JURUTERA

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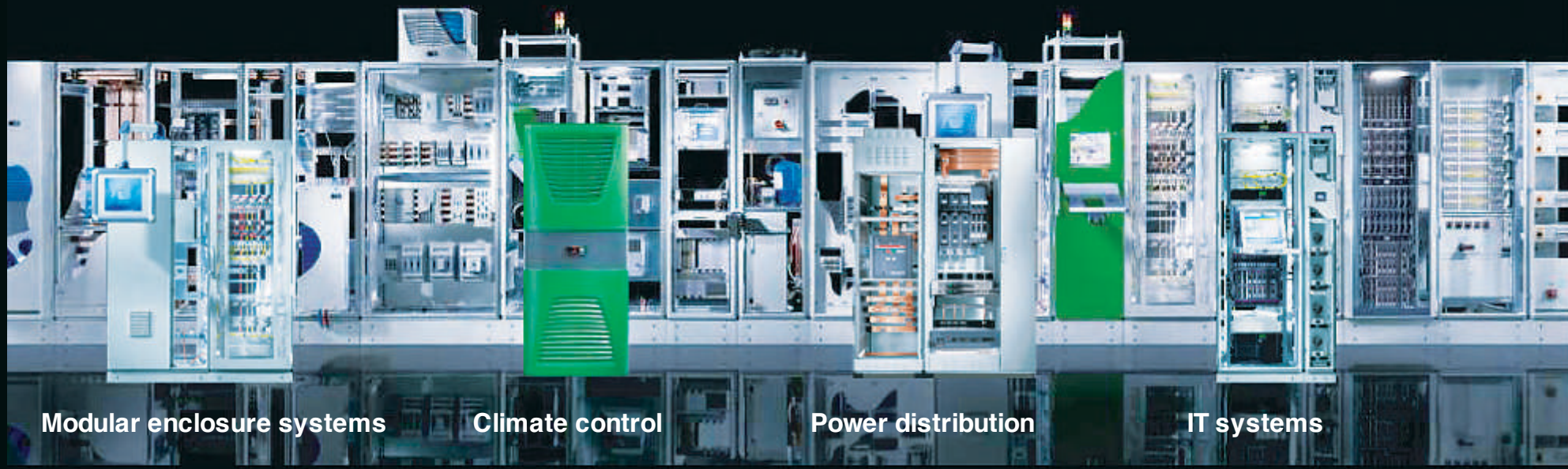

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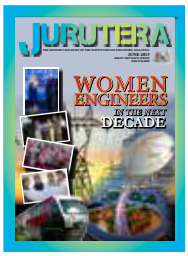

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BUILDING TRUST

By Ir. Raftah Mahfar
Chairman of Women Engineers Section (IEM WE) 2014/2015

***Ir. Raftah Mahfar** is the Chairman of IEM Women Engineers Section for Session 2014/2015. She is currently a Director of SCG Consultants Sdn. Bhd., a consultant for Structural, Civil, Infrastructure, Geotechnical and Railway engineering. She is a Professional Engineer and an active Member of IEM. She was also the committee member of the IEM Women Engineers Sub Committee since year 2008 and has held the post of Chairperson for session 2012/2013.*

Women Engineers In The Next Decade

According to recent statistics, more than 50% of engineering graduates are female but only 18% of practising engineers are women. A 2014 survey carried out by IEM indicated that the top three challenges that Malaysian women engineers face were work/life balance, lack of women in senior roles and work place culture. These show that the combination of psychological factors and workplace climate, is a strong factor that influences women engineers' job satisfaction and their intention to stay in the profession.

The cover story in the June 2015 issue of Jurutera, showcases prominent women engineers in the various disciplines. They will share stories of how they have managed to overcome challenges and talk about how they see their careers growing in the future.

We also present the winners of the Women Engineer Award for years 2014 and 2015 as inspirations for young women engineers.

IEM WE also invites all women engineers to participate in the National Women Engineers Summit 2015 on 26 November at Equatorial Hotel, Penang, where prominent women engineers and scientists from the Asia and Pacific region will gather to share their invaluable experiences and achievements as engineers and industry leaders.

Finally, I call on women engineers to join IEM WE as organising committee members or as supporters in our activities. We have, in the pipeline, lots of activities locally and internationally, happening over the next few years. Come join IEM WE and together we will have fun. ■

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Moving Forward to the Next Decade

Eleven women engineers share their thoughts and aspirations for a better future for their profession

by Zoe Phoon

Datin Ir. Hjh. Nor Asiah Othman

Prof. Ir. Dr Hjh Siti Hawa Hamzah

Ir. Assoc. Prof. Dr Leong Wai Yie

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Ir. June Lau Yuk Ma

Ir. Jama'iatul Lailah binti Mohd. Jais

Ir. Mah Siew Kien

Ir. Siti Badriah binti Ishak

Recently, the Women Engineer Section of Institution of Engineers, Malaysia (IEM WE) conducted a survey of women engineers to find out how they see themselves in the future. Matters of major concern include professional growth and accomplishments, career advancement prospects, work and life issues important to career-committed mothers, finding a suitable balance between work and life as well as participation in decision-making.

These issues are very real, especially as the country enters the final leg of its journey towards achieving Vision 2020 as a developed, highly competitive and high income economy.

At the same time, liberalisation of the services sector in the country and across the ASEAN region, brings with it fresh challenges even as it represents a new era of opportunities for engineering and related industries.

The survey respondents include Datin Ir. Nor Asiah Othman, Ir. Dr Leong Wai Yie, Puan Amnorzahira Amir, Dr Habibah @ Norehan Haji Haron, Ir. June Lau Yuk Ma, Puan Rene'e Aziz Ahmad, Ir. Jama'iatul Laila binti Mohd Jais, Ir. Mah Siew Kien, Ir. Khalidah Haron, Prof. Siti Hawa Hamzah and Ir. Badriah binti Ishak.

How do women engineers see themselves five years and more down the road?

Ir. Dr Leong feels that women today are keen to take up challenging work that will benchmark them in male-dominated fields.

There are also new engineering disciplines that require precise, critical thinking and are best suited for women. These include software engineering, multimedia engineering and nanotechnology.

Ir. Hajah Nor Asiah said engineering-based industries have essentially been defined and dominated by men, so women engineers are vastly under-represented in all aspects of the engineering industry. She said women engineers tend to leave their jobs much earlier than men and this is usually due to difficulty in balancing personal and professional responsibilities.

With greater knowledge for exploring and achieving sustainability development in Malaysia, Ms. Amnorzahira sees an interesting future ahead for women engineers while Dr Habibah expects things to get better as more women are currently leaders in their organisations. The only threat that Dr Habibah sees will only "come from the women themselves due to competitiveness and perhaps the nature of women".

Ir. Lau is not expecting any drastic change in the enormous support being given to women engineers at the workplace in the next 10 years; she notes however, that only the strong ones will continue their pursuit but expects them to show extraordinary achievements.

Ir. Jama'iatul said rapid advances in engineering technologies as well as their wide applications and increasing impact on so many facets of human lives demonstrate to women engineers that this will be an exciting field to be in. But she warns that women engineers will become irrelevant in their areas of expertise if they do not keep abreast with the latest knowledge or acquire new skills to adapt to the changing technological environment.

Ir. Khalidah suggests that professional women engineers join forces to make things better. She says: "Be more global in your approach and be versatile. A strategic blueprint on a more holistic approach will positively impact women engineers.

"Instead of competing with the men, women engineers should learn to balance life and the environment with engineering know-how in order to complement one another."

Meanwhile, Prof. Siti Hawa said current statistics from the country's institutions of higher learning show that between 35% and 50% of those in engineering programmes are women. This is significant, as it means that many of the "best and brightest" young Malaysians females are considering a career in engineering.

Quoting statistics, and assuming that the national population is 25 million, she said the country has approximately 80,000 engineers in employment currently. This is a poor engineer to population ratio of 1:312 compared to the benchmark of 1:100 in advance countries.

"To achieve an index comparable with those of developed countries, Malaysia will need some 275,000 engineers by 2020 and 300,000 engineers by 2025, assuming a population growth of 2% annually," she said.

"Considering the optimistic preference of young women for engineering study, the industry will be likely to see a significant involvement of women engineers in the workplace after 2020."

But, she warned that regardless of gender, all engineers will be facing challenges as there are always new demands in science, engineering and technology. Knowledge and teamwork are key elements in overcoming them, she said.

"Considering the optimistic preference of young women for engineering study, the industry will be likely to see a significant involvement of women engineers in the workplace after 2020."

But, she warned that regardless of gender, all engineers will be facing challenges as there are always new demands in science, engineering and technology. Knowledge and teamwork are key elements in overcoming them, she said.

> ***"Women engineers don't want to be promoted just because they are women. They want to be accepted, challenged and rewarded on their own merits. Women engineers are committed to growth and self-improvement and are capable of assuming great leadership roles."***
>
> *Datin Ir. Nor Asiah Othman*

Ir. Badriah sees a good future for women engineers. However, she added that it is up to women to make what is best for themselves as "true engineers".

"This is easier said than done because it all depends on the environment. If you work in a healthy office environment where success and acknowledgement are based on performance, then it's a bonus. If you have to rub shoulders to get somewhere, it can be a big problem," she said.

What makes a good woman engineer? What are the challenges she will face?

For Ir. Dr Leong, good women engineers as those who have truly excelled, not only professionally but also as leaders and role models. They are also able to strike a balance between family and career.

But, she added, without family support, women engineers will not be likely to overcome the many difficulties they face in their career.

Ir. Lau said good women engineers are those who see the big picture, are willing to do whatever it takes, can listen well, are flexible and compassionate, can punch through all perceived obstacles and take the opportunities, who love their team, learn to lead and are willing to take responsibility and be accountable.

Of the challenges, she said there are many. Examples include physical work, night work, site far from home, I miss my kids, I'm not a full-time mum so I feel guilty, limited career prospects (such as doing the same work for five years), getting bored, unfairness/biased evaluations (such as "I do all the work perfectly well but am not up for promotion"), a sense of isolation in a male-dominated field, I can't speak their lingo, lack of women mentors or role models, etc.

These challenges are real because "you believe they rule you" but, she noted, "the real challenges are often the women themselves".

"We have fears. At times, we lose our self-confidence and we dislike conflicts. I tell you to take charge and be yourself. Talk it out and walk the talk. Find your sense of belonging in all assignments given to you or you can create, because you are the engineer," she said.

Ir. Nor Asiah said women engineers should have strong work ethics and stay focused. They must be independent, confident and maintain a professional attitude. They must also be effective as role models and leaders in their field.

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Challenges are aplenty though as women engineers face a lot more discouragement at the workplace than men engineers and there is the added factor of balancing career and family.

Prof. Siti Hawa said employers look for graduates with a broader set of skills such as those who have acquired specified knowledge profiles that make them technically proficient engineering graduates whose education extends to both technical and non-technical areas.

"To be competent, women engineers have to grab opportunities and equipped themselves with skills in communication, collaboration, cultural adaption, critical thinking and problem solving as well as be innovative," she said.

"When a woman engineer has adequate knowledge and skills, challenges turn into pleasures. At the end of the day, any competent engineer's mission is to produce quality work beyond expectations."

For Ir. Badriah, "it is all about knowledge, having good management skills and teamwork".

She explains: "You put a good woman engineer anywhere and she will perform because she can make the best out of people and yet shine in her exceptional capabilities. She can lead when needed or follow when there is someone better."

The government is hoping to achieve the objective of having women hold 30% of decision-making posts.

Ir. Nor Asiah said: "Women engineers don't want to be promoted just because they are women. They want to be accepted, challenged and rewarded on their own merits. Women engineers are committed to growth and self-improvement and are capable of assuming great leadership roles."

The government must highlight to the public that the engineering profession is all about trained problem solvers, whether male or female, she added. Ir. Dr Leong said the 30% quota is encouraging and, given the opportunities, it is achievable in the engineering industry.

"IEM WE can play a leading role to actively pursue the government's objective and to establish a work plan or work programme together with the various government sectors," suggested Ir. Lau. "IEM WE can be the main agent to work together with the government and the corporate world for the success of the engineering industry. Otherwise, I'd say this would be hard to achieve."

Ir. Jama'iatul said the crux of the matter is that decision-making posts set aside for women must be filled by those who have proven themselves qualified for those positions. "It will be counter-productive to make exceptions just to fill the quota. Women shouldn't be perceived as less capable or weaker than men. We should strive to be just as capable to compete for higher posts. Ultimately, the best person should fill the vacant post," she said.

Ir. Mah thinks that while it is a good plan, it may be a challenge to achieve the target as the current pool of upper-middle and middle management women engineers is so small compared to the percentage of men engineers in the same position.

Prof. Siti Hawa also agreed that getting women engineers to fill one third of decision-making positions in the industry is not something that will happen soon.

"I estimate this scenario may be visible in another 20 years," she said, noting when she opted to pursue technical education during her secondary school years, there was only a handful of such young women in a class of 100. She graduated in 1983 and had been in the engineering industry for 32 years.

She added: "The ratio of women leaders in engineering is still small, probably 1:10. Hopefully, with the current education and training opportunities open to all, the 30% quota can be achieved by year 2030 at the earliest for the engineering industry."

Ir. Badriah believes that any objective can be achieved. The question though, is whether there are 30% women engineers to fill the decision-making posts.

"We shouldn't fill up the quota just for the sake of filling it up. Get the right people and train them properly first," she suggested.

Some employers hesitate to promote women to higher positions for fear they will resign when they become mothers.

Ir. Dr Leong said promotion should be based on performance as such unnecessary fears will only slow down a company's development.

She said: "Outstanding women engineers would know how to adjust for a work-life balance. There are lots of talented women and if the company cannot provide an alternative work schedule, it's going to lose these talents."

Dr Habibah said that based on observations, working mothers in high ranking positions have been able to cope with the demands of home and workplace.

New mothers perhaps may sacrifice promotion opportunities in the beginning but later, most are willing to make the time away from the family in order to excel at the workplace. But, she admitted, some employers still hesitate to promote women unless they can see the full potential.

Ms. Rene'e said employers who insist on typecasting women this way are shortchanging themselves and will lose out simply because they refuse to give women the opportunity to shine. "At times, women are their own worst enemy where progression of women is concerned. This is why it is important for IEM WE to provide the necessary support," noted Ir. Khalidah.

"Some women will back out; it is their choice. But there are still many who manage to balance their work and family lives well. Some also sacrifice their personal time for the company, much more than even the men."

Employers should be smart in profiling their employees and be smart enough to match job prospects with women engineers who have great potential, she said.

As for the excuse that employers are disinclined to promote women over concerns that they may later resign to be full-time mothers, Prof. Siti Hawa brushed this off as "lame".

"It is understood that any individual, when given the opportunity to take up higher positions and be entrusted with responsibilities, will deliver accordingly. If women engineers decide to accept an offer, deliverables are the key indicators of their performance," she said.

"Take my word for it. Promote them and you will see their dedication and commitment to the company. Most of all, the company will get a loyal woman engineer."

Ir. Badriah felt the onus was on the employer. She cited many ways that a company can retain women engineers in high positions without fear of them resigning. One example is providing a crèche at the workplace; government assistance is available in the form of incentives for companies to set up nurseries.

This brings us to another situation where increased family demands may be the reason why women slow down their career advancement.

Planning is the key, said Ir. Dr Leong. "We need to plan for work-life balance because that won't just happen. I think women engineers have to make time for the things that are important. We have to set aside time from our professional life as it's not to say work can't be flexible."

Ir. Lau said: "Be honest with yourself. Talk to your spouse. Alternative arrangements can always be made. A supportive spouse is the best shoulder to cry on.

She said companies can always work out roles to enable women to function with part-time or flexi-time work schedules. This will allow work to continue while creating a sense of belonging.

Prof. Siti Hawa said those who are able to, will want to start a family. Eligibility of being high achievers goes beyond their knowledge and skills. For work-life balance, coping with increased family demands requires good time management and communication with family members. Nurturing and caring for the family, she added, should not be left solely to the women engineers. "An extended family and professional help will be most helpful during household crises. The saying that 'behind every successful man is a supporting woman' applies in reverse to women engineers too," she said.

Ir. Badriah agrees. She said: "You have to have a great husband and, if you are lucky, be surrounded by people who can help pull you through all circumstances."

On gender equality at the workplace, Ms. Rene'e believes this means both women and men need to be empowered and that both should be given the opportunity to hold a leadership position if they are capable of taking on such a responsibility.

Promoting women to leadership positions purely as a show of gender equality, when there are male candidates who are either better suited or better qualified to hold the job, could backfire and erode the credibility of women in leadership positions, she added.

"In the past, women were denied the chance to lead, not because they lacked the capability but because they were women. Even though they had the qualifications and necessary experience, they weren't even allowed to try because of their gender. But today, this is no longer the case," she said.

Ir. Jama'iatul thinks everyone should be given access to knowledge, equal opportunities to gain experience and skills, upgrade oneself in acquiring higher qualifications, participate and contribute to teamwork and decision making as well as be promoted based on merit.

"An organisation benefits if it subscribes to workplace policies and practices free from gender biasness or discrimination," she said.

Ir. Khalidah said: "I have been to many countries and worked with many engineering organisations in Malaysia. Women engineers need not work hard for gender equality at the workplace.

"As for leadership positions, women engineers need to earn it. Does having women in leadership positions help? If those women leaders are not a 'pain in the neck', yes, it does help. But through my own experience, both women and men are equally fair if they are professional and objective.

"Be excellent in character and performance as an individual. The job position is yours. If not, it is not meant to be. "Meanwhile, Ir. Nor Asiah said women's contributions and influences are recognised as a vital force in all corridors of power, be these in commerce, industry or the arts. "National women networks such as IEM WE and WP of Badan Ikhtisas Malaysia must maintain a forum where women can develop business, professional and social contacts," she added.

Prof. Siti Hawa said men and women have physiological differences that can make a difference at the workplace. Gender bias does happen but it's according to the sectors in the industry and due to the physiological differences.

She explained that construction sites and offshore platforms employ more men than women while the reverse applies in design offices and the research sector. But as a whole, women engineers have a fair share at the workplace, she said.

"Empowering women engineers in leadership positions may be an appreciation of their functions and contributions to nation building but it may not necessarily promote gender equality as humans are created to complement each other gender-wise. women engineers must be part of the team," she added.

What are the challenges that impede the professional growth of women engineers?

"The greatest challenge is being open to where life takes you and embracing the opportunities that come along as well as being able to say no to some things, so you don't burn out," said Ir. Dr Leong.

"Outstanding women engineers can stop that voice in their head that is nagging, worrying, obsessing and comparing and

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turn it into strength, confidence and purpose so they can live their lives as they have always wanted."

"We need to stop perpetuating the traditional notion that a woman belongs (and wants to belong) exclusively to the home. Women engineers have to debunk and defy such stereotyping," said Ir. Jama'iatul.

"If women engineers want to change the way the world perceives us, our strengths and leadership capabilities in all fields of work, as well as to be in higher positions in a corporate environment in order that our voices are heard and not ignored, we need to improve and equip ourselves and step up as women and take the lead."

She said all these entail having the drive to succeed and be professionally qualified, gaining the relevant experience, working hard and earning people's trust and respect. "We must abandon feelings of self-doubt; we must not back down from challenges and, when the situation demands, women engineers must take on the role to lead," she stressed.

Ir. Khalidah wonders if it is a cultural issue and social norm. "By right, men should be the breadwinners, but where are the responsible men? Not all women are lucky to be married to responsible men. Many have no choice but to fend for their family and themselves," she said.

With the situation the way it is today, opportunities need to be provided fairly to all, she added, stressing that employers need to keep up with current times instead of just blindly following the old societal structure.

Prof. Siti Hawa noted that societal demands and cultural values of Malaysians are shifting from the traditional family structure to wider options which include childcare facilities and household cleaning services.

Studies show that educating girls have resulted in a woman reinvesting 90% of her income into her family compared to only 30% to 40% for a man. Even when a woman stays home when she becomes a mother, she tends to be a better teacher when it comes to helping the children with schoolwork.

Prof. Siti Hawa said that moving forward into year 2030, the switch in gender roles, where women become breadwinners and men become stay-at-home-fathers, will be acceptable.

Should mentors come from the home or the workplace?

Dr Habibah is of the opinion that mentors should not limit their mentees' capabilities as based on their own; instead they should encourage mentees to advance to their fullest potential.

Ms. Rene'e said mentors can help both women engineers and their male counterparts to excel by bringing out the best in them, adding that it is important that women learn to recognise a good mentor whom they think would suit them and to not be shy in seeking guidance if they feel this will benefit them.

Ir. Jama'iatul believes in mentorship as a crucial development process for someone entering any field of work, particularly fresh graduates.

"I was fortunate that my professional trajectory was helped, influenced and shaped by my mentors when I joined the different sectors related to the wastewater industry. All three were vastly capable women engineers who were instrumental in nurturing and instilling confidence and professionalism in me in the realm of engineering."

> ***"IEM WE can play a leading role to actively pursue the government's objective and to establish a work plan or work programme together with the various government sectors. IEM WE can be the main agent to work together with the government and the corporate world for the success of the engineering industry. Otherwise, I'd say this would be hard to achieve."***
>
> *Ir. June Lau*

Ir. Nor Asiah felt that mentorship provides the most lasting effects. "A mentor is a role model who can inspire us to overcome obstacles and achieve greatness. Engineering is a team effort," she said.

"As engineers, women work on projects with experts in many fields and people from different backgrounds. We collaborate in difficult situations and strict timelines.

"A mentor can help women set goals high and advise them to stay focused as well as work out a plan for a successful engineering career."

Last but not least, Ir. Nor Asiah suggested that the government provides more resources or privileges for working women so that they can afford quality childcare. This is particularly crucial for the few who do make it to higher positions in the corporate environment but the burden of domestic responsibilities eventually catches up, making it hard to stay in any role for an extended period of time.

Employees must improve maternity or paternity leave policies at the workplace. Allow those who must, to work from home and communicate electronically, she said.

Prof. Siti Hawa said: "Ideally, when one is positioned as a leader, it is understood that she has the winning formula in terms of arranging the domestic responsibilities. There is only a small percentage of men or women born to be leaders who will hold a high position immediately upon graduation."

She pointed out the process of climbing the corporate ladder comes with responsibilities for both the company and the family. Over time, the work-life balance will stabilise itself. However, when a choice has to be made between family and company, she believes men and women alike will choose family over company.

"You win some, you lose some. You can't have it all," said Ir. Badriah who cites the following scenarios: If you see a woman who has made it to a higher position, it is most likely that she has a small family and that she started a family early. By the time her children are grown up, she will have more time for herself. She lives in an extended family, so her children are taken care of by her elders or other family members. Her husband is very supportive and understands her huge responsibilities at the workplace, so he shares the domestic responsibilities. In the early days of her career, she was probably so good at her job

that her boss allowed her to work from home or to work flexi hours. By the time her children have grown up, she would have more time to focus on work. Or she would be one of the few lucky women who managed to get excellent domestic help or a good, reliable nursery.

Whichever it is, Ir. Badriah added that women engineers must be determined and positive in order to go through all obstacles and achieve their ambitions and dreams. ■

Y.Bhg. Datin Ir. Nor Asiah Othman *currently serves as Secretary of Woman Engineers Section of IEM and is the Vice Chairman of Woman Professionals Working Committee for Malaysian Professionals Centre (Balai Ikhtisas Malaysia). She holds a B.Eng (Hons) in Civil Engineering from Universiti Teknologi Malaysia and a M.Sc. in Highway Engineering from Heriot-Watt University, UK. She was appointed Head of Design for the East Coast Expressway Project team in 2008. Prior to that, she held a number of road engineering positions including Senior Assistant Director (Roads) of Roads Branch JKR HQ.*

Ir. Prof. Dr Siti Hawa Hamzah *is a professor at the Faculty of Civil Engineering, UiTM. She graduated with a PhD from UKM, MSc in Engineering from University of Kentucky USA and BSc in Engineering from the University of Miami USA. Her areas of expertise include civil engineering and structural engineering.*

Ir. Assoc. Prof. Dr Leong Wai Yie *is currently the Vice Chairman of the Women Engineers Section of IEM. She graduated from University of Queensland, Australia in 2001. She is currently a lecturer at Taylor's University. Her areas of expertise include electrical engineering, biomedical, signal processing and telecommunications.*

Ir. Hajah Khalidah Haron *is a freelance trainer, training consultant and Meta coach. She holds a BSc in Electrical Engineering (Power) from UK, and a Master in Human Resource from UPM. She is a certified Training Practitioner, Certified in Training and Development (ITD-UK), Certified Problem Solving Decision Making Trainer (KT-USA), a certified NLP-NS Practitioner (Meta-NLP) and a certified Meta Coach by International Society of Neuro-Semantics, USA. A professional engineer and Member of IEM, she has 32 years of working experience in the corporate world with a career history in Project, Operation, Maintenance and Planning Engineering, as Head of HRD, project leader and consultant with Renoir Consulting (Change & Transformation initiatives-Distribution).*

Puan Amnorzahira Amir *is a senior lecturer at the Faculty of Civil Engineering, UiTM Shah Alam. She graduated with B.Eng (Hons), from Universiti Malaya, M.Sc in Environmental Engineering from UPM and a, Ph.D in Civil and Environmental Engineering from Korea Advanced Institute Science and Technology (KAIST), South Korea. She was previously a project management engineer at Malaysia Maritime & Dredging Corporation Sdn.Bhd. (MMDC). Her areas of involvement are soil and groundwater remediation, air pollution, environmental assessment and sustainability management.*

Dr Habibah @ Norehan Hj. Haron *is a senior lecturer at UTM Razak School, Universiti Teknologi Malaysia. She holds a B.Eng from Kingston Polytechnic, UK, MSc from University of Warwick, UK and a PhD from Universiti Putra Malaysia. Her areas of expertise include manufacturing systems engineering and engineering education, with special interest in humanitarian, community service, environmental and nature.*

Puan Rene'e Aziz Ahmad *is Head of Maintenance and Development Division with PLUS Berhad. She graduated from University of Nottingham, UK. Her areas of expertise are civil engineering and highways.*

Ir. June Lau Yuk Ma *is currently the Principal of Perunding JLAU. She holds a B.Eng Honours in Civil Engineering from Universiti Teknologi Malaysia, and a Master in Business Administration from Universiti Malaya. She served, participated and completed a wide range of projects from design stage to construction completion, including factories, low rise and high rise buildings, housing developments, road widening and upgrading projects for PLUS highway, Kuantan and Kerteh Railway Project etc.*

Ir. Jama'iatul Lailah binti Mohd. Jais *is currently a Manager in Indah Water Konsortium Sdn. Bhd. She graduated from Universiti Putra Malaysia (UPM) and had previously worked with Suruhanjaya Perkhidmatan Air Negara. Her areas of expertise are Wastewater and process engineering specifically in domestic wastewater (sewerage).*

Ir. Mah Siew Kien *currently a Manager (Project Management) at The eCEOs Sdn. Bhd. She graduated from Universiti Kebangsaan Malaysia and previously worked as product engineer in Venture Electronics and lecturer in Multimedia University. Her areas of expertise are electrical and electronics engineering.*

Ir. Siti Badriah binti Ishak *is a director with SCG Infrasystem Sdn. Bhd. She graduated from Universiti Teknologi Malaysia with a B.Eng. Honours in Civil Engineering and previously worked with Syarikat Prasarana Negara Sdn. Bhd., GJ Runding Sdn. Bhd. and Gabungan Jurubina Sdn. Bhd. Her area of expertise include C&S and permanent way engineering.*

Liberalisation of Engineering Services

Dato' Ir. Lim Chow Hock
President, IEM

Dato' Ir. Lim Chow Hock, *was formerly the Director of the Division of River Basin and Coastal Zone Management with the Department of Irrigation and Drainage Malaysia (JPS).*

Trade prospects in Southeast Asia are set for exciting times ahead, with the ASEAN Economic Community (AEC) coming to the fore by the end of this year.

Much has been said about the AEC, both good and bad. Whether you're looking forward to it or not, the liberalisation of trade in services within Southeast Asia is already taking place.

At IEM (Institution of Engineers Malaysia), we believe it's time for engineers to "soar". We need to take heed or risk losing out on the many opportunities that come with the liberalisation of engineering services through the AEC.

First of all, liberalisation of services simply means a process where measures are taken to open up or expand local market access to foreign service providers, or to diminish discriminations against them vis-à-vis the domestic suppliers. In essence, it is a relaxation of government restrictions, usually in areas related to social and economic policy. More favourable investment environments are created that are characterised by the ease of doing business. In the long run, this will benefit the national economy.

Obviously, there are concerns that liberalisation will result in foreign service providers crowding out our own domestic service providers. Other concerns include the potential outflow of money from Malaysia, with foreign providers and shareholders repatriating the profits, as well as an increased risk of financial instability due to increased exposure to global economic events.

To address such concerns, let's recall the wisdom of Sir Winston Churchill who once said: "A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty."

The benefits of liberalising the engineering services are simply immense. In an exclusive interview by IEM in 2013, Datuk Dr Rebecca Fatima Sta Maria. Secretary General of the Ministry of International Trade and Industry, was quoted as saying that "growth of professional services such as engineering is critical as they have high potential to add value to the economy, besides having a significant multiplier effect on the economy and potential to improve productivity".

She added: "Liberalisation offers opportunities for transfer of capital, expertise and technology to domestic firms. It also provides opportunities for domestic firms in joint venture with foreign companies, to expand their business overseas."

The Board of Engineers Malaysia (BEM) has taken the necessary steps to amend the Registration of Engineers Act (2007) to liberalise the professional engineering services sector, with the aim to remove restrictions on foreign professional engineers. The Registration of Engineers (Amendment) Act 2014 was gazetted on 24 February 2015, where a two-tier registration has been introduced. The first tier is the Professional Engineer; a new second tier is Professional Engineer with Practising Certificate (PC). Professional Competency Examination (PCE) is a second tier examination introduced under the new Registration of Engineer (Amendment) Act 2014 for both local and foreign engineers who wish to practice as a Submitting Person.

Recognising the immense opportunities that liberalisation brings, it goes without saying that we should make the best out of it. In order to face the challenges of liberalisation, there is an urgent need to improve performance and increase competitiveness in our local engineering services, especially those who want to venture into the global market. To achieve this, IEM will take measures to support the liberalisation of engineering services by focusing on three major initiatives.

Firstly, IEM plans to strengthen the capacity building programmes by introducing Fundamentals of Engineering Examination (FEE) for final-year engineering students and fresh graduates, improving the Professional Interview (PI) Competency Model, and providing the necessary training for the Professional Competency Examination (PCE).

Strengthening capacity building programmes is essential to the development of local engineers, especially within IEM. Through such programmes, professional engineers will be

able to obtain their CPD points and equip themselves with the necessary skills to meet the impact of liberalisation and to venture overseas.

The next initiative is to facilitate business networking through national organisations such as the IEM Business Club and to support MITI's outreach and export programmes. Regionally, as the chair of ASEAN, Malaysia carries the hopes and aspirations of more than 600 million people in the region by working towards the final stage of the AEC.

At the same time, as the Secretariat of the ASEAN Federation of Engineering Organisations (AFEO), IEM conducts Business Opportunities Networking Sessions (BONS) for ASEAN engineers at the annual Conference of AFEO (CAFEO), an excellent avenue where matchmaking of local engineering firms with relevant foreign partners can materialise.

Lastly, IEM will establish an Engineering Services Database (ESD) that can be accessed via the IEM Web Portal. The ESD is aimed at assisting members who wish to ride the liberalisation by expanding their businesses or venturing overseas. The ESD will include information on all matters related to engineering services, locally and globally. It will also provide information on available grants, incentives and opportunities by the Government and other organisations, for engineers to participate in trade missions, marketing programmes and business ventures.

In short, IEM is thrilled to welcome the liberalisation of engineering services within ASEAN and especially in Malaysia. We believe all engineers should too and we welcome you to soar with IEM through your participation and support. ■

The article was published in The STAR – 29 Apr 2015 - Engineers take heed of the AEC

http://www.thestar.com.my/Opinion/Letters/2015/04/29/Engineers-take-heed-of-the-AEC/

ASEAN Women Engineers: Future and Prospect

by Ir. Assoc. Prof. Dr Leong Wai Yie

***Ir. Assoc. Prof. Dr Leong Wai Yie** is currently a committee member of Women Engineers Section. She is involved in biomedical signal processing analysis and wireless communications.*

For the longest time, the engineering profession had been almost exclusively a white male domain. But the world has changed and continues to change; the engineering industry as well as the broader workforce reflects that.

There are quite a few organisations actively advocating for women in engineering, including the Society of Women Engineers (SWE) and the IEEE Women in Engineering professional organisation. These promote women in engineering and science as well as encourage young women around the world to consider careers in these fields.

In ASEAN, there is the Women Engineers - ASEAN Federation of Engineering Organisations (WE-AFEO). This year, the WE-AFEO meeting will be held in Penang. Two women engineers from the ASEAN community have been invited to pen down their views and comments on WE development and future and networking strategies for WE-AFEO.

One of them is Mrs. Men Nareth, the Represent President of WEC, Cambodia and Students Affaires Coordinator from Institute of Technology of Cambodia.

In the past, parents in Cambodia did not allow their daughters to study or work away from home. After the Civil War however, Cambodia faced the lack of male labourers. So, the women had to take over responsibilities that were commonly and principally done by men. Under Cambodian law, women are to receive "equal pay for equal work". In the 1990s, many "uneducated young women" from rural areas ventured into the city to work in garment factories.

In 2004, the organisation, Gender and Development for Cambodia, stated that 6% of the female workforce in Cambodia were paid and that 16% of Cambodian girls were enrolled in lower secondary schools in 2004. Women were also increasingly present in Cambodia's universities. In 2004, 20% of graduates from universities were female but the number of women engineers was lower compared to other fields. Perhaps Cambodian women think engineering was very difficult, and that they must work hard in the field when they leave school.

Since 1993 there had been a modest rise in Cambodian women's participation, including leadership, in non-governmental organisations, focusing on the issues and rights of women. It was reported in 2004 that 10% of National Assembly members, 8% of Commune Council members and 7% of judges were women. Therefore, the ASEAN network changed the mindset of young women to study abroad and get jobs, just like the men.

According to the Engineering University survey, the number of women engineers should increase every year. Through WE-AFEO, we hope to strengthen the capacity building of WEC members to get new technology by training and sharing their experiences with each sister country.

The 3rd WE-AFEO Meeting 2014 in Myanmar

At the 3rd WE-AFEO Meeting 2014 in Myanmar.

The 3rd WE-AFEO Meeting 2014 in Myanmar

The other representative is Mrs. Khin Sandar Tun, the Joint General Secretary of Myanmar Engineering Society.

According to the Ministry of Foreign Affairs in Myanmar, there are 8 major national ethnic races in the country, comprising the different ethnic groups: Kachin, Kayar, Kayin, Chin, Mon, Burma, Rakhine and Shan. The country's population in 2014 was recorded at 51.4 million, with males at 24.8 million and females at nearly 27 million. This means females make up 51% of the population.

According to Myanmar's history, culture and laws, all its citizens have equal rights at all levels. Women have the same access as men to human resource endowments, rights and economic opportunities. The people believe that giving women equal opportunities will allow them to emerge as social and economic actors, influencing and shaping more inclusive policies.

Besides, improving the status of women also results in a greater investment in the children's education, health and overall well-being. The Myanmar Government also accepts that empowering women and the promotion of gender equality are key to achieving sustainable development. This is why there are many famous Myanmar women, not only in the country, but also in the world.

Technological universities in Myanmar have 19 academic engineering departments such as architecture, chemical, civil, electrical power, electronic, information technology, mechanical, mechatronics, metallurgy, mining, petroleum, textile, physics engineering, chemistry engineering and geology engineering. In all technological universities, females make up 75% of the total student population. From 2013 till

now, the ratio of female students in Yangon Technological University has increased by 50%.

In Myanmar, women as well as women engineers can occupy positions of leadership and decision-making. As Myanmar is a society in which there is gender equality at all levels, all women can be empowered, can fully realise their rights, are in position where they can effectively lead, and are treated with dignity and respect.

According to the data, women engineers in Myanmar are equal to men engineers and they can participate in all sectors of the country's development. They can play a vital sector in building the nation into a peaceful, developed country. ■

IEM DIARY OF EVENTS

Title: 10th Brunei International Lecture, Collectively We Are Stronger
15 June 2015
Organised by : Consulting Engineering Special Interest Group
Time : 5.30 p.m. – 7.30 p.m.
CPD/PDP : 2

Title: Talk on "New Tunnel Excavation Method using Abrasive Waterjet"
15 June 2015
Organised by : Tunnelling and Underground Space Engineering Technical Division
Time : 5.30 p.m. – 7.30 p.m.
CPD/PDP : 2

Title: 45th Annual General Meeting Graduate and Student Section (Young Engineers Section), IEM
20 June 2015
Organised by : Graduates & Student - The Young Engineers Section
Time : 11.00 a.m. – 1.00 p.m.
CPD/PDP : 2

Title: First Annual General Meeting of the Seniors Special Interest Group
27 June 2015
Organised by : Senior Special Interest Group
Time : 11.00 a.m. – 1.00 p.m.
CPD/PDP : 2

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

ANNOUNCEMENT

The Institution would like to inform that En. Zakaria bin Abdullah (IC: 5908274-04-5213) is not a member of the Institution.

Thank you.

Repair of Screw Press Using Hardfacing Process

by Ir. Dr Aravinthan Arumugam

***Ir. Dr Aravinthan Arumugam** is Academic Department Head for Mechanical Engineering at KDU University College. He has been actively involved in welding research and consultancy for the past 10 years. He also published various journal and conference papers on his research area. He is a sub-committee member for the Mechanical Engineering Technical Division (METD) in IEM.*

by Mr. M. Narayanan

***Mr. M. NARAYANAN** is a Mechanical Engineer and Certified Steam Engineer with 30 years of experience in the operation and maintenance of palm oil mills and cable manufacturing. He has conducted various public and in-house welding programmes with SIRIM, FMM, RCFISET-UM, OUM for palm oil, rubber, cement, mining, shipyard and other industries. He is currently involved in failure analysis and wear problems in palm oil and other industries.*

Wear in machine components is unavoidable and this normally leads to failure of the component. Wear is defined as the progressive loss of substance from the operating surface of a body occurring as a result of relative motion at the surface (1).

INTRODUCTION

Wear in machine components is unavoidable and this normally leads to failure of the component. Wear is defined as the progressive loss of substance from the operating surface of a body occurring as a result of relative motion at the surface (1).

The most common type of wear is abrasive wear. This occurs when non-metallic material slide or roll under pressure across a metallic surface. The common practice is to replace the damaged component. However, this will lead to higher costs due to scrap and inventory. There is also an urgent need to conserve non-renewable materials in compliance with green technology.

Hardfacing is a surfacing process used to improve wear resistance of a component without affecting the component when used. The process uses welding to create deposits that have excellent wear and abrasion resistance, on the surface of the component which has suffered wear.

This article takes a look at the hardfacing process used in the maintenance of a screw press in palm oil production, to prolong its working life.

This article takes a look at the hardfacing process used in the maintenance of a screw press in palm oil production, to prolong its working life.

WEAR OF A PRESS SCREW

Screw press (Photo 1) is an important component used for the extraction of crude oil. During the process, called digestion, the oil palm fruit is mashed up under steam-heated conditions and the screw press is used to press out the oil from the digested mash (2).

The screw press has an oil extraction efficiency of as high as 95% (3). However, during the process, the screw press flights wear out rapidly. The screw would normally be subject to severe abrasion wear, due to contaminant in the fruit such as sand and small stones.

Photo 1: Screw press

Photo 2: Abrasion wear of P20 screw press

Photo 2 shows a P20 screw press which has been subjected to abrasion wear, after 700 hours of working life. The P20 screw has the capacity to process 20 tonnes ffbs/hr (tph).

Each screw flight was initially 370 mm in diameter with flights 1, 2 and 3 having thickness of 55 mm, 40 mm and 34 mm respectively as shown in Photo 3. The materials used for the

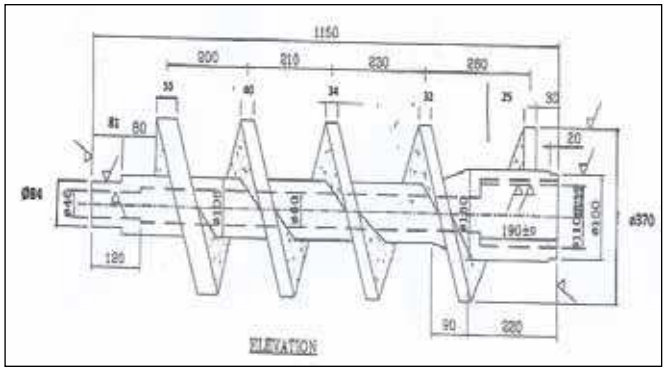

Photo 3: Press screw sizing

screw were low alloy steel or chrome moly steel with hardness of 35HRC-50HRC.

However after in use for 700 hours, all three screw flights showed severe reduction in diameters and thicknesses as shown Photo 4 and 5 respectively due to abrasive wear.

Flight 1 was observed to have undergone the highest reduction in diameter and thickness compared to the other flights. Observation by Basil (4) on the wear pattern of the press screw supports the wear of the observed flights. Flight 1 was severely affected mainly because the actual pressing of the entrapped oil was concentrated near the outlet of the press (Photo 6), which was closer to flight 1. High pressure from the hydraulic cones facilitates the pressing action at the outlet.

It was noticed that when the clearance of the flights due to wear, exceeded 22 mm, there was an excessive loss in oil extraction from the fibre and a high breakage of nuts, which exceeded the standards set by the palm oil industry. This would potentially cause a reduction in the throughput

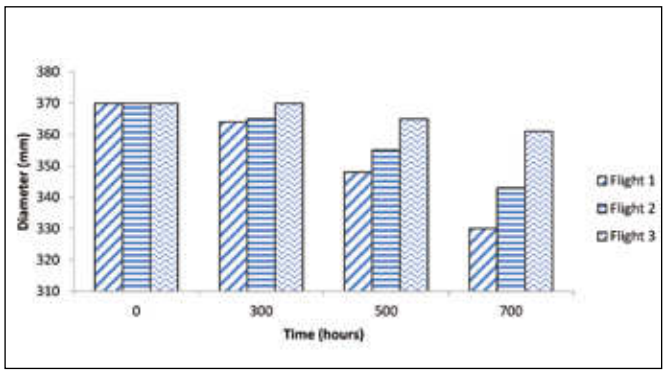

Photo 4: Change in screw flights diameters due to wear

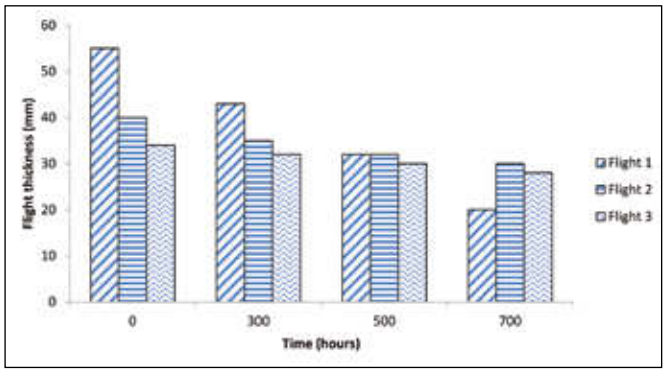

Photo 5: Change in screw flights thicknesses due to wear

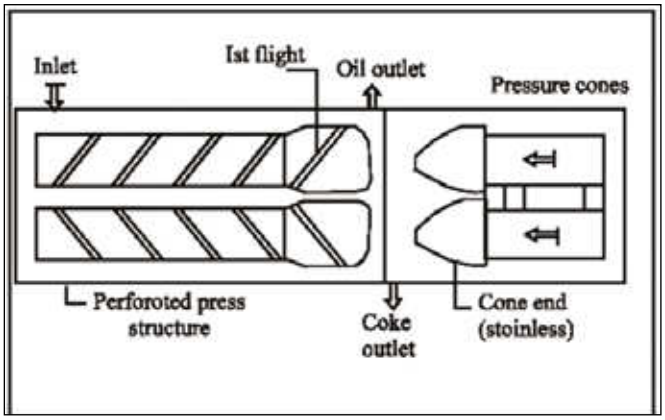

Photo 6: Position of 1st flight near the outlet [4]

and therefore lead to the replacement of the screws. According to the throughput rule (5), when the throughput drops more than 20%, the press screws need to be replaced. Due to severe wear, the useful working life of the twin press screws used in this work was found to be approximately 500 hours when Flight 1 diameter reduced to 354 mm and the throughput was about 15 tons FFB/hr with throughput drop of 25%. The industry spend millions of ringgit annually to replace these screws. Due to the unavailability of data on the annual cost for press screw replacement, an estimation was worked out based on the annual crude palm oil (CPO) production by Malaysian Palm Oil Board (MPOB) statistics for 2013 and 2014 (6) and the estimated FFB required to produce 1 tonne of CPO (7).

a) Annual CPO production = 28,000,000 tonnes.

b) 5.09 tonnes of FFB required to produce 1 tonne of CPO.

c) P20 screw press will process 20 tonnes of FFB per hour.

Annual FFB required to be processes in a year = 28 Mt x 5.09 t = 142.5 Mtpa of FFB

Total processing time:
142,500,000 / 20 = 7,125,000 hrs/year
Assuming press screws are replaced at 700 hours, total screws required annually:
7,125,000 hr / 700 hr = 10,178 pairs/year

Each pair of new screws was estimated to cost RM3,900. So the total annual cost for new screw replacements would be estimated at around RM39,694,200.

It is believed that with the use of the hardfacing process and the correct selection of maintenance electrode and welding parameters, the life span of the press screws can be further extended. It will also reduce iron contamination in the palm oil, a matter of great concern to the industry as it will increase the risk of oil oxidation.

HARDFACING OF PRESS SCREWS

The hardfacing process of the screw press starts with cleaning the section of the screw which has worn out so that it is free from grease and oil. Flux core arc welding, using 1.6 mm flux core wire with direct current with (DC) inverter was used for hardfacing.

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The welding current and voltage in the range of 140 A to 160 A and 24 V to 26 V were used to produce welds with low heat input, ensuring that the temperature of the base metal did exceed 100°C. This minimised the amount of dilution with the base metal and microstructural changes in the base metal. Based on the extent of the wear, the worn section of the screw was rebuilt with a buffer layer. This layer was produced using a ME-56 electrode, an austenitic Ni-based electrode, comprising nickel (N), chromium (Cr), molybdenum (Mo) and iron (Fe). The layer had a hardness of 42-48 HRC.

The surfacing layer was produced with ME-57 carbide electrodes comprising carbon (C), chromium (Cr) and niobium (Nb), with hardness of 57-62 HRC. These ME-75 electrodes had high abrasion resistance as well as impact resistance properties.

Photo 7 shows press screws which had been hardfaced using the ME-56 and ME-57 repair and reclamation electrodes.

Photo 7: Hardfaced screws

With the combination of hardness and abrasive resistance, industrial test run were carried on the hardfaced press screws as in Photo 8. The results show that the press screw's useful working life, based on Flight 1, has extended to 1000 hours. This shows that hardfacing of the screw press with correct selection of maintenance electrode and welding parameters has improved the working life by 50%.

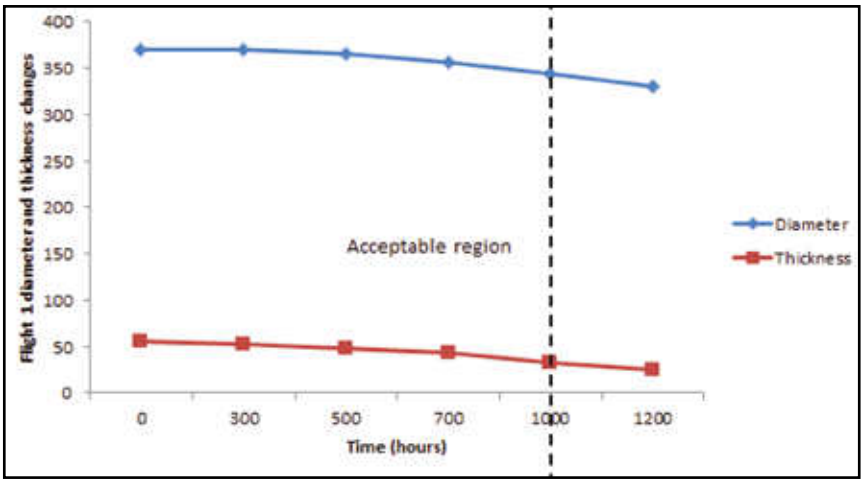

Photo 8: Screws service life after hardfacing

The cost for hardfacing a pair of press screws was about RM2,000. Based on estimation above, the annual cost of repairing 10,178 pairs would be RM20,356,000. This showed that hardfacing can lead to cost savings of RM19,338,200, when compared to replacing with new screws.

CONCLUSION

Press screws are subjected to severe abrasion wear during their working life and therefore need to be replaced to prevent high oil loss, high nut breakage and reduction in throughput. The use of ME-56 and ME-57 repair electrodes to rebuild the worn section of the screw was found to improve the hardness and abrasion resistance of the screws. The useful working life of the screws increased by 50%, leading to cost savings of RM19,338,200 when compared to replacing them with new screws. ■

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CONTRIBUTIONS TO WISMA IEM BUILDING FUND

RM 2,650,196.70 from IEM Members and Committees RM 741,502.00 from Private Organisations

(ANOTHER RM 4,039,331.94 IS NEEDED)

TOTAL RM 3,391,698.70

The Institution would like to thank all contributors for donating generously towards the IEM Building Fund HELP US TO PROVIDE BETTER SERVICES TO YOU AND TO THE FUTURE GENERATION *(The donation list to the Wisma IEM Building Fund is published on page 18 for the month of June2015)*

OBITUARY

With deep regret, we wish to inform that Ir.Tay Keng Yeow had passed away on 2nd May 2015. On behalf of the IEM Council and Management, we wish to convey our deepest condolences to the family.

IEM-WE Session 2014/2015

ASEAN WOMEN ENGINEERS FUTURE AND PROSPECT

reported by
Ir. Assoc. Prof. Dr
Leong Wai Yie

Ir. Assoc. Prof. Dr Leong Wai Yie *is currently a committee member of Women Engineers Section. She is involved in biomedical signal processing analysis and wireless communications.*

IEM-WE wins the 2014 Presidential Award

IEM Women Engineers Section (IEM-WE) successfully organised the 1st Annual General Meeting and Annual Gathering at Holiday Villa Hotel & Suites Subang in Selangor recently.

IEM-WE aims to connect women engineers locally and internationally as well as establish a strong network and encourage women engineers to participate in its activities. IEM-WE also plays an important role in creating a platform for self-development, continuous learning and contribution to the society.

During the AGM, IEM-WE members talked about their recent activities and future plans. Special highlights were on Perak, Penang, Sabah and the Southern Branch launching, APNN Meeting, Seoul Korea, WE-AFEO 32, Photography Competition, corporate connections, WE talks and Kampung Orang Asli. Many WE members expressed an interest in serving as committee members.

Ir. Magdalene Tan Le, recipient of IEM WE Award 2014, had worked as an electrical engineer since she graduated from University of Malaya in 1975. She talked about her achievements, challenges and expectations as a woman engineer. With her vast experience working with contractors and consulting firms, Ir. Tan was involved in the construction of water treatment projects and the airport at KLIA. Today, she is more focused on social work.

Ir. Siti Badriah talked about her challenges in competing with the young engineers. She says hard work, good strategy and making lots of sacrifices were what helped her achieve her goals.

In addition, IEM-WE was awarded the IEM Presidential Award Of Excellence 2014 for its active participation in the institution's activities. The award is in recognition of IEM-WE's excellent performance and contributions to the engineering community and public. ■

Session 2014/2015

CHAIRMAN	:	Ir. Raftah Mahfar
VICE CHAIRPERS	:	Ir. Assoc. Prof. Dr Leong Wai Yie
VICE CHAIRPERS	:	Ir. Suhana bte Abdul Majid
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COMMITTEE MEMBERS	:	Engr. Habibah Hj. Haron Engr. Gowry Thambirajah Engr. Nor Haslindah Razali Engr. Krishnaveni a/p Rangasamy Engr. Masilah binti Bandi.

Report on International Conference and Exhibition on Tunnelling and Underground Space 2015 (ICETUS 2015)

TUNNELLING AND UNDERGROUND SPACE TECHNICAL DIVISION

reported by
Ir. Dr Ooi Teik Aun, *Hon FIEM, FICE, FMIArb, FMSA*

Ir. Dr Ooi Teik Aun *is the Founder Chairman of IEM TUSTD and Chair of the Organising Committee of ICETUS 2015. He is, also the current Chairman of the IEM Dispute Resolution Practice Subcommittee. He is an Honorary Fellow of IEM, Fellow of The Institution of Civil Engineers, and is currently the ICE Country Representative for Malaysia. He is also the President of Southeast Asian Geotechnical Society (2010-2016).*

IEM President Dato' Ir. Lim and VIPs at the exhibition booths

The Third International Conference and Exhibition on Tunnelling and Underground Space was successfully organised by The Institution of Engineers Malaysia (IEM) on 3-5 March 2015 at Dorsett Grand Subang Hotel, Subang Jaya, Selangor.

The conference, with the theme Sustainable Transportation In Underground Space Development, was attended by 207 participants from all over the world. It was supported by The Institution of Civil Engineers (ICE) and many of its members attended the conference.

The International Tunnelling and Underground Space Association (ITA) gave a strong show of support by holding its executive committee meeting in Hilton Hotel Petaling Jaya to coincide with the ICETUS 2015. A pre-

conference workshop titled "Tunnels For Transport In Urban Areas" was also jointly organised by Tunnelling and Underground Space Technical Division of IEM and the ITACET Foundation on 28 February and 1 March 2015 at the Tan Sri Prof. Chin Fung Kee Auditorium, Wisma IEM, Petaling Jaya, Selangor Darul Ehsan, attended by 40 participants.

Technical Session 1 started with ITA President Mr. Søren Degn Eskesen delivering two papers: "Why Go Underground In Urban Areas" and "General Aspects Of Urban Tunnelling – Environmental Issues". ITA Honorary Treasurer and President of Amberg Technologies Mr. Felix Amberg then presented his paper on "Presentation Of The Different Tunnelling Methods In Urban Areas And Elements For The Choice Of The Method".

During Session 2, Mr. T. Babendererde's lectures were on "Slurry Shield, EPB, Soil Conditioning" and "Segmental Lining Design For Mechanized Tunnelling". Papers on "Excavation Methods And Basics Aspects Of Design" and "Ground Reinforcement, Support, Lining" were presented by Mr. T. Celestono in Session 3.

In Session 4, Mr. Eskesen delivered a paper on "Risk Management For Urban Tunnels", Mr. D. Peila on "Site Investigation" and "Health & Safety" by Ms. R. Haug while Ms. E. Chiriotti presented her paper on "Geotechnical Monitoring" and Mr. Amberg delivered his lecture on "TBM Monitoring".

Session 6 started with Case Studies 1 on "TBM Solution & Leak Sealing Repair" by Mr. Kah Fai Lee and Case Studies 2 on "Metro Case Studies – SYSTRA" by Mr. E. Leca.

Mr. Gusztav Klados spoke on "KVMRT Project: TBM Procurement And Tunnelling" and Ir. Dr Ooi delivered his lecture on "Site Investigation, Advance Works Before Tunnelling And Instrumentation And Monitoring For KVMRT Project".

The workshop ended at 6.30p.m. on 1 March 2015 and Ir. Dr Ooi presented mementos and Certificates of Appreciation to all the speakers.

At the opening ceremony of ICETUS 2015 on 3 March 2015, Ir. Dr Ooi delivered his welcome speech, after which Mr. Eskesen reported that:

1. More than 1,500 delegates and participants from the ITA family met in Iguassu in Brazil in May 2014 for the ITA 40th General Assembly and World Tunnel Conference 2014 (WTC2014).
2. The General Assembly had approved the ITA Strategic Plan going forward to 2016. As part of the strategy it has decided on an updated vision:

The ITA Vision: "ITA - the leading international organisation promoting the use of tunnels and underground space through knowledge sharing and application of technology."

IEM President Dato' Ir. Lim Chow Hock then delivered his address and declared opened the conference, followed by a visit to the exhibition booths.

After the morning tea break, Mr. Eskesen delivered the opening keynote lecture titled "Construction Challenges For Urban Tunnelling - The Copenhagen Metro Circle Line". After that, Professor Yong Kwet Yew, Chairman of Association of Geotechnical Societies in Southeast Asia & Vice President (Campus Infrastructure) at the National University of Singapore, gave his Keynote Lecture 1 titled "Learning Lessons From The Construction Of Singapore Downtown Line".

Mr. Amberg gave Keynote Lecture 2 titled "Sustainability Through Value Preservation Of Underground Infrastructure".

Professor Jenny Yan, ITA Council member and The China Railway Southwest Research Institute Co. Ltd, gave Keynote Lecture 3, titled "Key Issues Of Urban Tunnels For The Changsha-Zhuzhou-Xiangtan Intercity Railway".

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In addition to these were six special lectures, 2 technical sessions and 1 special session by MMC-Gamuda on KVMRT Underground/Tunnelling Works (SBK Line) consisting of 27 papers.

Through this conference, we are able to successfully share our experiences and innovations of tunnelling projects in Norway, Switzerland, Germany, Hong Kong, Thailand, Singapore, Malaysia and Taiwan and enable transfer of technology to be effected.

There was also a technical visit to the KVMRT Tun Razak Exchange Site in Kuala Lumpur on 5 March, 2015.

The conference attracted 13 exhibitors of wide ranging tunnelling activities. MMC-Gamuda was the main sponsor. China Railway Engineering Equipment Ltd Corp and Herrenknecht AG were the gold sponsors, Sepakat Setia Perunding Sdn Bhd was the silver sponsor and BSG Construction (Malaysia) Sdn Bhd was the bronze sponsor.

On the whole, the ICETUS 2015 and the pre-conference workshops were a big success. ■

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30 November - 2 December 2015

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Evening Talk on Analysis for Slope Stability

GEOTECHNICAL ENGINEERING TECHNICAL DIVISION

reported by
Ir. Yee Thien Seng

***Ir. Yee Thien Seng** is the Chairman of IEM Geotechnical Engineering Technical Division. He is the principal of Geo. Consult, a practice offering expert and specialist consultancy to the construction industry and in particular, on geotechnical engineering aspects. Ir. Yee is an expert witness and accredited checker for design of geotechnical engineering works registered with the Board of Engineers Malaysia.*

On 10 November, 2014, Professor Jim Graham from the University of Manitoba, Canada, gave an evening talk at the Tan Sri Professor Chin Fung Kee Auditorium, Petaling Jaya. The talk, "Analysis For Slope Stability", started at 5.30p.m. and was attended by 92 registered participants. It was also webcast live to the IEM Perak branch.

Professor Graham began by looking at the morphology of landslides to serve as the background for modelling embankments, river banks, flow slides and rock slides in Canada and Scandinavia. Although numerical modelling tools are excellent and numerically "precise", he said, our ability to characterise the ground is not as successful, particularly in identifying critical pore water pressures when failure actually occurs.

Hence, the "accuracy" of numerical solutions depends largely on the competence and informed judgement of the analyst. He also cautioned against the use of total stress analyses as these can produce unsystematically unreasonable solutions. He illustrated this with two case analyses which subsequently required re-analyses with effective stress strengths to arrive at acceptable solutions.

Professor Graham reminded the audience that commonly-used General Limit Equilibrium (GLE) method of analysis only addresses force and moment equilibrium conditions at the time of failure, without taking into consideration displacements or displacement rates. Even after making assumptions needed for these "slices" methods (a large variety is available), the solutions must be solved iteratively for the Factor of Safety (FoS). Force and moment equilibrium should be satisfied simultaneously.

The Simplified Bishop, Spencer and Morgenstern-Price methods all meet this requirement. With the same inputs, results from the analyses do not vary significantly. It is important to note, however, that input data used for characterising the ground profile, for example ground geometry, ground water conditions, geology (material stratifications), and material properties such as shear strengths and hydraulic conductivities will impact the quality of the solutions much more than the mathematical assumptions that have to be made.

Nowadays, Finite Element Method (FEM) solutions for stresses and deformations can provide realistic shear and normal stresses acting on each slice and permit improved GLE solutions. Analyses incorporating FEM-derived stresses are particularly valuable for problems with external point loads such as tiebacks that lead to highly non-uniform stresses in the ground. Professor Graham provided a case study where a river bank stabilised with rock-fill columns, was satisfactorily evaluated with the GLE analysis using FEM-derived stresses.

The issue of whether peak or post-peak strengths should be employed in a slope stability analysis was also discussed. Professor Graham mentioned a series of small dams and dykes in Manitoba that failed even though these had been designed with acceptable factors of safety in terms of peak strength parameters. After the failures, they were re-analysed using post-peak strengths and all had FoS close to unity. This and other case studies reinforced the practice established by the late Professor A.W. Skempton more than 40 years ago.

Professor Graham also discussed a river bank that experienced seasonal instabilities due to water pressure potentials rising in aquifers in wet autumns and a highway cut slope that failed as a result of loss of soil suctions during rainy seasons. Both examples showed the important effect of pore water

The speaker, Professor Jim Graham

pressures on slope stabilitys. They demonstrated the importance of specifying correct water pressure regimes when using effective stresses to analyse for slope stability.

Owing to unavoidable uncertainties in assessing both loading and soil resistance in GLE analyses, the computed FoS does not indicate uniquely whether the slope will or will not actually fail. Slopes with acceptable safety factors still have a probability of failure, even if that is low. Professor Graham showed that some engineers in Canada have started presenting hazard evaluations using probability density functions to establish the probability of slope failures.

The talk ended at 7.35p.m. after Professor Graham answered thought-provoking questions from the audience, including one from the IEM Perak branch. ■

IEM DIARY OF EVENTS

Title: Digital Class @ IEMICTSIG

13th June 2015

Organised by : Information and Communications Technology Special Interest Group, IEM
Time : 11.00 a.m. – 1.00 p.m.
CPD/PDP : 2

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

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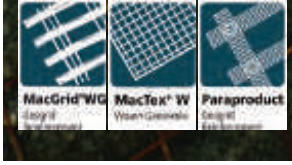

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Engineering a better solution

Temporary Shelter Programme for Post Flood Disaster

IEM WOMEN ENGINEER SECTION

reported by
Ir. Suhana Abdul Majid

Ir. Suhana Abdul Majid *holds a Degree in Civil Engineering from University of Glasgow, Scotland. She is currently the Managing Director of Prestasi Perintis Sdn. Bhd., an engineering consulting firm and has been involved in various projects related to infrastructure design, project management and asset management services in the transportation sector as well as mixed development projects.*

The recent floods in Kelantan were reported to be the worst in the past decade. Jabatan Pengairan & Saliran Kelantan reported that the rise in water levels was due to heavy rain in Ulu Kelantan from 17 December to 24 December 2014, causing the water level to peak on 24 December 2014. Continuous heavy rain since 17 December at the upstream section of the rivers caused the excess water to flood the catchment area downstream. The rain gauge station in Gunung Gagau, Gua Musang, recorded 507mm of rain water that day compared to 20mm recorded the previous day.

Temporary Shelter for flood victim whose house was destroyed

The floods not only destroyed public property but also forced 104,000 people to be placed in temporary shelters. Considerable damage included the destruction of houses as well as disruption to the infrastructure, especially in Kuala Krai, Gua Musang and Tanah Merah.

Mercy Malaysia (Medical Relief Society Malaysia) is a non-profit organisation that provides medical relief, sustainable health related development and risk reduction activities for vulnerable communities in both crisis and non-crisis situations. As part of its humanitarian and recovery activities for flood victims in Kelantan, Mercy Malaysia constructed a Temporary Shelter Programme in Kuala Krai, Kelantan as a post flood disaster relief.

It requested the help of volunteer engineers to conduct an independent site visit in order to assess temporary shelters that were completed as well as under construction in Kampung Tualang, Kampung Bekok and Kampung Temangan in Kuala Krai. This was carried out by a volunteer from IEM Women Engineer Section in March 2015.

The temporary shelters were designed such that the completed structures were easily movable. They could be lifted from their current position and transferred elsewhere. The construction work for each unit took 2-3 days to complete. Local carpenters were involved in the construction and the work was coordinated and supervised by volunteers attached to Mercy Malaysia. Assessment was carried out on randomly selected units.

The shelters were built for flood victims whose houses were totally/ badly damaged during the floods. These victims stayed in tents after the flood waters receded. Mercy Malaysia also provided aid to supply clean water to the victims and for the repair of toilets. ■

Temporary Shelter for flood victim whose house was badly

Temporary Shelter in Kampung Tualang

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- Practicing Structural Consulting Engineer and Principal of M C Hee & Associates.
- Expertise in design and construction of high-rise buildings particularly in value engineering and alternative design with more than 40 years experience.
- Well versed in computer modelling of high-rise buildings and strongadvocate of manual check methods.
- Registered accredited structural checker in BEM and highly regarded in the investigation committee.
- Vice President of IEM from 2009 to 2011, Chairman for drafting the Malaysian National Annex of EC0, EC1, EC2 and active member of Technical Committee drafting the Malaysian National Annex of EC8.

Benefits of Course

This 2-day course provides an in-depth analysis and design on high rise buildings with emphasis on fundamental approach. Construction professionals will be able to understand and appreciate the behaviour of the high rise structure by using principle of virtual displacement and moment distribution method. Manual computation will be introduced from the basics, which to facilitate the understanding, complemented by computer methods as means of verification and implementation. Some novel techniques such as two-cycle moment distribution, principle of virtual displacement (with short cut), powerful simplified unified approach in concrete section analysis/design, stability index and FC method are highlighted. The reference on the design of high rise building is in accordance with BS8110 and EN1992.

Course Outline

- Session 1: Back to Basics on Structural Fundamental
- Session 2: Simplified Unified Approach to Design & Analysis on Concrete Sections
- Session 3: Rigid Framed Structures subject to Gravity and Lateral Loads
- Session 4: Shear Wall Structures subject to Lateral Loads
- Session 5: Shear Wall-Frame Interaction subject to Lateral Loads
- Session 6: Transfer Floor Girder using Stick Model and Finite Element Model
- Session 7: Framed Tube Structures
- Session 8: Practical Example 10-storey Dual Frame-Shear wall/Core Wall Building

Date	Venue	
05-06 August 2015	ARMADA HOTEL, PJ	RM2000 (Individual)
Closing Date: 29 JULY 2015		RM1800 (Group)

12 BEM approved CPD Hours (Ref No. : ISE/ MD/CPD/ATG/008)
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Course Presenter: Prof. Steve Garrity

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- Recipent of various awards including the Institution of Highways and Transportation Babtie Premium Awards (1992), Institution of Structural Engineers Cass Hayward Prize (1993), Sir Arnold Waters Medal (1995) and Lewis Kennt Award (2004) and etc.
- Currently chair of UK Joint Board Moderators and President of the International Masonry Society.

Benefits of Course

This 2-day course is designed to help construction professionals to achieve successful rehabilitation or repair works for their concrete structures. Initially, emphasis is placed on developing an understanding of the properties of concrete, the problems that can occur in practice and the main causes of deterioration. This forms the basis of the rest of the course which focuses on a range of rehabilitation and repair methods as well as inspection, diagnosis and maintenance strategies all of which are integral to the design and specification of successful repairs. Reference is also made to the latest European standards relating to concrete rehabilitation and repair such as EN 1504.

Course Outline

- Session 1: Setting the Scene
- Session 2: An overview of Cement and Concrete Properties
- Session 3: Defects in Concrete 1
- Session 4: Defects in Concrete 2
- Session 5: Inspection and Testing of Concrete Structure
- Session 6: Concrete Repair Methods 1
- Session 7: Concrete Repair Methods 2
- Session 8: Electrochemical Methods of Rehabilitation

Date	Venue	
12-13 August 2015	ARMADA HOTEL, PJ	RM2000 (Individual)
Closing Date: 5 August 2015		RM1800 (Group)

12 BEM approved CPD Hours (Ref No. : ISE/ MD/CPD/ATG/010)
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IEM Women Engineer Award

by Ir. Raftah Mahfar

Ir. Raftah Mahfar is the Chairman of IEM Women Engineers Section for Session 2014/2015. She is currently a Director of SCG Consultants Sdn. Bhd., a consultant for Structural, Civil, Infrastructure, Geotechnical and Railway engineering. She is a Professional Engineer and an active Member of IEM. She was also the committee member of the IEM Women Engineers Sub Committee since year 2008 and has held the post of Chairperson for session 2012/2013.

The IEM Women Engineer (IEM WE) Award is a showcase of women engineers who have made exceptional contributions to the community and the engineering profession in the country. The award will enable women engineers to highlight their accomplishments, become more visible and inspire other women within the industry.

Ir. Associate Professor Hayati Abdullah, the recipient of IEM WE Award 2015, believes that women engineers need to be visible with the right attitude, not to draw attention to the fact that they are in a male-dominated world but to the fact that they are extraordinary engineers in their own right.

Ir. Associate Professor Hayati Abdullah was raised in a multi-cultural community in Penang. A former student of Tunku Kurshiah College in Seremban, she obtained her Bachelor of Science in Mechanical Engineering from Clemson University, USA. She then pursued her Masters in Mechanical Engineering at Universiti Teknologi Malaysia (UTM).

Her career took off in Politeknik Ungku Omar, Ipoh, in 1985. The following year, she took up a position as lecturer in UTM and in 1995, she was seconded to the Malaysian Armed Forces Academy (now Universiti Pertahanan Nasional Malaysia) and held the position of Deputy Director and Head of Mechanical Engineering Department. She was responsible for infrastructure and curriculum development. She is currently Deputy Director at the Centre for Academic Leadership and Professional Development, UTM.

She feels blessed that she had a great mentor, Professor Ir. Dr K. S. Kannan, who first took her out of the campus to the industries. During the long semester break and away from campus, her involvement as an energy management consultant to the Ministry of Energy, Telecommunication and Post Malaysia in the 1990s allowed her to work in many National Energy Conservation and Auditing projects in the country.

She believes she has an important role to play in bridging the industry-university gap – "I practise what I teach and I teach what I practise".

Ir. Hayati's ability to interconnect her knowledge and experience acquired through teaching, research and consultancy, has contributed to developing her own innovative teaching style. In 2010, she was awarded the prestigious Anugerah Akademik Negara, the national award for the Teaching of Engineering.

She appreciates the support she gets from her family and has always tried to maintain a balance between work and family. Away from work, she enjoys bowling with her family and friends. She plays an active role in IEM Southern Branch (Johor & Singapore) and is currently the Branch Chairman.

She feels strongly about increasing women's roles in engineering and believes there is a need for a strong network of women in engineering. It is for this reason that she actively participates in IEM WE activities and founded the IEM Women Engineers Southern and the Young Women Engineers Section of IEM – UTM Student Chapter.

An educational field trip is an integral part of Ir. Associate Professor Hayati Abdullah class activities.

Ir. Magdalene Tan Lee, recipient of IEM WE Award 2014, is full of passion and lives her life to the fullest as a woman engineer. When asked to describe her life as an engineer in a single word, she gave a radiant smile and answered: "Fulfilling."

Ir. Magdalene Tan is very active in our Women Engineers fraternity. She started her career as an electrical engineer in the switchboard manufacturing field after she graduated from University of Malaya in 1975. For more than 30 years, she worked as a professional engineer and raised her family at the same time.

She has a great sense of achievement. To her, success is not measured by monetary wealth or the number of friends she has made in the engineering world. Instead, it is the number of people, especially women engineers, whom she has touched and inspired.

Her formula for success is hard work and being useful in all working committees that she is a part of.

Since the early 1980s, she has always found the time to be actively involved in IEM activities. For many years she held the posts of Honorary Secretary and Vice President as well as worked tirelessly in the Excomm and IEM Council. She continued to hold a position in IEM Standing committees especially in Admission, E&Q and Training for several years. Her involvement in IEM grew when she was appointed a Board Member in the Board of Engineers Malaysia (BEM).

She hopes to see more women engineers in high ranking positions in public office, on the board of BEM and being elected as officers in IEM. In many of her talks, Ir. Magdalene Tan often spoke about the essential qualities of women engineers; she said women engineers should strive to be competitive, to maintain competency, to be creative and to be caring. These are the traits of successful engineers, especially women engineers. ■

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100,000	8,569.92	4,396.10	3,006.08	2,371.50	1,956.61	1,680.99	1,484.94	1,338.62	1,225.45	1,135.48
150,000	12,854.87	6,594.15	4,509.12	3,557.24	2,934.92	2,521.49	2,227.42	2,007.93	1,838.18	1,703.22
200,000	17,139.83	8,792.20	6,012.16	4,742.99	3,913.23	3,361.99	2,969.89	2,677.25	2,450.90	2,270.96

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Graveyard of Fishing Boats

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

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.*

It was early morning in December 2011. On board a 4WD vehicle, my friends and I left Nukus in western Uzbekistan and headed for Moynaq, 210km to the north. Our destination: The Graveyard Of Fishing Boats.

Nukus is the capital of the Republic of Karakalpakstan, the huge westernmost region of Uzbekistan which is rarely visited by tourists.

Two things here, however, attracted us – the Savitsky Karakalpakstan Art Museum in Nukus which has the largest art collection in Central Asia, and the Graveyard Of Fishing Boats near Moynaq.

It took us more than 3 hours to reach Moynaq, passing through vast expanses of grassland.

Nukus has a population of 230,000. Apart from the Art Museum, there is little here to attract tourists.

Moynaq is a much smaller place with a population of 12,000 only. However, it used to be a bustling fishing town on the Aral Sea. In fact it was the only seaport in otherwise land-locked Uzbekistan. But all fishing activity have ceased completely and the fish canneries in town have all closed down.

Most of the people have moved away and today, Moynaq is a ghost town populated by cotton field workers and elderly people looking after grandchildren whose parents have left to work in the cotton fields elsewhere.

The shrinking Aral Sea is now more than 150km from Moynaq and the once vibrant fishing fleet now lies rusting on the sand of the former seabed.

From a viewing platform in the north of the town, we saw the rusty steel hulls of 11 fishing boats on the seabed below.

A memorial in the shape of a sail in the centre of the platform bears a map of the Aral Sea, the town's name in Cyrillic and English alphabets, and the year 2011. At the edge of the platform were display boards showing the extent of the lake in 1960, 1970, 1990, 2000 and 2009 respectively, together with a write-up on the shrinking of the sea.

We walked down to the seabed to inspect the old fishing boats, trying to imagine what life was like in this town half a century ago.

The story of the Aral Sea is that of one of the most severe anthropogenic ecological disasters of all time. Straddling the border between Uzbekistan and Kazakhstan, it was the fourth largest lake on earth before 1960. It was an endorheic lake with two rivers discharging into it but it had no outlet.

In early 1960s, the government of USSR, of which the Central Asian "stans" were constituent Soviet republics at that time, decided to divert water from the two rivers to irrigate the desert in Central Asia for the planting of cotton and other crops. Using a network of canals, it succeeded in turning Uzbekistan into the world's largest exporter of the "white gold" in the late 1980s.

But most of the canals were so poorly constructed that much of the water was wasted through seepage and evaporation. Coupled with the large amount of water demanded by the thirsty cotton plant, this resulted in a drastically diminished discharge of the two rivers into the Aral Sea. Its level dropped and it shrank so rapidly that it is now only about 10% of its former size.

Satellite images show that the sea has become decimated into 3 small lakes. The south-eastern part of the sea has dried up and turned into a large desert. The salinity of the three lakes is so high that fish life has totally disappeared. Desertification of the sea has changed the climate in the surrounding areas for the worse. Now, summers in Moynaq are short and bitterly hot while winters are long and severely cold. Frequent salt and sand storms also badly affect the health of the population.

There is no plan yet to restore the Aral Sea to its pre-1960 state by increasing the flow of the two rivers into it, as an alternative means of livelihood has first to be established to replace cotton planting which is now the region's staple industry. ■

Editor's Note: We welcome contributions from all members on any travel stories.

Blood Donation Drive - YES (Sabah Branch)

A couple days after Chinese New Year, IEM – Y.E.S Sabah Branch successfully organised a Blood Donation Drive at Karamunsing Complex on 8 March 2015 together with the Queen Elizabeth Hospital's Blood Bank. This annual programme is part of Sabah IEM-YES community service to raise awareness of the need for and to collect blood to replenish the State's Blood Bank.

On that day, the committee members arrived at 9a.m. to arrange tables and chairs at the shopping mall as well as pack goodie bags from the various sponsors. The donation drive kicked off at 10a.m. sharp and finished at 4p.m. As the event slogan was "One pint of blood can save up to three lives", the young engineers took the opportunity to explain to the public the health benefits of donating blood regularly.

After six hours, 91 pints of blood were collected, exceeding the initial target of 80 pints. This blood donation drive received a lot of positive response and feedback from the public due to aggressive advertisements in the newspaper and social media networks. After the event, a certification of appreciation was presented to all the sponsors as a token of appreciation.

The blood donation drive also revealed that most of the public were not interested to donate blood because of a fear of needles and the belief that there were enough donors already.

IEM-YES Sabah Branch will be organising another blood donation drive on the second week of September in conjunction of IEM-YES Engineering Week to create greater awareness, as well as other activities to promote engineering to the public.

As part of the youth group's community service, the IEM-YES Sabah Branch also collaborated with Kota Kinabalu City Hall to clean up the beaches last month. ■

TEMUDUGA PROFESSIONAL

Tarikh: 18 May 2015

To All Members,

SENARAI CALON-CALON YANG LAYAK MENDUDUKI TEMUDUGA PROFESIONAL TAHUN 2015

Berikut adalah senarai calon yang layak untuk menduduki Temuduga Profesional bagi tahun 2015.

Mengikut Undang-Undang Kecil IEM, Seksyen 3.8, nama-nama seperti tersenarai berikut diterbitkan sebagai calon-calon yang layak untuk menjadi Ahli Institusi, dengan syarat bahawa mereka lulus Temuduga Profesional tahun 2015.

Sekiranya terdapat Ahli Korporat yang mempunyai bantahan terhadap mana-mana calon yang didapati tidak sesuai untuk menduduki Temuduga Profesional, surat bantahan boleh dikemukakan kepada Setiausaha Kehormat, IEM. Surat bantahan hendaklah dikemukakan sebulan dari tarikh penerbitan dikeluarkan.

Ir. Yam Teong Sian
Setiausaha Kehormat, IEM,

PERMOHONAN BARU

Nama	Kelayakan
KEJURUTERAAN AWAM	
CHRISTOPHER LIM	BSc (UTM) (CIVIL, 2002)
ELYA SHUHAIRA BINTI SHAFIE	BE HONS (UTM) (CIVIL, 2007)
HOR KOK SYNN, ERIC	BE HONS (PORTSMOUTH) (CIVIL, 1999)
MOHD YAZID BIN ABDULLAH	BE HONS (UTM) (CIVIL, 1981) MSc (UTM) (CONSTRUCTION MANAGEMENT, 2007)
NORISHAM BIN ABDUL TALIB	BE HONS (UPM) (CIVIL, 1999)
SHAIFUL EZAN BIN OMAR	BE HONS (UPM) (CIVIL, 2002)
SUZANA BINTI JAIT	BE HONS (UTM) (CIVIL, 1992)
ZALEHA BINTI JAMBUL	BE HONS (UiTM) (CIVIL, 2007)
KEJURUTERAAN ELEKTRONIK	
ADDIE IRAWAN HASHIM	MSc (USM) (ELECTRICAL & ELECTRONIC, 2005) PhD (CHIBA) (2012)
KEJURUTERAAN PERTANIAN	
NORBAITI BIN JARABE	BE HONS (UPM) (BIOLOGY & AGRICULTURAL, 2003)
KEJURUTERAAN KIMIA	
AHMAD ZULFADLI BIN MOHD GHAZALI	BE HONS (UTP) (CHEMICAL, 2007)
LUCAS BIN TAKIP	BSc (COLORADO) (CHEMICAL & PETROLEUM-REFINING, 1987) ME (UPM) (MANAGEMENT, 2006)
KEJURUTERAAN MEKANIKAL	
AHMAD ZAKI BIN MOHAMAD AFIFI	ME HONS (BRISTOL) (MECHANICAL, 2006)
HASSIM BIN IBRAHIM	BSc (WALES) (MECHANICAL, 1987)
MOHD MAZLAN BIN MAT ANI	BE HONS (UTM) (MECHANICAL-MANUFACTURING, 2010)

PERPINDAHAN AHLI

No. Ahli	Nama	Kelayakan
KEJURUTERAAN BIOPERUBATAN		
23071	SHAMILA ARIARATNAM	BE HONS (UPM) (ELECTRICAL & ELECTRONIC, 2000)
KEJURUTERAAN AWAM		
49423	ABDUL HADI BIN FIRUZ AHMAD	BE HONS (UiTM) (CIVIL, 2010)
49413	CHEN TIAN HEE	BE HONS (UTHM) (CIVIL, 2007)
42517	CHEW MEI LING	BE HONS (UNITEN) (CIVIL, 2006)
43177	CHOO KOK WAH	BE HONS (UTM) (CIVIL, 2009)
56466	LUQMAN BIN ISMAIL	BE HONS (UNITEN)(CIVIL, 2007)
27893	MOHD ZULHAM AFFANDI BIN MOHD ZAHID	BE HONS (USM) (CIVIL, 2007) MSc (USM) (CIVIL, 2012)
28263	SIA SOON YII	BE HONS (USM) (CIVIL, 2009)
72181	TAN JOO EE	BE HONS (UKM)(CIVIL & ENVIRONMENTAL, 2010)
43208	WONG TIAN KAI	BE HONS (TASMANIA) (CIVIL, 2007) M (MALAYA) (REAL ESTATE, 2011)
26864	YAZDI B. MD. MOKTAR	BE HONS (UKM) (CIVIL & STRUCTURAL, 2002)
KEJURUTERAAN ELEKTRIKAL		
No. Ahli	**Nama**	**Kelayakan**
24514	AHMAD BIN ABU SEMAN	BE HONS (UKM) (ELECTRICAL, ELECTRONIC & SYSTEMS, 1999) CONVERSION (UNITEN) (2012)
61960	AMIR HAMSAH BIN ARIFIN	BE HONS (UTHM) (CIVIL, 2011)
23240	CHIEW JUNE LOI	BE HONS (USM) (ELECTRICAL & ELECTRONIC, 2001)
70215	MAHENDREN JAGANATHAN	BE HONS (UNITEN)(ELECTRICAL & ELECTRONICS, 2002)
54225	MOHAMED FAIZAL AZNIL BIN MOHAMAED SAFFIAN	BE HONS (UNITEN) (ELECTRICAL POWER, 2005)
18065	PATRICK TEO TEIN	BE HONS (UTM) (ELECTRICAL, 1998)
KEJURUTERAAN ELEKTRONIK		
52561	ABANG RAZALI BIN MOHAMAD MUNIR	BE HONS (UNIMAS) (ELECTRONICS & TELECOMMUNICATIONS, 2007)
38343	IRHAN BIN AMRAN	BE HONS (UTM) (ELECTRICAL -ELECTRONICS, 2006)
KEJURUTERAAN MEKANIKAL		
70400	CHIN WAI LOON	BE HONS (UNITEN) (MECHANICAL, 2009)
29253	LEE CHOO MOU	BE HONS (LIVERPOOL JOHN MOORES) (MECHANICAL & MANUFACTURING, 2005)
41283	MOHAMAD FARIZ BIN MOHAMED NASIR	BE HONS (UTM) (MECHANICAL, 2006)
27967	MOHD JAFRIZAL BIN JAMALI	BE HONS (UPM) (MECHANICAL, 2004)
72588	TANG CHEE KHOAY	BSc (WICHITA) (MECHANICAL, 1993)
54604	WIRATMAN BIN ARMAN	BE HONS (UTM) (MECHANICAL-MARINE TECHNOLOGY, 2008)

PERMOHONAN BARU MENJADI AHLI

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AWAM		
22111	FAIRUL ZAHRI BIN MOHAMAD ABAS	BE HONS (BRADFORD) (CIVIL & STRUCTURAL, 1999)

Pengumuman yang ke-81

SENARAI PENDERMA KEPADA WISMA DANA BANGUNAN IEM

Institusi mengucapkan terima kasih kepada semua yang telah memberikan sumbangan kepada tabung Bangunan Wisma IEM. Ahli-ahli IEM dan pembaca yang ingin memberikan sumbangan boleh berbuat demikian dengan memuat turun borang di laman web IEM http://www.iem.org.my atau menghubungi secretariat di +603-7968 4001/5518 untuk maklumat lanjut. Senarai penyumbang untuk bulan June 2015 adalah seperti jadual di bawah:

NO.	NO. AHLI	NAMA
1.	19947	ABDOL SALAM BIN NS MOHAMED SARIFF
2.	18751	ABDUL AZIZ BIN AHMAD
3.	27472	ABDUL RASHID BIN HUSSAIN
4.	41118	AFARULRAZI BIN ABU BAKAR
5.	26903	AISHAH BINTI OTHMAN
6.	05930	ANANTARAJU PILLAI
7.	39230	AZWANIZAM BIN CHE ABD RAHMAN
8.	11435	BARKAWI BIN SAHARI
9.	08427	BONG KUEK POH, FREDERICK
10.	22005	CHAN TUCK LEONG
11.	08592	CHIEW HUEY SHENG
12.	25804	CHING CHEE KENG
13.	24198	CHUAH CHIN SENG
14.	27544	DATO' ABU BAKAR BIN AHMAD
15.	33726	DENNIS ANAK ENYANG
16.	22505	ENG KOK SONG
17.	12569	EWEDY BACHI
18.	06466	GUNASEGARAN S/O RAMACHANDRAN
19.	36347	HIEW FONG POH
20.	18662	HO BENG CHIANG, ALLAN
21.	61995	JAMALUDDIN BIN ABDULLAH
22.	18344	KAMAL NASHARUDDIN BIN MUSTAPHA
23.	23415	KAMSANI BIN AHMAD
24.	53723	KASTURIA S/O GOVINDAN
25.	07160	KOH JIT HUAT
26.	02289	LEE CHING TONG
27.	03530	LEE CHONG TEIK
28.	06166	LEE KIUN HONG
29.	25874	LEE WEI CHIEK
30.	12608	LENG BOON HOCK
31.	04727	LIM CHENG LIONG
32.	05549	LIM CHIEN CHIANG
33.	01687	LIM EWE CHYE
34.	13254	LIM JOO PERNG
35.	17948	LIM KEAN HOE
36.	00819	LOH HEAN LEONG
37.	06164	LOW AH HA
38.	08158	MAT NAWI BIN MOHAMAD
39.	05988	MAZELAN BIN MANSOR
40.	25860	MD RAZLI BIN AB RAHIM
41.	26740	MHD. SHUKREE BIN SHAHABUDIN
42.	13027	MO CHEE LIM
43.	08536	MOHAMED AMIN BIN KASIM
44.	04736	MOHAMMAD ZAINAL BIN MD. YUSOF
45.	06016	MOHD ELIAS BIN BURAN
46.	69485	MOHD FADLY BIN ASMAAI
47.	25174	MOHD RAPHEL AFFENDY BIN MOHAMED NAZAR
48.	42013	MOHD REDZUAN BIN ISMAIL
49.	12809	MOHD SABRI BIN ABDULLAH
50.	33894	MOHD SYARIZAL BIN HUSSIN
51.	20285	MOHD. RIADHI BIN HASHIM
52.	07983	MOHD. YUSOF BIN SULAIMAN
53.	23964	MU MUNG SIUNG
54.	11599	MUHAMAD GUNTOR MANSOR TOBENG BIN MANSOR TOBENG
55.	43623	NAZMAN BIN NAMSO
56.	03182	NEE CHOW YIT
57.	18655	NG YEOK POH
58.	21575	NGIM CHIN KIM
59.	28009	NOR AZAM AZIZ BIN BOGAL
60.	16532	NORDIN BIN MAASUM
61.	16288	NOR'IN BT MAN
62.	25614	NUR SHAZWANI BINTI MUHAMMAD
63.	58866	NURUL DAYANA BT. NASARUDDIN
64.	09852	ONG LYE SIONG
65.	54097	OON CHEEN SEAN
66.	14396	PHUA FOO YONG
67.	20014	POH HEON KHOON
68.	03462	RAMU S/O ANDY
69.	04633	SAW CHING HENG
70.	20421	SHAHRULNIZAM BIN MD. NUR
71.	70213	SIVALINGGAM A/L SELLIAH
72.	02417	SU YU HAI
73.	08710	SYED IDRUS BIN ABD. RAHMAN
74.	43067	TAN CHEW PENG
75.	47591	TAN LEY TIENG
76.	47048	TAN SIN NYAP
77.	24789	TAN WEE KOK
78.	04077	TEH GEK HUAT
79.	14400	TEO JIN ANN
80.	13205	TOH BOON CHIEW
81.	02659	WEE KIM SIANG
82.	06495	WONG HEE CHIONG
83.	09881	WONG HOCK CHUAN
84.	18436	WONG KIM HUNG
85.	11811	WONG KIM SIEW
86.	03594	WONG SIEW HEE
87.	36316	WONG YONG MING
88.	08426	YAP YAN NAM
89.	29572	YOU KONG HEAN
90.	13639	ZAINAL BIN MOHD
91.	43735	ZULKIFLI BIN AHMAD AHTAR

PERMOHONAN BARU / PEMINDAHAN AHLI

Persidangan Majlis IEM yang ke-395 pada **19 Januari 2015** telah meluluskan sebanyak **4,308** ahli untuk permohonan baru dan permindahan ahli. Berikut adalah senarai ahli mengikut disiplin kejuruteraan:

DISIPLIN	GRED KEAHLIAN									
	FELO	SENIOR	AHLI	COMPANION	SISWAZAH	"INCORPORATED"	"AFFILIATE"	"ASSOCIATE"	SISWA	JUMLAH
Aeronautikal									1	**1**
Aeroangkasa			1							**1**
Pertanian									1	**1**
Automotif					1					**1**
Biokimia									3	**3**
Bioperubatan					1					**1**
Biosistem										
Perkhidmatan Bangunan										
CAD/CAM										
Kimia			8	1	21				279	**309**
Awam			25	3	139				687	**854**
Awam & Struktur									26	**26**
Komunikasi										
Komputer					1					**1**
Sistem Komputer										
Komputer & Komunikasi			1						12	**13**
Pembinaan										
Sistem Kawalan										
Elektrikal & Elektronik									139	**139**
Elektrikal	1		16	3	73				486	**579**
Elektronik			10	9	36	1	1		548	**605**
Elektronik & Kawalan Instrumentasi										
Elektromekanikal					1					**1**
Tenaga										
Alam Sekitar			1		1				5	**7**
Proses & Makanan					1				2	**3**
Geoteknik			1							**1**
Lebuhraya										
Industri									2	**2**
Sistem Maklumat										
Teknologi Maklumat										
Instrumentasi										
Kawalan & Instrumentasi			3							**3**
Pembuatan			3		11			1	281	**296**
Sistem Pembuatan										
Marin										
Bahan				1	2				2	**5**
Metallurgi										
Mekanikal	2		24	2	103				1163	**1294**
Mekatronik				1	3	1			80	**85**
Mikroelektronik									11	**11**
Mineral										
Sumber Mineral										
Perlombongan										
Arkitek Naval										
Petroleum					30				14	**44**
Polimer										
Pengeluaran										
Struktur					1					**1**
Telekomunikasi			3						6	**9**
Sumber Air					1					**1**
Gas									11	**11**
JUMLAH	**3**	**0**	**96**	**20**	**426**	**2**	**1**	**1**	**3759**	**4308**

Senarai nama ahli dan kelayakan adalah seperti di muka surat 47 – 50. Institusi mengucapkan tahniah kepada ahli yang telah berjaya.

Ir. Prof. Dr Jeffrey Chiang Choong Luin
Setiausaha Kehormat
Institusi Jurutera Malaysia

KEAHLIAN

PERMINDAHAN AHLI KEPADA AHLI FELLOW

No. Ahli	Nama	Kelayakan
KEJURUTERAAN ELEKTRIKAL		
19550	PERUMAL S/O NALLAGOWNDEN	BE HONS (CNAA-PORTMOUTH) (ELECTRICAL & ELECTRONIC, 1986) MSC (WALES) (1988)
KEJURUTERAAN MEKANIKAL		
13588	JASAN AHPANDI BIN SULAIMAN	BSC (CNAA-SUNDERLAND) (MECHANICAL 1982)
18343	TAN CHEE FAI	BE HONS (UPM) (MECHANICAL, 2000) MSC (UPM) (MANUFACTURING SYSTEM, 2002) PHD (EINDHOVEN) (2010)

PEMINDAHAN AHLI KEPADA AHLI KORPORAT

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AEROANGKASA		
33902	KAMARUL ARIFIN BIN AHMAD	BE HONS (USM) (AEROSPACE, 2001) MSC (CRANFIELD) (AERODYNAMICS, 2003)
KEJURUTERAAN ALAM SEKITAR		
25755	LIM LIK PUEH, LEONARD	BE HONS (UTM) (CIVIL - ENVIRONMENTAL, 2003) ME (UTM) (CIVIL - ENVIRONMENTAL MANAGEMENT, 2004) PHD (CAMBRIDGE) (2010)
KEJURUTERAAN AWAM		
32592	AZMAN BIN YUSUF	BE HONS (USM) (CIVIL, 1997)
49572	CHAN HOOI SAN	BE HONS (UTM) (CIVIL, 2002)
62055	LAW SOON GUAN	BE HONS (MANCHESTER) (CIVIL, 2004)
36647	LEE KOK SUN	BE HONS (SWINBURNE) (CIVIL, 2004)
41280	LESLY AJENG	BE HONS (MALAYA) (CIVIL, 2006)
20352	LIM LEA PIENG	BE HONS (USM) (CIVIL, 1999)
50198	LIM TING AUN	BE HONS (BIRMINGHAM) (CIVIL, 2003)
36821	LOH KONG YEW	BE (QUEENSLAND) (CIVIL, 2006)
45315	MOHD ZULKARNAIN BIN MOHD SIDIK	BE HONS (MALAYA) (CIVIL, 2009)
50199	NG WEE HEAN	BE HONS (MELBOURNE) (CIVIL, 2010)
26418	SAW LAY TENG	BE HONS (KUITTHO) (CIVIL, 2002)
49243	THAYALAN A/L BALAKRISHNAN	BE HONS (KLIUC) (CIVIL, 2007)
20890	TIONG CHOONG HAN	BE HONS (SALFORD) (CIVIL, 1999)
43654	TONG WEN JIE	BE HONS (UTP) (CIVIL, 2007)
09832	ZAINUDDIN BIN YUSOFF	BSC (HARTFORD) (CIVIL, 1986)
36267	ZALIPAH BINTI IBRAHIM	BE HONS (UKM) (CIVIL & STRUCTURAL, 2000)
KEJURUTERAAN ALAM SEKITAR		
58704	ABU THALHAH BIN MOHD LAZIM	BE HONS (MALAYA) (ELECTRICAL, 2007)
51302	LIEW ZHAN LIU	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2006)
35602	MD SHAHILI BIN ABDULLAH	BE HONS (UITM) (ELECTRICAL, 2000)
34844	MOHD JUFRI BIN ISMAIL	BE HONS (UTM) (ELECTRICAL, 2007)
66410	NG JOO YOONG	POST GRAD DIP (ECUK) (ELECTRICAL, 2011)
51273	RAJA SAHARUDDIN BIN RAJA UDA	BE HONS (UTP) (ELECTRICAL & ELECTRONIC, 2007)
38738	SYED NORAZIZUL BIN SYED NASIR	BE HONS (UTM) (ELECTRICAL, 2008)
61188	YUSRIZAL BIN MOHD YUSOF	BE HONS (UITM) (ELECTRICAL, 2004)
KEJURUTERAAN ELEKTRONIK		
66101	AZFA RIZAL BIN ABDUL LATIF	BE HONS (UTM) (ELECTRICAL - ELECTRONICS, 2003)
25647	HARIKRISHNAN RAMIAH	BE HONS (USM) (ELECTRICAL & ELECTRONIC, 2000)
48508	MOHD KHAIR HASSAN	BE HONS (PORTSMOUTH) (ELECTRONIC & ELECTRICAL, 1998) ME (UTM) (ELECTRICAL, 2001)
38758	WONG CHAN YEE	BE HONS (SHEFFIELD) (ELECTRONIC-COMPUTING, 1995)
KEJURUTERAAN INSTRUMENTASI & KAWALAN		
53714	NORHALIZA BINTI ABDUL WAHAB	BE HONS (UTM) (ELECTRICAL-INSTRUMENTATION & CONTROL, 1999) ME (ELECTRICAL, 2001)
25530	TAN SZE HOE, WILLIAM	BE HONS (UTM) (ELECTRICAL, 2006)
KEJURUTERAAN KIMIA		
29832	BOEY KITT ONN	ME HONS (NOTTINGHAM) (CHEMICAL, 2007)
19846	CHOW PUI HEE	BE HONS (UPM) (CHEMICAL, 2001)
36307	NURBALQIS BINTI MOHAMMAD NOH	BE HONS (UTP) (CHEMICAL, 2006)
23295	SITI RAFIDAH BINTI AB RASHID	BE HONS (UTM) (CHEMICAL, 2004) MSC (UTP) (PROCESS INTEGRATION, 2007)
25494	YAP MIN YEE	BE HONS (UTM) (CHEMICAL-BIOPROCESS, 2002) ME (MALAYA) (SCIENCE, 2006)
KEJURUTERAAN MEKANIKAL		
48442	ABDUL MALIK BIN ZAINAL ABIDIN	BE HONS (USM) (MECHANICAL, 2005)
54510	FAIT BIN HANAPI	BE HONS (UITM) (MECHANICAL, 2006)
51650	MARDIANTO BIN ASLI	BE HONS (IIUM) (MECHANICAL-AUTOMOTIVE, 2008)
52508	MOHAMMAD AZRUL BIN AHMAD	BE HONS (UTM) (MECHANICAL- MARINE TECH, 2006)
21537	MOHD FAIRUSHAM BIN GHAZALI	BE HONS (UITM) (MECHANICAL, 2002) MSC (MANCHESTER) (THERMALPOWER & FLUIDS, 2005) PHD (SHEFFIELD) (2012)
28621	MOHD SHAFIQ SHARHAN BIN ZAINAL	BE HONS (UTM) (MECHANICAL, 2008)
43093	MOHD ZAINUDDIN BIN AWANG AHMAD	BE HONS (UM) (MECHANICAL & MATERIALS, 1999)
64639	NAVIN A/L RAMASAMY	BE HONS (UTHM) (MECHANICAL, 2011) ME (MALAYA) (MECHANICAL, 2012)
66462	NOORAZIZI BIN MOHD SAMSUDDIN	BE HONS (UTM) (MECHANICAL,2007) ME (UTM) (MECHANICAL, 2011)
17418	ROZLI BIN ZULKIFLI	BE HONS (LIVERPOOL) (MECHANICAL, 1994) MSC (LIVERPOOL) (MATERIALS, 1996) PHD (UKM) (MECHANICAL & MATERIAL, 2011)
43201	SOO WENG TSONG	BE HONS (UTM) (MECHANICAL, 2005)
49230	TAN LI ZHI	ME (SHEFFIELD) (MECHANICAL, 2004)
37301	WAN MUZAFFAR WAN MUHAMMAD	BE HONS (MALAYA) (MECHANICAL, 2005)
48938	YAP WENG SUON	BE HONS (UTAR) (MECHANICAL, 2009) ME (UTM) (MECHANICAL, 2013)
35544	YONG CHEN WEI	BE HONS (SHEFFIELD) (MECHANICAL, 1999)
KEJURUTERAAN PEMBUATAN		
59105	MOHAMAD HAFIZ BIN HARUN	BE HONS (UTM) (MECHANICAL-AUTOMOTIVE, 2003) MSC (UTEM) (MECHANICAL, 2013)
57032	YEN KIM SAM	BE HONS (USM) (MANUFACTURING, 2007) MSC (USM) (MECHANICAL, 2009) PHD (USM) (2012)
KEJURUTERAAN TELEKOMUNIKASI		
50195	LIM MUN YEE, JOANNE	BE HONS (MONASH) (ELECTRONIC, 2009)
69489	SITI NURBAYA BINTI MOHAMED	ME (IMPERIAL COLLEGE) (ELECTRICAL & ELECTRONIC, 2009)

PERMOHONAN MENJADI AHLI KORPORAT

Nama	Kelayakan
KEJURUTERAAN AWAM	
ABHIRAM PRATIBHAYANAND GOPINATH	BE (MYSORE) (CIVIL, 1976) MSC (IIT, MADRAS) (A STUDY OF TWIN BOX TUNNELS, 1979) PHD (IIT, MADRAS) (ANALYTICAL AND EXPERIMENTAL INVESTIGATION ON TWIN BOX TUNNELS, 1982)
CHUNG CHOON KEE	BE HONS (UNITEN) (CIVIL, 2007)
FAIZUL AZLAN BIN LOMAN	BE HONS (UKM) (CIVIL & STRUCTURAL, 2000)
HAFIZUL AIMME BIN CHE HAMID	BE HONS (MALAYA) (CIVIL, 2007)
ISMARUBY BINTI ZOLKIFLY	BE HONS (UNIMAS) (CIVIL, 2001)
LEE MIN LEE	BE HONS (UTM) (CIVIL, 2005) PHD (UTM) (CIVIL, 2009)
MUHAMAD FUAD BIN SHUKOR	BE HONS (UTM) (CIVIL, 2007) ME (UTM) (CIVIL, 2008)
SITI NORBAITI BINTI MOHD YUSUF	BE HONS (UTM) (CIVIL, 2005) MSC (UITM) (CIVIL-STRUCTURES, 2011)
VASANTHI P. PACHAIAPPAN	BE (BHARATHIDASAN) (CIVIL, 1992)
KEJURUTERAAN ELEKTRIKAL	
ARMAN BIN CHE OTHMAN	BE HONS (UTM) (ELECTRICAL, 2001)
AZMIL BIN ZAIN	BE HONS (UITM) (ELECTRICAL, 2007)
ESWARAN SUBRAMANIAM	BSC (PURDUE) (ELECTRICAL, 1999)
KAMARUL HISYAM BIN KAMARUZZAMAN	BE HONS (UITM) (ELECTRICAL, 2001)
MUHAMMAD AMIR BIN MD HANAPIAH	BE HONS (MALAYA) (ELECTRICAL, 2002)
SHARIZAL BIN SHAMURI	BE HONS (WALES, CARDIFF) (ELECTRICAL & ELECTRONIC, 1997) MSC (STRATHCLYDE) (ELECTRICAL POWER WITH BUSINESS, 2004)
SUHAIMI BIN TAJUDIN	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2002)
ZAINOL ALAM BIN MD. ZAIN	BE HONS (UNITEN) (ELECTRICAL POWER, 2007) ME (UTM) (ELECTRICAL-POWER, 2010)
KEJURUTERAAN ELEKTRONIK	
ABU BAKAR BIN HASAN	BE HONS (UTM) (ELECTRICAL, 2010) MSC (CRANFIELD INSTITUTE) (DIGITAL SYSTEMS, 1984) PHD (UNITEN) (2013)
AHMAD FARID BIN ABIDIN	BE HONS (UKM) (ELECTRICAL, ELECTRONIC & SYSTEMS ENGINEERING, 2000)
KHOR OOI HOKE	BE HONS (MONASH) (ELECTRICAL & COMPUTER SYSTEMS, 2000)
LOKHMAN BIN MOHD FADZIL	BSC (WISCONSIN - MILWAUKEE) (ELECTRICAL. 1990) MSC (USM) (MECHANICAL, 2008)
MOHD HASZUAN BIN SUKAIRI	BE HONS (UKM) (ELECTRICAL, ELECTRONIC & SYSTEM, 2001)
SURIAN BIN RASOL	BE HON (UTM) (ELECTRICAL-MECHATRONIC, 2001)
KEJURUTERAAN GEOTEKNIKAL	
MOHD KHAIRI BIN KAMARUDIN	BE HONS (WOLVERHAMPTON) (CIVIL, 2004) MSC (BIRMINGHAM) (GEOTECHNICAL, 2008)
KEJURUTERAAN INSTRUMENTASI & KAWALAN	
ONG TIEN SOON	BE HONS (UMS) (ELECTRICAL & ELECTRONIC, 2001)
KEJURUTERAAN KIMIA	
AW SEI HOWE	BE HONS (UTM) (CHEMICAL, 2010)
RAJENDRAN A/L MUTHUVELOO	BE HONS (MALAYA) (CHEMICAL, 1988)
TAY BOON SUAN	BE HONS (UKM) (CHEMICAL, 2001)
KEJURUTERAAN KOMPUTER & KOMUNIKASI	
NORHANA BINTI ARSAD	BE HONS (UPM) (COMPUTER SYSTEM & COMMUNICATIONS, 2000) MSC (UPM) (COMMUNICATIONS & NETWORK, 2003) PHD (ELECTRONIC & ELECTRICAL, 2010)

KEJURUTERAAN KOMPUTER & KOMUNIKASI

NORHANA BINTI ARSAD	BE HONS (UPM) (COMPUTER SYSTEM & COMMUNICATIONS, 2000) MSC (UPM) (COMMUNICATIONS & NETWORK, 2003) PHD (ELECTRONIC & ELECTRICAL, 2010)

KEJURUTERAAN KOMPUTER & KOMUNIKASI

NORHANA BINTI ARSAD	BE HONS (UPM) (COMPUTER SYSTEM & COMMUNICATIONS, 2000) MSC (UPM) (COMMUNICATIONS & NETWORK, 2003) PHD (ELECTRONIC & ELECTRICAL, 2010)

KEJURUTERAAN MEKANIKAL

ABANG ASHAARI BIN ABDUL RAHMAN	BE HONS (UTP) (MECHANICAL, 2005)
ABDUS SAMAD BIN MAHMUD	BSC (MISSOURI AT COLUMBIA) (MECHANICAL, 1994) MSC (USM) (MECHANICAL, 2000) PHD (WESTERN AUSTRALIA) (ENGINEERING, 2010)
HASNIZAN BINTI HASHIM	BE HONS (UTM) (MECHANICAL, 2006)
MOHD ZULKIFLY BIN ABDULLAH	BE HONS (WALES) (MECHANICAL, 1990) MSC (STRATHCLYDE) (MECHANICAL-THERMODYNAMICS & FLUID MECHANICS, 1994) PHD (STRATHCLYDE) (1997)
MUHAMAD SAYUTI BIN MUSTAPHA	BE HONS (UITM) (MECHANICAL, 2000)
ROSLENDA BINTI HASAN	BE HONS (UITM) (MECHANICAL, 1999)
SHAMIL BIN ABU HASSAN	BSC (COLORADO) (MECHANICAL, 1988)
WONG SHUEN YUAN	BE HONS (UTM) (MECHANICAL, 2003)
ZAISMADI BIN ISMAIL	BE HONS (UKM) (MECHANICAL & MATERIALS, 1996)

KEJURUTERAAN PEMBUATAN

TEH THIAM OUN	BE (NUS) (MECHANICAL, 1977) MSC (MALAYA) (ENGINEERING SCIENCE, 2002)

KEJURUTERAAN TELEKOMUNIKASI

ROSDISHAM BIN ENDUT	BE HONS (MALAYA) (TELECOMMUNICATIONS, 2000) MSC (UPM) (COMMUNICATIONS & NETWORK, 2004)

LULUS PPP (BEM)

KEJURUTERAAN ELEKTRIKAL

AZIAN BINTI ABD AZIZ @ ABD AZIS	BE HONS (UTM) (ELECTRICAL, 2002)

KEJURUTERAAN MEKANIKAL

ANA MIRAA BINTI MOHD YUSOF	BE (QUEENSLAND) (MECHANICAL, 2009)

KEJURUTERAAN MINING

LOH KOK HU	BE (MELBOURNE) (1970)

KEJURUTERAAN PETROLEUM

AZDI BIN ABASS	BSC (TEXAS A&M) (PETROLEUM, 1995)

PEMINDAHAN KEPADA 'COMPANION'

No. Ahli	Nama	Kelayakan
KEJURUTERAAN ELEKTRONIK		
24604	NAJIDAH BINTI HAMBALI	B.E.HONS.(USM) (ELECTRONIC, 2004) M.E.SC.(UNSW) (SYSTEMS & CONTROL, 2007)
KEJURUTERAAN KIMIA		
26793	FAZLI BIN RAHIM	B.E.HONS.(UTP) (CHEMICAL, 2001) MSC (UKM)(CIVIL & STRUCTURAL, 2012)
KEJURUTERAAN MEKANIKAL		
23017	AHMAD REDUEAN BIN AHMAD TAKRIM	B.E.HONS.(UITM) (MECHANICAL, 2005)

PERMOHONAN MENJADI AHLI 'COMPANION'

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AWAM		
75283	CHAI PAK SHIN, ERWIN	B.E.HONS.(UTM) (CIVIL, 2006) M.E.(CIVIL-GEOTECHNICS, 2009)
74386	FAIRUL AZLIN BIN ABD AZIZ	B.E.HONS.(UTM)(CIVIL, 2005)
73107	MARIAM BINTI ABD KADIR	B.E.HONS.(UKM) (CIVIL & STRUCTURAL, 1990) M.SC.(UUM) (OCCUPATIONAL SAFETY & HEALTH, 2008)
KEJURUTERAAN BAHAN		
74392	WONG AI MING	B.E.HONS.(MONASH) (MATERIALS, 1981)
KEJURUTERAAN ELEKTRIKAL		
75277	DR. RAMLI BIN ADNAN	B.SC.(SOUTH DAKOTA STATE)(ELECTRICAL, 1985) M.SC.(DREXEL) (ELECTRICAL, 1993) P.HD.(UKM)(ELECTRICAL, ELECTRONIC & SYSTEMS, 2007)
75279	HABIBAH BINTI HASHIM	B.SC.HONS. (NOTTINGHAM) (ELECTRICAL & ELECTRONIC, 1983)
75278	NOFRI YENITA BINTI DAHLAN	B.E.HONS.(UNITEN) (ELECTRICAL POWER, 2002)
KEJURUTERAAN ELEKTRONIK		
74391	DR. LIM BOON HAN	B.E.HONS.(UTM) (ELECTRICAL, 1998) P.HD.(UTM)(OPTICAL ENGINEERING, 2003)
75281	DR. MOHAMAD HUZAIMY BIN JUSOH	B.E.HONS.(UITM) (ELECTRICAL, 2004) M.E.(UKM) (COMMUNICATION & COMPUTER, 2007) P.HD. (KYUSHU)(SATELLITE COMMUNICATION & SPACE SCIENCES, 2013)
75280	DR. SHAHRIL IRWAN BIN SULAIMAN	B.E.HONS.(UNITEN) (ELECTRICAL & ELECTRONICS, 2002) M.E.SC.(UNSW) (PHOTOVOIC, 2004) PH.D.(UITM)(ELECTRICAL, 2012)
74388	HASRULNIZAM BIN HASHIM	B.E.HONS.(UTM) (ELECTRICAL-TELECOMMUNICATION, 2006) M.E.(UTM)(ELECTRICAL-MECHATRONICS & AUTOMATIC CONTROL, 2013)
74387	MOHD ZAINI BIN ABDUL MAJID	B.E.HONS.(UITM) (ELECTRICAL, 2004)
75282	NORHASHIM BIN MOHD ARSHAD	ADV. DIP.(ITM) (ELECTRICAL-ELECTRONICS, 1988)
75275	ROS SHILAWANI BT S. ABDUL KADIR	B.E.HONS.(UNITEN) (ELECTRICAL & ELECTRONICS, 2000)
75276	ZUNAIRAH BINTI HAJI MURAT	B.SC.(SYRACUSE) (ELECTRICAL, 1989)
KEJURUTERAAN MEKANIKAL		
74390	AHMAD FAUZI BIN FUDZIN	B.E.HONS.(UTM) (MECHANICAL, 1992)
KEJURUTERAAN MEKATRONIK		
74389	SUHAIMI BIN ZAKARIA	B.E.HONS.(USM) (ELECTRONIC, 2004) M.E.(UTM)(ELECTRICAL-MECHATRONICS & AUTOMATIC CONTROL, 2013)

PEMINDAHAN KEPADA AHLI SISWAZAH

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AWAM		
42747	BAN POH KOON	B.E.HONS.(UTHM)(CIVIL, 2012
38927	CHANG KENT CHIN	B.E.HONS.(UTHM)(CIVIL, 2011)
57606	CHIN TIAN XIAN	B.E.HONS.(UTM)(CIVIL, 2013)
31111	FAIDHIL BIN MOHAMAD	B.E.HONS.(UPM)(CIVIL, 2010)
38463	FARAH NADIAH BINTI OTHMAN	B.E.HONS.(UMP) (CIVIL, 2010) M.SC.(UTM)(CIVIL, 2013)
32044	FAZLINA BINTI KASMANI	B.E.HONS.(USM)(CIVIL, 2008)
32749	GOBINDARAN A/L RAJU	B.E.HONS.(KLIUC)(CIVIL, 2011)
53590	HENG JIA WANG	B.E.HONS.(UKM)(CIVIL & STRUCTURAL, 2013) B.SC.(DUISSBURG ESSEN)(CIVIL, 2013)
52851	HNG BOON CHONG	B.E.HONS.(UTHM)(CIVIL, 2013)
43897	HON CHA YAT, MOSES	B.E.HONS.(UCSI)(CIVIL, 2013)
40527	KENNETH ALBERTO	B.E.HONS.(UTM)(CIVIL, 2012)
34591	KIMBERLY ANAK JAYUM	B.E.HONS.(UPM) (CIVIL, 2012) M.SC.(LEEDS)(ENRG. PROJECT MANAGEMENT, 2013)
39642	LAU LEE SZE, STEPHANIE	B.E.HONS.(UTHM)(CIVIL, 2010)
57612	LIM YOK CHIN	B.E.HONS.(UTM)(CIVIL, 2013)
51476	LO VUN TSUN	B.E.HONS.(SWINBURNE) (CIVIL, 2013)
26011	LOKE YIN YING	B.E.HONS.(KUITTHO) (CIVIL, 2006) M.E.(MELBOURNE)(CIVIL, 2011)
26625	MOHD FARIZ BIN MANSORUDIN	B.E.HONS.(UITM)(CIVIL, 2006)
44203	MOHD HAZWAN BIN OTHMAN	B.E.HONS.(UITM)(CIVIL, 2011)
33023	MOHD NAJIB BIN MOHD YUSOP	B.E.HONS.(UTM) (CIVIL, 2009) M.SC.(GLAMORGAN) (CIVIL, 2013)
40541	NOOR AMIRAH BINTI ABDUL AZIZ	B.E.HONS.(UTM)(CIVIL, 2011)
53610	NOR AZRA BTE AB WAHAB	B.E.HONS.(UKM)(CIVIL & STRUCTURAL, 2013)
33522	NORLIZA BINTI MOHAMAD RASOL	B.E.HONS.(UITM)(CIVIL, 2009)
27819	NUR ASHIKIN BINTI MARZUKI	B.E.HONS.(UITM)(CIVIL, 2009)
45959	NURUL ASHIKIN BINTI ABDULL RAHMAN	B.E.HONS.(UMP)(CIVIL, 2011)
55712	SITI ASHELA BINTI ZAINOL ABIDIN	B.E.HONS.(UPM)(CIVIL, 2013)
42217	SITI KATIJAH BINTI SAIMAN	B.E.HONS.(UTHM)(CIVIL, 2011)
40298	SITI NUR AISYAH BINTI SALAHUDDIN	B.E.HONS.(UTM) (CIVIL, 2011) M.E.(UTM)(CIVIL, 2012)
26568	SITI SAFURA BINTI AHMAD DARDIRI	B.E.HONS.(UPM)(CIVIL, 2006)
53627	TEO LII BINN	B.E.HONS.(UKM)(CIVIL & ENVIRONMENTAL, 2013)
55683	WONG KOK WENG	B.E.HONS.(UPM)(CIVIL, 2013)
18004	YIP KIM LENG	B.E.HONS.(UTM)(CIVIL, 2000)
48029	YOO YI HENG	M.E.HONS.(NOTTINGHAM) (CIVIL, 2012)
KEJURUTERAAN ELEKTRIKAL		
48279	ABDUL RAHMAN BIN ABAS AZMI	B.E.HONS.(UITM) (ELECTRICAL, 2012)
47027	AMIR AFIQ BIN ISMAIL	B.E.HONS.(UITM)(CIVIL, 2011)
64893	AMIRUL HAFIZ B. MOSLY	B.E.HONS.( ) (ELECTRICAL-CONTROL, INSTRUMENTATION & AUTOMATION, 2014)
38482	ATIKAH BINTI RAZI	B.E.HONS.(UTM) (ELECTRICAL, 2010) M.E.(MALAYA) (INDUSTRIAL ELECTRONIC & CONTROL, 2013)
54170	KUEH JIN HOWE	B.E.HONS.(SWINBURNE) (ELECTRICAL & ELECTRONIC, 2013)
42165	MUHAMMAD AZIZI BIN MOHD WAHIDI	B.E.HONS.(UTP) (ELECTRICAL, 2011)
42151	NADIA ASYIKIN BINTI KASSIM	B.E.HONS.(UTP) (ELECTRICAL & ELECTRONIC, 2011)
56948	RUMIZI BINTI MOHD NASIR	B.E.HONS.(UMP) (ELECTRICAL, 2013)
44767	TAN YEK WHA	B.E.HONS.(UTP) (ELECTRICAL, 2012)
KEJURUTERAAN ELEKTRONIK		
21028	ANWAR BIN MOHD ABD MAHI	B.E.HONS.(UITM) (ELECTRONIC, 2001) M.E.(UTM)(ELECTRONIC, 2013)
51090	KISHVA AMBIGAPATHY	B.E.HONS.(USM) (ELECTRONIC, 2013)

Note: *Remaining list would be published in the July 2015 issue. For the list of approved "ADMISSION TO THE GRADE OF STUDENT", please refer to IEM web portal at http://www.myiem.org.my.*

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Cement Soil Mixing & Grouting, KVMRT

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Keller provides Ground Engineering Solutions throughout ASEAN with offices in Malaysia, Singapore, Vietnam, Indonesia and Hong Kong. These solutions include our traditional ground improvement techniques, such as vibro stone columns, deep soil mixing, grouting, etc. Together with our local Keller companies, Resource Piling and Ansah, we also offer Bored Piles, Driven Piles, Jacked-in Piles, Ground Anchors, Micropiles, Sub-structure works, etc. Our capability in design enables us to provide efficient and economical, design and construct solutions for our clients.

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