechanical engineer has gone through only 30% of mechanical engineering scope of training as the industry he is working in is involved only in this narrow scope of activities, his training will still be endorsed by his mentor on the basis that it is not the latter's purview to ask the mentee to resign and work with another company to get the required minimum spectrum of important professional trainings exposures.

Therefore, I would suggest that all mentors be given a specially designed Mentorship Training course before they are appointed as mentors and that Professional Interview workshops or seminars should be made an annual affair so that all mentors and mentees can meet together regularly and, at the same time, attend free seminars related to mentorship scheme.

They should be exposed to the standard basic spectrum of training requirements to meet the level qualified to be upgraded to professional engineers. Emphasis should be given to those fields of training involving public and consumer safety.

The following are my suggestions for the 12-month basic scope of training module required before an engineer is considered to go for Professional Interview.

1. At least 6 months training in hands-on general engineering structural design (regardless the discipline) and its installation supervision that concern or are related to the public and consumer safety. By doing this, we will be able to inculcate safety in every engineer's mind and structural safety will then be a common concern (though not common expertise) for all engineering disciplines as most accidents that occur are due to structural failure. **For example:** An electrical engineer may be responsible only for the electrical aspect but he or she still needs to have experience and awareness of the importance of the safety aspect of the structure used to mount the heavy electrical components as this concerns public safety, even though structural safety is officially the responsibility of the structural engineer. This applies to all other engineering disciplines.

2. At least 6 months training in basic engineering aspect in respective discipline i.e. Civil, Mechanical, Electrical, Electronic, Chemical, Mining etc. that concern or is related to public and consumer safety. **For example:** A mechanical engineer needs to experience the design, fabrication and installation of heavy machines, especially in safety aspects, although his job may be in small machines or engineering management, as we cannot assume that the engineer will be forever working in an environment that does not involve public safety. Likewise, an electrical engineer needs to experience the design and installation of heavy (voltage or amp) electrical components even though his current job is on low voltage which will not injure the public or the consumers.

The above 2 scopes of compulsory basic training are crucially important as most public complaints about the engineering society are related to safety. The recognition of Professional Engineer status by the PI panel grants an engineer the authority to inspect and endorse document related to their respective discipline. However if the above 2 aspects of training are insufficient and the engineer is still allowed by the mentor to maintain in his/her existing nature of training and subsequently proceed for Professional Interview, the recognition given by the PI panel (which depends on the non-safety related experience) would be misleading. BEM or IEM will only realise this through the news media if the professional engineer cum ex-mentee makes a wrong decision on safety related design and supervision which results in a serious accident.

A mentor may feel uncomfortable asking an engineer to go through practical experiences not related to his current job in order to complete his minimum required training spectrum. However, the mentor also has a duty to uphold the right principles for selecting qualified candidates for entry into the PI examination and the awarding of Professional Engineer status based on the sufficient spectrum of important professional trainings that the candidates need to go through.

So mentors need to be well guided and informed through a special mentorship course conducted for those registered with IEM. In that particular course, the mentors will be consistently reminded to perform their duties, not only as facilitators and advisors to mentees, but also to consult mentees and training providers so that they can provide the sufficient spectrum of important hand-on exposures by various alternatives means. This can be achieved by asking the training provider to organise the Mentee Mobility Program among the various intergroup or intragroup industries for their future Professional Engineer.

The function of the Log Book Committee at IEM is to monitor and facilitate the mentee and mentor by informing them of the status of current and past professional training, whether such training is sufficient and have the minimum required breath, depth and quality for taking the PI examination.

The Log Book Committee and the Training And Examination Committee also need to function as a screening body besides facilitating the engineer's training needs and preparing him or her for PI examination. Otherwise, these committees would just be a rubberstamp to endorse what the mentor has approved. The quality of Professional Engineers trained and regulated by IEM and BEM reflects the overall quality of Professional Engineers in Malaysia although not all engineers are trained by IEM and BEM. This misunderstanding has led to complaints being made to IEM and BEM about engineers in cases of accidents originating in engineering faults.

The public will have confidence in an engineers society when the expertise of an engineer is accurately translated into his Professional Engineer recognition through PI examination.

However, sometimes engineers are not assessed on appropriate professional practical experience required for "professional engineer" recognition.

For example, what will public expectations be if a professional mechanical engineer is well versed only in electronic based mechanical control without the important mechanical dynamic or mechanical structural strength design and analysis experiences as right from the start of the career, he or she is placed only in the limited working scope of activities and responsibilities? Or what if an Electrical Professional Engineer well versed in domestic appliances but not in industrial application, is awarded the status as if he or she has had that minimum important practical exposure?

There are also incidences where engineers go through professional training in disciplines different from their own. For instance, a graduate has a mechatronic degree in mechanical engineering faculty but undergoes professional training under electrical environment. When, at the end of the 3-year period, he or she applies for PI, the application for Professional Engineer in Electrical discipline is rejected because the degree is in Mechanical Engineering.

This adds up to a very bad experience and a waste of time for the mentee. In such a case, the mentors should have checked the mentee's basic degree curriculum – whether they have the minimum credit hour for the related subject studied – before agreeing to supervise the engineer. The basic degree should be appropriately matched with the practical exposure. The mentee may have believed that the matching of the curriculum is officially approved by IEM, so when the application for the PI, and the PE with the BEM, are turned down, the mentee will put the blame on IEM.

IEM needs to work parallel with BEM's policies and regulations before delegating any mentor to supervise a candidate.

Due to the above reasons, it is high time that the report of the mentor in the mentorship program, the review by the Log Book Committee and the approval by the Training and Examination Committee are scrutinised and executed in such a way that they can function in synergy, not only as the layers of screening mechanisms but also as facilitators that can interface the mentee and the training organisation on the needs for the right spectrum of important professional trainings for the national agenda.

By doing so, we will help groom more and more unquestionably qualified Professional Engineers who have credibility in the respective engineering field especially those involving public safety. The IEM, through its top management, must help this national agenda to be successfully achieved by negotiating with the various authorities concerned on the new policy and incentives that can be drawn to encourage the industries to cooperate in the proposed engineers' Mentee's Professional Training Mobility Program. ■

Ir. Assoc. Prof. Abdul Talib bin Din is an Associate Professor at the Faculty of Mechanical Engineering at Universiti Teknikal Malaysia Melaka, Malacca. His academic qualifications include PhD (Mechanical Engineering) from National University of Malaysia, Bangi (2010), M.Sc. (Environmental Engineering) from Technology University of Malaysia, Skudai (2000) and B. Eng. (Mechanical Engineering) with Honours from University of Malaya (1987).

CONGRATULATIONS

The IEM would like to congratulate **Datuk Ir. Hj. Mohd. Hassin @ Mohd. Hashim bin Daud** for being conferred Darjah Kebesaran Panglima Jasa Negara (P.J.N.) which carries the title "Datuk", by Seri Paduka Baginda Yang di-Pertuan Agong XIV, Almu'tasimu Billahi Muhibbuddin Tuanku Alhaj Abdul Halim Mu'adzam Shah ibni Almarhum Sultan Badlishah in conjunction with His Majesty's official birthday on 1 June 2013.

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IEM Log Book Training Scheme for the Development of New Engineers Towards Professional Standing

by Ir. Al-Khairi Mohd Daud

AN engineer is a professional practitioner of engineering who uses ingenuity, mathematics and established physical laws to systematically develop solutions for technical problems. Engineers design, construct, operate and maintain materials, structures and systems throughout its life cycle while balancing the limitations imposed by practicality, regulation, safety and cost in the most optimal way.

It is not enough for an engineer to just have knowledge acquired in university without the proper practical experience. An engineer has to continuously update himself on the knowledge and development in his area of expertise. He must have the experience and capability to coordinate, administer and control programs, activities and protocol. It is an engineer's duty to manage resources, monitor activities and assess environmental risk, safety and quality control associated with the program.

An engineer must have good leadership skills and abilities needed to coordinate, facilitate, and participate in a collaborative approach to the completion of tasks or assignments. It is important that he is able to communicate, in written and oral form on the detailed technical engineering information, guidelines and standards, statutes, codes and regulations to various audiences in order to ensure that they understand the information and the message, and to seek compliance. An engineer must be able to deliver presentations suited to the characteristics and needs of the audience such as negotiating solutions among different parties, or providing expert testimony.

Last but not least, to be effective, an engineer must understand the business and economics of the solutions presented so that his ideas remains practical and relevant to solve the technical problem and be viable commercially. He is expected to be ethical, firm but tactful when performing his duty.

A university engineering degree fulfils the academic requirements. Unfortunately in an actual working environment, not all organisations can provide proper structured training and the all-rounded experience to develop engineers professionally. Sometimes, senior engineers may not have the time to develop new engineers or they have moved on to other roles, away from technical requirements. Getting a professional status is a recognition that requires the engineer to have the required knowledge, skills and aptitude to deliver good engineering solutions. Getting a good practical experience is the issue that many young engineers face.

To this end, IEM has developed the Log Book Training Scheme (LTBS) to assist young engineers prepare themselves towards qualifying as candidate for the Professional Interview (PI) and towards becoming professional engineers. The LTBS matches an experienced mentor volunteer who will guide and supervise new engineers to ensure the latter has the training and exposure required to be a professional engineer. The mentor is expected to impart wisdom and share knowledge with his mentee.

IEM has clear guidelines on how the LBTS is to be conducted. The guidelines are meant to ensure consistency and standard practices for both mentor and mentee. It is hoped that the scheme will be adopted as a systematic training scheme for young engineers' development in the country by all industries.

(Continued on page 20)

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Before a new graduate decides to join the mentorship program, it is important that both mentor and mentee have the necessary "chemistry" to work in symbiotic manner to ensure good outcome of the training. Since mentorship is voluntary, it is important that during the initial acquaintance, both mentor and mentee establish baseline information by understanding the background and experience, expectation of the outcome as well as the frequency of meetings. The mentor must identify the mentee's objectives and aspirations as well as his willingness to work to fulfill the PI requirements. It will be a waste if the mentee is not willing to listen to the mentor's advice and guidance. If such is the case, the mentorship should not proceed.

A mentee should select a mentor who has the relevant experience and knowledge of the industry that he is working in. The mentor will then be his invaluable resource to get a proper perspective when solving problems and performing his daily work. The mentee also has to first get approval from his employer to sanction the type of in-house information that can be shared with the mentor. It would be futile if the mentor cannot understand the issues or give appropriate advice because the mentee is not able to discuss his work in an open forum. Similarly the mentor must ensure that he does not have a conflict of interest when mentoring to ensure the integrity and maintenance of confidential information.

It is encouraged to consider the log book as an official training format with the employer for the mentee's career development so that the scheme can benefit both parties. It is important that a mentor is allowed to visit the mentee's work place so that the mentor can discuss with the employer how the employer can support the program. The visit will also allow the mentor to understand the mentee's working environment and gauge the kind of support he gets from the employer and colleagues.

Once both parties have agreed to be in the mentorship program, the mentor has to map out the detailed trainings and competencies required to be achieved during the three-year period. He has to list down the fundamental body of knowledge for the discipline, the standard and regulatory requirements to be followed and the duration needed on the design, field experience and supervisory/management function. He must explain the mandatory courses as required by the Board Of Engineers Malaysia (BEM) to be attended by the mentee. Other information and knowledge such as ethics, environment and safety, business, communication and economics must be explained throughout the mentoring period. The mentor must have a strategy to cover all the information needed so that he can monitor the mentee's performance.

It is the mentee's duty to plan and arrange the meetings on a regular basis, minimally once every quarter. The mode of meeting, location and timing has to be mutually agreed but preferably at a place where proper discussion can take place. During the meeting, the mentee has to produce his logged reports and documentation for verification by the mentor.

The report has to have sufficient details describing the activities, issues faced and the solutions provided by the mentee. Relevant information such as sketches, drawings, sample calculations and design concept can be attached. The mentee is not expected to provide original documents belonging to his organization such as correspondence to the authority or licences. This is to avoid misplacement or missing documents, especially when the log book is submitted to IEM during the yearly review.

The mentor has to check and verify the experience and ensure that the mentee has the confidence and ability to express his ideas fluidly and in systematic manner. He should write his observations and comments in the log book for reference. Annually, the IEM log book committee shall review the comments and independently assess whether the mentor's guides and comments are constructive to the development of the mentee.

(Continued on page 22)

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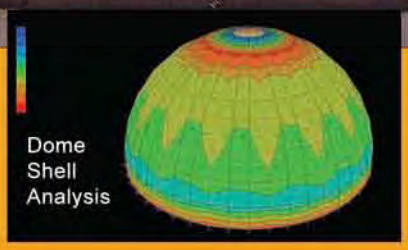


During the period of mentorship, the mentee must make as much effort as possible to fulfil the training and experience as required by PI Guidelines. The mentor should advise the means and ways to get the appropriate training and support the objectives and requirements of the mentee whenever possible. In the event that the mentee loses interest or is no longer able to continue with the requirements of mentorship program, he should advise the mentor as well as IEM in writing so that the mentor does not waste valuable time and effort. Similarly if a mentor cannot continue to provide the support, he must advise the IEM to get a replacement.

At the end of the third year, a mentor should advise the mentee whether he is ready to sit for the Professional Interview. If the mentee is ready, he can support the application as well as offer advice on the experience and project reports required for the interview. If the mentor feels that the mentee has yet to achieve the required experience and confidence level required to be a professional engineer, he should recommend the mentee to extend the training. IEM should also be advised accordingly. Eventually it is up to the mentee whether he wants to pursue the interview process and qualify as a professional engineer.

It is recommended that the process above be followed by both the mentee and mentor to ensure that the log book program produce quality engineers. For senior engineers, imparting wisdom and knowledge is a noble act and should be continued voluntarily to ensure the country has well respected and ethical engineering professionals.

New engineers must be exposed to the log book training scheme programme during their undergraduate study so that they know what to do when they start work as an engineer. IEM encourages all organizations to adopt the IEM log book program to ensure their engineers are well trained and able to contribute professionally to the organization. ■

Ir. Al-Khairi Mohd Daud has 20 years of engineering experience in both project and maintenance of various plants and facilities such as Liquefied Natural Gas (LNG) plants, petrochemical, oleo chemical, manufacturing, high end R&D and medical centre facilities. He is a certified surveyor and appointed trainer with MSQH and a member of Biomedical Engineering Association Malaysia (BEAM) and Malaysian Energy Professional Association (MEPA). He is also a member with Institute of Asset Management, UK. Ir Al-Khairi is currently the Advisor for Oil, Gas & Mining Technical Division, IEM and a member of Building Services Technical Division, IEM. He is also an active member in IEM logbook committee and also serves as the Principal Interviewer for Professional Interview examinations.

The Log Book Training Scheme – Adding Value to Graduate Engineers' Training Through Mentoring

by Ir. Juares Rizal Abd. Hamid

THE logged training scheme for graduate engineer members of the IEM has been in practice for over 30 years, since January 1982. Initially referred to as Log Book System (LBS), it is now known as Log Book Training Scheme (LBTS).

The mentees' experiences and training activities are continually entered in IEM-issued log books for a quarterly review with mentors. This is done over a minimum period of three continuous years, with annual progress reports submitted to the IEM for quality conformance check.

The scheme has helped many mentees prepare for the IEM Professional Interview (PI). Its training format facilitates those who have not been able to secure work under the direct supervision or guidance of senior engineers of the same engineering discipline in their work place.

Securing the PI candidacy via the LBTS is one way to attaining the IEM initial corporate membership (MIEM), leading to possibly applying from the Board of Engineers Malaysia (BEM) for the registered Professional Engineer (P.Eng or Ir.) standing.

How does LBTS mentoring fare as a choice route towards the PI candidacy – the alternative being for graduate engineers to independently self-prepare for it?

How has mentoring benefited – and continue to benefit – mentees in preparing them for, in particular, PI candidacy, and in effecting gainful training and development in professional engineering generally?

As of June 2013, 210 member graduate engineers completed the LBTS between 2006 and 2012 (Figure 1).

There were 609 mentors registered with the IEM during the same period (Figure 2). Most of the nearly 3,000 LBTS log books printed during this period had since been procured from the IEM, so there should be still some 2,700 procured log books that have yet to be reverted to IEM – either as (mentee-mentor) annual progress reports or as (mentee) confirmation to commence the LBTS. Assuming the log books not reverted are in the process of being accordingly acted upon, and given that the standing graduate membership of the IEM at around 9,400, a cursory estimation indicates only 30% response to the scheme and on average, only around 7% yield on completion of the scheme by participants.

The overall performance suggests a tepid response to the scheme, particularly by graduate members. Hopefully, this is not the result of a misperception that the LBTS is not, or will not be useful in preparing mentees for PI candidacy or in guiding them to attain gainful learning of professional engineering knowledge and acquiring competency.

It is definitely worth the while to inform graduate engineers of how LBTS can benefit them.

The LBTS is essentially a mentee-driven format of training. First, the mentee communicates with the mentor, who will be from the same engineering discipline, to plan and effect the training supervision.

Year	Civil	Chemical	Electrical	Mechanical	Electronics	Others	Total
2006	12	6	6	6	5	5	40
2007	4	3	5	4	7	2	25
2008	2	2	2	4	4		14
2009	7	6	7	8	9		37
2010	7	3	4	6	5		25
2011	8	5	7	8	6	3	37
2012	6	5	7	6	5	3	32
						Total :	210

Figure 1: List of Candidates Completing the LBTS by Engineering Discipline between 2006 and 2012 (Source: IEM)

Discipline	No. of Mentors
Civil	270
Mechanical	150
Chemical	49
Electrical	102
Electronics	17
Others	21

Figure 2: List of IEM Registered Mentors between 2006 and 2012 (Source: IEM)

This means the mentor will continually provide guidance and monitor the progress of the mentee for the acquisition of relevant knowledge and competencies.

Mentor and mentee will hold interactive meetings at least once every three months to track and clarify the reported progress of the mentee's work experience and training activities and to submit an annual report to the LBTS for milestone quality conformance check.

Continued guidance allows mentor and mentee to progressively assess the latter's experience and training and for the mentor to offer advice on what a mentee has to do to close any knowledge or competency gap.

A similar mentoring facility can also be provided to graduate engineers by their employees, either as subordinated or direct supervision (wherein such extended guidance and progress monitoring are internally placed and inherently on the job) or an unsubordinated or indirect supervision (where in the guidance and monitoring are externally placed but laterally on the job).

The latter format of mentoring is conceptually similar to LBTS except that the extended guidance and progress monitoring by the latter are externally placed but laterally informed of the job.

However, direct and indirect in-house supervision mentoring schemes may not capably effect preparatory objectives toward PI candidacy though these can effect guided acquisition of knowledge and competency to meet mentee's professional development vis-à-vis organisational objectives. This is because the senior engineer-mentor may not be a MIEM or a P.Eng, or of the same engineering discipline as the mentee. Such situations may arise because of staff movement, including possibly the practice of multi

Log Book Committee Members

(engineering discipline) tasking as practiced in many project engineering services at process plants.

On the other hand, participating in the LBTS will secure uninterrupted and continued mentoring for the mentee, independent of in-house staff and staffing situation. In other words, an IEM-assigned mentor can accordingly function either as a "substitute for" or as a "complement or supplement to" the in-house mentor, in as far as and particularly where the PI candidacy training and development is concerned.

Mentees can expect mentors to request visits to their workplaces (at least once) and to communicate with them regularly to keep abreast of their learning progress and development.

Mentors will assure that in-house supervising engineers (if not a MIEM or a P.Eng) are aware of the mentees' progress and development. This is usually done by having the supervising engineers officially attesting to the authenticity and executive responsibility of the work done by mentees.

Mentors will advise mentees of any additional forward experience and training needed (if not possibly acquired at the workplace) to qualify for the PI candidacy. They will also guide and offer advice on basic professional engineering practices (including code of ethics) as well as regulatory requirements concerning public safety and the environment. Mentees can also have mentors as ready proposers to sit for the PI. They can submit their completed log books as ready attachments to the reports on Summary of Training and Experience, and (if included earlier as part of the completed log books) on Detail Technical Report, required to be prepared for the PI by candidates not taking the LBTS route.

Development and changes in science and technology in engineering and design, information and communication, engineering operation and maintenance, have also impacted changes in workplace management and practices, including in the strategy and practices in engineer training and development. A reality is the wide use of virtual communication to facilitate training.

The operative LBTS can make use of this to facilitate communication between mentors and mentees and allow experience and training activities to be monitored more closely and routinely so that quarterly meetings can be spent on deeper discourses to identify (with respect to PI candidacy requirements) knowledge and competency gaps and to extend advice on the possible forward and fastest ways and means to close them.

Virtual communication can also be used to facilitate communication between mentors too – in the interim of and between LBTS mentors' workshops. Mentors can share experiences or discourses on prevailing issues with regards to the preparation of mentees for PI candidacy, and of general knowledge on mentoring and coaching.

The use of virtual communication is expected to be a motioned topic at a LBTS' mentors workshop planned for 2013.

Another topic expected to be motioned will be a proposal to revise the present operative LBTS guidelines to include a checklist on professional engineering knowledge and competencies specific to a particular, and common, to all engineering disciplines. ■

Ir. Juares Rizal Abd Hamid is a Professional Engineer and a Fellow of the IEM. He is self-employed, and has over 30 years of experience and training at the oil, gas, and petrochemical industry (Petronas) as well as at an engineering design consultancy (MECIP Global Engineers) – in process engineering, planning and design, project management, technical auditing, and mentor coaching. He has been a DOE-registered Subject Consultant, a trained ISO 14001 EMS auditor and a certified Business Coach.

Integrity and Ethical Behaviour

by Engr. Mohamed Zaimir bin Mohamed Suffian

Question: Engineers are often entrusted with the responsibility of implementing large scale projects involving millions of ringgit. In view of the large amount of money changing hands, the integrity and ethical standards of engineers are being put to test. What measures can an engineer take to prevent corruption and unethical practice of cutting corners in order to safeguard the good image of the engineering profession?

ENGINEERS invent the future. Their works invariably affect the lives of people and their environment. Attaining the moral high ground in this profession is the prime focus in ascertaining the sanctity of the profession. In this regard, we are expected to be aware of, to recognise and to comply with the ethical aspects of engineering in techno-commercial dealings and business decisions when discharging our duties and fulfilling the expectations of stakeholders.

It is virtually impossible for engineers to not face challenges in upholding integrity and maintaining high ethical standards on a daily basis. We are, inevitably, involved in handling finances and holding commercially sensitive documents. When it comes to money, we must be aware of the measures for preventing possible corruption. Cutting corners and crossing ethical boundaries, whether deliberate or out of sheer ignorance, are examples of gross acts that need to be stamped out completely. In combining the objective of ensuring a good image within the engineering fraternity, the following steps can be taken:

1. NOT PARTICIPATING IN ANY DISHONEST ACTIVITY

Due to the pressure to maximise profit and ensure business survival, it is paramount to successfully bid for projects. In an increasingly competitive marketplace, there are instances when engineers participate in segmentation of market-areas between friends working in competitor organisations. This can lead to a cartel, which is a straightforward breach of the antitrust law. Market segmentation creates exclusivity within the demarcated territories and enables price fixing to effectively dismantle the free market.

Engineers must always subscribe to the free market enterprise system by competing openly, fairly and independently, based on merit i.e. superiority of technology offerings, intelligence of market benchmarking and smart pricing strategies. This will give customers a wider choice besides maintaining an improved quality and competitiveness in pricing at each time of offering. The objective is to protect the interests of consumers and ensure entrepreneurship. Engineers should avoid such 'traps' at all costs as history has shown that it never pays to conduct businesses this way.

In essence, antitrust practices and conflict of professional interest cases can be mitigated through mere actions of avoidance, refusal and structured disclosure. The golden rule is to be responsible at all times by proactively distancing oneself from any inappropriate conduct.

2. REPORT ANY ACTIVITY SUSPECTED TO BE DISHONEST AND TO SEEK GUIDANCE

Whistle-blowing of corrupt and malpractice within the organisation gained momentum when Parliament passed the Whistleblower Protection Act in late 2010, part of the many major initiatives under the Corruption National Key Results Area (NKRA) of the Government Transformation Programme (GTP).

In many cases, information can be sensitive, leading to potential harm to the whistleblower. Many organisations committed to the highest standard of integrity, openness and accountability in the performance of their businesses have acknowledged the need for a robust avenue for disclosure or reporting concerns of any act of misconduct within the organisation through strictly confidential and safe avenues.

The engineers however, should exercise fine judgment and a clear conscience when dealing with non-compliance cases even though they are protected against retaliation under the law. This is simply because of respect, a profound moral value that needs to be upheld especially as cases concern colleagues and fellow industry players. Besides private, confidential documents, guarding such sensitive information e.g. compliance complaint against exposure into the public domain is also part of values that engineers should hold firmly to.

3. ABIDE BY THE ETHICAL CODE OF THE COMPANY CHARTER AND PROFESSIONAL INSTITUTION

The code of conduct consists of a set of values and sound behavioral attributes, setting the fundamental guidance for engineers to perform duties to the best of their ability within the contours of the laws and regulations. The set of obligations covers the complete spectrum of stakeholders, society, profession as well as the environment. Besides their company's integrity charter, engineers must also exercise zero tolerance for unethical behaviour as set forth by the local governing engineering bodies, (in the case of Malaysia, these are the Board of Engineers and Institution of Engineers). The code of conduct is therefore central to the way we protect, develop and sustain our reputation.

It is the innate responsibility of engineers to perform services only in their areas of technical competence and to be honest about skill-gaps as doing otherwise would lead to a compromise in engineering quality for the sake of economic advantage.

In addition, engineers are duty bound to not mislead about engineering matters to their employers, non-technical owners or fund managers which may result in financial loss, damage to reputation as well as injury and even death.

4. CONCLUSION – THE EQUATION: TECHNO-SKILLS + BUSINESS TARGET + PROFOUND ETHICS = SUCCESS

The increasingly demanding roles of engineers to meet the business target must be done without crossing the line with respect to business ethics, environment, health, safety and social standards. They must integrate ethical behaviour in their daily work attitude instead of treating it as an additional demand. Essentially, ethical considerations are to be built into the engineering practice. Above and beyond, integrity and compliance to the code of conduct should be the DNA of each and every engineer in fulfilling their duties, even during off-work. The ultimate challenge is to do the same when no one is watching or checking! ■

Engr. Mohamed Zaimir bin Mohamed Suffian graduated with a First Class Honours in Bachelor of Electrical and Electronics Engineering from UMIST, Manchester, UK. He has been with ABB Malaysia Sdn. Bhd., a multinational company (MNC) and the original equipment manufacturer (OEM) of electrical power and automation for the past 15 years. He is presently Head of Service Sales of Substation Service, Power Systems Substation.

Adhere to Building Codes and Adopt Sound Engineering Judgement to Mitigate Disaster

17 JUNE, 2013

THE recent freak storm in Penang highlights the importance of ensuring buildings and infrastructures are designed and built to withstand not just normal environmental conditions but also the occasional exceptional circumstance. It takes only one such tragedy – injury or death – to hammer home the point.

To the family members of the victim who was killed in the freak storm, The Institution of Engineers, Malaysia (IEM) expresses its heartfelt sympathies.

IEM is active in drawing up Codes Of Practice For Earthquake, Wind Loading And Position Papers on various technical issues that serve to guide engineers in mitigating accidents caused by normal and exceptional circumstances.

Generally, most buildings in the country are not designed for seismic actions but they are designed for wind loads, which sometimes can be more serious than a low seismic effect.

Earthquakes may not be rampant here and neither are typhoons and hurricanes, but some degree of resilience in the design against such conditions will go some way to avoid catastrophic failures and consequent disasters should the occasional earth tremor or strong winds occur.

Sound engineering judgement is also necessary to prevent such mishaps. IEM hopes the authorities will ensure strict adherence to all building codes and other recommended guidelines, and that sound engineering judgement is being exercised, in order to reduce the possibilities of disasters from freak weather and other unforeseeable natural conditions. ■

Contributed by: Ir. Cheang Kok Meng and Puan Ainul Azraina Ainul Adnan

CONGRATULATIONS

Congratulations to **Ir. Raymond Chan Kin Sek** for being appointed the 39th President of The Hong Kong Institution of Engineers at the 38th Annual General Meeting held on 25th June 2013.

IEM DIARY OF EVENTS

Kindly note that the scheduled events on the upcoming events. Events will be held at Wisma IEM, Petaling Jaya unless stated otherwise.

Half-Day Workshop on The Source For Innovation

7th September 2013 (Saturday)
Organised by Chemical Engineering Technical Division
Time: 9.00 a.m. – 1.00 p.m. (CPD/PDP: 4)

Half-Day Workshop on Journal Publication

20th September 2013 (Friday)
Organised by Standing Committee on Information and Publications
Time: 9.00 a.m. – 12.30 p.m. (CPD/PDP: 3)

Half-Day Course on Bird's Eye View on Intellectual Property (IP) Law Practical Approach on Protection of Your IP Rights

28th September 2013 (Saturday)
Organised by Chemical Engineering Technical Division
Time: 9:00 am – 1.00 pm (CPD/PDP: 3.5)

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Government Receives Submissions On Greentech Incentives Review, Says Maximus

Professional bodies have made submissions to the government on the review of existing incentives to encourage construction of buildings using green technology.

Energy, Green Technology and Water Minister Datuk Seri Dr Maximus Ongkili said his ministry was talking to the Finance Ministry on the matter.

"The government has announced incentives in the form of tax exemptions and stamp duty waivers for owners of buildings with Green Building Index (GBI) certificates and buyers of GBI-certified properties," he told a media briefing.

Meanwhile, Malaysian Institute of Architects' President Chan Seong Aun said they have asked for the incentives, which will lapse in mid-2014, to be extended until 2020.

"We're asking for an extension as many of the buildings for which applications have been made for GBI certification are still under construction," he told the same media briefing.

Maximus said that over 60 million square feet of green buildings were GBI-certified this month.

He said the GBI, a national rating tool developed by Malaysia's experts comprising architects, engineers, academics and stakeholders of the construction industry, was firmly benchmarked to international standards.

"The GBI is much admired by countries in the region," he added.

(Sourced from BERNAMA , 11 July 2013)

PETRONAS FEED Tender For Sepat

PETROLIAM Nasional Bhd (Petronas) will undertake a three-way parallel front-end engineering and design (FEED) tender as early as this month for the US$1.5 billion (RM4.7 billion) multi-platform Sepat gas processing project off Peninsular Malaysia. According to AmResearch Sdn Bhd, Petronas opened a pre-qualification exercise in May for international oilfield service providers, with plans to shortlist at least three contenders made up of yard owner and engineering outfits, to complete the parallel FEED studies for the project.

AmResearch said the FEED competition is scheduled to begin late this month and will lead to the award of an engineering, procurement, construction, installation and commissioning contract to the winning team.The project is said to contain more than 40 per cent carbon dioxide in the gas leg of the producing oilfield.

(Sourced from NST, 18 June, 2013)

SEB Team To Probe Sarawak Blackout

Sarawak Energy Bhd (SEB) has set up a team to probe the cause of the widespread blackout for more than six hours in Sarawak last night, SEB chief executive officer Torstein Dale Sjotveit said.

He said the investigation would be carried out to maximise the learning SEB could get from "this very serious incident".

"Just before this incident, the system had a total load and supply of 1555 megawatts (MW). In this incident, the Bakun hydro-electric plant, which at the time had a load of 884 MW, dropped its load (supply) by 456 MW in 10 seconds, causing a serious frequency drop to below 47.5hz in the system," he said.

"The normal operating frequency in Sarawak is 50hz. We lost 456 MW from the Bakun plant. When this happens, you will have a frequency drop in the system because demand is much higher than supply. Within 10 minutes, we initiated the blackout restoration plan to restart all the generation plants".

(Sourced from NST, 29 June 2013)

Hino Motors' First Plant in Malaysia

Hino Motors Ltd will further strengthen its market leadership in the local commercial vehicle segment with its first manufacturing facility in the country.

The RM140 million Hino Motors Manufacturing (Malaysia) Sdn Bhd plant, on a 15,793.5 sq m site in Sendayan Tech Valley here, will be Hino's third largest in Southeast Asia after Thailand and Indonesia, and has the same production engineering technology and quality control system used in Japan.

Hino Motors president Yasuhiko Ichihashi said the plant, with an annual production of about 10,000 units, will manufacture the full range of Hino products comprising light-, medium- and heavy-duty trucks as well as buses for the Malaysian market.

(Sourced from NST, 3 July 2013)

Japan Firms Seek To Restart Nuke Reactors

TOKYO: Japanese power companies yesterday asked for permission to restart 10 nuclear reactors, a move that could presage a widespread return to atomic energy more than two years after the Fukushima disaster. The firms submitted applications to regulators for safety assessments on units at five separate plants on the day that new beefed-up rules came into force. The requests are the first step on a journey that could take many months, but which commentators say is likely to result in the resumption of nuclear power generation in Japan.

(Sourced from NST, 9 July 2013)

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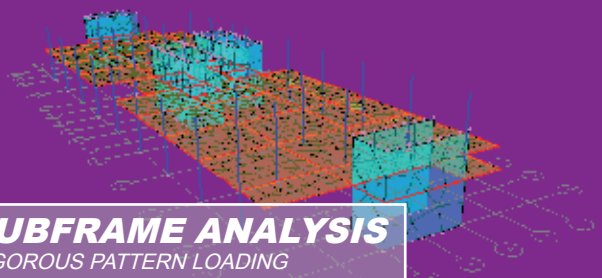

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AUTOMATED MESH GENERATION
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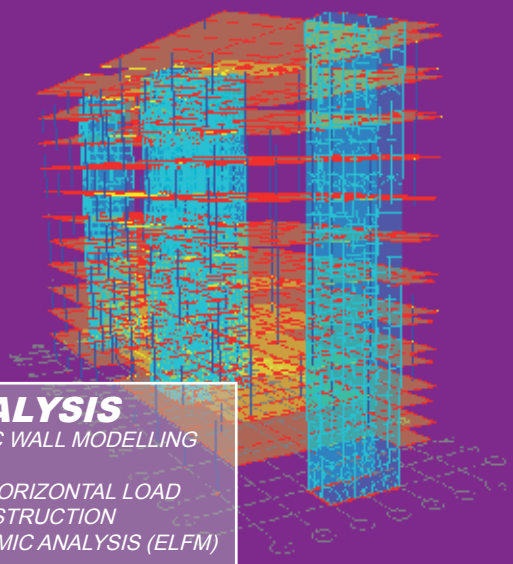

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Talk on Lessons Learnt in Geotechnical Engineering from The Kaohsiung Railway Underground Project

GEOTECHNICAL ENGINEERING TECHNICAL DIVISION

by Ir. Liew Shaw Shong

IN conjunction with the Inter-institutional Tripartite Seminar 2013 – IEM, Chinese Institute of Engineers (CIE) and The Hong Kong Institution of Engineers (HKIE) – the Geotechnical Engineering Technical Division of IEM arranged for CIE delegate Dr Lee Shun-Min to give a talk at Tan Sri Prof. Chin Fung Kee Auditorium, Wisma IEM on 22 October 2012.

The talk, attended by 75 participants, was chaired by Ir. Liew Shaw Shong, the present chairman of the division. Dr Lee started the presentation with a project brief on the US$21.3 billion Kaoshiung Railway Underground Project (KRUP) in south Taiwan as shown in Figure 1 and followed by the key areas of presentation below. His talk covered the construction of a 7.87km-long underground railway line with five stations in the western part of the KRUP.

- Slurry wall construction (Figure 2)
- Temporary railway, stations and bridge design for temporary line diversion (Figure 3)
- Construction of underground railroad crossing
- Construction through the Love River (Figure 4)
- Construction under existing viaduct structures
- Construction of underground vehicular underpass

Figure 2: The layout of KRUP and stations

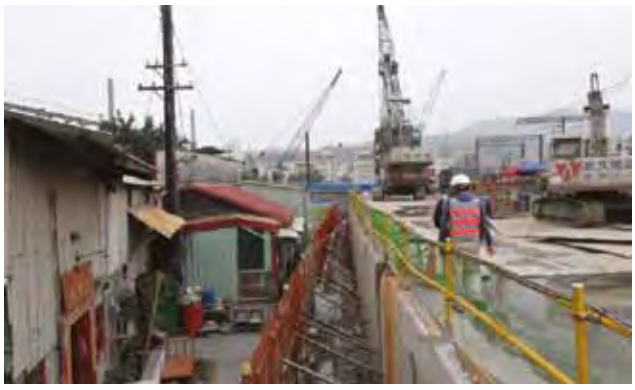


Figure 2: Slurry wall construction with horizontal and vertical site constraints, and modified slurry wall equipment

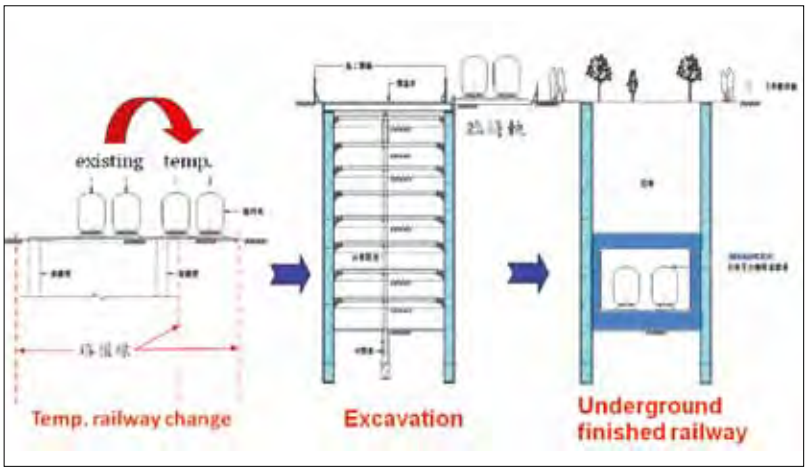


Figure 3: Construction sequence of rail line diversion and permanent underground works

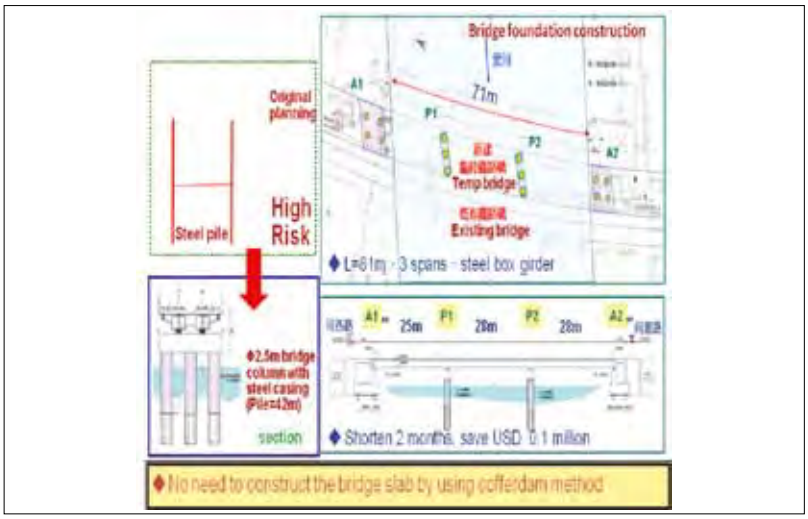


Figure 4: Proposed bridge diversion scheme crossing Love River

The Q&A session was lively, with active discussions from the floor on the subject matter and a mutual exchange of opinion. The technical talk ended at 7 p.m. with the presentation of a memento to Dr Lee Shun-Min as shown in Figure 5. ■

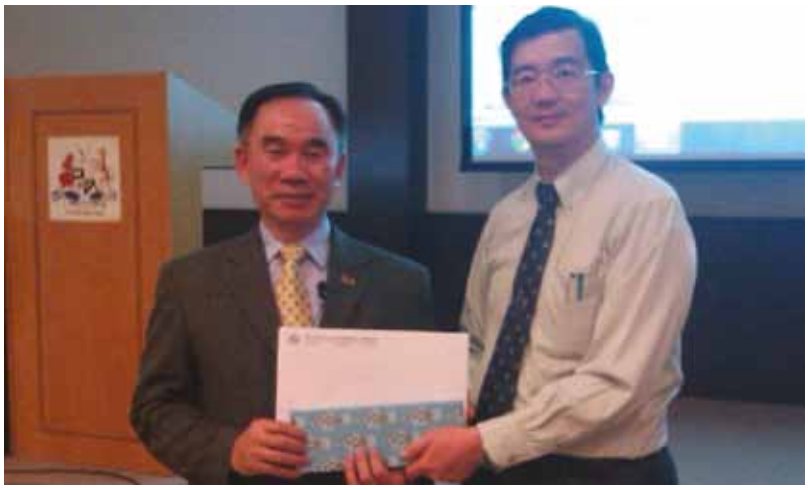


Figure 5: Presentation of memento to Dr Lee Shun-Min by Ir. Liew Shaw Shong

Ir. Liew Shaw Shong is Chairman of IEM Geotechnical Engineering Technical Division (GETD) for session 2012/2013 and Senior Director of G&P Geotechnics Sdn. Bhd.

Note: To read the full article, please go to *www.myiem.org.my*.

Increasing the Value of Professionals and Engineers

PROJECT MANAGEMENT TECHNICAL DIVISION

by Ir. Noor Iziddin Abdullah Ghazali

THE Project Management Technical Division (PMTD) of IEM organised a talk on Increasing The Value of Professionals and Engineers on 7 November, 2012, at Wisma IEM. Over 60 participants attended.

The speaker was Dean Kashiwagi, Ph.D, Professor, P.E., Fulbright Scholar, IFMA Fellow, Director, Performance Based Studies Research Group (PBSRG), Arizona State University and Adjunct Professor, Universiti Tunku Abdul Rahman (UTAR). He said the position of professionals (designers, engineers and quantity surveyors) in the delivery of construction has been downgrading in the past decade. Owners, buyers and developers are not effectively and efficiently utilising professional services in construction. This is easily observable in the following:

1. Owners are directing the professionals and making the technical decisions.
2. The professionals are doing rework instead of optimising the utilisation of their time and services.
3. The professionals do not have a detailed plan that identifies when their expertise is being utilised and the cost of the expertise. Instead owners are hiring them based on a percentage fee which requires professionals to spend less time in using their expertise and more time in non-productive meetings and rework.
4. The owners are depending more on contractors instead of trained professionals (design-build).
5. The expertise of professionals is being threatened and instead of changing the environment which is causing the problem, the professionals do more technical training (which does not solve the business problem but forces the professional to do more work for less returns).
6. The problem may also have a compounding effect in that when technical expertise is required, owners think that Malaysian professionals are inadequate, so they utilise foreign technical experts instead.

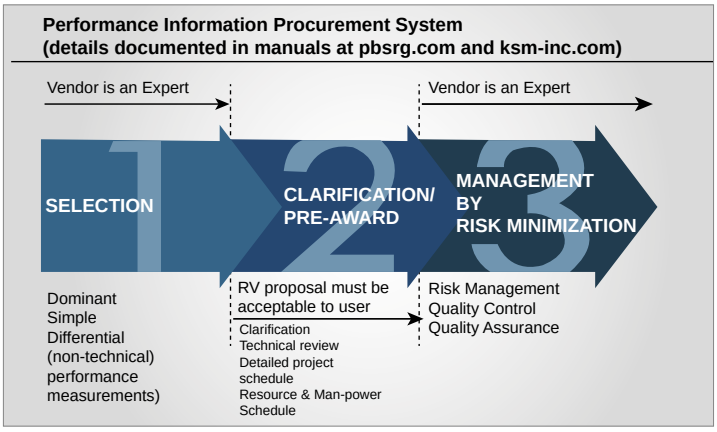


Figure 1: Performance Information Procurement System

However, this is not a "Malaysian" problem and it is not an isolated problem with professional engineers in Malaysia, but extends to all professionals worldwide. Currently the author is working with the professional engineering and risk management and project management groups in the Netherlands to assist in the aligning and utilising of professional expertise in The Netherlands. The problem is also found in the United States and Canada, where the introduction of the best value approach is changing the mindset on the use of expert services by owners.

The answer lies in the industry structure which applies to all service industries worldwide. Increasing competition is forcing owners to focus on lowering prices. They do not understand that when they control the delivery of services and don't utilise the expertise of professionals to minimise risk and improve performance, they are:

1. Decreasing the value of the expertise.
2. Creating a price based environment.
3. Not motivating the technical experts to utilise their expertise.
4. Becoming top-down, micro-managing the situation, and delivering lower quality for a higher price.

The end result is a creation of an environment of "the abuser and the abused" in which both sides become partners in degrading expertise – the owners because they are not utilising expertise efficiently and effectively because of their need to manage and control, and the professionals because they have given up their right to utilise their expertise.

Prof. Dean Kashiwagi proposed that the environment must change from price based to best value environment. Professionals must act unilaterally for this to happen. They cannot depend on the owners to change the environment. The best value approach is more of a business approach rather than a technical approach and this makes it difficult for professionals trained to utilise technical expertise to resolve problems.

The professionals must act together. They must identify visionaries who recognise what is happening. They must get the assistance of "best value" implementation experts. Best value experts resolve industry structure issues and change the environment where experts are utilised more effectively and efficiently. Best value experts increase the profit margin of the experts and decrease the project costs of the owner, creating "win-win" results.

Best value is the creation of transparency, where the level of expertise has value. Best value is also where technical experts can quantify their value without having to explain things "technically" to an owner with no technical knowledge.

Malaysia has the advantage in utilising technical expertise due to the relationship between the Department

Prof. Dean Kashiwagi and Ir. Noor Iziddin during the session

Of The Built-Environment of Universiti Tunku Abdul Rahman (UTAR) project management group and the Performance Based Studies Research Group (PBSRG) at Arizona State University (ASU). PBSRG has presented to both the Institution of Engineers, Malaysia (IEM) and the Royal Institute of Chartered Surveyors (RICS) and Institute of Surveyors Malaysia (ISM) and to the Project Management Institute Malaysian Chapter (PMIMY), 10th Anniversary Lecture Series in UTAR, encouraging them to collaborate to change the current environment.

The talk concluded that the engineering profession must have a strategic plan to change the professional's environment. Engineers should integrate their efforts with visionaries from other disciplines. The problem is that owners are not utilising the expertise of professionals, resulting in the owners directing and controlling the professional services. So the value of expertise is diminished and professionals are losing their status. They have become the "abused" in an "abuser-abused" relationship and they abuse themselves by not having a strategic plan to control the use of their expertise.

Perhaps they find the problem difficult to solve as it is not technical in nature. The solution lies in rising above their technical nature to learn the best value approach to their business.

During the Q&A session, Prof. Dean Kashiwagi answered all the questions raised by the participants. The talk ended at precisely 7.15 p.m. in line with the practice of Project Management on timely delivery.

At the end of the talk, Prof. Dean Kashiwagi received a certificate of appreciation and a memento from Ir. Noor Iziddin Abdullah B. Hj. Ghazali, currently the Secretary of Project Management Technical Division and IEM Council Member for session 2011 to 2014.

Readers may write to the speaker at Dean.Kashiwagi@asu.edu. for any enquiries. ■

The participants listening to the talk

Prof. Dean Kashiwagi receiving a memento from Ir. Noor Iziddin

Ir. Noor Iziddin Abdullah Ghazali is Secretary of Project Management Technical Division for session 2012/2013 and Council Member of IEM. He is working as a Manager, Facility Management Division, Sunway Property Berhad.

Seminar on MS1553 Code of Practice on Wind Loading for Building Structures

CIVIL & STRUCTURAL ENGINEERING TECHNICAL DIVISION

by Ir. Prof. Dr Jeffrey Chiang Choong Luin

LAST year, the IEM Civil & Structural Engineering Technical Division hosted a seminar on MS1553 Code Of Practice On Wind Loading For Building Structures on 7 and 9 November 2012 at Hotel Armada, Petaling Jaya and Blue Wave Hotel, Johor Baru respectively.

The events at both venues were partially sponsored by the Department of Standards Malaysia (Standards Malaysia), and were well attended (136 participants in Petaling Jaya and 34 in Johor Baru), comprising more than 50% practicing engineers as well as 5% academics and 5% students. The rest were non-practicing engineers in contracting, material or equipment suppliers or project development.

In his opening address, the guest of honour, Encik Shaharul Sadri Alwi, Director of Accreditation, Standards Malaysia encouraged members of the audience to look up to Standards Malaysia website to view all the standards in progress, especially the completed standards available for public comments. Input from the industry and end users would give invaluable suggestions to improve or to correct some of the draft standards before publication as referenced standards.

The two invited speakers for both events were Dr John Holmes and Ir. Prof. Dr Jeffrey Chiang. Dr Holmes is Director of JDH Consulting, Australia and previously was a senior academic and researcher at James Cook University and Monash University, Australia. Other than being a regular visiting professor in USA, he has been engaged in research, testing and consulting in wind loads and wind effects for more than 35 years. He is currently Chair of the wind loads subcommittee of Australia and New Zealand, and was actively involved in the writing of Australian Standards AS1170.2-1989, AS/NZS1170.2:2002 and now the 2011 version (Wind loads) and AS3995-1994 (Design of steel lattice towers and masts). He is the author or co-author of some 300 journal papers, conference presentations, and research and consulting reports. He is the author of "Wind Loading Of Structures", published in 2001, with the second edition published in 2007, and co-author of "A Guide to AS/NZS1170.2:2002 – Wind Actions" published by Warreen Publishing in 2005. He is Editor-in-Chief of the journal Wind And Structures.

Ir. Prof. Dr Jeffrey Chiang is currently the Head of Civil Engineering at the Faculty of Engineering & IT, INTI International University at Nilai Campus. He is actively involved in drafting the Malaysian Standards on design of concrete structures (as TC Secretary) and is now serving as Chairman of both IEM-TC on Wind Loading and IEM-TC on Earthquake. He was a Past Chairman of IEM Civil & Structural Engineering Technical Division, and had served as IEM Honorary Secretary and Treasurer. He has recently been re-elected to serve as the Honorary Secretary of IEM.

Dr John Holmes started the seminar by presenting slides on the main features of MS1553 which is essentially an adoption of AS/NZS1170.2:2202 version. The current Australian Standard version is AS/NZS1170.2:2011 version. Interestingly, he pointed out that the format of MS1553 is based on ISO 4354:1997. This indicated that Malaysian Standards' format follows the ISO format wherever possible. The key items to work on are the various comprehensive set of shape factors, relating to different types of structures such as:

- Gable roofs
- Curved roofs
- Multi-span buildings
- Free-standing walls and hoardings
- Pitched-free roofs
- Lattice towers
- Tower ancillaries
- Flags
- etc

Comparison was made with between MS1553 and AS/NZS1170, whereby some key differences were identified in terrain-height multipliers below 10 metres in terrain categories 2 and 3, as well as in averaging distance for change of terrain category. Other differences include, a more complex topographic multiplier in AS/NZS1170, which also specifies a minimum design wind speed (30 m/s) while MS1553 specifies a minimum net wind load of 0.65 kN/m^2. Some minor differences were mentioned in calculating the dynamic response factor, and MS1553 has appendices outlining a simplified procedure with a guided flow charts.

Participants were also given a list of amendments to MS1553:2002 which was sent for public comments by SIRIM. Some of these included basic information like changing air density from 1.225 kg/m^3 to 1.20 kg/m^3, and

Photographs of the seminar at Petaling Jaya as shown above and on page 34

amending some formulas and diagrams. Readers may get hold of the amendments from SIRIM as addendums to be inserted into MS1553:2002.

Dr John Holmes then gave a detailed lecture on the procedures of calculating the wind pressure, firstly referring to zonal map of Peninsular Malaysia for the basic wind speed, after which various site exposure multipliers (terrain/height, shielding, and hill shape or slope) and importance factor would be incorporated to yield the design wind speed.

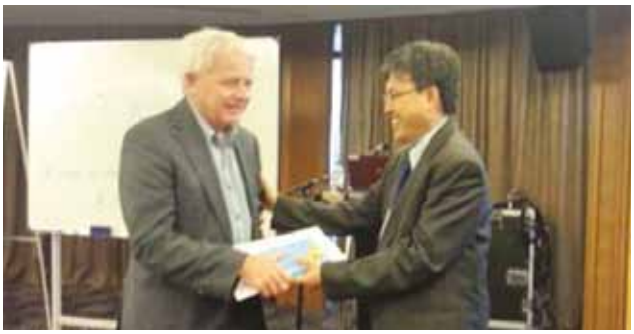
The design wind pressure would include this design wind speed, together with parameters relating to aerodynamic shape factor which is covered in Chapter 6 of MS1553. Other analyzing for rectangular enclosed buildings for external and internal pressure coefficients and other factors such as local pressure factor and frictional drag coefficients, Dr Holmes also presented provisions unique to structures (as found in MS1553) as follow:

- Appendix C — Curved roofs, multi-span buildings, bins, silos and tanks
- Appendix D — Free-standing hoardings and walls; monoslope, pitched and troughed free roofs; and hypar free roofs
- Appendix E — Various cross sections in rectangular, circular and structural angles; lattice towers, ancillaries
- Appendix F — Flags, circular discs, hemispheres, spheres

Once the dynamic response factor, C_{dyn} is determined, there may be need to also analyse the effect of cross-wind dynamic response, for both rectangular and circular cross-sections.

After the lunch break, Dr Holmes gave tips on how to determine the wind pressures for three types of structures:

- Multispan industrial building, located in Kedah near Alor Setar on a 100m hill with terrain categories 1 and 4 with station wind speed of 32.5 m/s,
- 180m high tall building, located in Kuala Lumpur (Zone I), with suburban terrain for all directions with station wind speed of 33.5 m/s,
- Reinforced concrete chimney 50m high, located in Subang, Selangor, with open rural terrain for all directions with station wind speed of 32.5 m/s



Photographs of the seminar at Johor Baru as shown above

After the mid-afternoon break, Ir Dr Jeffrey Chiang presented a tutorial session for participants in which a structural steel lattice tower was selected for detailed step-by-step analysis, performed with inputs from the audience. The details of the lattice tower were as follow:

- 50m high located on a hill 65m from ground level in Melaka, under Zone I category with station wind speed 33.5 m/s,
- Exposed open terrain category I, and
- 6m x 6m sectional configuration

Participants were guided through a series of procedural steps to determine all the basic parameters, such as:

- Exposure multipliers (terrain/height, shielding, and hill shape or slope) and importance factor
- Calculation of design wind speed, V_{des}
- Calculation of aerodynamic shape factor, C_{fig}
- Calculation of dynamic response factor, C_{dyn} (which involved additional calculations for background factor, size reduction factor, spectrum of turbulence, peak factor for resonance.

The last part of the tutorial session involved the filling up of tabulated calculated values of along-wind base bending moments, for a series of stepped heights of the structure at 5m intervals, as shown as Table 1.

Table 1

Height of section (m)	b (m)	$C_d = C_{fig}$	$M_{z,cat\ 1}$	M_h	V_{des} (m/s)	q_z	qz.Cfig (kPa)	$q_z.C_{fig}.C_{dyn}.\delta A$ (kN)	Moment contribution (kN.m)
47.5	6.0	3.5	1.2475	1.0970					
42.5	6.0	3.5	1.2425	1.0996					
37.5	6.0	3.5	1.2350	1.1023					
32.5	6.0	3.5	1.2250	1.1052					
27.5	6.0	3.5	1.2125	1.1083					
22.5	6.0	3.5	1.1975	1.1115					
17.5	6.0	3.5	1.1750	1.1150					
12.5	6.0	3.5	1.1400	1.1187					
7.5	6.0	3.5	1.1300	1.1226					
2.5	6.0	3.5	0.825	1.1268					

In between the sessions in the morning and afternoon, participants raised queries during the Q&A session as well as during coffee breaks. Both Dr Holmes and Dr Chiang had a field day answering questions from the floor, making the seminar lively, enjoyable and a good learning and awareness session. The seminar ended at 5.30 p.m., with the organiser presenting souvenirs to both speakers. ■

Ir. Prof. Dr Jeffrey Chiang Choong Luin holds several posts in IEM, namely Honorary Secretary of IEM, Past Chairman and current committee member of Civil & Structural Engineering Technical Division and Chairman of Technical Committee on Earthquake. He is currently the Head of Civil Engineering at INTI International University.

1SUDOKU Centerpiece "1"

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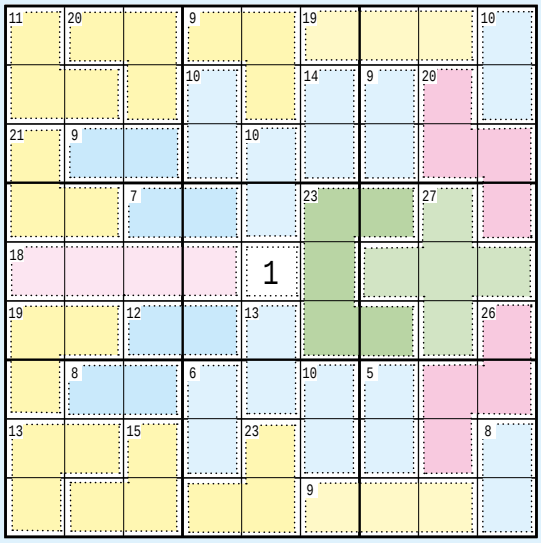
by Mr. Lim Teck Guan



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 of nine squares. 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*

(Solution is on page 46 of this issue.)

CONDOLENCE

With deep regret, we wish to inform that **Ir. Ha Chee Kong** and **Ir. Steven Chong Fook Loy** passed away on 31 March 2012 and 20 April 2012 respectively. On behalf of the IEM Council and management, we wish to convey our deepest condolences to both families.

Half-Day Seminar on "IEM Arbitration Rules 2012" and the Half-Day Seminar on "Contractual and Statutory Adjudication: Understanding the Main Differences"

by Ir. Dr Ooi Teik Aun

SUB-COMMITTEE ON DISPUTE RESOLUTION PRACTICE

UNDER the Standing Committee on Professional Practice, IEM, the Sub-committee on Dispute Resolution Practice successfully organised two half-day seminars – one on "IEM Arbitration Rules 2012" and the other on "Contractual And Statutory Adjudication: Understanding The Main Differences".

These were held on two Saturdays, 5 January 2013 and 12 January 2013 respectively at the Tan Sri Prof. Chin Fung Kee Auditorium, Wisma IEM, Petaling Jaya, Selangor. The speaker at the seminar was Ir. C.K. Khoo, a Chartered Arbitrator, Fellow and past Vice President of IEM. Each seminars garnered more than 90 participants.

The objective of the first seminar was primarily for participants to get an overview of the new IEM Arbitration Rules (2012). The previous IEM Arbitration Rules 2003 had been in use since November 2003. Since then the Arbitration Act 2005 was enacted and became effective on 15 March 2006, superseding its preceding Act of 1952.

The IEM Rules (2012) is a revised version of Rules (2003), ammended to improve upon the 2003 Rules with the objective of savings in time and cost of the arbitral proceedings, as well as to conform to the 2005 Act. Revision was made to 7 (seven) of the 2003 Rules.

At the seminar, participants were briefed on each of the revised rules and the reasons for such revisions. The presentation was interactive and each participant was given a copy of the 2003 Rules together with the amendments as reference documents.

The seminar on "Contractual And Statutory Adjudication: Understanding The Main Differences" was to explore the main differences and give a general understanding of how the two systems of "adjudication", namely contractual and statutory adjudication operate.

In 1999, FIDIC introduced contractual "Adjudication" in its "red book", i.e. "Conditions Of Contract For Construction For Building And Engineering Works Designed By The Employer".

In the same year such contractual "adjudication" was also introduced in other FIDIC forms of contract, viz, the yellow, silver and green books.

Statutory "adjudication" was introduced in several Commonwealth countries and States of Australia, viz. UK (1996), New Zealand (2002) and Singapore (2004) and in Australia: New South Wales (1999), Victoria (2002) and Queensland (2004).

In 2012, the Construction Industry Payment and Adjudication Act (CIPAA) was passed by Parliament in Malaysia and gazetted as Law on 22 June 2012.

There are significant differences between contractual "adjudication" (as prescribed in the provisions and practices in FIDIC) and the statutory provisions under CIPAA. The seminar has given an opportunity for The Institution to brief participants on the two systems. ■

Participants in the auditorium

Ir. C.K. Khoo delivering his presentation

Token of appreciation to Ir. C.K. Khoo

Ir. Dr Ooi Teck Aun graduated in Civil Engineering in 1966 from Auckland University, New Zealand and obtained his Master's degree from the same University in 1968. He obtained his PhD from Sheffield University in 1980. He is a Hon. Fellow of The Institution of Engineers, Malaysia (Hon. FIEM), Fellow of The Malaysian Institute of Arbitrators (FMIArb) and Member of The Institution of Civil Engineers, United Kingdom (MICE). He is an ASEAN Engineer, APEC Engineer, International Professional Engineer, ASEAN Chartered Professional Engineer, Professional Engineer (Malaysia), Accredited Checker (Geotechnical) and Chartered Engineer (C.Eng.), United Kingdom. He is a Practicing Specialist Engineering Consultant, an Arbitrator, an Accredited Checker and Expert Witness and current President of the Southeast Asian Geotechnical Society.

Importance of Professional Networking

by Engr. Dr Balamuralithara Balakrishnan

ENGINEERING EDUCATION TECHNICAL DIVISION

A talk titled "Professional Networking For Academics And Researchers" was jointly organised by the Engineering Education Technical Division (E2TD) and Chemical Engineering Technical Divisions (CETD) on 8 January 2013.

The talk was delivered by Ir. Prof. Dr Dominic Foo Chwan Yee, 2012/13 Session Chairman of CETD. He is the Professor of Process Design and Integration at the University Of Nottingham Malaysia Campus (UNMC), and the Founding Director for the Centre of Excellence For Green Technologies Of UNMC. There were more than 40 participants, including lecturers and practising engineers.

Prof. Foo started by sharing his own experiences on various advantages that he gained for having good professional network among his collaborators.

He has worked with more than 30 collaborators (comprising university professors, researchers and companies) from various countries in Asia, Europe, American and Africa. He told the audience that networking should not be restricted to the commercial world. Having a long list of collaborators had helped him get recognition among the research community worldwide in the past few years.

He said some of the incentives that he had obtained from professional networking included the following: Getting to know latest research trend, research papers collection, joint research output (publication, research grants, student supervision and exchange), among others.

He showed the audience some email communications made during his early days of postgraduate study, where he had contacted the authors of some papers to obtain their latest publications, as well as communicated with some senior professors in his area of research, to discuss the research direction that he was moving into.

Such interaction with experts in the field had greatly helped shape his research direction up to the completion of his PhD.

He also explained how he was appointed to the International Scientific Committee for several important conferences in his area of research. The main "trick" that he used was to attend similar conferences regularly. After some time, he got to know the conference committee, which then appointed him to help promote the event in Asia (note: Prof. Foo is the rare Asian representative for high profile conferences mainly dominated by the western community).

Another advantage of knowing the organiser, he said, was that he had been invited to be the keynote or plenary speaker for more than 15 times.

Another advantage of professional networking is increased research output. Prof. Foo told participants that his annual journal publications had seen double digits in the past 5 years, after he started working with collaborators.

Many of the publications were the results of collaborations with visiting scholars, who were often postgraduate students of his international collaborators.

He encouraged researchers in the country to expand their network with international researchers. He showed the participants some tricks for writing good emails. We can start by sharing ideas and views with international researchers on the areas that we are working on or even offer feedback to the authors on the papers that they have published. Usually, we will start with formal language and later on carry out with less formality.

The talk ended at 6.30 p.m. with a Q&A session. On behalf of E2TD and CETD, session chairman Engr. Dr Chong Chien Hwa presented a token of appreciation to Prof. Foo and thanked him for his informative talk. ■

Photographs of the talk as shown above

Engr. Dr Balamuralithara received his Electrical-Telecommunication Engineering degree from University Technology of Malaysia in 2000. He received the Master of Engineering Science degree from Multimedia University in 2005 and obtained his PhD in Creative Multimedia from Multimedia University in 2011. He is currently Senior Lecturer at Universiti Pendidikan Sultan Idris Malaysia. His research interests include E-Learning in Engineering Education, Technical and Vocational Education, Wireless communication and Error-Control Coding.

Information Modeling for Transportation

Image courtesy of Creighton Manning

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Visit to Sumitomo Electric Interconnect Product (M) Sdn. Bhd.

YOUNG ENGINEERS SECTION, IEM SOUTHERN BRANCH

by Engr. Rajandran Morthui

ON 6 December last year, the IEM SB-YES and IEM SB Technical Committee arranged a visit to Sumitomo Electric Interconnect Product (M) Sdn Bhd in Tebrau II, Johor. Engr. Rajandran Morthui led the group of 18 participants who were greeted by Mr. Murgan Wirapan, Senior Manager of General Maintenance Department at Sumitomo.

In his briefing, Mr. Murgan gave a presentation on the activities and products that the company offered. These were very interesting as Sumitomo developed its own technology. Sumitomo Electric's corporate mission is to serve society by applying technological innovation to the development of tomorrow's products and services.

This mission is represented graphically by the communication symbol, which features three diagonal lines extending from the tops of the Company's initials, S.E.I. (Sumitomo Electric Industries). These three lines denote the key words that sum up Sumitomo Electric's operations namely: Reliability, Vitality and Creativity.

Flat cables are manufactured to meet the demand for simplicity and improved efficiency of wiring in the increasingly sophisticated fields of computers and electronic devices such as DVD, CD, VTR, audio, OA equipment and game consoles. These flat cables are commonly used for mass termination in conjunction with connectors or just simply for board-to-board connections. The main products from this division are Sumi-Card (Flexible Flat Cable), Steering Cable (STC), Flat Jumper Lead and Jumper Lead.

The Electric Wires division produces a wide range of wires and cables which simplify wiring and improve operational efficiency. A lighter and smaller wire with better space factor has been developed to meet more complicated and advanced wiring requirements because computers, switchboards and other electrical or electronic devices have become smaller in size and superior in performance. These wires are also recognised by Underwriters Laboratories (UL) and Canadian Standards Association (CSA). The main products from this division include Hookup Wires,IRRAX Wires (Irradiated wires), Shield Wires, TV High Voltage Wires, TV High Voltage Wires, Office Automation Wires, Flexible High Voltage Wires and Automobile Wires.

The last presentation was on energy management where the objective was to reduce energy wastage through promoting the efficient use of energy and introducing wastage limits in the production line. It also educates and raises awareness of energy conservation at the workplace and encourage its employees to practice efficient use of energy.

The visitors were then brought to the production floor where the products were being made and tested. The discussion was very lively, especially when Sumitomo provided a demonstration of the products. The visit ended at around noon with a Q&A session before the IEM (Southern Branch) gave a token of appreciation to Mr. Murgan and took a group photo. ■

Main Gate of Sumitomo Electric Interconnects Sdn. Bhd.

Technical briefing by Mr. Murgan, the Senior Manager of General Maintenance Department

Group photo of the participants with Mr. Murgan in front of the plant

Engr. Rajandran Morthui graduated in 2007 from the Universiti Teknologi Malaysia Melaka (UTeM) with a bachelor's degree in Electrical Engineering majoring in Power Electronics and Drive and a Master's in Technical and Vocational Education from the Universiti Tun Hussein Onn Malaysia (UTHM). He is a lecturer at Politeknik Ibrahim Sultan, Johor in Electrical Engineering Department and Director of Professional and Development under Young Engineer Section (YES) with The Institution of Engineers Malaysia, Southern Branch (IEMSB).

Nipping Corruption in the Bud

by Anti-Corruption NKRA, PEMANDU and Mechanical Engineering Technical Division

IN 2013, the Government launched the second phase of the Government Transformation Programme (GTP2.0) and introduced a new work-stream under Anti-Corruption NKRA which focuses on Education and Public Support.

This new work-stream was introduced primarily to address the issue of corruption and the lack of understanding among students. According to independent surveys, students have become more tolerant of corrupt practices and this does not bode well for the long-term fight against corruption. This work-stream is aimed at inculcating correct values in the younger generation during the formative years.

ANTI-CORRUPTION EDUCATION IN SECONDARY SCHOOL TEXTBOOKS

A comparative study conducted by Universiti Kebangsaan Malaysia (UKM) and MACC showed that a growing percentage of students are internalising and becoming more accepting of corrupt values and practices. As such, the Anti-Corruption NKRA feels that proper remedial action must be taken at these formative levels to inculcate right habits.

The chief goal is to groom a future generation that not only understands the need to turn away from corruption but also to arm them with the proper tools and mentality to support efforts to stamp out corruption in future. This means ingraining a sense of ownership over the problem of corruption in students and stressing the need for them to cooperate with the authorities to combat corruption in the future.

ESTABLISHING CORRUPTION PREVENTION SECRETARIATS IN INSTITUTES OF TEACHER EDUCATION

This initiative will see the establishment of Corruption Prevention Secretariats in all institutes of Teacher Education after a pilot programme that established the secretariat in 20 public universities from 1997, was found to successful.

A study in 2011 in the universities concerned showed that the percentage of attendees who had a better understanding of corruption, increased from 48.6% to 80.4%, after attending programmes organised by the secretariat.

This initiative will train and equip teachers who will eventually become the key communicators to the younger generation, thus ensuring a successful fight against corruption. ■

ANNOUNCEMENT

NOTICE ON NOMINATION PAPERS FOR COUNCIL ELECTION SESSION 2014/2015

A notice inviting nominations for the Election of Council Members for Session 2014/2015 will be posted on the IEM Notice Board and IEM website by 18 November 2013 for the information of all Corporate Members of IEM. Following the close of nominations on 21 December 2013, the election exercise will proceed. All Corporate Members residing overseas are requested to take note of the requirements of the Bylaw, Section 5.11, as shown below.

The voting paper shall, not less than twenty-eight (28) clear days before the date of the Annual General Meeting be sent by post to all Corporate Members residing in Malaysia and to any other Corporate Members who may in writing request to have the paper forwarded to him. The voting paper shall be returned to the Honorary Secretary in a sealed envelope so as to reach him by a specified date not less than seven (7) days before the Annual General Meeting.

Voting papers will be posted out by 24 February 2014.

Any Corporate Members residing outside Malaysia, who wish to receive voting papers, are advised to write to the Honorary Secretary on or before 2 January 2014.

Thank you.

Election Officer, IEM

The Vatican City

by Ir. Chin Mee Poon
www.facebook.com/chinmeepoon

THE conclave of 115 cardinals from all over the Roman Catholic world elected a new Pope on 13 March, 2013, to succeed Pope Benedict XVI who abdicated because of poor health.

The cardinals started the election process on 12 March and it was after the fifth round of voting that 76-year-old Jorge Mario Bergoglio of Argentina was elected to become the new Pope, the 266th in the Church's 2,000-year history.

As soon as the new Pope was elected, white smoke was seen rising from the temporary chimney above the roof of Sistine Chapel in Vatican City and the bell of St. Peter's Basilica tolled to announce the news to the world.

The new Pope named himself Pope Francis I, after St. Francis of Assisi. Sistine Chapel is the Pope's official private chapel located in the museum complex that is housed in an extremely large rectangular building adjoining, but perpendicular to St. Peter's Basilica.

Its ceiling frescoes, painted by Michelangelo around 1508, depict scenes from the Old Testament. More than 20 years later, the Renaissance artist painted "The Last Judgement" on the altar wall of the chapel. The other walls were decorated by several prominent painters of the period – Pinturicchio, Perugino, Botticelli and Ghirlandaio.

Michelangelo's ceiling frescoes and "The Last Judgement" are probably the most viewed paintings in the world; it is estimated that on an average day, about 15,000 visitors trudge through the chapel to admire the masterpieces.

When my wife and I visited in September 2011, the chapel was packed with tourists. Photography was not allowed but many tourists just could not resist the temptation to sneak a shot or two, and that included me.

Situated on the west bank of the Tiber River, just across from the city centre of Rome, Vatican City was established as a sovereign State in 1929, a tiny territory surrounded by high walls on its far western side. St. Peter's Basilica and the colonnaded piazza in front of it are not surrounded by walls. The Basilica, built on the site of St. Peter's tomb and worked on by the greatest Italian architects of the 16th and 17th Centuries, is the principal shrine of the Catholic Church. Its interior is lavishly decorated with priceless sculptures and paintings of Italian masters.

The enormity of the church is best appreciated from the gallery that runs around the interior of the 41.5m diameter dome. From the roof, one has an impressive overview of St. Peter's Piazza, where colonnade arms symbolically welcome the world into the lap of the Catholic Church.

A few days before we went to Rome, we visited St. Francis Basilica in Assisi, a small town near Perugia in the province of Umbria, about 100km north of Rome.

St. Francis is Italy's premier saint and founder of the Franciscan order. He was born in Assisi in 1182. Started in 1228, two years after the saint's death, St Francis Basilica is made up of two churches, one built on top of the other. It has one of the most overwhelming collections of art outside a gallery anywhere in the world. ■

Ir. Chin Mee Poon is a retired civil engineer who derives a great deal of joy and satisfaction from travelling to different parts of the globe, capturing fascinating insights of the places and people he encounters and sharing his experiences with others through his photographs and writing.

BULETIN BULANAN IEM

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Electrical Engineering Technical Division
The Institution of Engineers, Malaysia

IIEC 2013
Souvenir Programme

The Institution of Engineering and Technology

"Sustainable Development Through Innovations In Energy Management and Technology"

What is IIEC 2013?

The **Electrical Engineering Technical Division (EETD)** of **The Institution of Engineers, Malaysia (IEM)** & **The Institution of Engineering and Technology, Malaysia (IET)** is jointly organising an international conference under the theme, "Sustainable Development Through Innovations In Energy Management and Technology" from 19th to 21st November 2013. The organiser will be printing 500 copies of its official publication entitled **"IIEC 2013 Souvenir Programme Book"**, to be circulated during the two-day conference at the Palace of the Golden Horses. A technical exhibition related to design solution and the application of sustainable solutions for energy utilisation will be organised simultaneously during the conference.

Circulation

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Solution for 1Sudoku published on page 36 of this issue.

1Sudoku

11 2	20 7	9	9 3	4	19 5	8	6	10 1
3	6	4	10 1	2	14 8	9 7	20 5	9
21 5	9 1	8	9	10 7	6	2	3	4
7	9	7 1	6	3	23 2	5	27 4	8
18 8	3	2	5	1	4	9	7	6
19 6	4	12 5	7	13 8	9	3	1	26 2
9	8 2	6	6 4	5	10 3	5 1	8	7
13 1	8	15 3	2	23 6	7	4	9	8 5
4	5	7	8	9	9 1	6	2	3

Pengumuman yang ke 65

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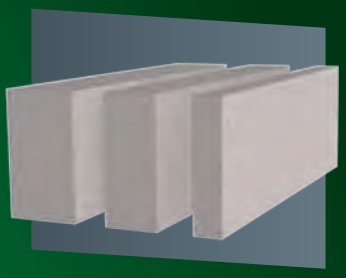

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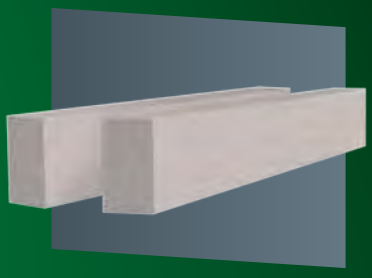

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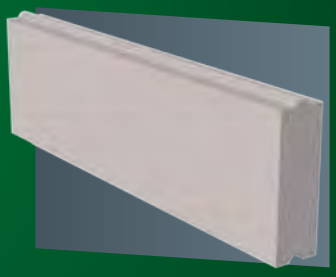

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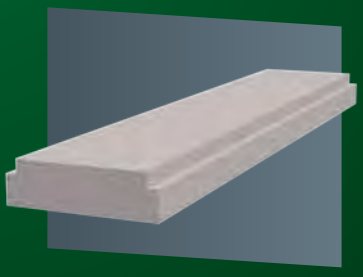

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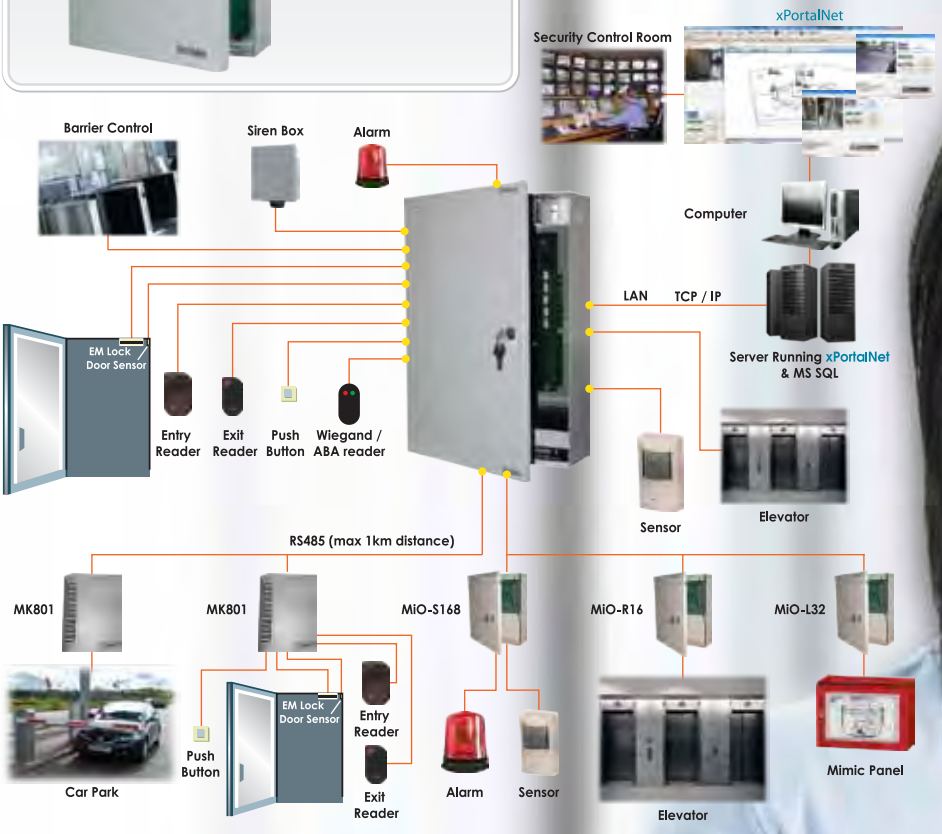

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