

PAMSC Quarterly Newsletter No. 10/2008



PAM Sarawak Chapter Committee 2008-2009

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Standing from left: Committee Member Ar. Stephen Mong Vui Min, Committee Member Mr. Lee Chai Guan, Committee Member Ar. Stephen Liew Ngian Chin, Committee Member Ar. Law Kim Chui, Committee Member Mr. Kevin Phua Siaw Chiat. Committee Member Ar. Hubert Kueh Peng Yaw and Honorary Treasurer Ar. Mike Boon Chee Khian.

Absent from picture: Committee Member Ar. Kelvin Wong Yii Sing.

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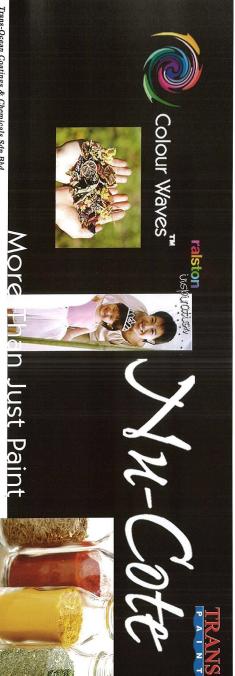
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Proposed CPD Seminars for 2008

8/11/08 (Sat) - Am: Seminar on Design by Ar. Wooi Lok Kuang - Pm: Seminar by Roxul/UGI/Acoustic

Chairman says

Greetings from PAMSC!

elcome to the first edition of Intersection under the 2008/2009 PAMSC Committee. The PAMSC AGM was held on 26th July, and the turnout from Members was quite encouraging. Altogether over 40 Corporate and Graduate Members attended the AGM.

Ar Stephen Mong who did a great job as Editor of Indexection during the last term will be back again to continue with the good work. We hope you will continue to enjoy reading the Intersection, and more importantly contribute articles, features and opinions for this publication which is supposed to be "for the Members - by the Members".

For the PAMSC Committee, our focus for this term will remain with "Conservation and Sustainable Design". As has been mentioned in earlier issues of Intersection, Conservation is becoming more and more relevant to architect. As our city grows, inevitably many of the new developments will encroach on our existing city fabric. When we are faced with such a project, how we handle the existing structures and spaces - especially those with significant heritage value, will directly impact our builtenvironment and the legacy that we are leaving behind for our future generations. As architects, it is important that we take the lead on conservation issues. If we cannot show the respect for buildings which have be built in earlier eras - especially those with architectural, technical and historical merits, how can we expect the general public to respect the work of contemporary architects?

Sustainable Design is another area which warrants our urgent attention. The impact of Global Warming is becoming more apparent everyday, and signs are showing that things are going to get much worse. In many parts of the world - storms are getting more severe, droughts are prolonged, and fresh water is becoming a precious and increasingly rare resource. The run-up in energy cost has also severely impacted the cost of everything, including building materials. As the building industry consumes one of the largest share of materials and energy, it is also one of the biggest contributors to Global Warming. As architects, it is our responsibility to find solutions which use less resources and energy. It is also our responsibility to convince our Clients to invest in renewable or sustainable solutions. In the long term, it will help them to save cost and at the same time reduce the impact on our environment.

This year and perhaps the next one or two years will be some of the most challenging for the global economy. The financial crisis which has started in the US will no doubt find it's way around the world in due course. Malaysia - as a part of the global economy, will not be spared. Already, many Government projects have been put on hold, and even the private sector is progressing at a snall's pace. Perhaps this is the time for us to regroup, consolidate, and prepare for the worse. With perseverance and good planning, I am sure all of us will be able to weather this financial storm.



Chairman PAMSC



Letter from the Editor

Waste Not Want Not

t may have become apparent that 'Recycling' is a by-word we at PAM Sarawak are pushing vigorously ... even to the extent that the new Committee for the Tern 2008-09 bears much of the 'recycled' committee members from the last term ...

But kidding aside, the theme of 'Conservation & Sustainable Design' continues to be the focus for this new term for the simple fact that the current social climate in our fair city have deemed it necessary for us architects to ponder on this subject a little longer and deeper.

In this spirit, the second installment of CK Tang's article on '8 Fundamental Steps Towards Energy Efficiency in Air Conditioned Buildings for Tropical Climate' is included in this issue.

Healthy Body Healthy Mind

The PAM Sports Meet was successfully held in early September, culminating with the price giving cum dinner at Garden Hill on 19 September 2008. It was a good start to see some members participating. We hope to see more members flex those biceps and stretch those deltoids. More sports events are planned this term

so keep a watch out.

A big thank you and well done to our Graduates Sub-Committee members: Mr. Lee Chai Guan and Mr. Kevin Phua for organizing the event.

By The People For The People

As always, our Intersection can only really be a members publication if we get contributions from members. This term, we will be more proactive and seek out members to contribute articles and 'pearls of wisdom' for our publication. Please do be generous when we call upon you. You have been warned ...

BTS (Big Tall Sexy?)

Yes, it is coming this term! The Building Trade Show 2009 is in the works, and together with this event many other side activities are planned including CPD events and off course the legendary Gala Dinner. Just make sure you get your tickets early as this year's entertainer will be magical ... Stay tuned for more details!

Cheers!

Ar Stephen Mong





Freedom to Express



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DATUM KL 2008

Datum Kl. 2008 was held on 4th & 5th July 2008. It seems to get bigger and bigger each year, with a record of over 1,200 delegates attending the 2 day design forum. This year there were over 150 delegates from Sarawak - it seemed like the whole of the Sarawak architecture fraternity was at the Forum!

As usual, the programme was iam-packed, starting from 9.00 a.m. on 4th July. Our own Dr. Tan Lok Man started the ball rolling. It was a go-all-out performance, showing their amazing feat of producing impressive schemes and presentations in incredibly shortdeadlines. The most interesting project was a Masterplan for Ho Chi Minh City, which was knocked out by 2 persons (Dr. Tan and an assistant) over the Hari Raya break, as everyone else in the office was on holiday. A high-rise iconic tower meant to be the visual focus of the entire masterplan features a shining star cradled by a chalice, which Dr. Tan jokingly called Sauron's Tower inspired by Lord of the Rings.

What Dr. Tan showed in his bravura presentation was how small firms can knock out ideas and schemes to compete with the best. What it needs is an incredible amount of confidence, hard work, virtuosity and creativity. What it needs is the right people, and not necessary more people.

Other notable speakers include an engineer from Adams Kara Taylor UK, a UK engineering firm which has done work for Zaha Hadid and other big name architects. They show a refreshingly pure approach to engineering - really looking at the building and

what it requires in terms of structural systems, instead of trying to shoehorn the building into standard columns, beams and slabs which many local engineers are wont to do. One of the most beautiful structures presented is the Henderson Bridge in Singapore - really worth a visit as it is right at our door step.

Another interesting speaker was Hou Liang from China. Hou Liang is a new breed of Architects working in their homeland. Very sophisticated and world savvy, he was trained in Belgium and has worked in several offices in Europe. One of the most interesting projects presented was a competition entry for the Seoul Performing Arts Centre which he has been invited to enter the final stage competition. A cylindrical-shaped building, the external skin is derived from Chinese paper cut design, with regular patterns of small cuts interspersed with bigger cuts which allow view out of and into the building. These biaaer accommodate different programs inside the building, and also provide the enigmatic look of the outer skin. Hopefully the building will be realized, and then we can see the translation of idea to reality and whether anything is lost in the process.

The Forum is not short of superstar architects, with Ben Van Berkel of UNStudio presenting the futuristic



The Convention Hall at Datum - it was almost full house

Mercedes Benz Museum in Stuttgart, Germany. The other superstar architect was Kengo Kuma, one of the leading architects from Japan. His recent works have shown a change in direction. He is now working on projects of smaller scale, using natural materials such as wood, bamboo and stone. In his architecture one can sense the desire to return to the basics, to rediscover the connection with nature. One of the projects presented was so simple - a small hut to house the local Buddha statue in a village. It involved rediscovering indigenous construction technique of using adobe walls to create a structure which is no more and no less a shelter for the statue. That courage to let something just be what it is - rather then try to adorn and decorate with unnecessary frills, comes from his many years of tearing away architecture down to the basics. There is a celebration of the "quiet" rather then the "loud", which has always been a trademark of Japanese architecture. It is inspiring and provokes one to thinking deeper about the true and meaning purpose architecture. Maybe there is a need to re-look at the modern tendency to "shout" in order to be heard above all the "noise".

continued page 8...

Continuation..... Part 2 of '8 Fundamental Steps Towards Energy Efficiency in Air Conditioned Buildings For Tropical Climate' by CK Tang.

3. The 8 Steps Toward Energy Efficiency in Buildings

The simulation results of the 3 case scenarios were tabulated in a bar chart (displayed in Figure 2) to provide an overview of the various breakdown of energy consumption in a building.

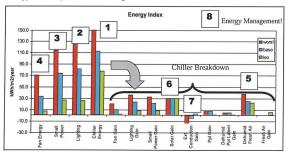


Figure 2 Energy Index breakdown of 3 different types of building scenario.

The energy index breakdown in Figure 2 shows that there are basically 4 major energy consumption in an air-conditioned building in tropical climate. These are:

- 1. Fan Energy
- 2. Small Power Energy
- 3. Lighting Energy
- 4. Chiller Energy

Usually the chiller energy and fan energy are combined and called as air-conditioning energy; however, for the purpose of understanding the energy flow in building, it is useful to it split up in order to provide a breakdown of chiller energy into each heat element that the chiller is required to remove from the building.

The chiller energy breakdown showed the following heat element that is removed by it from an airconditioned space:

1. Fan Sensible Heat Gain

The fans have a motor that drives it. The motor would then generate waste heat. This heat is introduced directly into the air-conditioned space.

2. Small Power Sensible Heat Gain All equipments that are plugged into

the powerpoints constitute of small power energy use. As a law of energy conservation, all electrical energy used by these equipment will end up as heat in the air-conditioned space.

3. Lighting Sensible Heat Gain

Similar to the small power sensible heat gain, all electrical energy used by lighting will end up as heat in the air-conditioned space.

4. Solar Radiation Sensible Heat Gain The heat gain due to solar radiation through the building windows are known as solar radiation sensible heat gain.

5. Conduction Sensible Gain due to

The heat gain due to conduction through the building facade excluding the roof space.

6. People Sensible Heat Gain

The sensible heat gain from people is the heat emitted by people in the airconditioned spaces.

7. Dehumidification of People Latent Heat Gain

The latent heat gain from people is the moisture emitted by people in the air conditioned spaces.

8. Dehumidification of Fresh Air Ventilation

The infiltration of fresh air (outside air) into air-conditioned spaces bring along moisture content of the outside air.

9. Fresh Air Ventilation Sensible Heat

The infiltration of fresh air (outside air) into air-conditioned spaces bring along heat/cooling content of the outside air.

The chiller energy is used to remove all the heat generated in the list described above in order to maintain the comfort temperature and humidity in the air-conditioned space.

The chiller energy is the highest contributor to the total building energy use for all the cases. The electricity used for lighting is consistently the second highest, followed by small power and lastly the fan energy that is used to deliver cold air into the spaces.

Figure 2 is a very insightful chart. It shows that in the worst case scenario the heat generated by lighting and small power is higher than the heat from solar radiation or conduction heat gain in the building.

More interestingly is the fact that the worst case scenario, the net conduction gained over a year is negative, meaning that heat is being conducted out of the building more than being conducted in. This is due to the reason that in a worst case scenario, a significant amount of small power equipment and lighting system are still running during nonoccupied hours (e.g. night time to early morning), at hours where the outside temperature is low. The air temperature in the office space during night hours would then be (due to the internal equipments and lighting that are still in operation) than the outside air temperature. Therefore, heat is being conducted out of the fabric of the building, helping to cool the building during night time.

This chart also shows that conduction gain is high for the base case in 1987 due to the reason that the building in 1987 does not have night load inside the building because it does not have equipments that are running during night such as computers, fax machine, server room, control room and etc.

The dehumidification of fresh air in the worst case scenario is also shown to contribute more energy to the chiller than the solar radiation heat again. This is largely caused by the high moisture content of a hot and humid climate such as Malaysia. In addition the removal of moisture from the air is phase-change process that requires large amount of energy to convert moisture in vapour form into water in liquid form.

It is also interesting to note that the air-conditioning that is used for the primary purpose of providing comfort to the building occupants (people). However, the sensible and latent heat gain from people represented only a fraction of the chiller energy use.

It is also shown in Figure 2, that the heat generated internally by lighting and equipment (small power) represented a significant amount of heat removed by the chiller, clearly indicating that the reduction on energy consumption of internal loads such as lighting and equipments will also lead to significant saving on chiller energy consumption.

Finally the chart shown in Figure 2 allows the following general interpretation to be made to provide a sort of checklist of priorities for energy efficiency features in building starting from the items that consumed that highest amount of energy to the item that consume the least:

1. Energy efficient chiller system. A low efficiency chiller system will increases the total energy use within a building significantly as it increases the energy used to remove heat from the air-conditioned space. The term 'chiller system' consist of the chiller, chill water pumping system, chill water piping system and condenser system such as the fans for the cooling tower and the pumping system of the condenser system. Energy efficiency of the

whole 'chiller system' is required in order to gain efficiency in this area.

2. Reduce artificial lighting load. Natural daylighting is the best because it provide the highest amount of light with the least amount of heat. Other methods include the use energy efficient lighting system, proper zoning of lighting circuit and etc. Night lighting should be carefully considered and should never be over provided.

 Reduce small power load. This would means that energy efficient computers, servers, and control system should be used. Nighttimes energy consumption of small power should be closely monitored.

4. Minimise fan power. The fan is used for the air-conditioning system. The energy use by the fan is mainly contributed by two factors, fan efficiency and ductwork total pressure. Selection of fan with high efficiencies will reduce the energy use by fan significantly, while larger duct sizes will have lower pressure loses and therefore lower overall static pressure and thereby reducing energy use of the fan.

5. Control of fresh air intake and infiltration. Air-tightness of building is now shown to be more important than preventing solar radiation heat gain as the infiltration of humid air air-conditioned contributes significantly to the energy used by the chiller. In addition, it is highly recommended to install CO2 sensor in the air-delivery system to control the amount of fresh air air-conditioned introduced in building in this climate. The CO2 sensor will ensure that the quality of air is maintained adequately without over providing fresh air via the airdelivery system to minimise the energy used to dehumifidy outside

6. Control of solar heat gain. Building orientation, exterior shading devices and glazing properties should be carefully considered by the architects to minimize heat gain from the sun.

7. Insulation of building fabric. Building fabric should only be well insulated when night load in the building is well controlled. Otherwise, the insulated fabric will trap the heat generated during night hours. It is also possible to use vegetation (greeneries) outside the

building to help to keep the microclimatic surrounding the building to be cooler.

A low energy building design need to address all these 7 steps, as these are the fundamental steps towards energy efficiency for airconditioned buildings in tropical climate. It should also be noted that in each proposed step there are many possibilities to achieve the same intended objective as every building is built unique. It is up to the designer of the building to be creative to provide the most appropriate solution for their client while addressing these fundamental steps for energy efficiency in air-conditioned building in the tropical climate.

Step 8 is energy management of the building after construction. This is to ensure that steps 1 to 7 are being practised in the building during the actual operation of the building to achieved the intended effect of a low energy air-conditioned building in tropical climate.

4. Summary

The re-evaluation of the OTTV offers an opportunity for an insightful analysis of typical energy consumption in buildings. As energy flow in building is often a matter of great complexity, this analysis simplified and put in perspective of the relationship and quantity of the possible energy saving potential of each element of a typical building into 8 fundamental steps. More importantly this analysis aided in providing a form of general checklist of priorities in the design of energy efficient buildings for the building designers such as the architect and engineer.

References

- Technical Committee on Energy Efficiency in Buildings, 2001, Malaysian Standard 1525. Sirim, 5, pp. 10 - 18.
- Kannan, K.S. & Lawrence Berkeley Laboratory, 1987, OTTV Formulation on Malaysian Climate.

continued page 5 ..

If everyone is "shouting", then in the end nobody actually gets heard.

Another architect who prefers to "whisper" rather then "shout'" is Rene Tan of RT+Q Architects from Singapore. He presented a series of houses which have been so meticulously crafted, they look and feel like luxury watches or luggage. Every corner, every detail has been so carefully thought out so as to complete the whole picture of architecture as sculpture. While it is difficult to detect any "meaning" or "individuality" from the architecture they all seemed to be designed for the same client - it nevertheless inspires awe and respect for the skill and craftsmanship involved in the process. It would be interesting to see how the firm evolve into doing projects of a bigger scale and for different functions. Would they still be able to preserve the purity of design?

One of the most rewarding presentations for me was the talk by Nader Tehrani of Office dA USA. Nader, besides practicing, is also a tenured Associate Professor of



Architects from Sarawak at the Datum

Architecture at MIT. His theoretical and research oriented approach is shown very clearly through the exploration of materials, techniques and construction process. The use of traditional materials such as bricks, metal and masonry, and the blending and transformation through modern computer modeling and digital fabrication techniques is quite amazina. Throughout presentation, one can see that Nader has truly brought something new to the table. It is a new way of building, a new way of looking at materials, and not just about style and iconic objects. His work pushes the boundaries of architecture, and leads the way for new directions in architectural design.

The crowd favourite of the Forum must have been Biarke Ingels of BIG Architects from Denmark. Still very young, Bjarke has already worked with Rem Koolhaas at OMA, and started his own firm in 2005. He treats architecture as a problem solving exercise, and does not take himself too seriously. Most of the projects involve looking at the needs of the client, analyzing the potentials and constraints, and coming up with eye-poppingly ingenious solutions. One may not always agree with Biarke's solutions, but it is impossible not to be caught in the frenzy and excitement of the schemes. Many of his design antics almost inspire standing ovations from the audience. Nevertheless - one comes away with an empty feeling, much like after watching a blockbuster movie. It was exciting while it lasted, but was it meaninaful?

It has been another landmark year for Datum KL, and PAM must be congratulated on initiating and nurturing this design forum which has now gathered regional following. It is interesting to see what the organizers will come up with next year. Perhaps a Frank or a Zaha?



PAMSC Committee Members at the Datum

DNA AWARDED MENTION IN TWO CATEGORIES





Design Network Architects Sdn. Bhd. (DNA) received a Mention in the PAM Awards 2008 under the Public and Civic Building Category for their Wan Alwi Mosque and another Mention for One-Tree-House under the single-residential category.

The design for the mosque complex was commended for its effort in "re-interpreting a building of traditional typology yet maintaining the functional and communal context."

A major feature of the design is the development of spaces in the form of tree courts, plazas and gardens to promote communal activities in the forecourt. The old surau has also been integrated into the new structure through adaptive-reuse.

The One-Tree-House design evolves from the solitary tree that was found on site at the inception of the project. This house is seen to revive the character of the Malay house in its relationship with its neighbours and within itself through courtyards and communal spaces.

The annual Malaysian Institute of Architects (PAM) Architectural Awards are conferred to recognize Malaysian architects who pursue excellence in design. The award promotes 'the advancement of quality built environment that has beneficial, social, physical and cultural impact in Malaysia and to recognize the diversity of Malaysian Architecture'.

PAMSC would like to congratulate DNA for their achievement.







CPD ON 'HISTORY REPEATS ITSELF'

This seminar, held on August 6, was entitled 'History Repeats Itself.' The speaker is Ar. Lim Peng Keang and his presentation is on defects that has occurred in mass housing projects today which are not too different from those that happened in the 1970's and 1980's, a recurring problem for architects today and causing them headaches.

"These defects can cause legal issues for the architects and at this seminar, we try to identify the problems involved and seek ways to help architects avoid these problems and seek ways to help them to improve. This is in a way a self-improvement for the architects and hopefully will reduce these problems becoming more rampant," said Ar. lim

Ar. Lim also listed out what course of action an architect can do when he/she has discovered a defect or defects during construction. An architect can act under the Building Contract, or act under the Standard Sales & Purchase Agreement for Land and Building or act under the Uniform Building By-laws.

Some of the commonly identified defects occur at the roofs & ceilings, in the internal areas of the houses and also at the external areas of the houses. The speaker also presented some slide pictures of the common defects that had occurred.

Ar. Lim is with Akitek Berjasa and he graduated as an architect in 1970. He has worked in both Singapore and Malaysia on many housing projects during his practice as an architect. He is also a PAM Arbitrator and an external architect to other architectural practices. He has been a committee member of the



The speaker Ar. Lim Peng Keang

Professional Practice Committee (formerly known as the Housing and Practice Committee) of PAM for many years.

At the conclusion, Ar. Lim also presented three case studies for the benefit of the more than 40 participants who attended the seminar.



The participants at the seminar

CPD ON PAM CONTRACT FORMS

A capacity crowd of participants attended 'The PAM Forms of Contract 2006' which was held on October 11

The aim of the seminar was to present the PAM Contract 2006 Main Forms and Sub Contract Form in detail to the participants. The Contract Review Committee presented the changes by referring clause by clause to the PAM 1998 Form and the reasons for change to the PAM 2006 Contracts.

The drafting process of the PAM Forms of Contract 2006 took five



The speakers for this seminar are Ar Jerry Sum Phoon Mun, Ar Chee Soo Teng, Ar Tan Pei Ing and Sr Low Khian Seng (From the left)

years and the construction industry and professionals involved were kept informed of its interim progress via periodical workshops organized by the Contract Review Committee. The workshop was a venue for the years and the construction industry and professionals involved were kept

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CPD ON DESIGNING FOR FIRE SAFETY PART II





View of the participants attending the seminar

The Speaker Ar Chong Lee Siong

This seminar, held on September 20, is the second of a series on the Uniform Building By-Laws on Designing for Fire Safety, following up on the "Designing for Fire Safety Part I: Means of Egress" in which the topic explored the fundamental principles of designing buildings for safe evacuation.

The speaker for this seminar is Ar Chong Lee Siong of LeeSiong Architect and he introduced the concepts of Passive Containment to help participants understand the principles of Compartmentation and the various elements that make up this concept which will allow the architect to do the designing to comply with the provisions of the Uniform Building By-Laws.

Ar Chong also explained the characteristics of fire and applied that in the design for compartmentation, fire resistance ratings for building components, fire barriers, smoke control and the protection of openings, with reference to the 5th, 6th and 9th Schedule of the Uniform Building By-Laws.

The speaker is a member of the UK-based Institute of Fire Engineers (UK), an internationally recognized body that studies and promotes the science of Fire Safety. He has contributed to the book "Guide to Fire Protection in Malaysia" and was a key seminar speaker for the Fire & Rescue Services Department Malaysia during the implementation of Fire Certificates for designated buildings. In addition to his architectural practice, he is also a partner of AMEP Engineering Sdn Bhd, an engineering firm which provides consultancy on designing for fire safety in buildings.

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informed of its interim progress via periodical workshops organized by the Contract Review Committee. The workshop was a venue for the Contract Review Committee to explain their reasons and proposals for any changes to the PAM 1998 Form and also provides an avenue for interested parties to suggest further possible improvements for the Contract Review Committee's deliberation

When the contract drafting reached the final drafting stage, a two-day workshop was held in October 2005 and the Contract Review committee presented a clause

by clause explanation of the proposed revisions to the Contracts. Following the final workshop, opportunities were also extended for further feedbacks and improvements.

The suite of Contracts comprising the PAM Contract 2006 (With Quantities), the PAM Contract 2006 (Without Quantities) and the PAM Sub-Contract 2006, were finally completed and was launched by YB Dato' Seri S Samy Vellu, Minister of Works, Malaysia on April 5, 2007.



The participants at the seminar



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