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(Penang Branch)

INGENIEUR PENANG

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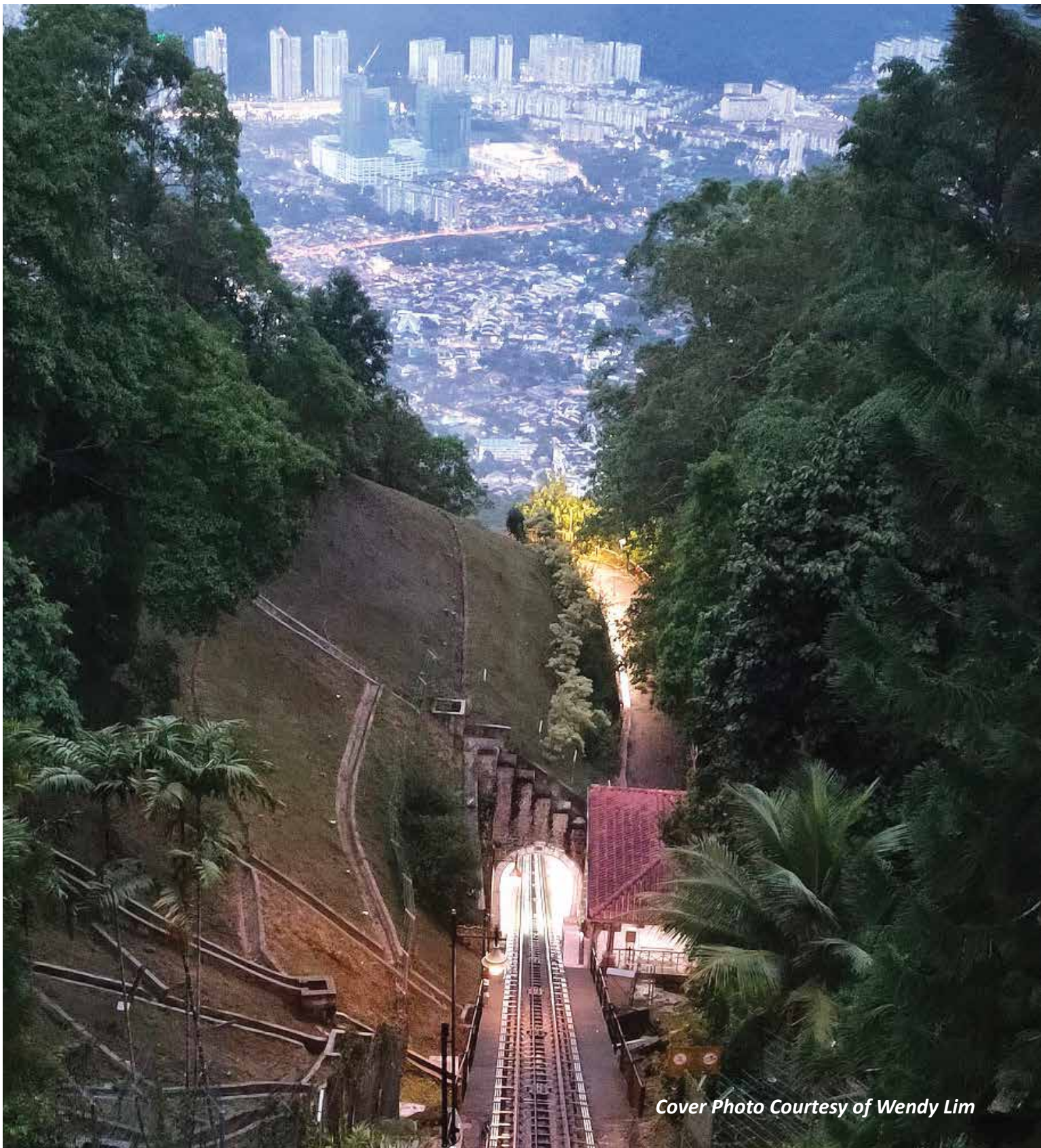
March 2022

COMPLIMENTARY ISSUE



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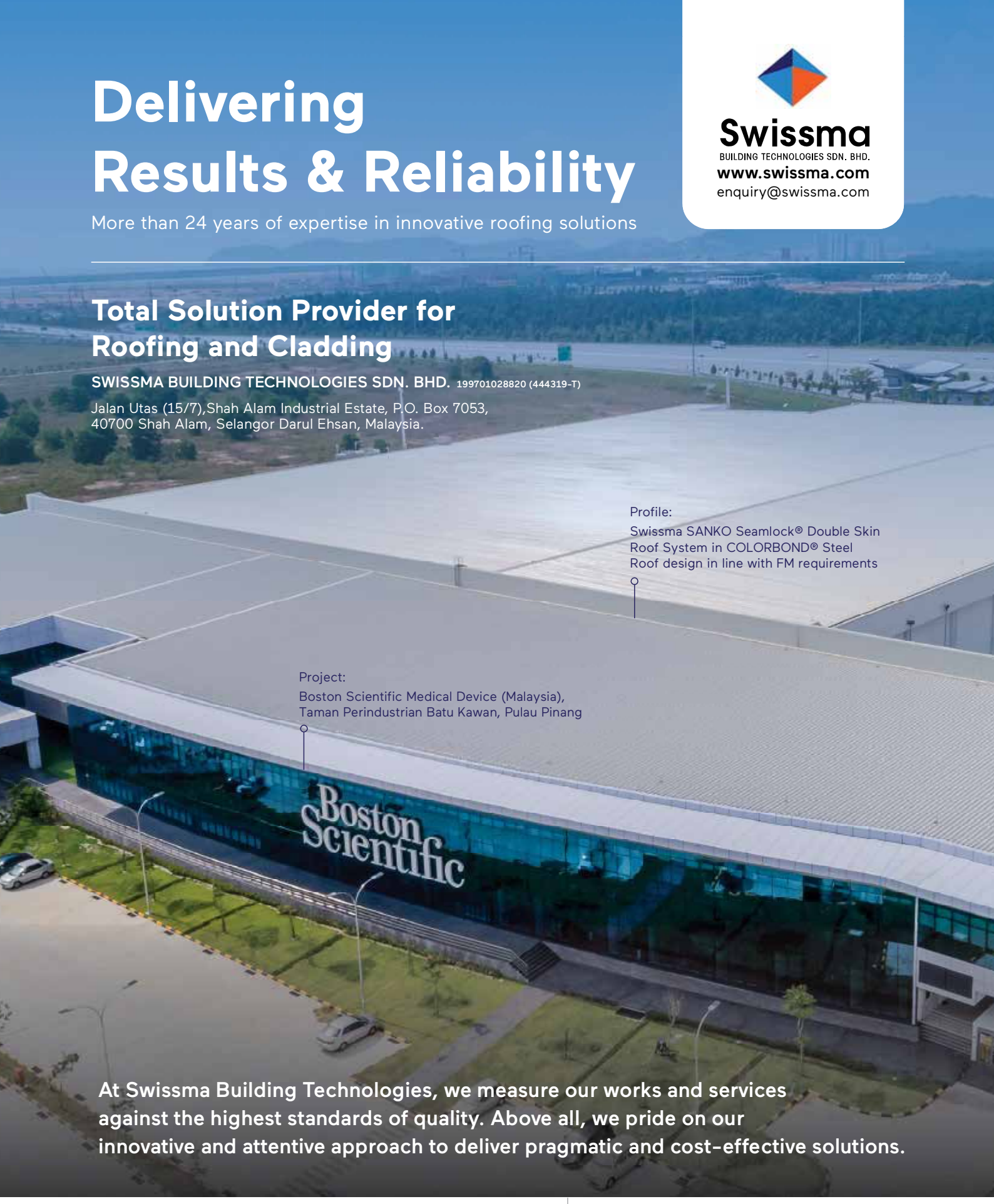

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CONTRIBUTE YOUR ARTICLES

Volunteer to contribute articles to the newsletter contact IEM secretariat (iempenangbranch@gmail.com)

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CHAIRMAN'S CORNER

Ir. Bernard Lim Kee Weng

Greetings to IEM Penang Engineers,

Another year has passed by, we are now in the year 2022. I pray that everyone is well and safe.

This is our 2nd edition of Ingeniur, Penang. I applaud the newsletter editorial team for working very hard to persistently pushing and finally come out with this edition of newsletter.

In the year 2021, it is really a challenging year for all of us. We are now coming to the 3rd year of Covid-19 pandemic.

I am very happy that over the period of 2021, through the hard work and effort render by the various IEM Penang Branch sub-committee, we are very fortunate to be able to organize quite a number of activities, like technical webinar, workshop, conference, and even technical visit and virtual sports event like E-finity run.

On December 3rd, 2021, IEM Penang Branch was given the opportunity to organize TIA2.0 Seminar with the theme, "Urban Transportation-Engaging local community participation for sustainable urban transport solution" collaboration with Malaysia Association of Local Authorities (MALA) in conjunction with the MOU Ceremony signed between MALA and IEM at SPICE Convention Centre, Penang. This is indeed a memorable event as the seminar was officiate by Yang Berhormat Dato' Sri Dr. Haji Ismail Bin Haji Abd Muttalib, Timbalan Menteri Kementerian Perumahan dan Kerajaan Tempatan.

Furthermore, the executive committee had also managed to schedule various courtesy visit to different government and semi-government bodies like Penang Development Corporation (PDC), Penang Skill Development Corporation (PSDC) and Majlis Bandaraya Seberang Perai (MBSP).

Last but not least, my sincere gratitude to all my fellow engineers, friends, and sponsors for their warm and generous support to IEM Penang Branch.

I would also like to wish everyone a blessed and fruitful year ahead, 2022.

Before I end my message, I would like to leave with the following quote, "Strive for perfection in everything you do. Take the best that exists and make it better. When it does not exist, design it." — Sir Henry Royce

Ir. Ong Sheng How

EDITORIAL NOTES

Another year has gone by in a blink of an eye. The year 2021 has been a challenging year for all of us. However, there is hope that we will be seeing the light at the end of the tunnel soon. Let us fight this pandemic together, and with one heart, one mind, one goal, we shall win this battle.

In this edition of the *INGENIEUR PENANG,* the editorial team is pleased to publish the many interesting articles and events updates to our members and readers, particularly focus on the reports for various activities and events by the sub-committees for year 2021.

We would also like to thank our sponsors for the kind support that you have for us by placing your advertisement in our bulletin. We truly appreciate it and we hope we could get your continuous support in our future editions to come. For more information on advertising, please contact our IEM Penang Branch secretariat office.

For members who are interested to share your writings or artworks for our enjoyment, either in the form of technical or non-technical articles, or any other topics such as leisure, adventures, poems, etc., you are welcome to submit it to the IEM Penang Branch secretariat.

Thank you and may the year 2022 be a good and prosperous year for everyone. Cheers.

PROGRESS DEVELOPMENT ON:

PART III

EARTHQUAKE DESIGN CONSIDERATIONS OF BUILDING STRUCTURES IN PENANG ISLAND. A COLLABORATIVE STUDY BETWEEN IEM (Pg)/ USM/UiTM.

Ir. Chua Beng Seong
Chair, Earthquake Engineering Sub-Committee

BACKGROUND INFORMATION

This is a continuation of a series of technical sharing on the progress development of the collaboration work between IEM (Pg)/USM/UiTM on the above subject of study. Part II report/sharing was published in the Issue No. 2/2021 of the INGENIUR PENANG.

As a recap, Part II paper elaborated on the general scope of studies and briefly highlighted the design specifications adopted for Wind Loads and Seismic Loads requirements.

In this article, a more in-depth elaboration on two of the seismic design assumptions adopted shall be discussed, namely the Limit State Design philosophy and the Design Horizontal Elastic Spectra.

2.0 EARTHQUAKE DESIGN PHILOSOPHY

Eurocode 8 (EN 1998-1) asks for a **two-level seismic design** establishing explicitly the two following requirements:

a. No-Collapse Requirement or Ultimate Limit States (ULS):

Prevent collapse during worst credible event (1:475 yrs) while accepting some structural damage. In other word, design seismic action (for local collapse prevention) with 10% probability of exceedance in 50 years which corresponds to a **mean return period of 475 years.**

This is illustrated by assuming a Poisson model for the occurrence of earthquakes, the Mean Return Period T_R is given by:

$T_R = 1/ v = -T_L / \ln(1-P)$

where,

T_L = reference time period

P = probability of exceedance of such threshold

when T_L=50 years, P=10%, therefore T_R = 475 years.

Satisfaction of this limit state asks for the verification that the structural system has simultaneously lateral resistance and energy-dissipation capacity. This is met by designing the structure to be ductile.

Besides the verification of the individual structural elements (for resistance and ductility), in accordance with specific rules for the different structural materials, the Ultimate Limit State verification entails the checking of:

- The overall stability of the structure (overturning and sliding);
- The foundations and the bearing capacity of the soil;
- The influence of the second order effects &
- The influence on non-structural elements to avoid detrimental effects.

b. Damage Limitation Requirement or Serviceability Limit States (SLS):

Prevent structural damage and limit non-structural damage during the maximum expected event in the lifetime of a structure (1 in 95 yrs).

This is met by providing adequate stiffness and strength through linear behavior.

Design limitation seismic action with 10% probability of exceedance in 10 years which corresponds to a **mean return period of 95 years**.

The damage limitation seismic action is sometimes also referred to as the **Serviceability Seismic Action**.

EC8 (EN 1998-1) Clause 4.4.3.2 establishes the following limits to the inter-storey drift (relative displacement divided by the inter-storey height) due to the frequent earthquake (serviceability seismic action).

- 0.5% for buildings having non-structural elements of brittle materials attached to the structure

- 0.5% for buildings having non-structural elements of brittle materials attached to the structure:
  dr v ≤ 0.005h

- 0.75% for buildings having ductile non-structural elements:
  dr v ≤ 0.0075h

- 1.0% for buildings having non-structural elements fixed in a way so as not to interfere with structural deformations or without non-structural elements:
  dr v ≤ 0.010h

where,
d_r = the design inter-storey drift
h = the storey height;
v = reduction factor which takes into account the lower return period of the seismic action associated with the damage limitation requirement.

For this study, we shall adopt d_r v ≤ 0.0075h

MS EN 1998-1:2015 (National Annex: 2017):
Only Class IV buildings need to be checked for damage limitation limit state based on a return period of 475 year, where v =0.5.

Comparatively, in EC8 (EN 1998-1):

Class I & II: v =0.5
Class III & IV: v =0.4

For this study, we shall adopt the value of v to be 0.5.

Therefore, d_r ≤ 0.0075h/0.5 ≤ 0.015h or h/66.7

Figure 1.0 & 2.0 tabulate the inter-storey drift vs No. of storey of the test buildings with 11x 3 bays.

No of Bays	Lx x Ly = 11 x 3		Storey						
Slenderness Ratio	λ =3.67		10	15	20	25	30	35	40
Height	H	m	43.2	63.2	83.2	103.2	123.2	143.2	163.2
Max. Inter-Storey Drift	imit	mm	30.0	30.0	30.0	30.00	30.00	30.00	30.00
(dr. v ≤ 0.0075h, v=0.5)	EQx	mm	3.58	3.06	3.40	4.60	6.16	7.56	7.14
	EQy	mm	4.66	4.20	4.40	5.00	6.16	7.28	6.68

Fig. 1.0 Inter-Storey Drift vs Storey For 11x3 Bay

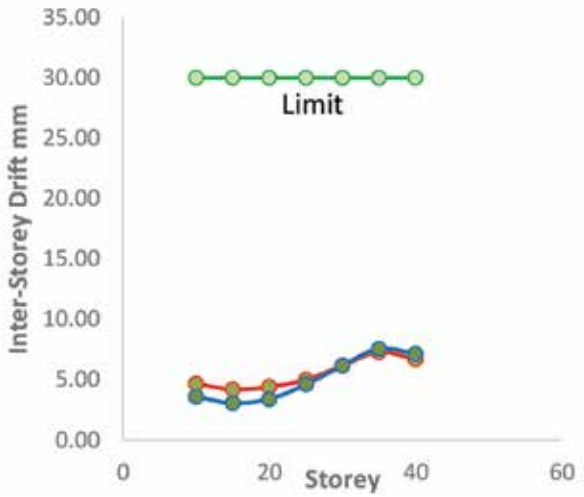

Fig. 2.0 Graphical Representation of Inter-Storey Drift

Figure 1.0 & 2.0 also show that the inter-storey drifts (under EQx & EQy) due to the Design Peak Ground Acceleration of 0.06g are far less than the limit criteria.

3.0 RELIABILTY DIFFERENTIATION

The levels of the seismic action described above (Section 2) are meant to be applied to ordinary structures and are considered the **Reference Seismic Action** (which is anchored to the reference peak ground acceleration a_{gR}). However, EC8 (EN 1998-1) foresees the possibility to differentiate the target reliabilities (of fulfilling the no-collapse and damage limitation requirements) for different types of buildings or other constructions, depending on its importance and consequences of failure.

In practical terms EC8 (EN 1998-1) prescribes that:

Reliability differentiation is implemented by classifying structures into different importance classes. An important factor γ_1 is assigned to each importance class.

The different levels of reliability are obtained by multiplying the reference seismic action by this important factor γ_1 which, in case of using linear analysis, may be applied directly to the action effects obtained with the reference seismic action.

The definition of the buildings belonging to the different importance Classes is given in Table 4.3 of EC8 (EN 1998-1). The Importance Factor (γ_1) for the Malaysian Standard **MS EN 1998-1:2015 (National Annex: 2017)** is given in **Table E1 of Annex E**.

Building importance class	Importance factor 1 (γ_1)	Recommended building categories
I	0.8	Minor construction
II	1.0	Ordinary buildings (individual dwellings or shops in low rise buildings)
III	1.2	Buildings of large occupancies (condominiums, shopping centers, schools and public buildings)
IV	1.5	Lifeline built facilities (hospitals, emergency services, power plants and communication facilities

Figure 3.0 - Table E.1. of Annex E (normative) - Importance Factor (γ_1) for Malaysia

It is to be noted that EC8 (EN1998-1) recommends the Importance factor 1 (γ_1) = 1.4 for the Building Importance class IV.

Accordingly, for the different importance classes, the design ground acceleration, a_g is equal to a_{gR} times the important factor γ_1:

$$\mathbf{a_g = a_{gR} \cdot \gamma_1}$$

For this study, we shall adopt the value of a_g = 0.05g x 1.2 = 0.06g.

4.0 SEISMIC ACTION

The seismic action to be considered for design purposes shall be based on the estimation of the ground motion expected at each location in the future. ie it should be based on the hazard assessment.

Seismic hazard is normally represented by hazard curves that depict the exceedance probability of a certain seismologic parameter (for instance the peak ground acceleration, velocity or displacement) for a given period of exposure, at a certain location (Normally assuming a rock ground condition).

In EC8 (EN 1998-1), the seismic hazard is described by the value of the **reference peak ground acceleration** on the ground type A, (a_{gR}) as explained in section 3.0 above.

The reference peak ground acceleration ($\mathbf{a_{gR}}$), for each seismic zone, corresponds to the reference return period $\mathbf{T_{NCR}}$, chosen by the National Authorities for the seismic action for the no-collapse requirement (as indicated above, the recommended value is $\mathbf{T_{NCR}}$ = 475 years).

5.0 GROUND CONDITIONS

The earthquake vibration at the surface is strongly influenced by the underlying ground conditions and correspondingly the ground characteristics very much influence the seismic response of the structures.

EC8 (EN 998-1) provides **five ground profiles**, denoted Ground types A, B, C, D and E described by the stratigraphic profiles and parameters given in Table 3.1 of the code.

Correspondingly, the five ground profiles applicable to Malaysia topography are represented in **Table N.A.1 of MS EN 1998-1:2015 (National Annex: 2017)**.

6.0 HORIZONTAL ELASTIC SPECTRA

The ground motion is described in EC8 (EN 1998-1) by elastic ground acceleration response spectrum $\mathbf{S_e}$, denoted as the "elastic response spectrum".

The basic shape of the horizontal elastic response spectrum, normalized by $\mathbf{a_g}$, is as presented in Fig 3.1 of EC8 (EN 1998-1).

The basic spectral shape is composed by four branches:

- Very low period branch, from peak ground acceleration to the constant acceleration branch
- Constant acceleration
- Constant velocity
- Constant displacement

These branches are separated by three "corner" periods: T_b, T_c and T_D which are Nationally Determined Parameters (NDPs), allowing the adjustment of the spectral shape to the seismo-genetic specificities of each country.

$S_e(T)$ is the elastic response spectrum;

T is the vibration period of a linear single-degree-of-freedom system;

$\mathbf{a_g}$ is the design ground acceleration on type A ground ($\mathbf{a_g = \gamma_1 a_{gR}}$);

T_B is the lower limit of the period of the constant spectral acceleration branch;

T_C is the upper limit of the period of the constant spectral acceleration branch;

T_D is the value defining the beginning of the constant displacement response range of the spectrum;

S is the soil factor;

η is the damping correction factor with a reference value of η = 1 for 5% viscous damping.

EC8 (EN 1998-1) further defines the Elastic Response Spectrum $S_e(T)$ by the expressions in CL 3.2.2.2.

7.0 DESIGN SPECTRA FOR ELASTIC ANALYSIS

To avoid explicit inelastic structural analysis in design, the capacity of the structure to dissipate energy, through mainly ductile behavior of its elements and/or other mechanisms, is taken into account by performing an elastic analysis based on a response spectrum reduced with respect to the elastic one, henceforth called a **"Design Spectrum" S_d (T).** This reduction is accomplished by introducing the **behavior factor q**.

The upper limit value of the behavior factor q, introduced to account for the dissipation capacity, shall be derived from each design direction as follow:

$q = q_0 . k_w \geq 1.5$, where:

q_0 is the basic value of the behavior factor, dependent on the type of the structural system and on elevation;

k_w is the factor reflecting the prevailing failure mode in structural systems with walls.

EC8 (EN 1998-1) Table 5 shows the basic value of the behavior factor **q_0**, for systems regular in elevation.

It is to be noted that in Penang Island where the reference Peak Ground Acceleration **(a_{gR})** is only 0.05g, the value of **q** shall be taken as 1.5 as allowed for under CL 5.3.3 of **EC8 (EN 1998-1).**

Based on the above, we are able to develop the Design Horizontal Spectrum for **a_g =0.06g** applicable to the typical Penang Island soil profile as shown in **Figure 4.0.**

8.0 CONCLUDING REMARKS

The collaborative study between IEM(Pg)/USM/UiTM is currently in its third-year phase.

In **EC8 (EN 1998-1),** the damage limitation seismic action or **Serviceability Seismic Action** only requires Inter-storey Drift to be checked. There is no provision for the Horizontal Displacement requirement. It can also be safely concluded that the inter-storey drifts due to the Design Peak Ground Acceleration of 0.06g are non-critical. Having said that, the Horizontal Displacement due to Wind Loads shall not be over-looked.

Ground Type	S	T_B	T_C	T_D	β	q	a_g/g	Damping Ratio, η	T (Sec)	Accel	Note:
D	1.35	0.1	0.8	1.5	0.2	1.5	0.06	0.05	0.00	0.0540	T=0
									0.05	0.0945	$0<=T<=T_B$
									0.10	0.1350	$T_B<=T<=T_C$
									0.50	0.1350	$T_B<=T<=T_C$
									0.80	0.1350	$T_C<=T<=T_D$
									1.00	0.1080	$T_C<=T<=T_D$
									1.30	0.0831	$T_C<=T<=T_D$
									1.50	0.0720	$T_D<=T$
									1.60	0.0633	$T_D<=T$
									1.80	0.0500	$T_D<=T$
									2.00	0.0405	$T_D<=T$
									3.00	0.0180	$T_D<=T$
									4.00	0.0120	T>=4s
									5.00	0.0120	T>=4s

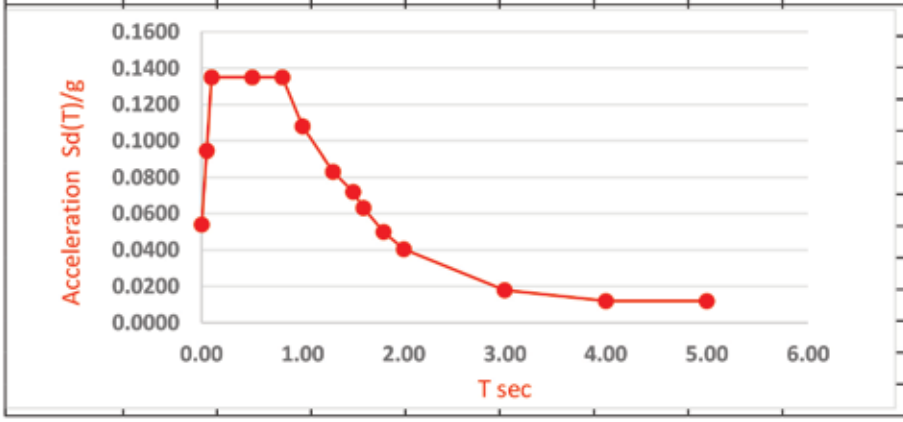

Figure 4.0 Design Horizontal Spectrum For a_g = 0.06g

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COURTESY VISIT TO PENANG DEVELOPMENT CORPORATION (PDC)

Report by Ir. Teh Siew Yin

Dato' Mohd Bazid Haji Abd Kahar delivering a presentation on PDC to IEM Penang Branch.

On 28th September 2021, the IEM Penang Branch, represented by its 11 committee members paid a virtual courtesy visit to Penang Development Corporation (PDC). It was a privilege and an honor to be accorded a warm welcome by 6 PDC representatives. The CEO of PDC, Dato' Mohd Bazid Haji Abd Kahar announced that the introduction of IEM to him was unfortunately a bit late as he was about to retire. However, he believed that his successor will be able to follow through and continue with the collaboration with IEM. Dato Bazid stressed on the importance of communication and a good working relationship with IEM. It is important for IEM to obtain first-hand information on PDC plans and projects rather than from other sources. He was glad to be given the opportunity to present PDC's strategic plan and where it's heading to.

Dato' Bazid, Ir. Dato' Yeoh, Noorazreen Morad and Zulkifli Yusoff presented PDC's vision, mission, organizational structure and core activities. PDC is a financially independent statutory body controlled by the Board which has to report to the Economic Planning Unit of the Prime Minister's Department.

The 12-member Board consists of:

- Chief Minister (Chairman)
- Deputy Chief Minister I
- Deputy Chief Minister II
- State Secretary
- State Financial Officer
- 3 EXCO members
  - Housing, Local Government, Town & Country Planning
  - Infrastructure & Transport
  - Trade, Industry & Entrepreneur Development
- Ministry of Economic Affairs representative
- Ministry of Finance representative
- Ministry of International Trade & Industry representative
- Independent

Dato' Ir. Yeoh Lean Huat along with his PDC staff and together with the committee members of IEM Penang Branch via Zoom platform.

PDC has more than 400 staff and Dato' Bazid is assisted by Ir. Dato' Yeoh Lean Huat, Dato' Jamil Bin Ibrahim and En. Aziz Bin Bakar. Their 5 main core activities are industrial land development, township development, urban redevelopment, housing development and investment. PDC has been implementing these activities via land reclamation, land acquisition and urban regeneration.

IEM Penang Branch Chairman, Ir. Bernard Lim introduced the IEM Penang Branch as well as its committee members. His desire to promote science and making IEM more relevant to society can be seen in the many recent activities especially those involving government bodies. PDC is welcomed to use IEM Penang Branch as a platform to reach out to engineers in Penang. He will also extend technical services to PDC if required. Hopefully there will be collaboration such as workshops, dialogues, etc. between both parties in the future.

COURTESY VISIT TO DATUK BANDAR MBSP ON OCTOBER 18, 2021

Report by Ir. Bernard Lim Kee Weng

On 18 October 2021, IEM Penang Branch paid a courtesy visit to the Datuk Bandar Majlis Bandaraya Seberang Perai, Pulau Pinang

IEM Penang Branch Committee paid the courtesy visit through a hybrid mode with some committee attended online and some physically. The courtesy visit was attended by the Datuk Bandar MBSP, YBhg Dato' Sr Haji Rozali Bin Haji Mohamud, YBrs Tuan Haji Baderul Amin Bin Hamid, Pemangku Setiausaha Bandaraya and officers of MBSP Engineering department.

IEM Penang Branch Excomm attending the courtesy visit virtually.

During the meeting, IEM Penang Branch Chairman brief Datuk Bandar, MBSP, updates relating to IEM Penang Branch, its organization, and its readiness to serve MBSP in whatever capacity relating to engineering matters.

Courtesy visit between IEM Penang Branch Excomm with Datuk Bandar MBSP, Pemangku Setiausaha MBSP and MBSP Engineers.

After the courtesy visit, IEM Penang Branch presented a plaque as a token of appreciation to Datuk Bandar MBSP and witness by Pemangku Setiausaha Bandaraya MBSP.

IEM Penang Branch thank Datuk Bandar MBSP, Pemangku Setiausaha Bandaraya and the officers of MBSP engineering for spending their valuable time.

Presentation of plaque by IEM Penang Branch Chairman to Datuk Bandar MBSP.

MEMORANDUM OF UNDERSTANDING (MOU) CEREMONY BETWEEN IEM AND MALA

Report by Ir. Bernard Lim Kee Weng

On 03 December 2021, the signing of the Memorandum of Understanding (MOU) Ceremony was held between Malaysia Association of Local Authorities (MALA) and IEM. The MOU is for a period of 3 years.

The MOU ceremony was held during the Traffic Impact Assessment (TIA) 2.0 "Urban Transportation-Engaging Local Community Participation for Sustainable Urban Transport Solution" held at SPICE Convention Centre, Penang.

The signing ceremony was attended by YBhg. Dato' Ar. Yew Tung Seang, Datuk Majlis Bandaraya Pulau Pinang and as President of Malaysia Association of Local Authorities (MALA), YBhg. Datuk Zainal Bin Abu, Datuk Bandar Majlis Bandaraya Melaka Timbalan President MALA, Ir. Ong Ching Loon President The Institution Of Engineers, Malaysia (IEM) and Ir. Bernard Lim Kee Weng, Chairman, The Institution Of Engineers, Malaysia (IEM) Penang Branch together with other distinguished guest and local authorities representatives.

This is indeed a memorable event for IEM as this MOU as MALA constitute 97 local authorities around Malaysia. The MOU was signed to express interest to establish, to foster and to promote on several basis for cooperation and collaborations between all the MALA members as well as and all the IEM branches in Malaysia. Here are some images capturing this memorable event.

MOU Signing Ceremony between IEM and MALA.

TECHNICAL VISIT TO YONGYANG SDN BHD "ROOF TOP SOLAR SYSTEM"

Report by
Ir. Wong Jian Choon

Ms Regine Choo's presentation

Presentation in Yongyang's meeting hall

Display hall

Yongyang's Managing Director, Mr Choo

Roof top solar panel installation

Q&A Session

Solar panel with support bracket

Skylift as transportation to roof top

IEM representative presented certificate of appreciation to Ms Regine Choo

Group photo for IEM members and host

On 27th Nov 2021, IEM Penang Branch has organised a technical visit with 20 pax branch members to Yongyang Sdn Bhd located in Jalan Baru, Perai, Penang. Due to Covid-19 pandemic, the participant has been limited to maximum of 25 pax. All the participants are requested to comply with the Covid-19 safety standard of procedure, where participants have to be fully vaccinated, provide RTK test result before the visit and shall wear face mask/face shield during the visit.

The participant registration at Yongyang Sdn Bhd started on 9.00am, IEM members had signed on the attendance and collected the goodies bag with commercial brochure and souvenir. The participants were welcomed by Yongyang Sdn Bhd managing director, Mr Choo and the project director, Ms Regine Choo.

On 9.30am, a welcome speech was given by Ms Regine Choo, then, continued with the briefing about Yongyang Sdn Bhd company profile and the solar installation system. Yongyang Sdn Bhd is one of the Registered Photovotaic (PV) Service Provider under Sustainable Energy Development Authority (SEDA). Regine has introduced and explained on the solar energy system industry background, the challenges for the solar energy system, government policy implementation and brief design/installation of the solar energy system. Some past projects have been introduced with their installation difficulties faced and the solution to overcome it. Also, the current real-time monitoring system for the solar energy system is presented during the briefing.

After an hour technical briefing, a tea break of 20min was given. During the tea break, breakfast was served, and the participants can have a visit to the display hall. In the display hall, Yongyang's staffs were ready to give a presentation on the equipment & device to be installed for the solar energy system.

Then, around 10.50am to 11.30am, the participants have been carried up by a skylift to Yongyang office's roof top and visited the exact solar system installation. The participants can personally observe the installed material like the solar PV panel with the support bracket, cable trunking and cable. There were few staffs on the roof top to explain about the safety procedure and the solar installation procedure.

On 11.30am, all the participants have gathered in the meeting hall and the Q&A session has been carried on. Few questions about the monitoring system and future trend on solar energy system have been asked by the participants, very comprehensive explanation was given by the host.

The technical visit ended at 12.00 noon when IEM representative presented a token of appreciation from IEM to Ms Regine Choo, and continued by the group photo taking session. This was a very memorable technical visit and every participant felt very grateful for the hospitality and generosity shown by the host.

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GEOTECHNICAL ENGINEERING SUB-COMMITTEE 2021 - 2022

Reported by :
Ir. Khor Wei Huat

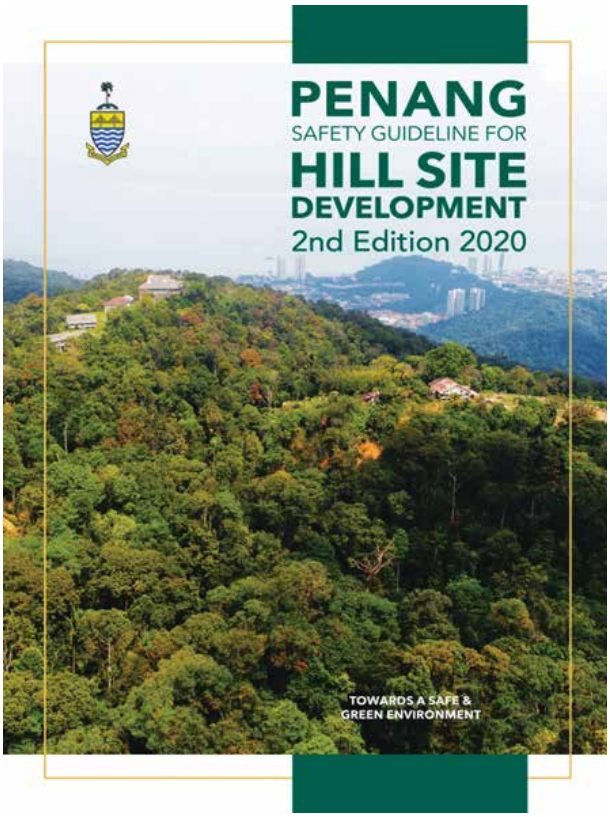
Geotechnical Engineering Sub-Committee (GESC) is a sub-committee formed by The Institution of Engineers, Malaysia (IEM) Penang Branch with the aim of attending matters relating to geotechnical engineering for our IEM Penang branch.

IEM Penang Branch's GESC March 2021 to March 2022 sub-committee members are represented by:

- Dato' Ir. Dr Goh Teik Cheong (Leader)
- Dato' Ir. Ng Sin Chie
- Ir. Yau Ann Nian
- Ir. Baddrul Hisham
- Ir. Khoo Koon Tai
- Ir. Leng Boon Hock
- Ir. Teh Siew Yin
- Ir. Khor Wei Huat

In year 2021, GESC has initiated a 1-day Geotechnical Engineering Seminar with four speakers of very senior and renowned engineers to share their experiences. However, the Seminar has been postponed for several times due to Movement Control Orders and the chain effects from COVID-19 pandemic. The GESC intends to conduct a physical seminar to ensure the participants are able to focus and interact with the speakers during the Seminar.

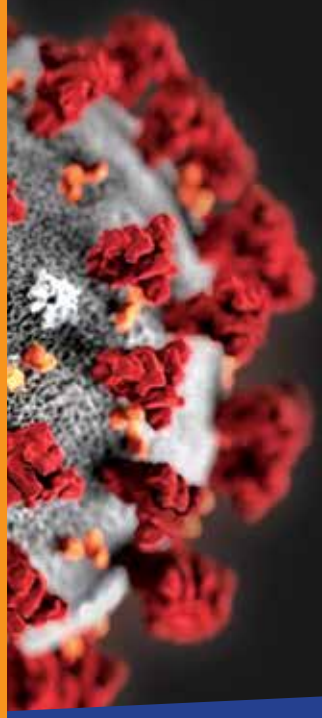
On 2nd February 2021, GESC attended to the courtesy invitation from MBPP Engineering Department to review on the Safety Guideline for Hill Site Development, 2nd Edition 2020. The meeting was held online and chaired by the MBPP Head of Engineering, Ir. Rajendran together with the officers from Geotechnical division, namely En. Razif, En. Hanafi, Mr. Tan Jia Jun, Ms Katherine and En. Muhamad Faiz. During the meeting, Ir. Rajendran briefed GESC on the highlights of the newly published Safety



Guideline for Hill Site Development, 2nd Edition 2020, followed with discussion on the queries raised by GESC from the perspectives of practitioners in geotechnical engineering. From the meeting, GESC has obtained the clarity from MBPP Engineering Department on the enhancement made in the updated Guideline.

In September 2021, IEM received a request from MBPP Engineering Department to provide review to the draft of *Garispanduan Keselamatan Aktiviti Pertanian Di Kawasan Berbukit, Pulau Pinang 2021* (Safety Guideline for Agriculture Activities on Hill Site). More than 80 IEM members attended the online meeting hosted by MBPP to discuss the draft guideline. MBPP head of engineering department, Ir. Rajendran A/P Anthony presented the draft guideline to IEM members and encouraged them to provide feedbacks for improvement. IEM Chairman Ir. Bernard along with GESC members compiled the feedbacks provided by IEM members and submitted their review to MBPP for consideration and perusal.

The GESC together with leadership of IEM Penang Branch Chairman, plans to organise more geotechnical engineering activities for our fellow members.



MEDICAL & HEALTH

Related Talk Series By IEM Penang Branch Medical Sub-Committee Group

By: George Lim Jing Wei

The World Health Organization (WHO) has declared the novel coronavirus (COVID-19) outbreak as a global pandemic on March 11, 2020. The pandemic has not only threatened our health, becoming a disruption to our lives, but also changed the landscape of healthcare and public health communications. In response to the pandemic, The Institution of Engineers Malaysia, Penang Branch has taken initiatives to organise a series of medical-related webinars to highlight the importance of health and raise awareness within the community. IEM Penang Branch is proud to present the webinar as a virtual platform where the leading experts are able to share their in-depth knowledge in the medical field, and solve common "myths" among the public in response to their topics of expertise.

IEM Penang Branch Medical sub-committee group under the leadership of Associate Professor Ir. Dr. Yee Hooi Min has successfully organised 6 online medical talks launched over "Zoom Online Meeting" platform and Facebook Live. It has managed to invite 6 renowned speakers from well-known health care centre and reputable academic institution from Penang, namely Hospital Seberang Jaya, Pantai Hospital, Kulim General Hospital, Loh Guan Lye Specialists Centre, Island Hospital, Lam Wah Ee Hospital and Universiti Sains Malaysia.

On 8th August 2021, the first medical webinar with the title of "Ask the Expert: What are my options for Backpain?", was successfully presented by Dr Gee Teak Sheng, specialist consultant neurological and spine surgeon. As a general observation from the public, although the backpain is increasingly ubiquitous nowadays especially to a working adult, however, due to the pandemic situation and "Work from Home" working culture, backpain situation is worsen, which are most likely caused by ergonomics and poor posture, wrong sitting position. From the webinar, we learnt the common differences between ergonomics back pain and sinister back pain. Dr Gee also shared with us some tips and the correct posture which is really helpful to us. The second online talks successfully attracted approximate 60 participants to join.

As Malaysians, we are proud to share the pride of enjoying the worldwide ranking of delicious cuisine and fine eateries. Conversely, it is sad to see that the chronic kidney disease has become a crucial health problem in our society. On 20th of August 2021, Dr Leong Chong Men, a Consultant Nephrologist and Physician from Kulim General Hospital has been invited to give us some ideas and advice about some common practices to take good care of our kidneys. He illustrated how a kidney function as filter to remove waste products in our blood stream. He also explained that the risk factors of kidney failures, where majorly were diabetes and high blood pressure. With reference to the statistics presented by Dr Leong, it can be seen that Malaysian is experiencing an uptrend of New Dialysis patients. Dr Leong's talks has empowered more than 300 virtual audiences to have better awareness on the eating habits and taking care of our Kidneys.

Furthermore, it is also of great honor to invite Dr Lim Chee Pin as a distinguished speaker for the IEM medical group online medical talks series. Dr Lim Chee Pin is an Anesthesiology and Critical Healthcare Specialist who is serving in Loh Guan Lye Specialists Centre. Throughout the presentation, Dr Lim has widened our horizon that his roles as an Anesthesiologist, is not only as simple as injecting local anesthesia. In fact, he also plays extremely crucial roles in every aspect of surgical procedure to plan for the most appropriate anesthetic on account of all factors, including the patients' medical condition and medical history. Dr Lim introduced the basics in anesthetics and anesthesiology, as well as the types or divisions of anesthesia. Moreover, he also managed to cover his specialty in intensive care. The online talk has recorded 22 participants on zoom online platform and few hundreds other audiences have viewed up to date.

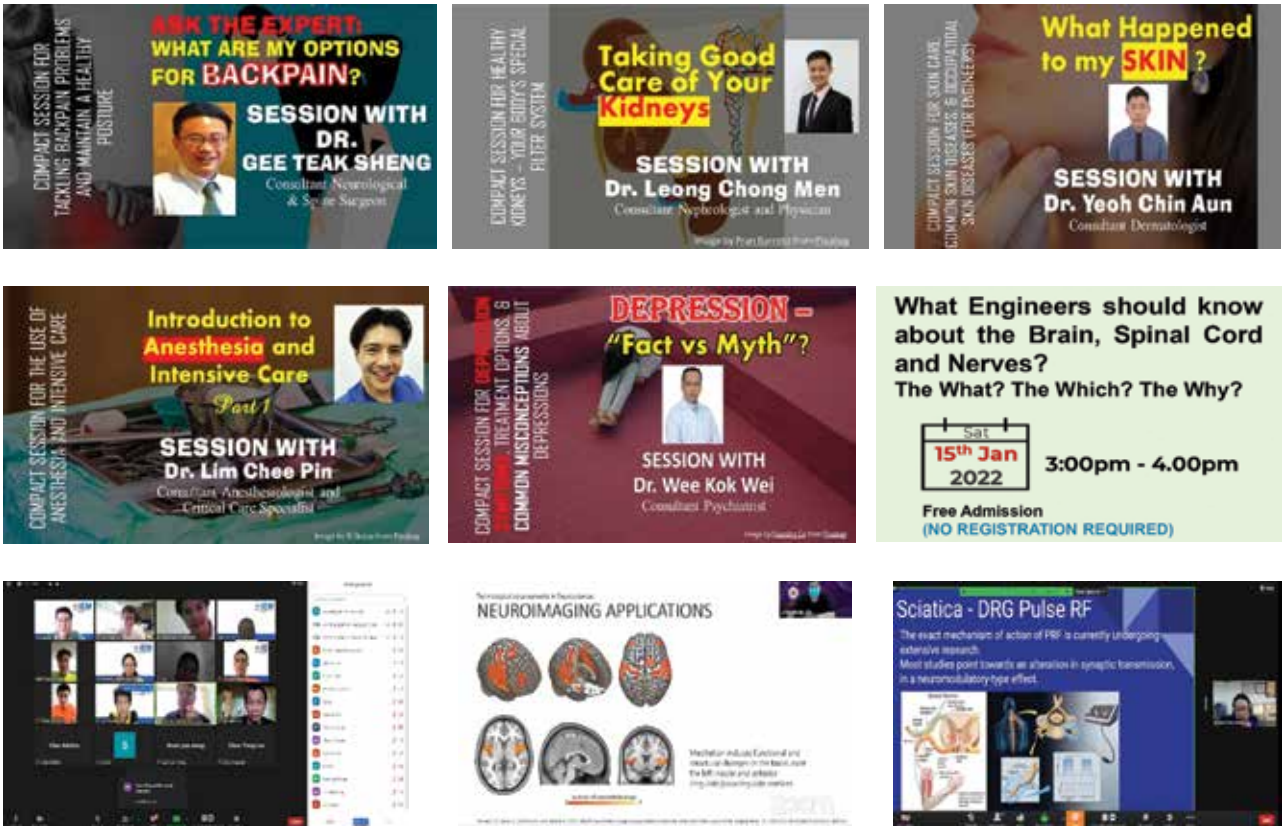


Figure 1: Medical and Health-related Talks Series Poster Designs and Webinar Screenshots

It is undoubtable that the COVID-19 pandemic is a large-scale traumatic event which has wreaked havoc to everyone's lives. It has raised concerns about the mental health of the world population. Some even experiences depression, anxiety and stress symptoms. The New-Normal lifestyles expect prolonged deprivation of social-linked activities, while in unfortunate cases when we get associated with the infected, we will need to quarantine and isolate completely from all, including our loved ones. Financial crisis and losses of jobs aside, the potential "aftermath" of the pandemic in regard to our mental conditions must at least make us be wary about our underlying mental health conditions. On 30th of September, an online talk about Depression – "Fact Vs Myth" was delivered by Dr Wee Kok Wei. Dr Wee is a Consultant Psychiatrist from Island Hospital Penang. During his insightful session, he introduced various depression symptoms that we must be actively observing from the people surrounding us. Dr Wee also elaborated on the misunderstanding about depression treatment that faced by public commonly especially the consumption of Antidepressant. At the end of the session, he also recommended some simple ways to overcome depression such as expressing ourselves, sharing our thoughts with somebody.

On 21st of November, a collaboration between IEM Medical Group and Technological Association Malaysia (TAM) was successfully conducted with the topic of "What Happened to My Skin". The talk was presented by Dr Yeoh Chin Aun, a Consultant Dermatologist from Lam Wah Ee hospital. The presentation was kicked off by the showcase of few examplary case studies by Dr Yeoh which gave the audience a brief introduction about skin diseases and the common causes leading to them. Dr Yeoh also highlighted the occupational skin diseases which particularly prepared for engineers working while exposing to extreme sunlight. Other than that, Dr Yeoh also gave some tips on how to choose and use sunscreen properly. This joint effect between both associations has significantly impacted the audiences to face the skin problem positively.

Last but not least, we are grateful to have Professor Dato' Dr. Hj. Jafri Malin Abdullah to draw the circle for the series of online medical talks 2021, with the topic of "What Engineers should know about the Brain, Spinal Cord and Nerves? The What? The Which and The Why?" Throughout the presentation, our audiences learnt some basic neurophysiology and neuroanatomy knowledges. The presentation has enlightened the groups of engineers who were involved in the mimic of brain parts via neurotechnology. The presenter elucidated his contents by illustrating more comprehensive diagrams.

All in all, the COVID-19 pandemic has profoundly affected every segment of our society. It has shed lights on the importance of health. Despite the detection of the new Omicron variant spreading rapidly, we ought to believe that the pandemic would end soon, as it is statically proven that the vaccination really helps the disease to become less severe and we hope that the effective annual covid boosters would become a reality.

IEM PENANG BRANCH
TRAFFIC, TRANSPORT & HIGHWAYS ENGINEERING SUB-COMMITTEE REPORT 2021

by Ir. Ong Sheng How
IEM Penang Branch
Traffic, Transport & Highways Engineering Sub-Committee Lead

The year 2021 was another year overshadowed by Covid-19 and MCOs, since the pandemic started a year earlier. While all of us were going through difficult and hard times, having to distance ourselves from the society, IEM Penang Branch Traffic, Transport & Highways Engineering Sub-Committee was able to organise a few events in virtual platform, with even one physical event which we were involved in as co-organiser with MALA.

Our first event for the year 2021 was co-organised with MALA and it was held virtually on 24th May 2021. It was a half-day workshop on the Preparation of the Traffic Impact Assessment (TIA) Report "Checklist & Guidelines for Local Councils". The first part of the workshop was having 3 speakers giving a talk each. The 3 speakers were En. Noor Mazlan Bin Muhammad Noor from JKR HQ, Ir. Chin Kar Keong from IEM Highway and Transportation Engineering Technical Division (HTETD), and the appointed Independent Checker of MBPP Ir. Lean Kok Woei. The second part of the workshop was brainstorming and discussion in small groups, where the participants were divided and assigned into various small groups led by a facilitator in each group. The outcome of the group discussion was then compiled by MBPP for their further use to improve the TIA checklist and guidelines.

On 31st May 2021, IEM Penang organised an online technical talk on mechanical car park system. The various speakers from the mechanical car park system provider gave the participants a glimpse of the history of the mechanical car park system and introduced the mechanism and the various types of system available in the market. The car parking experts shared about the development of car parking systems, different types of systems and the practical part of installation and operation. The supposedly two-hour long session ended with another hour of Q&A.

Another online talk was organised by IEM Penang on 2nd October 2021, in which an Australian speaker, Mr. Marty Prowse, shared his overseas experience in traffic and transport data collection. One thing good about virtual platform is that we are able to invite any speaker from anywhere in the world. Mr. Marty Prowse is an Australian based in Brisbane and has been involved in numerous projects within Australia. He shared his experience conducting traffic surveys in Australia and how the industry practice is like in Australia, the requirements of traffic surveys by the local authorities for engineering projects in Australia, and the various problems faced working with clients and consultants in Australia. Marty also introduced the latest technology and equipment to conduct traffic count surveys. It was an eye-opener and the participants learned a lot from his sharing as well as from his answers to the participants' questions.

Just a couple of days after the traffic survey talk, IEM Penang collaborated with USM to hold a two-day online course from 4th to 5th October 2021 on data management for sustainable transport and mobility. The participants had the privilege of having three distinguished lecturers for this course, namely Prof. Dato' Dr. Ahmad Farhan Mohd Sadullah, Assoc. Prof. Ir. Ts. Dr. Leong Lee Vien and Assoc. Prof. Dr. Nur Sabahiah Abdul Sukor, with Pn. Shafida Azwina Mohd. Shafie as the moderator. This webinar course focused on data management for sustainable transport and mobility. The objective of this course was to ensure that all of us professionals and practitioners will regard, appreciate and be competent in ensuring that data will be a critical item in our deliberations and decision-making processes. The lecturers attempted to explain the role of data by giving examples of data requirements, and how they are used in our work, to ensure Malaysia's transportation and mobility continue to be sustainable to the benefit of the nation and its people. The first day belonged to Prof. Dato' Dr. Ahmad Farhan Mohd Sadullah. In the first session he shared with the participants the importance of data and its management in the transport eco system, while in the second session he touched on road safety and how data management can play a better role on road safety. In the first session of the second day, Assoc. Prof. Ir. Ts. Dr. Leong Lee Vien spoke on the importance of data management in traffic impact assessment studies; i.e. the types of data, methods of data collection, the application of various traffic parameters and analysis related to traffic studies. Assoc. Prof. Dr. Nur Sabahiah Abdul Sukor took the second session of day 2. Her topic was on public transport and she shared that an efficient public transport system is needed to connect

people, communities, societies, building new markets and enhancing the overall quality of life. It is therefore vital to understand the methods of data collection and data management to enhance public transportation services.

Due to the issue surrounding the traffic impact assessment and the independent checker, a webinar on SIDRA traffic modelling for intersections and networks was organised to give a brief information on SIDRA INTERSECTION software status and key modelling principles, and discuss SIDRA network model basics and some important aspects of the model in more detail. The main objective was to demonstrate that the SIDRA INTERSECTION software is a reliable and recognised intersection analysis tool used by traffic engineers worldwide. It is a micro-analytical software with a lane-based model for the design and evaluation of single intersections and networks of intersections, which has a different function from micro-simulation modelling software. The speakers for this webinar were none other than Dr Rahmi Akçelik, a leading scientist and software developer, and Mark Besley, a scientist and software specialist.

Before the year ended, MALA and IEM co-organised the "Seminar Traffic Impact Assessment (TIA) 2.0 : Urban Transportation – Engaging Local Community Participation For Sustainable Urban Transport Solutions", held physically in person at the Setia Spice Convention Centre on 3rd December 2021. This event was also held in conjunction with MOU signing ceremony between MALA and IEM. The IEM president Ir. Ong Ching Loon was present to sign the MOU with MALA president YBhg. Dato' Ar. Yew Tung Seang. The event was officiated by the Timbalan Menteri of Kementerian Perumahan dan Kerajaan Tempatan YB Dato' Sri Dr. Haji Ismail bin Haji Abd. Muttalib. The seminar consisted of 4 sessions, 2 in the morning and 2 in the afternoon, with a speaker giving a talk for each session. The seminar began with YBhg. Datin Paduka Dr. Dahlia Rosly Mantan from PLANMalaysia taking the first session, followed by Ir. Asiah Ismail from JKR HQ for the second session. The third session after lunch was taken by

Figure 1: Webinar on "Overseas Experience in Traffic and Transport Data Collection"

Figure 2: MALA-IEM Seminar Traffic Impact Assessment (TIA) 2.0

Mr. Alan Wong from Sabah, with MBPP State Secretary YBhg. Dato' Ir. Addnan Bin Mohd Razali filling the fourth session.

In summary, on the year at a glance, 2021 had been quite a fruitful year with a handful of webinars and one physical seminar organised for the benefits of our IEM members in Penang to gain more knowledge during this pandemic year with long periods of movement restriction order. The Traffic, Transport & Highways Engineering Sub-Committee will continue to serve our members in the year 2022. Cheers to all fellow engineers.

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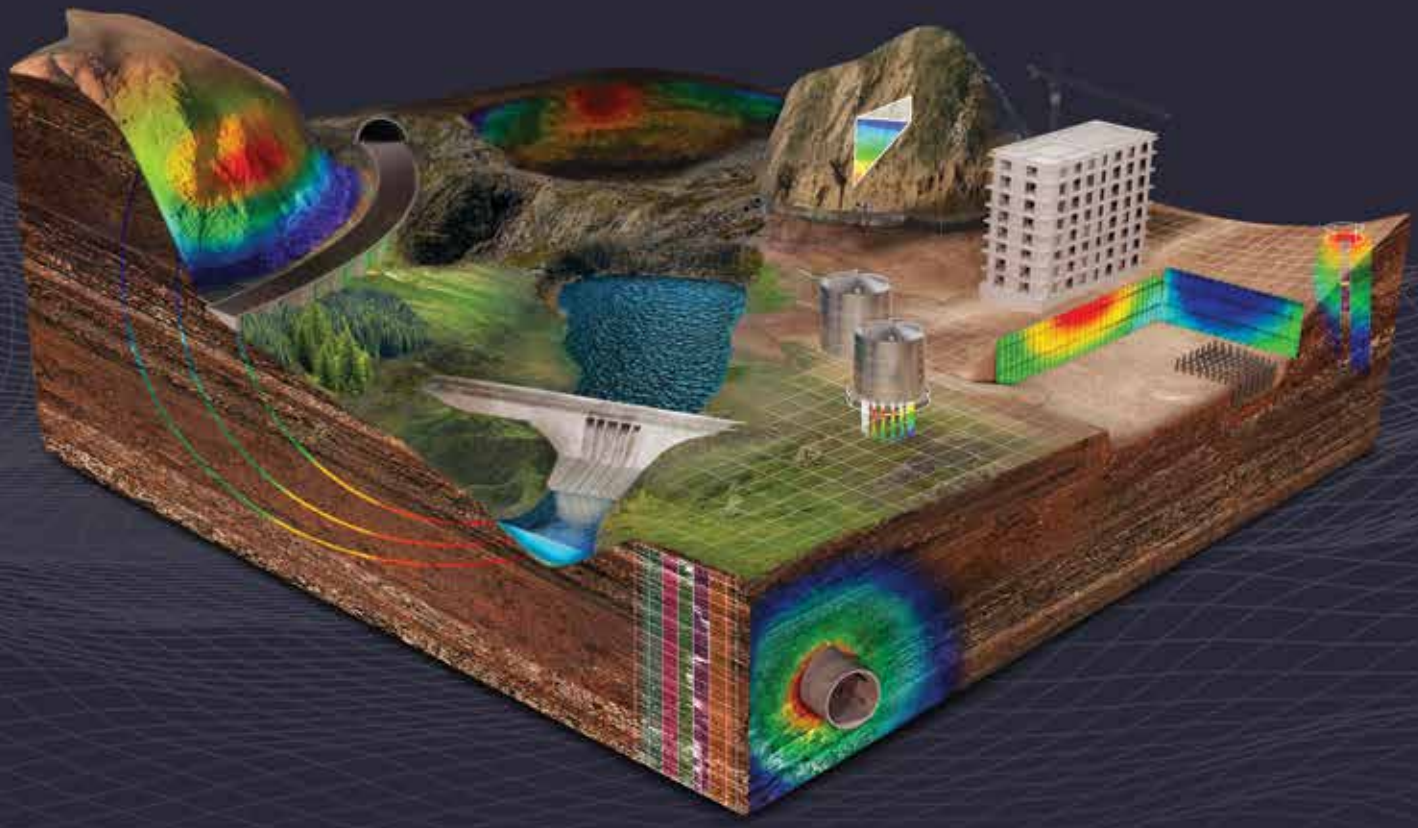

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PANEL DISCUSSION ON THE DRASTIC DROP OF DENGUE CASES IN MALAYSIA

by Ir. Dr.Chang Chun Kiat

by Ir. John Cheah Kam Loong

Date : 27th August 2021 (Friday)
Time : 3.00 pm - 3.30 pm
Venue : Online platform
Written by : Ir. Dr. Chang Chun Kiat & Ir John Cheah Kam Loong

Dengue cases in all states of Malaysia have recorded a drop of 20% to 94% in the year 2021 compared to the year 2020. According to Health Minister, Y.B. Datuk Seri Dr Adham Baba, a total of 16,565 dengue cases from January to August 6, 2021 were reported compared to 63,988 in the same period in 2020, which is a reduction of 47,423 cases or 74.1%.

The panel of speakers consisting of the engineers from IEM Southern Branch, IEM Penang Branch and IEM Melaka Branch and have actively participated in Jawatankuasa Tindakan Wabak Denggi Negeri. They had been invited to the IEM Task Force committee meeting chaired by Ir Dato Lim Chow Hock. The moderator, Ir John Cheah Kam Loong (also the current chairman of Dengue Control Committee, IEM Southern Branch) first highlighted the role of engineers involved with the government in their efforts to combat dengue. It is pertinent for engineers to play a key role in offering engineering solutions to combat dengue, particularly engineers in the bio-medical, environmental, chemical, public health and civil engineering disciplines.

PP. Lucas Chew Kar Hin, Chairman of Rotary International District 3310 Dengue Control Committee commented that the current Dengue Fever Statistic for Malaysia and Singapore were decreased by at least 73%. This is a significant decrease of dengue cases reported during the same period in 2020. According to PP. Lucas Chew, it is not a difficult task to control the Aedes Mosquito population and also a preventable lethal disease, since Rotarians practises "Fight the Bite" Campaign in their District 3310.

Accumulated Cases	Year 2020	Year 2021	Reduction
Johor	6,357 (May)	1,308 (May)	79.5%
Malaysia	62,615 (May)	16,194 (May)	74.3%
Singapore	14,883 (August)	3,935 (August)	73.5%

Dato' Ir Mohd Noh Ibrahim, vice chairman from IEM Southern Branch Dengue Control Committee emphasized that engineers should take the challenge to keep the 70% drop of dengue case. The IEM's engineering guidelines on prevention and control of dengue are timely prepared for engineers in the country effectively preventing the breeding of dengue mosquitos when people are working back to normal life.

Ir Yau Ann Nian, from IEM Penang Branch, explained that the reduction in the dengue cases was because of fewer construction site activities during MCO period. Construction sites are instructed by MBPP and MBSP to tidy up before site activities stopped. Therefore, construction materials were properly managed, waste and garbage have been have been properly disposed of, as well as erosion and sediment control measures are cleared. These efforts generally help to reduce the stagnant water construction site by destroying and reducing mosquito breeding sites. At the same time, under the requirement of the local municipal council, site teams have to be retained to carry out the regular site maintenance and fogging, as well as all erosion and sediment control measures to be properly maintained and thus these reduced the breeding of mosquito. Besides that, due to the strict requirement by local municipal councils and authorities on the site maintenance and OPS Lumpur, the condition of erosion and sediment control measures and devices are applied nowadays to avoid stagnant water happened and avoid choking or overflow drainage systems. Meanwhile, according to Ir Heng Lee Sun from IEM Penang Branch, awareness towards the public community to strengthen the preparedness and response capacity in order to detect cases and outbreaks for immediate action is also one of the main reasons for the reduction in dengue cases. She highlighted that it is important to prepare and distribute guidelines such as clinical practice guideline on the management of dengue infection in adults, early detection of dengue cases, public awareness on symptoms and signs of dengue, and seeking early treatment for community awareness.

Ir Sreedaran Raman and Ir Sures Kumar Ganesanthey from IEM Melaka Branch shared the experience of "Gotong Royong" initiative carried out in the Taman Bemban, Melaka. According to Ir Sreedaran, the event which started with an awareness program held at the community hall for the students and also Taman Bemban residences was well received especially supports from the local authorities and local political representative's office. The program later continued with the "Gotong Royong" event participated by Rotarians who came from various places including Singapore, IEM members, local residences, and also various government authorities. The housing estate that they have cleaned was identified as a dengue hot spot by Melaka State's Health Department. As a result, this was indeed a successful event and it shows a reduction of dengue cases after that. In addition, Ir Sures Kumar mentioned that the event had also managed to get Nippon paint to sponsor their mosquito repellent paint for the common benefit of the residences of Taman Bemban. Indeed, this "gotong royong" activity needs to be done regularly but unfortunately with the spread of Covid-19, most of the planning for this initiative is kept on hold until it is safe to do so in the future. Meanwhile, wet markets, night markets and, construction/project sites generally are operated for limited hours or closed due to the MCO/EMCO, and this rapidly brought down the number of dengue cases in Melaka.

ACTIVITY REPORT:

"Effective Ways to Get High Score on Building Energy Intensity (BEI)"

Written by:
Ir. Chan Wah Cheong

An successful event resulted from great collaboration with malaysiaGBC Northen Chapter

IEM Penang had successfully collaborated and co-organized with Malaysia Green Building Council Northern Chapter a webinar – Effective Ways to Get High Score on Building Energy Intensity (BEI) on 16 Oct 2021, 10.00am to 12.30pm via Zoom online. This was second collaborations this year following a successful malaysiaGBC Webinar Series earlier in 25th September - Marine & Ecological Engineering.

This event was fully sponsored by UAC Bhd. where members from both institutions could register and join for free. In order to foster a closer relationship with malaysiaMGBC Northern Chapter; future collaboration would continue be promoted.

There were 113 participants (including speakers) had joined this webinar. The objectives of this webinar were to enable participants to gain technical knowledge; cost effective solutions and know-how to overcome the challenges. We believed the webinar would provide enriching experience for all participants.

The 1st part of the seminar was presented by Ir Ahmad Izdihar bin Supaat, who was the Past President of Malaysia Green Building Council 2016-2017, a renowned practising consultant in "Green and Sustainability" and the managing director of his own consulting firm. He touched on the debunking the myth of high costs for Energy Efficiency (EE) Solutions and sustainability in the existing buildings. Ir Ahmad also shared few real-life case studies and examples of his past experiences on the approaches and strategies used. He also shared his journey in promoting green initiatives and how to effectively control the cost of high BEI implementation.

Before going into the 2nd half of the presentation; a short video presentation on the sponsor company profile and its products was shared by Mr Eric Tan from UAC Berhad.

The 2nd half of the event continued with Mr Tang Chee Khoay, Past Honorary Treasurer of malaysiaGBC; an industry expert and an author who interestingly shared the philosophy of 7+1 Steps for Energy Efficiency in Tropical Air-conditioned Buildings. Mr. Tang had not only shared the theories and Laws of Thermodynamics; he also explained the wrong perceptions that commonly made.

A sample slide provided and shared by Ir Ahmad.

A sample slide shared by Mr Tang.

One of the Group photos of speakers, committees and participants.

Throughout the Q&A slots; there were various great questions posted and great answers; discussions and opinions had been exchanged.

Despite the event ended slightly over the time slot; many stayed as they would like to gain good knowledge and insights from the speakers. The organizing committee agreed to continue similar Webinar Series in the future so that more people could be able to learn the useful knowledge from both the Gurus and others.

Current Geopolymer Research

New Application as Construction Materials

Mohd Mustafa Al Bakri Abdullah[1] ***Noor Fifinatasha Shahedan[1]*** ***Part Wei Ken[2]***

[1] *Center of Excellence Geopolymer and Green Technology, Universiti Malaysia Perlis (UniMAP)*
[2] *R&D Department, Macro Dimension Concrete Sdn Bhd, Kedah*

Recycling and reusing waste materials have become an increasingly important research area in recent years [1–3]. The development of geopolymer research is to step ahead towards searching for green materials with the purpose to minimize or replace the use of ordinary Portland cement (OPC) and emissions of carbon dioxide (CO_2) so as not to risk the needs of future generations [4–6]. The production method applied is significant and user and eco-friendly with lower consumption of energy.

The binder materials used for geopolymer products are mostly the industrial waste or by-products containing high content of silica (Si) and alumina (Al) which acted as precursor for geopolymerization [2]. The potential of source materials in a wide range of slag, natural clay, waste and natural Al–Si minerals possibly will provide as potential source materials for the production of geopolymer [1].

In addition, the current research on geopolymer demonstrates how geopolymer products display superior properties good for many applications including as a new building materials (lightweight concrete, insulating concrete, lightweight brick, lightweight aggregate, a new steel fiber reinforced concrete), a new materials for road base application, as a repair materials, a new materials for corrosion application, a new filler in piping application, as underwater concrete materials, a low sintering temperature ceramic, as reinforced material in solder alloy, lightweight ceramic application and also high strength paste application [1–8].

The advancement made in the various research of science and technology has helped us to have equivalence or a better quality of existing product [1–8]. The characteristic and performance of geopolymer products has proved for better thermal insulation properties, higher fire resistance, lower processing temperature, low permeability, good chemical resistance, excellent in acid and salt environment [8]. There are a few current geopolymer researches that can be highlighted such as a new finding on high strength paste application, self-fluxing for low-sintering ceramic and insulation concrete.

The high strength paste development of solely ground granulated blast furnace slag geopolymers (GGBFS) with various solid/liquid and alkaline activator ratios had been determined by performing a number of compressive strength tests (Figure 1) [4]. It was found that GGBFS with 3.0 solid/liquid ratio and 2.5 alkaline activator ratios resulted in high compressive strength at 168.7 MPa after 28 days of curing. The microstructure analysis of the GGBFS geopolymers using SEM, FTIR and XRD revealed the formation of tobermorite and calcite ($CaCO_3$) phases within a threedimensional system. It displayed that the calcium concentration was higher at silica and alumina regions, which described the formation of tobermorite and $CaCO_3$ as the contributing factor towards high compressive strength.

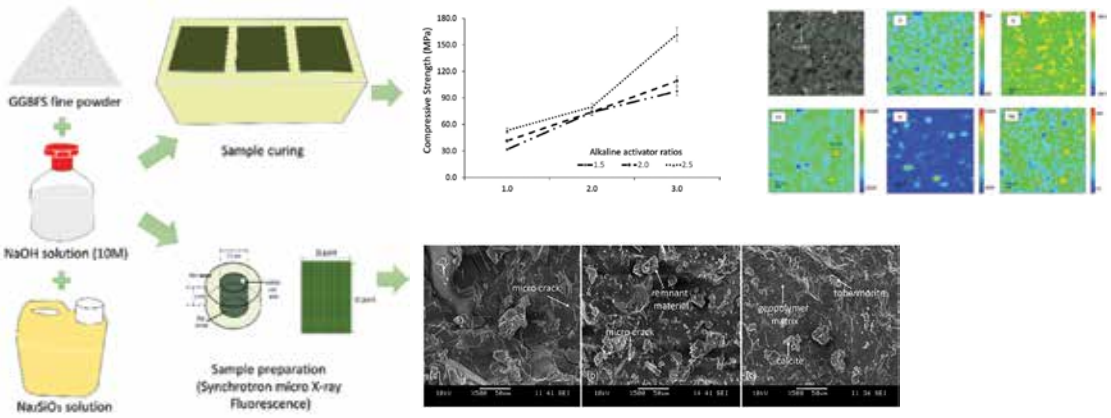

Figure 1: Mechanical and microstructure of solely GGBFS based geopolymer [4]

Self-fluxing low-sintering geopolymer ceramic was prepared with a ratio of solid to liquid 2:1 and cured at 60°C for 14 days [5]. The cured geopolymer was sintered at different temperatures: 800, 900, 1000, and 1100°C. Sintering at 900°C resulted in the highest compressive strength (Figure 2) due to the formation of densified microstructure, while higher sintering temperature led to the formation of interconnected pores. Thermal analysis indicated the stability of sintered kaolin–GGBS geopolymer when exposed to 1100°C, proving that kaolin can be directly used without heat treatment in geopolymers. The geopolymerization process facilitates the stability of cured samples when directly sintered, as well as plays a significant role as a self-fluxing agent to reduce the sintering temperature when producing sintered kaolin–GGBS geopolymers.

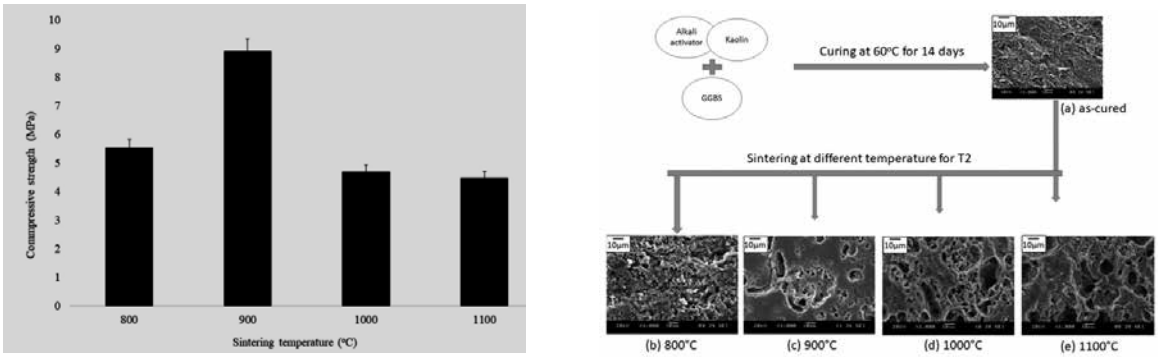

Figure 2: Effect of sintering temperature on the compressive strength and microstructure ((a) as-cured, (b) 800°C, (c) 900 °C, (d) 1000°C, and (e) 1100°C) of sintered kaolin-GGBS geopolymer [5]

A novel geopolymer concrete embedded with glass bubble as its thermal insulating material, fly ash as its precursor material, and a combination of sodium hydroxide (NaOH) and sodium silicate (Na_2SiO_3) as its alkaline activator to form a geopolymer system (Figure 3) [6]. The workability, density, compressive strength (per curing days), and water absorption of the sample loaded at 10% glass bubble (loading level determined to satisfy the minimum strength requirement of a load-bearing structure) were 70 mm, 2165 kg/m^3, 52.58 MPa (28 days), 54.92 MPa (60 days), and 65.25 MPa (90 days), and 3.73%, respectively. The thermal conductivity for geopolymer concrete decreased from 1.47 to 1.19 W/mK, while the thermal diffusivity decreased from 1.88 to 1.02 mm^2/s due to increased specific heat from 0.96 to 1.73 MJ/m^{3}K. The improved physicomechanical and thermal (insulating) properties resulting from embedding a glass bubble as an insulating material into geopolymer concrete resulted in a viable composite for use in the construction industry.

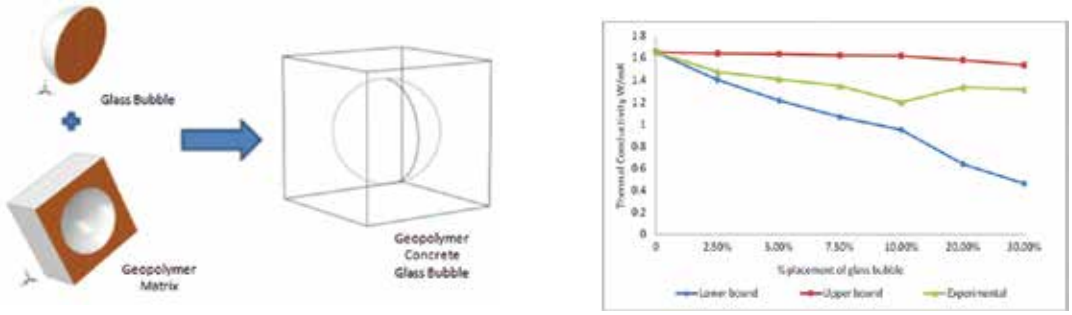

Figure 3: A novel geopolymer concrete embedded with glass bubble as its thermal insulating material [6]

In conclusion, this article introduces current geopolymer research of product development process and their performance. Current geopolymer research is important to develop a new product which is environmental friendly, robust and safe for intended use by any application.

Reference

[1] Nergis, D. B., Abdullah, M. M. A. B., Vizureanu, P., & Tahir, M. M. (2018, June). Geopolymers and their uses. In IOP Conference Series: Materials Science and Engineering (Vol. 374, No. 1, p. 012019). IOP Publishing.
[2] Abdullah, M. M., Ming, L. Y., Yong, H. C., & Tahir, M. F. (2018). Clay-based materials in geopolymer technology. Cement Based Materials, 239.
[3] Jaya, N. A., Yun-Ming, L., Cheng-Yong, H., Abdullah, M. M. A. B., & Hussin, K. (2020). Correlation between pore structure, compressive strength and thermal conductivity of porous metakaolin geopolymer. Construction and Building Materials, 247, 118641.
[4] Aziz, I. H., Abdullah, M. M. A. B., Salleh, M. M., Azimi, E. A., Chaiprapa, J., & Sandu, A. V. (2020). Strength development of solely ground granulated blast furnace slag geopolymers. Construction and Building Materials, 250, 118720.
[5] Jamil, N. H., Abdullah, M., Al Bakri, M., Pa, F. C., Mohamad, H., Ibrahim, W. M. A. W., ... & Ibrahim, N. (2021). Self-fluxing mechanism in geopolymerization for low-sintering temperature of ceramic. Materials, 14(6), 1325.
[6] Shahedan, N. F., Abdullah, M. M. A. B., Mahmed, N., Kusbiantoro, A., Tammas-Williams, S., Li, L. Y., ... & Nabiałek, M. (2021). Properties of a New Insulation Material Glass Bubble in Geo-Polymer Concrete. Materials, 14(4), 809.
[7] Zaidi, F. H. A., Ahmad, R., Abdullah, M. M. A. B., Mastura, W., & Syauqi, A. (2020, May). The Effect of Seawater on The Strength, Microstructure and Elemental Distribution of Fly Ash/Kaolin Based Underwater Geopolymer. In IOP Conference Series: Materials Science and Engineering (Vol. 864, No. 1, p. 012014). IOP Publishing.
[8] Bouaissi, A., Li, L. Y., Moga, L. M., Sandu, I. G., Abdullah, M. M. A. B., & Sandu, A. V. (2018). A review on fly ash as a raw cementitious material for geopolymer concrete. Rev. Chim, 69(7), 1661-1667.

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Immediate Past Chairlady/Adviser	Ir. Heng Lee Sun

Committee Members	
Professional Development, Mentoring (PDM)	Ir. Yeap Geok Ngoh & Ir. Lim Sheau Rou
Technical Talk/Visit (TTV)	Ir. Catherine Sim & Ms. Chan York Lin
Membership Recruitment, Career Talk (MCT)	Ir. Dr. Leo Choe Peng & Ir. Dr. Yee Hooi Min
Corporate Social Responsibility (CSR)	Ms. Tan Hui Sze & Ms. Loh Yee Teng
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WE Conference 2022	Ir. Heng Lee Sun, Ir. Sophia Than, Ir. Tan Yan Moy, Ir. Ooi Choy Hoong & Ir. Lim Sheau Rou
Chairlady (Term 2022/23)	**Ir. Catherine Sim Siew Ping**

.....thank you IEM Pg Branch for providing this platform for WE to serve.....

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Blood Donation – Co organise with Pertubuhan Hui Yin Seh




Video Showing Appreciation to Frontliners

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CSR - Corporate Social Responsibility

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IEM-YES Annual General Meeting 2022

Report by: Mr. Phuah Yong Zhen

Event Photo 1 –Photo screenshots taken during the YES AGM Election 2022

The Institution of Engineers Malaysia, Young Engineers Section (IEM Penang Branch) conducted the IEM YES Penang Annual General Meeting (AGM) 2022 on the 8th of January, 2022. All committee members and volunteers were invited to take part.

The meeting started sharp at 0900, with the former IEM YES Penang Chairman Ts. Low Chung Kitt summarizing the activities conducted in the year 2021, and addressing his appreciation to the efforts and contributions by all members to make each event successful. Then we also go through the treasurer report to see how much YES spend on the budget proposed in 2021 and how much we earn throughout 2021.

A new committee line-up for the term 2022 was formed in line with the by-laws requirements with the basis of online voting for proposed and seconded candidates, for all positions in the committee line-up. All selected candidates were provided with equal opportunity to promote themselves and how they would contribute to the organization and community when elected. The new elected chairman for the IEM YES in the term 2022 is Ts. Sim Kai Sheng, and his committee line-up is as shown below.

IEM Penang Branch Chairman Ir. Bernard also attended the AGM on behalf of the executive committee, and he also deliver his hope of a better year for YES Penang. New elected YES chairman Mr. Sim Kai Sheng also deliver his speech and direction for YES Penang 2022 to all the new committee line-up.

The AGM ended around 1030 followed by a group photo session.

IEM-YES (Penang) Committee Members Session 2022

Chairman	: Ts. SIM KAI SHENG
Vice Chairman 1	: GEORGE LIM JING WEI
Vice Chairman 2	: LIM WEI HONG
Hon. Secretary	: GOH SHING YI
Hon. Treasurer	: PHUAH YONG ZHEN
Immediate Past Chairman	: Ts. LOW CHUNG KITT
Past Chairman	: Ir. LOH KWAN JOU, Ir. Ts. WONG KOK NIAN

General Committee Member

Professional Development	: LEE SANG YU, Dr. NGOO SEONG BOON
Social & Community Services	: ONG HAN BIN
Interbranch & Public Relation	: MOHAMMAD AZRUL BIN MAT ZAHIR
Publicity and Advertising	: Ts. GOH WEI LOON
Inventory and Documentation	: LOH WEI KIAT
General and Student Affair	: LIM WEI HANG

The IEM Enhanced Professional Interview (Outcome Based Assessment) Latest Practices

Prepared By:
Ir. Dr. Mui Kai Yin

(A) About IEM Enhanced (Outcome Based Assessment) Professional Interview

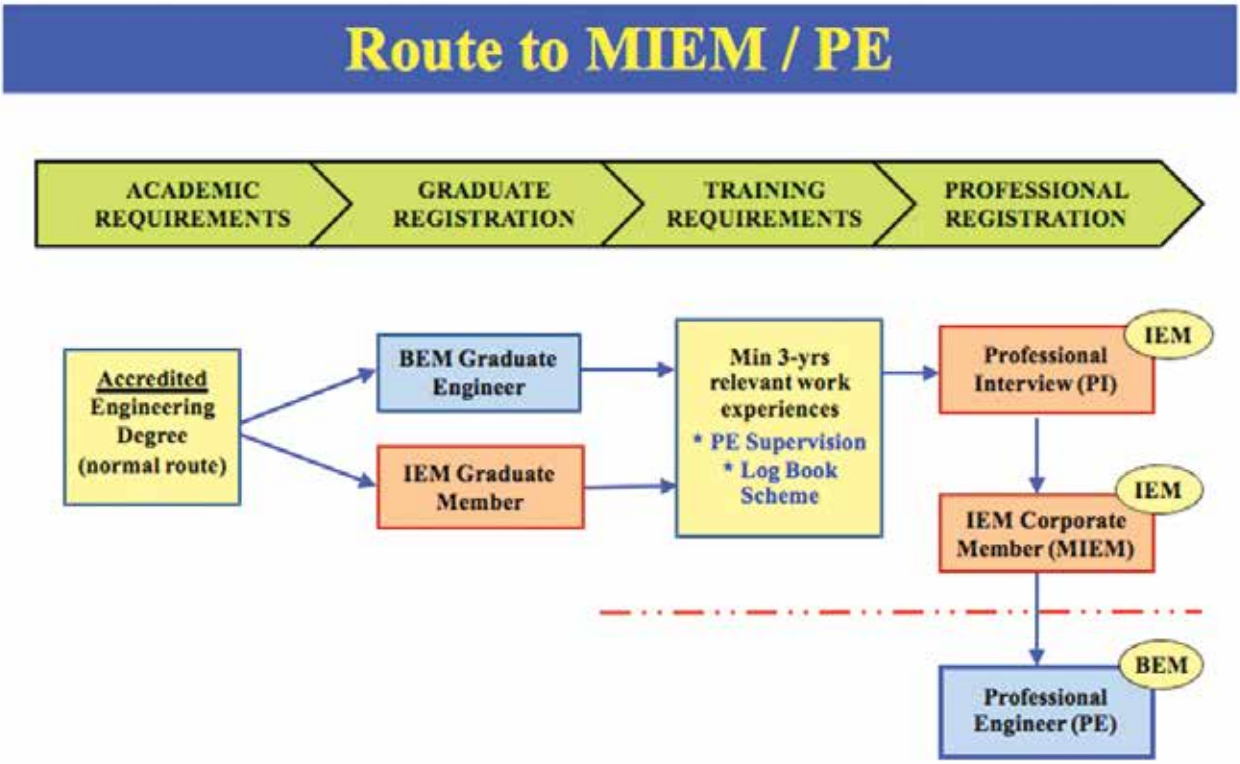
With the competency profiles for professional engineers used as a basis for assessment, the IEM Professional Interview (PI) measures the outcome of practical training and development for independent practice. This is in line with the global move in the international engineering communities towards an outcome-based competency assessment for international recognition. With this assessment method, the IEM PI would be on par with the international best practices.

(B) Candidate Eligibility, Processes and Required Documentations

The Registration of Engineers Act mandates engineering graduates to register with the Board of Engineers, Malaysia (BEM) as a Graduate Engineer after completing an accredited engineering degree.

A Graduate Engineer must obtain at least three (3) years of relevant practical training and experience in engineering before they are eligible to apply to sit for Professional Interview (PI) to become MIEM.

At least one (1) year of the practical training and experience must be obtained under the supervision of a Professional Engineer (PE) in the same or allied branch of engineering as that practiced by the Graduate Engineer.



Important Documents & Guides:

1. Competence Standard for the Professional Interview (IEM PI 0100)
2. Professional Interview Application Form (IEM PI A100)
3. MIEM Application Form (IEM PI A300)
4. Training and Experience Report (IEM PI A401)
5. Development Action Plan (IEM PI C300)

(C) What to Access During IEM Professional Interview?

The IEM Professional Interview divided into two main parts, that is oral interview and essay writing. For oral interview, there are 18 competency elements under the 5 competency categories to be accessed (refer to document IEM PI 0100).

Oral Interview: 5 Key Competency Categories

A – Knowledge and Understanding

B – Design & Development of Process, System, Service & Product

C – Responsibilities, Management and Leadership

D – Communication and Inter-personal Skills

E – Professional Commitment

For essay writing (technical & ethical essay), there are 9 competency elements under the 4 competency categories (refer to document IEM PI 0100).

Technical Essay: 2 Key Competency Categories

T – Evidence of technical competencies.

W – Evidence of writing competencies.

Ethical Essay: 2 Key Competency Categories

P – Evidence of competencies related to ethical conduct.

W – Evidence of writing competencies.

There are four (4) levels for assessing Candidate's attainment of each competency element.

Level	*Generic Statement of Attainment*
1	Little or no evidence of competence
2	Some evidence of competence with shortfalls
3	Acceptable or satisfactory level of evidence
4	Strong level of evidence

(D) 5 Key Tips for Successful Professional Interview

1. Be details for all application forms.
2. Prepare portfolio of evidence sincerely.
3. Organize oral interview presentation ahead.
4. Clear essays with sufficient details.
5. Be confidence throughout the professional interview process.

Upcoming Events

Date	Online Event Topic	CPD Hours
13/4/2022	**IEM Conditions of Contract Simple Explainer (1-Day Course)**	**6**
22/4/2022	**Optimizing Pump Selection for a Sustainable, Holistic & Eco-efficient Green Building**	**2**
25/4/2022	**Computational Fluid Dynamics (CFD) Applications in Heating, Ventilation and Air-Conditioning (HVAC) & Surface Mount Technology (SMT)**	2.5
28/4/2022	**Digitalization of Construction 4.0 Community – The Building Information Modelling (BIM)**	**2**

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- *Green Building Index (GBI) Facilitation*
- *Technical Due Diligence*
- *Lead Consultant*
- *Turnkey Consultant*
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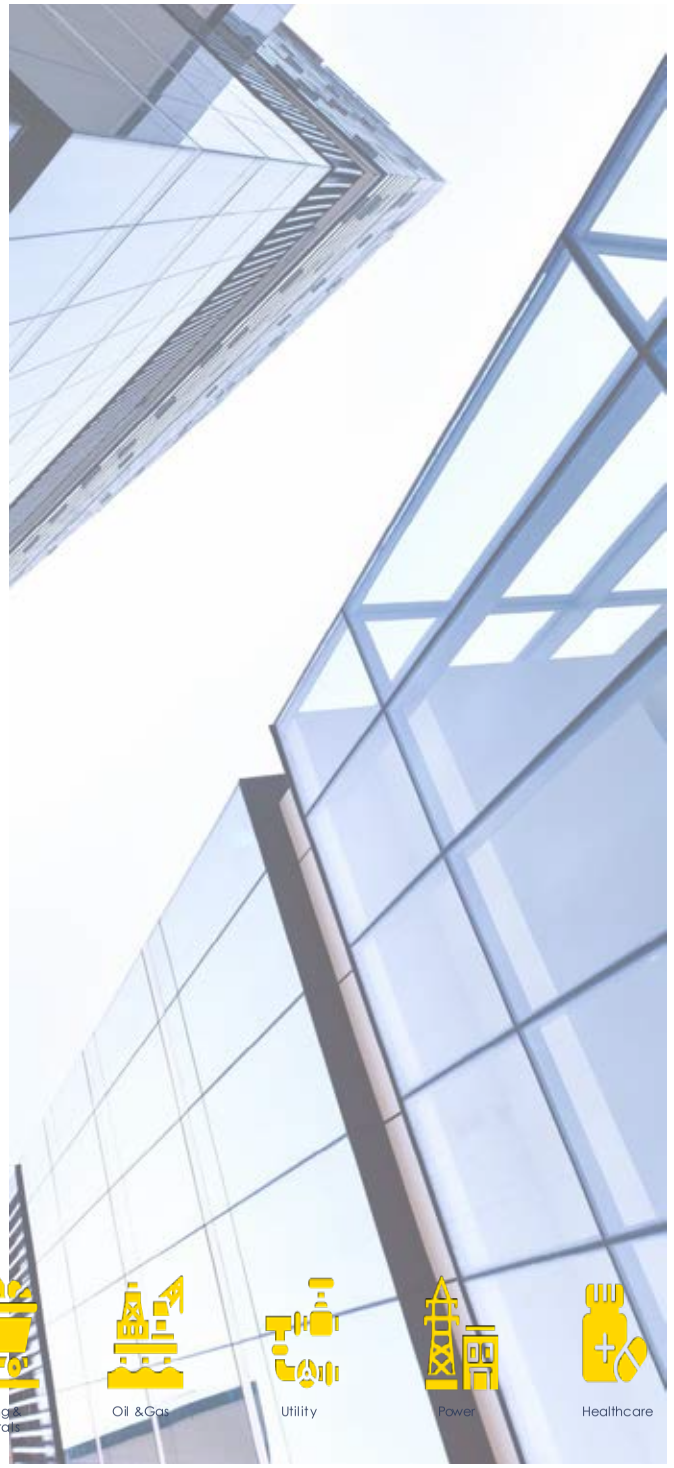
- *Legal Department*



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A Brief Report on University Collaboration 2020/21

By Ts. Sim Kai Sheng

By Ir. Catherine Sim Siew Ping

THE IEM PENANG BRANCH ACADEMIC AWARD 2021

The IEM Penang Branch Executive Committee on 20 October 2020 had the monthly committee meeting and decided to approve Institution of Higher Learning (IHL)'s request for Book Prize with certification for approved engineering programmes with the following conditions:-

The IHL must have established an IHL-IEM student section. Currently, in Penang, University Sains Malaysia (USM) and University Teknologi Mara Cawangan Pulau Pinang (UiTM) have IEM student section. USM has 11 engineering programmes and UiTM Cawangan Pulau Pinang has 4 engineering programmes.

The engineering programmes must be an accredited Bachelor of Engineering Degree by Engineering Accreditation Council (EAC) of Malaysia.

The Book Prize is a cash prize of RM300 for each of the best student from the above 15 engineering programmes, with IEM Penang Branch certificate.

The Book Prize will be awarded to only the best First Year Student of each Engineering Programme. The student will be graded based on their year one Cumulative Grade Point Average (CGPA) results. If more than 1 student received the same top CGPA results, the IHL will choose the best among them based on their extra-curricular activities.

The IHL has to send the recommended list of student names with their Identification Card Number and their results to the Chairman of IEM Penang Branch for approval prior to 30th October 2021.

The awards will be presented in one of the events organized by the IHL or IEM Student Section. The awards are likely to be presented during the fourth quarter of the year.

These awards will be considered from year to year basis subject to application by IHL and approval by IEM Penang Branch.

The IEM Penang Branch Recruitment Drive at University Sains Malaysia (USM)

The IEM Penang Branch has been actively conducting recruitment activities to enrich university students and graduates about joining IEM, and the effort persists despite the limitations posed by the Covid-19 pandemic.

IEM-USM recruitment drive was conducted virtually on 20th October 2021. It was a joint effort by IEM Penang Branch represented by Ir. Catherine Sim Siew Ping and University Sains Malaysia represented by Associate Professor Ir. Dr. Lau Tze Liang. This event garnered over 400 attendees.

The IEM Penang Branch Recruitment Drive at University Teknologi Mara Cawangan Pulau Pinang (UiTM)

Whereas, IEM-UiTM recruitment drive 2.0 was conducted virtually on 5th November 2021, with 3 invited speakers from IEM Penang Branch and IEM Young Engineers Section (YES) Penang Branch, represented by Ir. Ts. Bernard Lim, Chairman of IEM Penang Branch, Ts. Low Chung Kitt and Ts. Sim Kai Sheng, the Chairman and Vice Chairman of IEM YES Penang year 2020/21

By Ir. Ts. Cheah Sheng Hong

IEM PENANG E-FINITY RUN/RIDE (VIRTUAL) 2021

(16TH OCTOBER TO 30TH NOVEMBER 2021)

The IEM Penang E-Finity Run is an annual event organized by the young engineer section (YES) of IEM Penang Branch.

Besides promoting a healthy lifestyle, we also aim is to raise the awareness that this exercise can fortify self-determination thus preparing oneself for various available opportunities. Organizing this event is also part of our continuous effort to enhance the image of the engineering profession amongst the community.

We are organizing this run for the fourth (4th) time in Penang this year. For the previous run that we have organized, we had an overwhelming response from the public with a total of 600, 800 and 500 participants for year 2016, 2017 and 2018 respectively.

Due to the covid-19 pandemic, we postponed the event to this year and the event was organized virtually.

There are 2 categories for our event this year which is 10km run or 30km cycling. The participants can use any tracking apps to record their result and submit their record.

This event was successfully held from 16th October to 30th November 2021. The participants not only from Penang, but they were from all over the Peninsular Malaysia, Sabah and Sarawak.

We highly appreciate the executive committee of IEM Penang Branch and also our Platinum Sponsor BK Vision Enterprise Sdn. Bhd., Guanlite Sdn. Bhd. and Gold Sponsor KLL Piling & Jack In Sdn. Bhd., Hager Engineering (M) Sdn. Bhd. for their support to make this event success.

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- **No cash payment** to be made to customer. The rollover grace period for export credit is **immediately credited** upon the same month TNB Bill as saving.
- NEM Solar PV Installation capacity are limited to **4kWac for 1Ø (230Vac)** TNB Meter & **10kWac for 3Ø (415Vac)** TNB Meter.
- Solar loan is available for those qualify with mortgage loan from banks. Installation will be under respective bank's solar service provider.

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*1	4	423	4,795	***15,200.00***	***205***	2,324	**6.54**	317
*2	6	605	7,193	***22,800.00***	***293***	3,486	**6.54**	476
*3	8	786	9,590	***30,400.00***	***437***	5,329	**5.70**	634
*4	10	968	11,988	***38,000.00***	***595***	7,372	**5.15**	793
*5	12	1,149	14,386	***45,600.00***	***707***	8,846	**5.15**	952

▲ Recommend NEM Capacities for normal household installation allowed by SEDA/TNB. Any extra electricity consumption beyond the solar predicted generation are still subjected to normal TNB Tariff rate charges.

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*1	4	423	***205***	***388***	*23,280*	183	**4.48**	**1,824**
*2	6	605	***293***	***588***	*35,280*	295	**6.40**	**1,520**
*3	8	786	***437***	***688***	*41,280*	251	**8.32**	**1,216**
*4	10	968	***595***	***888***	*53,280*	293	**10.24**	**912**
*5	12	1,149	***707***	***988***	*59,280*	281	**12.16**	**608**

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Yours sincerely

Ir. Bernard Lim Kee Weng
Chairman
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- Dell Asia Pacific – APCC2
- Flextronics Technology (Penang) Sdn Bhd – Plant 1, Plant 5
- Canon Electronics (M) Sdn Bhd
- Chin Herr Industries Sdn Bhd
- Chin Well Fasteners Co. Sdn Bhd
- DIC Compounds (M) Sdn Bhd
- FMS Audio (M) Sdn Bhd
- Leong Bee & Soo Bee Sdn Bhd
- Molex (M) Sdn. Bhd.
- Samtec Asia Pacific (M) Sdn Bhd
- Rubicon Sapphire Tech.
- Honeywell UOP
- Honeywell Aerospace Avionics Malaysia Sdn Bhd
- Blaupunkt Sdn Bhd
- Optic Balzers Malaysia

Bukit Minyak Industrial Park, Penang
- Flextronics Technology (Penang) Sdn Bhd - Plant 1, 2 & 2A, P3, P4
- Nissan-Industrial Oxygen Inc.
- Asia Medical Supplies Sdn Bhd
- Nanyang Synergy Sdn Bhd
- Metex Steel Sdn Bhd
- THP Medical Sdn Bhd @Penang Science Park

Bayan Lepas, Penang
- Dell Asia Pacific Sdn. – APCC1
- Osram Opto Semiconductors (M) Sdn. Bhd. – PEN 3, PEN 5
- Dynacraft Industries Sdn Bhd
- Kobe Precision Technology Sdn Bhd
- Tanaka Electronics (M) Sdn Bhd
- Intel Technology Sdn. Bhd.
- Optima Asia Pacific Sdn. Bhd.
- KESP Sdn. Bhd.
- Malaysian Pharmaceutical Industries Sdn. Bhd.

Kedah Darul Aman
- London Rubber Sdn. Bhd.
- Matsushita Electronic Motors (M) S/B
- Nichias FGS Sdn. Bhd.
- Phoenix Rubber Products Sdn. Bhd.
- Toyobo Wool (M) Sdn. Bhd.
- AIC Semiconductors
- Asian Composites Manufacturing, Bukit Kayu Hitam

Kulim Hi-Tech Industrial Park, Kedah Darul Aman
- Advance Disk Technology Sdn Bhd
- AIC Semiconductor (M) Sdn Bhd
- Fujimi-Micro Technology Sdn Bhd
- Intel Products (M) Sdn. Bhd.
- MERCK (M) Sdn Bhd
- Toyo Memory Industry Sdn Bhd
- Silterra Malaysia
- Osram Opto Semiconductors (M) Sdn. Bhd. – FEK1

Perak Darul Ridzuan
- HCM-Hygenic Corporation (M) S/B
- Tanako (M) Sdn. Bhd.
- Toyobo Textile (M) Sdn Bhd
- MEMC Ipoh Sdn Bhd

Science Park 2, Sepang, Selangor
- Hanwha Q Cells Malaysia S/B

Cyberjaya
- Dell Asia Pacific Sdn.

Johor Darul Ta'zim
- Solectron J3
- Adeka Foods Asia Sdn Bhd
- Pagoh Education Hub – District Cooling System Plant
- Samtech Asia Pacific (M) Sdn Bhd

Terengganu
- Tosoh Advanced Materials Sdn Bhd

Melaka
- DIEHL Metal
- Infinion Technologies (Malaysia) Sdn Bhd – Phase 1 & 2

HOUSING SCHEME
- Taman Tambun Indah - 94 acres of Mixed Housing Development, Tambun, Penang.
- Taman Idaman - 89.7 acres of Mixed Housing Development, Simpang Ampat, Penang.
- Kulim Square - 68.2 acres of Mixed Development, Kulim, Kedah
- Juru Heights – Mixed Development Gated Community, Juru, Penang
- Pearl Garden – Mixed Development Gated Community, Tasek, Penang
- Bukit Residence – Bukit Mertajam, Penang
- Pearl Harmoni @Pearl City, Penang
- Pearl Saujana @Pearl City, Penang
- Pearl Tropika @Pearl City, Penang
- Rain Tree Park @Pearl City, Penang
- Rain Tree Park 2 @Pearl City, Penang
- Palm Villas, Butterworth, Penang

COMMERCIAL DEVELOPMENT
- Harbour Trade Centre @ Macallum, Penang
- Wisma Pantai @Butterworth, Penang
- Straits Garden 31-storey Commercial Suites @Jelutong, Penang

CONDOMINIUM / APARTMENTS
- Scotland Villas @Batu Gantong, Penang
- Straits Garden 31-storey Condominium @Jelutong, Penang
- Straits Garden 27-storey Low-Medium Cost Apartment @Jelutong, Penang
- Tanjong Heights @Raja Uda, Penang
- Dahlia Park @Butterworth, Penang

HOTEL
- Royale Bintang Hotel @Georgetown, Penang
- Hompton Hotel (33-storey) @Tanjung Tokong, Penang

HOSPITAL
- Bagan Specialist Centre @Butterworth, Penang

GOLF RESORT
- Kristal Golf Resort @Valdor, P.W.(S), Penang

OVERSEAS PROJECTS

GUANGZHOU, CHINA
- Guangzhou Otis Elevator Co. Ltd. (200,000 sq.ft. built-up)

XIAMEN, CHINA
- Dell Computer (China) Co. Ltd. [CCC2] @ Jimei, Xiamen
- Dell Computer (China) Co. Ltd. [CCC4] @ Jin Shang Road, Xiamen

WUXI, CHINA
- Osram China BE2

INDONESIA
- PT Koba Tin

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