

HOUSING NEWS

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Editorial

Assoc. Prof. Ar. Meor Mohammad Fared Meor Razali
Chief Editor

After two years absence, Housing News returns with a new Editorial Board and contemporary image. The content of the newsletter remains the same and a cartoon slot also has been introduced to provide humorous outlook into housing and settlement issues. To cope with the changing world, Housing Research Centre (HRC) has set a new vision entitled "**Leader in sustainable human settlement innovation**" which is aptly conveyed through the message from Director of HRC.

The global warming and unpredictable weather has forced us to re-examine our lifestyles and rallying cry for sustainable development is no longer mere sloganeering but to a certain extent has become a policy. With that in mind, **Coping with climate change** has been chosen as the theme for this issue. The **Self Built Anyone?** article, offers a prototype of rapidly built shelter that is easy to construct, affordable and using locally available materials. In the aftermath of a natural disaster due to climatic change, the Ready-To-Assemble (RTA) unit might be one of the better solutions. Whilst, **Appropriate sleep covers reduce households energy demand**, is a passionate plea at a micro level to reduce the energy consumption of a household. At the macro level, **Fear of climate change? Adaptation and Mitigation measures in planning for comfort living in tropical environment** offers insight in combating the impact of climate change from the planning and management perspectives.

With the passage of time, changes are inevitable, and coping with these changes require innovative and sustainable approaches.

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Coping with Climate Change



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Message from Director, Housing Research Centre

Today, the development of Sustainable Human Settlements (SHS) is becoming a major challenge for the housing and construction industry. Inhabitants of SHS in both urban and rural areas are looking forward to a healthy, safe and secure living environment, with sufficient opportunities for economic and social development in harmony with nature, cultural heritage and spiritual values. Rising living standards coupled with an increasing awareness of environmental issues have resulted in a higher demand for sustainable designs for housing.

Housing Research Centre (HRC) in Universiti Putra Malaysia, aims to develop SHS policy, strategy and technology for the local as well as global housing and construction industry. Issues in SHS include such initiatives as use of sustainable materials, technology and design, conservation of water and energy through rainwater and daylight harvesting, security and socio-economic considerations. Housing designs that provide better ventilation, passive cooling, rich daylighting, in short a healthier indoor environment minus the heavy energy consumption are the latest craze nowadays, under the new name of green technology. However there is a need for further research and development work in search of new ideas and technology and to optimise costs.

With the vision to be a leader in sustainable human settlement innovation, I hope HRC shall be able to be in the forefront of research and development activities in the housing and construction sector for many years to come.

Thank you.



Prof. Dato' Abang Abdullah Abang Ali
Director of Housing Research Centre
Universiti Putra Malaysia



Every year, Muslims around the world observe a month-long fast, from dawn to sunset, during the 9th month of the Islamic calendar, Ramadhan. This is the month of deep self-control devoted to inner reflection and sanctity. Muslims believe that this month is filled with blessings, where peace, equality, faith and love are strengthened. When Ramadhan ends, Syawal will enter the calendar, as Muslims celebrate Aidil Fitri, the victory of having successfully observed Ramadhan. This special month is celebrated by asking for and giving forgiveness, and visiting our loved ones, family and friends to strengthen our relationships. We in HRC would like to wish all Muslims to welcome the Ramadhan as well as Aidil Fitri. May this Ramadhan and Aidil Fitri bring all the comforts you have ever wanted, and all the joy and laughter you have ever wished. -KD-





Wan Srihani Wan Mohamed
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SELF BUILD ANYONE?

Changes in climate can lead to many catastrophic events such as hurricanes, tsunamis and flood ravished areas. As a result, many settlements were destroyed; many people were killed not to mention thousands were left displaced. Administration of post disaster recovery is a tricky business. One of the many decisions that needed to be quick is provision of shelter. Through this invention of Ready-To-Assemble (RTA) system, it is able to meet that objective speedily. Application of self build method during the shelter provisions, would not only reduce the cost. In addition it encourage community rebuilding, as well as utilising readily available labor, the victims themselves.

Self build housing has been widely known as an alternative construction method in providing immediate shelter or houses to low-income household especially in developing countries. Statistics in the UK shows that the completed self build homes has increased consistently from 2,000 in 1978 to 15,000 in 1999 [1].

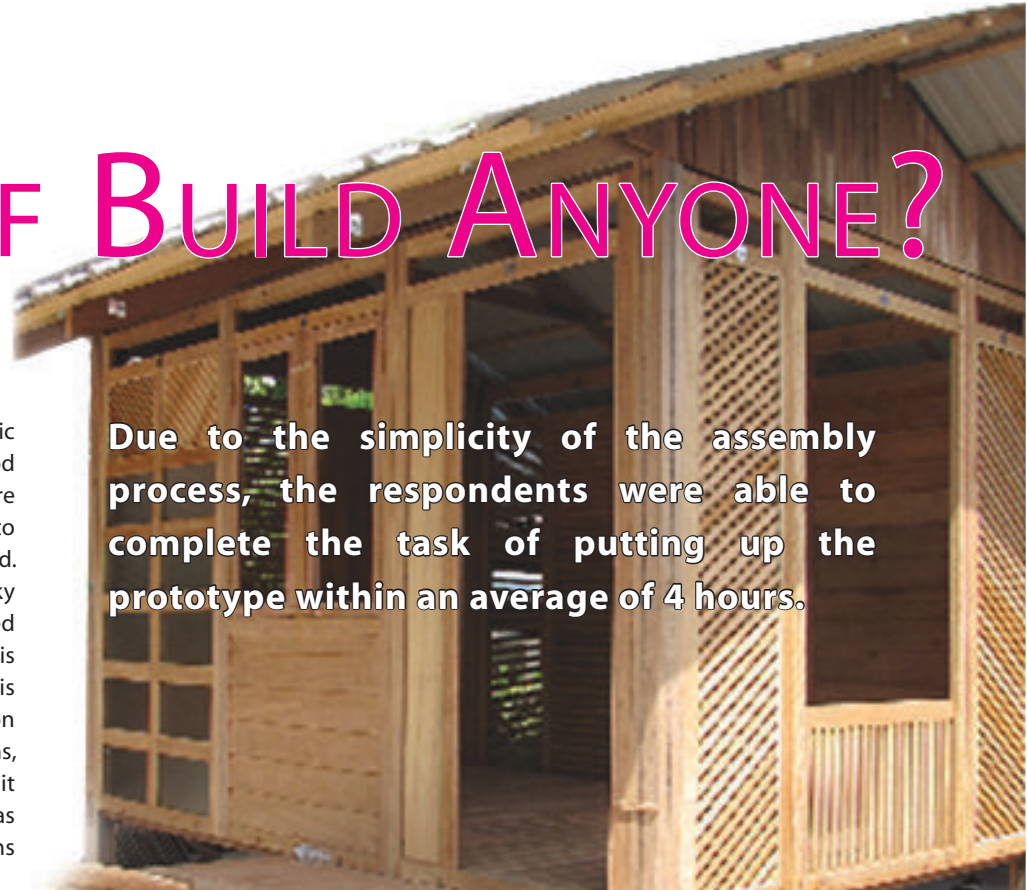
A few facts are recognized about self build homes. Firstly, it is predominantly established in less urban area whereby speculative market is comparatively small. There is also a shift in self builders from those who cannot afford the mainstream housing to those who actually wanted exclusive properties at certain location. As there is no dependable data on the cost of self build housing, it is difficult to put a price on the total cost of one complete unit. This is due to great differences in land cost and erratic prices of building materials as well as the construction system opted for individual homes. It is acknowledged that self builders usually include innovative techniques or design. Even though, innovations are often controlled by planning requirements, there are concerns over resale values and insufficient knowledge of innovation within the construction industry.

¹ James Barlow, Robert Jackson and Jim Meikle (2001), *Homes to DIY for: The UK's self-build housing market in the twenty-first century*, report published for the Foundation by YPS (ISBN 1 84263 039 3)

² Wan Mohamed, W.S. and Ahmad, Y. (2006), "The Segal Method", *Proceedings for the 2nd ASEAN Post-Graduate Seminar (APGS) at University of Malaya*. 4-6 Disember 2006, by Faculty of Built Environment, UPM.

³ Wan Mohamed, W.S. and Ahmad, Y. (2009), "Prospective of Prefabrication System In Self Build Housing: Is It Possible In Malaysia?", *Proceedings for the 4th ASEAN Post-Graduate Seminar (APGS) at University of Malaya*. 14-16 April 2009, by Faculty of Built Environment, UPM.

Due to the simplicity of the assembly process, the respondents were able to complete the task of putting up the prototype within an average of 4 hours.



It is projected that the sector will be able to contribute about 18,000 a year of self build houses to the housing industry and would increase up to 10% (about 20,000 houses). However, further growth in this sector requires increased awareness and easier production. There is also a need for changes in land provision, planning and finance plus a different attitude towards our construction industry. Rather than allowing the housing industry to be monopolised by capitalists, it should be promoting the idea of autonomy as mentioned many times by JFC Turner (1972).

Due to this, a more specific research was conducted in Padang Terap District, Kedah to instigate the idea of self build housing using a simpler construction approach which is categorised as low technology. Through earlier interviews, it is established that most respondents could only afford a house that costs much less than RM30,000 and the idea of owning a house through self build process using a simplified construction system is appealing although it is risky.

An invention using the most accessible material as well as is easy to work with was prepared. Timber was chosen as it is categorised as lightweight construction and it is easily obtained from any part of the country. It was referred to as Ready-To-Assemble (RTA) self build housing system. The RTA modular housing system is created based on five basic principles (with reference to Segal approach [2]) These principles have the potentials to be applied locally and to be utilised as fast assembly of temporary shelter, resettlement or for post-disaster homes. The aim of the system is designed to encourage self build process in providing a house.

The five basic principles are:

1. Using available current market construction materials whereby these materials are accessible in any parts of Malaysia.
2. The materials are used either in their uncut sizes or with minimal cutting, therefore the sizes of windows and doors correspond to other materials available in the market and promoting zero or minimal wastage on site.
3. The housing components (wall, floor, columns, beams, roof trusses) are modularised to ease the non-skilled worker during the construction process.
4. Drawings are kept at smaller sizes (A4 or A3) aided with the schedule of materials indicating sizes, length, finishing and even type of material to suit individual financial capacity. (what is the advantage of this? Need to explained shortly here, e.g. ease of handling?)
5. Through modularisation of smaller component sizes, the presence of machineries can be avoided. Hence houses are organised to be built through self build schemes with low technology required.

>>> Continue on Page 4

The RTA system was tested on 4 different groups of people in one of the villages in Kedah. The program was set to test not only the comprehension of self builders reading the given illustrated guidebook but also the response towards the idea of having to self-assemble a timber prefabricated house. Due to financial restriction, the researchers were able to only design for a 12'X8' prototype to be constructed in this program. All components i.e. main structural members, walls, floors and even the roof structures are modularised using the market sizes. For example, the frame of the wall module is based on 4'X8' which can be compatible towards a variety of materials sold in our local market such as cement board, corrugated metal sheet, plywood and gypsum board. The program was conducted for 4 days whereby each day has a different team to assemble the prototype in the morning and after completion it would be dismantled again to prepare for tomorrow's group. Each team consisted of 8 persons with different background and age group ranging as young as 16 up to a 58 years old. Due to the simplicity of the assembly process, all teams were able to complete the task of putting up the prototype within an average of 4 hours.



HOOR 1: Main structural components were assembled



HOOR 2: Assembling wall module completed within the second hour



HOOR 3: Finalising fixing of roof panels



HOOR 4: Construction of one modular space concluded

Based on observation during the assembling process and the interview survey done after all the groups have completed assembling the prototype, we came to these conclusions:

1. Dedication to the task in hand is utterly important as it would almost certainly take longer when enthusiasm declines and unnecessary compromises had to be made.
2. Unexpected delay due to situation beyond our control may occur. Delays inevitably will happen which are beyond our control. For example, we experienced rain and storm on the 3rd day of the program in Kedah right after the major structural components have been assembled. Therefore a good project plan is required, in relation to time, money and the individual or group capacity.
3. Good communication within the group is crucial to ensure mutual gain, knowing when and how to compromise. Situations need to be addressed in their full complexity.
4. In order to ensure that the self build house for an individual is built accordingly, it is important to motivate others so as to encourage them to work competently and swiftly. In addition, it helps enormously to have a fast assemble system as it fundamentally affects time consumption in building the house.

Even though the general response was positive on the RTA system, the awareness of possibilities in using low technology approach through modular concept is still minimal among the low-income group. As to date, the concept of Industrialised Building System (IBS) in Malaysia has become more and more expensive due to production and design as well as centralised plant location, which is only practical where economies of scale is involved. However, RTA is categorised as low technology that could be manufactured in mass quantity at local area instead of being centralised in cities. Regardless of the future housing programs set by Malaysian government, the researchers believe that an establishment of rural studio, either as part of architectural studio teaching or as a non-profit organisation, should be facilitated as this would remind us all of our individual responsibilities.

APPROPRIATE SLEEP COVERS REDUCE HOUSEHOLD ENERGY DEMAND

Ar. Kalsom Mohamed
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UPM Serdang - A study conducted by a UPM researcher reveals that the use of inappropriate sleep covers when sleeping in an air conditioned bedroom may lead to higher household energy need. People who use thicker, comforter type blanket tend to operate their air conditioners at a lower temperature than that set by people who use single ply or thinner blanket. As a result, the cooling load for a comforter user's bedroom is higher than the load for a non comforter user's bedroom. At the moment, air conditioners constitute up to 50% of a household energy use (excluding transportation energy), making this appliance a significant contributor to Malaysian households energy demand.

The study was conducted by Dr Mohamad Fakri Zaky bin Ja'afar, from the Department of Architecture, Faculty of Design and Architecture. He did a survey of 112 households with air conditioners around the Klang Valley between 2004 and 2005. He found that the need to use comforter is not a necessity in Malaysia, as more than 60% of respondents were found did not use this type of blanket.

In a more detailed study following the survey, he conducted environmental monitoring in 38 households with air conditioners. He found that those households which occupants use comforters operate their air conditioners at an average of 22.1 degree Celsius. This is 2.8 degree lower than the temperature setting for households without comforter use, i.e. an average of 24.9 degree Celsius. This seemingly small difference resulting from the use of thicker blankets, actually translated into an increase of 52% cooling load.

"It seems that the temperature setting they would operate for their air conditioners is decided at the moment they purchased the comforters at the retail outlets. Of course sleeping under thicker covers necessitates colder ambient room temperature" he said in a public talk here recently.

Commenting on the reason why people use comforters, he said "I believe it has more to do with psychological need, with the choice of lifestyle. Browse any local home design magazines nowadays and you will see the sight of a thick, soft comforter spread on a bed, suggesting good taste in design. I think we need to rethink how we view this issue for the sake of the environment"

Dr Zaky Jaafar was speaking at a public outreach lecture held here on the 3rd of June 2010. The talk is part of a lecture series entitled 'Greenspiration Lecture Series' organised by the Department of Architecture. It is meant as a platform for academicians to disseminate research findings, latest information and knowledge to the public, especially on environmental and sustainability issues. For upcoming lecture dates and other info, please contact the department at 03-89464070.

Fear of climate change?



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ADAPTATION AND MITIGATION MEASURES IN PLANNING FOR COMFORT LIVING

In Michael Crichton's 2005 action-packed thriller novel, *State of Fear*, the scientist hero discovers that climate change is all a fraud that has been commercially and politically manipulated. It was based on arguments that the percentage of change was not too significant, not be expected for at least another two decades, and none of the theory is conclusive enough to show that human has indeed caused the climate change.

The issue of global warming and climate change should not be taken lightly. Despite the controversies on whether we should prepare ourselves for climate change, governments from all around the world have come to the consensus to strategically put effort on environmental policy and management. Many recent works have showed that climate change is human induced and. There is no doubt that the resulting rise in the Earth's temperature contributes to man-made activities and actions. Worse, the changes are not limited to increase average temperatures or warmer weather but they also mean more extreme and unstable weather conditions. The current unpredicted weather-related events like the rise of sea level, increased storm events, extreme heat waves and flooding indicate an urgent need for new approaches to settlement design to enable human and non-human species to adapt to these increased risks.

The question is not on how to rectify the problems, but more on how to mitigate and adapt to such changes. This article will discuss about mitigation and adaptation processes that can be carried out to help us curb the effect of climate change. While mitigation planning works to reduce current and future greenhouse gas emissions, including emissions that are generated through the built



Source of image: <http://topbanana.wordpress.com/category/green/>



environment and transportation sectors, adaptation seeks to adjust our development and settlement patterns to minimize the negative impact of now-unavoidable climate change. Thus, mitigation and adaptation must be treated as equally important interrelated issues.

Ewing et. al (2008) argues that both adaptation and mitigation measures should be tackled together in the form of compact development to reduce vehicle miles travelled (VMT). They list five key factors of planning and urban design that will assist in reducing VMT namely, Density, Diversity, Design, Destination accessibility and Distance to transit.

Who should lead the action of adaptation and mitigation for climate change?

In all cases, the central government should become the main catalyst to spur the need for action to adapt and mitigate the climate change. In the USA, some short term Government measures include planting shade trees in and around local government parking lots and facilities, maintaining healthy urban forests and street trees as well as promoting tree planting to increase canopy and to absorb Co2. Long term measures include co-locate facilities to reduce travel time and maximize building use, utilise brownfield sites where possible, preserve open spaces, promote high-density and in-fill development through zoning policies, institute growth boundaries, ordinances or programs to limit suburban sprawl, give incentives and bonuses for development in existing downtown areas and areas near public transit (Ewing and Rong, 2008). In implementing the strategies, the UK government have identified that the local authorities have a key role to play in the development and delivery of action to curb the threat of climate change, particularly through cutting emissions of carbon dioxide. This is based on the facts that they have the capacity to influence carbon emissions, either directly or through the influence or control it exerts on another person or organisation.

Local authorities are important key players in reducing the impact of climate change as they have jurisdiction over so many matters that influence energy consumption and Co2 emissions, such as planning and land use, transport, air quality management, waste management, and building regulations. In addition, local government is the level of government closest to the people and through Local Agenda 21 and community planning processes citizens can be educated about the relevance of their actions for the global environment and build consensus for local climate protection measures (LGA and LCCC, 2007). Therefore, local authorities should be developing and implementing local action plans to reduce greenhouse gas emissions.

>>> **Continue on Page 6**

Adaptation and Mitigation measures for climate change through land-use planning

The key land-use pattern implication of climate change mitigation is concentrating development so that car travel and building energy use is reduced. In other words, the focus should be on compact development to control sprawl or smart growth campaign. While proposing for higher density development, we must not neglect the importance of maintaining an urban forest and green lungs to cool buildings and sidewalks, as well as to absorb carbon. The table below illustrates some actions taken by local authorities from different countries in combating climate change through planning.

The Malaysian Government Actions

The Malaysian government has also pledged to be one of the nations to curb climate change in Copenhagen in 2009. Part of the strategies is to reduce carbon emissions and increase green coverage. Malaysian government strategies as stated in 10th Malaysia Plan include promoting concentrated growth and inclusive development, valuing environment endowments, development that encourage working and leisure within same compact areas, seamless public transport connectivity, increase pedestrian-friendly street network, allocating more open spaces and green corridors, and restoration of rivers and waterfronts in cities. In addition, there is more budget allocation for the people-centric public transport system and renewable energy target of 98MW by 2015 to contribute 5.5% to total electricity generation. For short term measures, a policy to phase out incandescent light bulbs by 2014 to reduce carbon dioxide emissions by 732,000 tonnes and reducing energy usage of 1,074 gigawatts a year has also been implemented. The states are encouraged to gazette forests especially water catchment areas and allocation for more trees to be planted with non-government organisations. Besides, there are steps on implementation of Clean Air Action Plan was devised. The government is also committed in preserving the rain forest through the planning for preserving the Central Forest Spine of 4.32 million hectares in Peninsular Malaysia and Heart of Borneo of 6 million hectares in Sabah and Sarawak.

Conclusion

In summary, the consensus in greenhouse gas mitigation is that the appropriate local land-use policies must limit sprawl, reduce carbon emission (efficient and effective transportation system) and create denser built forms, while maintaining or increasing urban forests if at all possible. Development plans should not focus on urban areas only, as both urban and rural areas complement to each other as the producer and sink of carbon emission. Laws and regulations (especially for natural resources such as water and forest), and knowledge bases (such as awareness, education and research and development-R&D), although less tangible, are also important to ensure sustainable development and sensitivity towards climate changes. Some other mitigation measures that could be implemented include the support from the government for cleaner alternative energy and the use of solar energy. Flash floods could be reduced through the use of less concrete drainage and more natural infiltration such as lakes for retention ponds and bioswales.

Some of the key actions for planning and communities to undertake for adaptation include changing infrastructure and prepare disaster plans, forecasts for climate change, include provisions for potential climate induced sea level rise in local plans, planning for larger river floodplains and protecting wetlands in areas likely to experience increased severe storm events from climate change, providing corridors for species movement as climate changes and species ranges need to change, and changing building requirements to reflect the need for more natural cooling/less contribution to the heat island effect, for example, the Green Building Index recently published by the Malaysian government. Instead of creating low density areas, the government should focus more on medium density residential area. Buildings that are more moderate in height and placed to enable natural ventilation between individual dwellings provide adaptation to higher temperatures. Future residential planning may insist on moderate density with ample spaces for green to create the most effective form especially in the tropical environment.

Table 1: Local Authorities actions to mitigate and adapt to climate change.

Planning action to adapt and mitigate climate change	Source /Local Authorities
Increase density of homes and mixing of uses.	Climate Change risk assessment for Victoria, AUS
Revise infrastructure capacity plans to take future climate scenarios into account, rather than historical weather events, and adjust settlement thresholds accordingly.	Gold Coast, QLD (flood plan revisions) AUS
Identify and reserve locations for relocation of major infrastructure and for new decentralized energy, water, or waste management plants.	UK Draft Planning Policy on Climate Change
Link walkways and areas of natural habitat and vegetation. Use urban shade strategies to improve visitor facilities and outdoor amenity.	SunSmart Victoria Shade Development Guide, AUS
Emergency management - Maintain space for emergency access, shelter and evacuation; reserve locations for intermediate post emergency recovery (these locations may be multifunction). Weatherization program to reduce home energy use and improve resilience to storms for low income families.	Portland, Oregon (OR), USA
Collaborate with other local governments at regional level on future climate scenarios and potential responses.	Western Coast Greenhouse Alliance, AUS
Establish effective and ongoing public involvement processes for identifying and prioritizing mitigation and adaptation responses.	Clarence, Tasmania
'Mainstream' climate change across planning and management decisions. Adopt strong objectives for climate change mitigation and adaptation within statutory land-use plans.	Waverley LEP NSW; Yarra Ranges
Collaborate with other local governments at regional level on future climate scenarios and potential responses.	Western Coast Greenhouse Alliance
Revealing the climate change forecast - which includes an increased intensity and frequency of severe weather events - Include businesses, public services and local communities to action.	Northumberland, UK

Source: adapted from local government sites in internet, Gurran et al. (2008); Hamim and Gurran (2009).

¹ Ewing, R., Bartholomew, K., Winkelman, S., Walters, J., & Chen, D. (2008). *Growing cooler: The evidence on urban development and climate change*. Washington, DC: Urban Land Institute.

² Ewing, R., & Rong, F. (2008). *The impact of urban form on U.S. residential energy use*. *Housing Policy Debate*, 19(1), 1.

³ Fankhauser Samuel, Smith Joel B., Richard S.J. Tol (1999) *Weathering climate change: some simple rules to guide adaptation decisions*, *Ecological Economics* 30 (1999) 67-78.

⁴ Hamin, Elisabeth M. and Gurran Nicole (2009) *Urban form and climate change: Balancing adaptation and mitigation in the U.S. and Australia*. *Habitat International* 33 (2009) 238-245.

⁵ Intergovernmental Panel on Climate Change. (2007). *Climate change 2007: Synthesis report, fourth assessment report*. Cambridge: IPCC and Cambridge University Press.

⁶ Local Government Association (LGA) and Local Government Climate Change Commission (LGCCC) UK (2007) *Report on Council action to curb climate change: key issues for local authorities*.

Designing Office Space with Sustainable Environment

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In step with the technological progress, ideas and methods in designing office furniture are expanding beyond traditional concepts and challenge with conventional design ideas and trend. Furniture and products in offices are now becoming smaller, occupied minimal space areas, and can be more mobile and more sophisticated. As successful new technology driven designs ideas which is also focussing to develop products for sustainable and environmental friendly living environment, office furniture design should also aims to encouraged a 'piece of mind' sustainable and motivated working space surroundings.



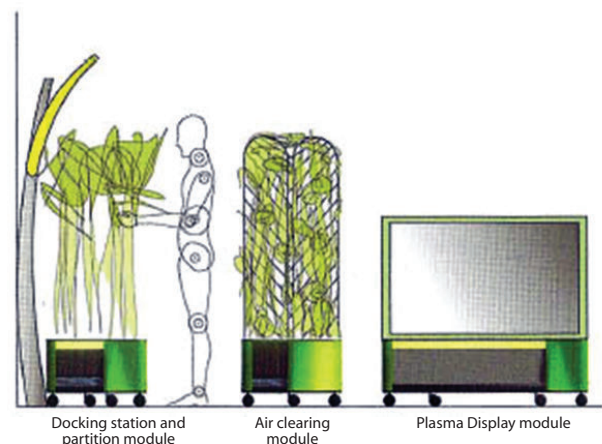
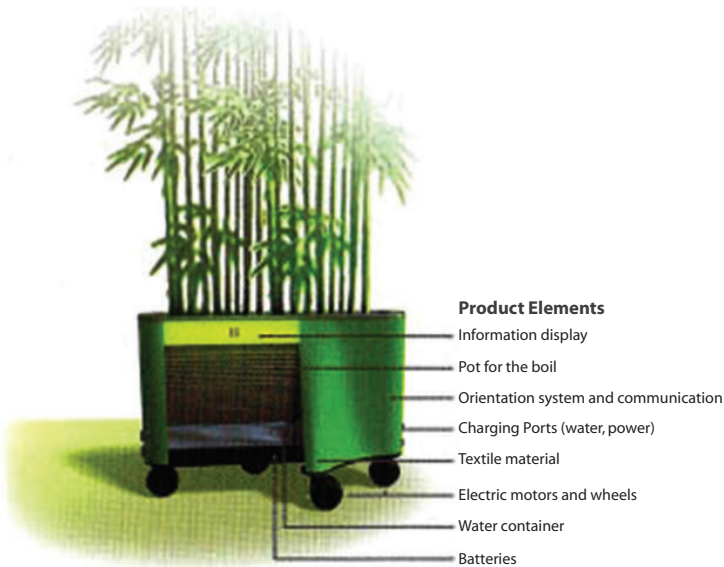
Mobile Office Partition

(Design by Barutcieff S. and Anderson M.)

Office partitions need to be moved frequent to accommodate a variety of individual or group functions. Office managers need to hire plant maintenance service to add a touch of life to partitioned areas. Two designers from Romania took this challenge by creating a mobile office partition system which meets both these needs simultaneously with its smart moving capability. The result is utilitarian, flexible and attractive product concept, named 'Grobot'.

According to them, unlike static partitions in conventional office environment, this 'Grobot' partition is designed to be easily moved and match within office space and its environment. Live plants filter the air and beautify the scenery while a modern modular design allows a variety of support options and style choices (see illustration). Programmed intelligence allows each unit to recharge at a docking station and then return to its position.

Different situations call for different ways of dividing space. This designed system proposed a flexibility to define spaces as needed, from an informal meeting space to a multimedia zone. Technologically, sensors in the room and in the 'Grobot' regulate their positions and movements as they respond to computer commands depending on its function in specific space or room. For future design research, this concept can be further develop by the designer to experiment the integration of digital products in current lifestyle trend to understand about human factors impact on novel products.



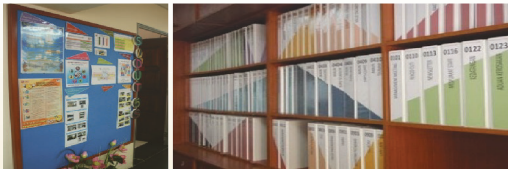
Collaboration Between HRC and "Pusat Pembangunan Keusahawanan & Kemahiran Kelantan" (KESDEC) in the Use of Putra Blok Building System

On November 2009, there was a meeting between the advisor of KESDEC, Tn. Hj. Zulkifli Mamat and Director of HRC to obtain an information on Putra Blok Building system and to discuss the potential of Putra Blok that can be used in training programs under KESDEC. Commencing throughout the meeting, KESDEC had sent a letter of collaboration to HRC. The collaboration is aim to create "Interlocking Blok System Training Workshop" at KESDEC Training Centre, Machang, Kelantan and to commercialise Putra Blok at Kelantan. HRC together with KESDEC had agreed to prepare location of training workshop to be organise, the needs of equipments and expertise.



HRC Pass 5S Audit Certification under Faculty of Engineering UPM

HRC has joined the practice of 5S Kaizen program organised by the Faculty of Engineering, Universiti Putra Malaysia. This activity involves all HRC staff management. In the first audit, HRC managed to get first place with the Excellence category. In conjunction with such success, HRC has been visited by several departments and external faculties such as Faculty of Ecology and the Faculty of Science to be as a good sample to visit. After the three process audit, HRC has managed to retain title in the first place and gained 5 'sticker' good practice examples of 5S. As a result, the Faculty of Engineering has passed the Compliance Audit Quality Certification for Environmental Practices (5s) on March 29, 2010. Audit conducted by the Malaysia Productivity Corporation (MPC).



19-20 April 2010

A Two Day Design Course and Practical Workshop on the Design of Reinforced and Prestressed Concrete Structures to Eurocodes 2010 had successfully held at Seri Pacific Hotel, Kuala Lumpur. This is the 4th time HRC invited Dr. Kim S. Elliot as a speaker for the course. HRC had invited Malaysian Society for Engineering & Technology (mSET) and Construction Research Institute of Malaysia (CREAM) to be the co-organizer, meanwhile Institution of Engineers Malaysia (IEM) as a supporter for the course. There are a total number of 24 participants over 30 registered attended for the course. The objective of this course is to develop techniques in the use of Eurocodes, including limit state design, load factors, material properties, worked examples, construction details, in addition to hands-on workshop in the design of 6 storey unbraced and braced frames, and prestressed concrete floor slabs and inverted tee beams, plus the use of computer software.



14-15 April 2010

A Two-Day Course and Design Workshop on Design & Construction of Precast Concrete Structures 2010 have successfully held at Seri Pacific Hotel, Kuala Lumpur. This is the 6th time HRC invited Dr. Kim S. Elliot as a speaker for the course since 2003. This course was successfully organized by HRC and CREAM whereby supported by IEM. The total number of participants is 37 over 44 registered.

21 June 2010

A Seminar On Structural Masonry Research Needs And Improved Design Standards For Safer Buildings had successfully held at Dewan Taklimat, Faculty of Engineering, Universiti Putra Malaysia. There are a total numbers of 21 participants attended the seminar. The objective of this seminar is to introduce the research by Professor M. Dhanasekar from Queensland University of Technology (QUT), Brisbane, Australia. This seminar is open for academics, researchers, postgraduate and undergraduate students in civil/ building degree programs. Consulting engineers is almost welcome in this seminar. It is hope that there would be a follow-up on the collaboration of research between QUT and Universiti Putra Malaysia in the future.

COMING EVENT STEdex'10

SUSTAINABLE TROPICAL ENVIRONMENTAL DESIGN EXHIBITION

2-16 December 2010
National Art Gallery
KUALA LUMPUR
(Subject to changes)

For more information please visit:
<http://frsb.upm.edu.my>

SUSTED'10 Sustainable Tropical Environmental Design Conference "Tweaking for Sustainable Living"

The aim of the Conference is to bring together researchers and practitioners involved in sustainability to present and discuss their research and developmental activities related to the topic. The conference will serve as a platform for participants to exchange new ideas, experience and knowledge as well as to establish networking for future collaborations. The conference will consist of invited papers from prominent researchers and practitioners, technical paper presentations and discussions. Selected papers will be published in a special issue of the refereed and cited journal Alam Cipta: International Journal on Sustainable Tropical Design Research and Practice. Design and Applied Arts Index (DAA).

Date: 1-2 December 2010
Venue: **Experimental Theatre
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