

PILLARS |

We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.

Building and Construction  Authority

Building the Green Momentum p2-4

Making Our Mark on Global
Sustainability • p6-7

Beyond Net Zero • p8-9

Thumbs Up from the
International Productivity
Experts • p12-13





Ms Jaye Tan is a registered architect with DP Architects Pte Ltd, as well as a BCA-certified Green Mark Professional. She was involved in numerous Green Mark projects, which include the NUS University Town, Resorts World Singapore and other institutional and residential developments. She is currently part of a team working on a Zero/Low energy Sustainable House in Singapore, which is slated for completion by end 2010.

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PILLARS

contents

CEO's Message • p1

Building the Green Momentum • p2-4

In 2030, Singapore Will Be 80% Green • p5

Making Our Mark on Global Sustainability • p6-7

Beyond Net Zero • p8-9

Bringing 'Green' Closer to Home: A Green Mark Singapore: A Green Mark Singapore • p10-11

Thumbs Up from the International Productivity Experts • p12-13

Nominations Now Open for the Built Environment Young Leaders Programme • p14

Integrating Sustainability into Designs • p15

Insights from Germany • p16-17

Professional Management of Complex Projects • p18

Greenest Spark from NUS Team • p19

Is Your Building Friendly Enough to Win?: Pioneer Masters in Facility Management: Pioneer Master in Facility Management • p20

Upcoming Events • p21

CEO's Message



Dear readers,

Last year, we launched BCA's first Zero Energy Building (ZEB) during the inaugural Singapore Green Building Week. Now, one year into its operation, and after a series of test-bedding, we are very pleased to announce that the ZEB has performed beyond expectation of achieving zero power consumption. It netted a surplus of 16.3MWh (megawatts/hour) of electricity. This commendable achievement has not only placed Singapore significantly on the world green building map, it also underscores our innovation and engineering excellence in the advancement of green building technologies.

This year's Singapore Green Building Week, which took place at Marina Bay Sands, saw the Singapore Green Building Council (SGBC) hosting its first SGBC conference and the World Green Building Congress for hundreds of international and local delegates. During the event, BCA and SGBC jointly launched the BCA-SGBC Green Individual Award to accord recognition to outstanding industry professionals for their contributions and achievements in the development of a sustainable built environment. To further promote the government's efforts in the green building movement, BCA, together with HDB, also took part in the Build Eco Xpo (BEX) Asia 2010. Besides showcasing green features and the interim findings from the ZEB, we also had an interactive game at our booth to allow visitors to have a go at retrofitting an existing building.

Indeed, the need to green our existing building stock is a pertinent issue which BCA has been actively pushing for. Besides reaching out to building owners, we are also working on bringing 'green' closer to the masses. As such, we collaborated with Mediacorp to produce a two-part

series to feature Green Mark buildings in Singapore. If you had missed the telecast, you can still watch the video clips on our newly revamped Green Mark website.

As promised in the last issue, we will be featuring some recommendations from the International Panel of Experts (IPE) meeting for construction productivity and prefabrication technology. The IPE had given their endorsement for our comprehensive framework in raising construction productivity. However, we would need the firm support of industry stakeholders to implement the strategies and measures to promote productivity improvements across the entire sector.

In order to document and showcase best practices and latest technologies along the whole construction value chain, BCA has started a new publication in August this year. The new magazine is aptly titled, Build Smart, to inform readers of the latest technologies and processes that firms are adopting to raise productivity on site. If there is any productivity-related news or technologies that you would like to share with the industry, we welcome you to write in to the publication team.

Dr John Keung
Chief Executive Officer

Building the Green Momentum

The Singapore Green Building Council has been actively championing the global green building movement. In recent months, it has held three landmark events and initiated several programmes to further the awareness and adoption of green building design and practices in Singapore.

Singapore Green Building Week 2010

In September, Singapore Green Building Council (SGBC) hosted the Inaugural SGBC Green Building Conference and the World Green Building Council (WGBC) International Congress 2010. The WGBC Congress is an important and influential annual meeting that brings leaders of green building councils together to share strategies for market transformation, policies that accelerate green building practices and ways to tackle global climate change while meeting local priorities.

The umbrella theme of the Conference and Congress was 'Sustainable Solutions for Emerging Markets'. The events welcomed 55 international speakers and close to 700 participants.



Guests and participants at the conference.

The opening ceremony of the SGBC Green Building Conference was officiated by Dr Yaacob Ibrahim, Minister for the Environment and Water Resources. It was followed by a full-house Leadership Lecture Series, jointly organised by SCBC, BCA Academy and Autodesk, and a closed-door session of the WGBC Congress attended by representatives from almost 40 nations. The first day ended with an evening reception at the magnificent Marina Bay Sands Skypark.



Networking session at Marina Bay Sands Skypark.

There was again full-house attendance on the second day of the WGBC International Open Congress where almost 400 participants gained insights from international renowned speakers.

The SGBC conference which was held on the third day, saw international and local speakers sharing on wide-ranging topics covering super-energy-efficient buildings, cutting-edge technologies and designs, financing, green construction and retrofitting of existing buildings. In parallel were three important back-to-back meetings: the SIA Roundtable Discussion, the WGBC Asia Pacific Meeting and the Preparatory Meeting for Tropical/Sub-Tropical Alliance Symposium.



WORLD GREEN BUILDING COUNCIL
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**SINGAPORE
GREEN
BUILDING
COUNCIL**



(From left) Dr Yaacob Ibrahim, Minister for the Environment and Water Resources and Mr Tony Arnel, Chairman of WGBC, at the opening ceremony of the conference.

SGBC is also a strategic partner with REED Exhibitions for the Build Eco Xop (BEX) Asia exhibition, which was held in conjunction with the SGBC Green Building Conference and the WGBC International Congress, to showcase products and services that are eco-friendly, sustainable and energy-saving. The exhibition attracted more than 7,000 visitors and 1,200 exhibiting personnel.



Dr Yaacob Ibrahim at the SGBC Product Certification display booth.

Singapore Green Building Product Certification Scheme

During the SGBC Anniversary Dinner, Dr Mohamad Maliki Bin Osman, Parliamentary Secretary for National Development, launched the new Singapore Green Building Product (SGBP) certification scheme that provides a holistic and comprehensive approach to the assessment of green building products. The new

The eight product categories under the Singapore Green Building Product certification scheme.



scheme would bring about a stronger environmental awareness among consumers and encourage the adoption of sustainable products in the construction and operation of buildings. The aim is also to spur manufacturers to continuously innovate and develop a wider range and variety of green building products.



(From left) Launch of the Singapore Green Building Product certification scheme by Mr Lee Chuan Seng, President of SGBC; Dr Mohamad Maliki Bin Osman, Parliamentary Secretary for National Development and Mr Tony Arnel, Chairman of WGBC.

The scheme was developed with valuable inputs from more than 100 industry experts. Its basket of evaluation criteria includes energy, water, resource efficiency, pollution avoidance, carbon footprint and other green initiatives, and is meant to support the existing BCA's Green Mark assessment scheme.

In addition, it was designed to be particularly relevant to the tropical climatic conditions and urban setting of Singapore. Under the scheme, products will be recognised at four levels of sustainability: one tick for 'Certified', two ticks for 'Good', three ticks for 'Excellent' and four ticks for 'Leader'.

At present, there are more than 20 products that would qualify under the scheme and the use of these certified green products will be recognised in the certification of Green Mark for buildings.



BCA-SGBC Green Individual Award

In a symbiotic partnership between the private and public sectors, SGBC and BCA will be launching a joint BCA-SGBC Green Individual Award scheme to accord recognition to outstanding industry practitioners/professionals for their consistent contribution and significant achievements in the development of a green and sustainable built environment.

At the same time, the award will motivate green professionals to constantly challenge their limits in developing innovative solutions for the green building sector. It would also raise the profile of built environment careers to attract more locals to join the green collar workforce and steer the industry towards greater heights.

BCA- SGBC Green Individual Award Categories

The award recognises individuals across the whole value chain of the building and construction sector and comprises four categories:

BCA-SGBC Green Architect

Recognises architects' achievements towards a greener and more sustainable built environment

BCA-SGBC Green Engineer

Recognises the accomplishments of Civil & Structural and Mechanical & Electrical engineers in the green and sustainability front

BCA-SGBC Green Advocate

Recognises industry's individuals who exude passion, leadership and entrepreneurial qualities in championing the green building movement

BCA-SGBC Green Innovator

Recognises researchers for their breakthrough achievements in green building innovation

The award will be open for nominations in end November 2010. More details will be updated on <http://www.bca.gov.sg>.

In 2030, Singapore Will Be 80% Green

This sustainability goal was the theme of the Singapore Green Pavilion at the Build Eco Xpo (BEX) Asia 2010 held from 13 to 15 September at Marina Bay Sands. It highlighted the government's effort in leading the movement to green the existing building stock.

The pavilion, jointly set up by BCA and the Housing & Development Board, received tremendous interest from visitors who learnt about the importance of retrofitting existing buildings. Many were drawn in to play an interactive game on 'Retrofitting on Existing Building'. Also on display were the interim findings on BCA's Zero Energy Building (ZEB) in meeting its net zero power consumption target, as well as a newly launched website dedicated to ZEB.



BCA's communications team sharing with the media on the exhibition booth.



BCA staff from the Green Mark Department briefing the guest of honour, Dr Yaacob Ibrahim, Minister for the Environment and Water Resources.



Intrigued visitors having a go at BCA's interactive game on 'Retrofitting an Existing Building'.



BCA Research officer describing the interim findings of the Zero Energy Building to a visitor.



BCA staff from the Green Mark Department explaining the cost savings of retrofitting an efficient chiller system.

Making Our Mark on Global Sustainability

Since signing a Memorandum of Understanding (MOU) with the United Nations Environment Programme (UNEP) in 2009, BCA has been actively making its contribution to the global sustainability movement. The MOU was signed with the aim of promoting sustainable buildings and construction to the region and building capacity for sustainable building policies by exchange of best practices, policies and strategies.



Exchange of the Memorandum of Understanding in October 2009.

UNEP SBCI Board and Steering Committee

At the UNEP Sustainable Buildings and Climate Initiative (SBCI) Annual General Meeting held in Paris in May 2010, Mr Choo Whatt Bin, BCA's Executive Director (Services), and Mr Ang Kian Seng, BCA's Director (Research), were elected to the SBCI Board and Steering Committee respectively. Two projects were selected to be pursued in collaboration with UNEP SBCI.



The SBCI Board at the UNEP SBCI Annual General Meeting.

UNEP SBCI Projects

The first project is the Regional Status Report on Sustainable Building Policies in South-East Asia, conducted within the framework of the global status reporting on sustainable buildings launched by UNEP SBCI. The report will collate the current status and trends from sustainable building policies and initiatives in the region, to be released in the second half of 2011.

The second is the Common Carbon Metric Protocol launched by UNEP SBCI at the Conference of the Parties 15 in Copenhagen in December 2009. The Protocol was developed to measure building emissions and to establish energy performance baselines for buildings. As a contribution to the global sustainability movement, BCA has taken the initiative to participate in the pilot trial of the Common Carbon Metric Tool and Protocol with Singapore as a pilot city. The pilot test, scheduled for completion in the second half of 2011, is being carried out with participation spanning multiple climate regions in Australia, Asia, Europe, India, North America and Africa.

Singapore Green Building Week 2010

To further boost the partnership and collaboration with UNEP, BCA participated in the international plenary session on sustainable building policies co-hosted by UNEP at the Singapore Green Building Week 2010. BCA also co-organised a regional workshop and committee meeting with UNEP during the week.



Mr Choo Whatt Bin speaking at the Policy Paradise session at the WGBC International Congress.



Mr Ang Kian Seng presenting Singapore's sustainable building initiatives at the Regional Workshop.

International Profiling at WGBC – Policy Paradise Session Co-hosted by UNEP

At the recent WGBC International Congress 2010 in Singapore, Mr Choo Whatt Bin, BCA's Executive Director (Services), presented BCA's green building policy journey and initiatives at the Policy Paradise session co-hosted by UNEP, to further profile BCA's efforts on sustainability.

First UNEP SBCI – BCA Regional Workshop on Sustainable Building Policies in South-East Asia

The regional workshop was the first milestone towards the Regional Status Report to review the sustainable building policy initiatives in the region. It was attended by delegates from eight South-East Asian countries, namely, Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. The event was co-sponsored by the Singapore Green Building Council and the UNEP Regional Office for Asia and the Pacific Region.

UNEP SBCI Sustainable Building Index Steering Committee Meeting

BCA plays an important role in influencing the development of the Sustainable Building (SB) Index, an international reporting framework for building performance. During the Singapore Green Building Week 2010, BCA hosted and participated in a Steering Committee meeting that focused on the development of the SB Index.



The SBCI Steering Committee hosted by BCA.



Regional delegates, including local building stakeholders, at the Regional Workshop on Sustainable Building Policies in South-East Asia.

Beyond Net Zero

One year into its operation, the Zero Energy Building has proved that it is able to achieve net zero energy consumption. In fact, it is a net positive building generating 24MWh (megawatts/hour) of electricity. It is no wonder the building has drawn interest from 8,000 visitors from various local and international academia, corporations, government organisations and the public since its opening. Recently, it was awarded the Prestigious Engineering Achievement Award from the Institute of Engineers Singapore, adding to its list of many illustrious awards.



Façade of ZEB

Located at BCA Academy in Braddell Road, the Zero Energy Building (ZEB), a super energy efficient building, is the first existing building in Southeast Asia to be fully retrofitted with green building design features and technologies. The building employed several Passive Design and Active Solutions - a two-step, integrated design approach - to achieve 40% to 50% more efficiency than a typical office building.

The surplus energy that the ZEB has generated translates to savings of about \$3,900 per month for 52 units of HDB 5-room flats at residential electricity tariffs at 24.13 cents/kWh (kilowatts/hour).

Commenting on the achievements, Dr John Keung, CEO of BCA said, "ZEB has placed Singapore favourably on the world green building map. From achieving innovation and engineering excellence, we have also enhanced sustainability in the built environment through advanced green building technologies."

ZEB Performance Statistics: 1 Year Operation

Electricity Generated/ Electrical Consumption	Power
Cumulative Electricity Generated (Solar Power)	204 MWh
Cumulative Building Electrical Consumption	180 MWh
Average Monthly Electricity Generated	17 MWh/month
Average Monthly Building Electrical Consumption	15 MWh/month
Average surplus generated electricity per month	2 MWh/month
Electricity Savings	24 MWh (surplus)

Integrated Design Approach

Through Passive Design, the project team comprising researchers from the National University of Singapore (NUS) and practitioners from the private sector managed to minimise heat transfer through the building envelope. This was achieved via design features such as greenery systems, light shelves and sun-shading devices. This was followed by a well-conceived installation of Active Solutions, such as an energy-efficient air-conditioning system, high-efficiency lighting including motion sensors and carbon dioxide sensors.

To achieve net zero energy consumption, the building has to produce its own electricity. Facilitated through an EDB-funded solar power system, about 1,540 square metres of solar energy (photovoltaic) panels, or a combined area bigger than an Olympic-sized swimming pool, were installed on ZEB's roof and other prominent areas to tap on the sun's energy.

Some Green Features Found at the ZEB



Solar Panels



Solar Chimneys



Rooftop Garden

"The main target of the project was to demonstrate that the concept of a zero-energy building is possible even in the tropics, where high air-conditioning loads make up more than 50% of the electricity consumption of buildings," said Stephen Wittkopf, the NUS Associate Professor who heads the building's design and research into integrated photovoltaic and advanced daylighting.

He added, "After almost one year of analytical energy monitoring we are happy to confirm, that we have achieved this target. The building integrated photovoltaic systems have generated a surplus of electricity which is fed back into the BCA premise grid."

The ZEB will continue to serve as a test-bed for integration of green building technologies in existing buildings. It will also be a hub for practitioners and students in the study of energy efficiency and green buildings. For more information on the ZEB, please visit www.bca.gov.sg/zeb.

Bringing 'Green'



Mr Heng Chee How (centre), Minister of State, Prime Minister's Office and Member of Parliament for Jalan Besar GRC, touring the model 'Green Home'

A newly revamped Green Mark portal now makes green building resources and information more readily available with just a click of the mouse.

Through www.greenmark.sg, Singaporeans can see a directory of Green Mark buildings and a comprehensive list of energy efficient features for green homes and offices. Besides informative videos and an updated section dedicated to green news and publications, there is also an entertaining green building game for visitors to build and experience a specially customised virtual green home.

The revamped Green Mark website was launched at the fourth BCA Green Building Exhibition at Marina Square by Mr Heng Chee How, Minister of State, Prime Minister's Office and Member of Parliament for Jalan Besar GRC.

Apart from the model 'Green Home', a new corner dedicated to construction productivity was also displayed at the exhibition. The exhibition panels featured information on innovative building materials, technology and know-how as a showcase of efficient construction methods.



New exhibits on construction productivity.



The revamped Green Mark website.

"The Green Building Exhibition will be roving to Compass Point from 11 to 14 November!"

Closer to Home



Mr Heng viewing the building models from the "Greening our Built Environment" competition.



From Recycled Material to Building Models

Another highlight of the exhibition was the section where eight intricately-designed building models made of recycled materials were put on display. They were part of the 24 entries submitted for the inaugural 'Greening our Built Environment' competition organised by BCA. The aim of the competition was to create awareness of green buildings and the usefulness of recycled materials among tertiary students. After a round of public voting and judging from a panel of industry experts, a team from BCA Academy emerged as the champion. The first and second runner-ups were from the National University of Singapore and BCA Academy respectively.

The winning entry entitled 'Our Dream Home' was designed to be a self-sufficient and sustainable building with features to maximise solar and wind energy as well as natural ventilation. The building model also included a waste water management system.

The Green Journey in Cyberspace

BCA has also been spreading the green message in cyberspace via social media platforms like Youtube and Facebook. A Facebook fan page dedicated to this cause had garnered over 3,000 followers since it was launched. In conjunction with the exhibition, an exciting 'Tower Stacko' contest was added on the page. BCA gave away an Apple iPad for the top scorer of the game.

Visit <http://www.facebook.com/bcagreen> for more contests and fun green facts!



Green offices, green homes, green shopping malls, green districts, green parks – Singapore television viewers got a look at how these developments would benefit them.

That was when a special two-part programme, 'A Green Mark Singapore', was telecast on Channel NewsAsia on 22 and 29 September. The Chinese version '绿色狮城' was also aired on Channel 8 on 2 and 9 October.

A variety of interesting BCA Green Mark projects were featured in the programme. These developments showed that there was a strong business case to go green, especially if sustainability design principles were taken into account from the start of the project. For building and home owners, going green also translated into lower utilities bills and better indoor environmental quality.

The programme was very well-received, with several positive and appreciative remarks made by fans on BCA's Facebook page dedicated to green buildings. With this broadcast, the topic of a green built environment has truly been brought closer to the masses!



What our viewers say:

"Wow great show! It gave a very holistic view of how buildings and occupants consider the environment!"

Great programme! Didn't know 313@Somerset is a green-building shopping mall. Pretty cool!"

If you had missed the programme on television, you can still catch it on BCA's Green Mark portal at www.greenmark.sg.



Khoo Teck Puat Hospital, a Green Mark Platinum development.

Thumbs Up from the International Productivity Experts

The International Panel of Experts for Construction Productivity and Prefabrication Technology has endorsed Singapore's approach towards tackling construction productivity. Here is what the panel members noted and recommended when they convened in August to discuss how Singapore can achieve a more productive, professional and technologically advanced construction sector.



The International Panel of Experts (IPE) for Construction Productivity and Prefabrication Technology noted that Singapore's current three-prong strategy to raise the quality of the workforce; to incentivise workforce development, technology adoption and capability building, and to enhance the buildability framework, was a good start. It also lauded BCA's efforts in taking a strong lead to promote productivity improvements for the construction sector and agreed with the broad direction of the proposed Construction Productivity Roadmap.

Productivity Indicators

The IPE noted Singapore's use of value-added labour productivity as a measure and suggested the need to incorporate productivity indicators at the project and trade levels to track productivity improvement in the construction industry.

Manpower Development

Recognising that Singapore was uniquely placed with a large and mostly transient foreign workforce, the IPE recommended the need to retain and upgrade the foreign workers. On local manpower development, Singapore experienced similar challenges as other countries in attracting locals to join the construction trade. The IPE suggested building up a more positive image of the industry and considering the need for a more formalised 'apprenticeship' programme for locals to help build up their competence and retain them in the industry.

Technology Adoption

The IPE also noted that better integration between designers and contractors was key to higher productivity. It recommended that public sector projects could take the lead in adopting Building Information Modelling as a vital tool to bring together all the project parties along the design and construction value chain. The same tool could be phased into the rest of the industry for implementation over time.

The IPE viewed that having modular coordination, which involved designing in standard modules, would help to improve productivity without compromising flexibility in designs so that designers and developers could still retain their distinctive designs in their buildings. Thus, the IPE recommended that modular coordination should be emphasised within Singapore's buildability framework with additional buildability points awarded for modularisation within different building types.

In addition, the IPE discussed the greater use of precast and prefabrication to reduce manpower at the sites, save time and costs. While there was a need for greater adoption of precast and prefabrication, the IPE viewed that the industry should consider the idea of optimal system construction that incorporated precast, prefabrication, system formwork to raise productivity, given the projects' site constraints and availability of resources.

Similar to what was being done in Europe, the IPE recommended raising the awareness on the importance of good design and the built environment among the younger generation. At the tertiary education level, precast design and technology could also be incorporated into the curriculum of relevant courses.

Commenting on IPE's recommendations, BCA's CEO and IPE's Chairman, Dr John Keung said, "This being our first IPE on construction productivity, has given us an insight on how different countries manage construction productivity and the common challenges we share. BCA will take all their recommendations into consideration and collaborate closely with the industry, to integrate our efforts to achieving higher productivity."

IPE's Recommendations in a Nutshell

Productivity Indicators

- Build a framework to track construction productivity

Manpower Development

- Attract local tradesman and professional, managers, executives and technicians
- Focus on higher value-adding trades and supervisory positions
- Consider a more formalised 'apprenticeship' programme for locals
- Improve the image of the industry, leverage on the more positive attributes of green technology
- Retain foreign workers and upgrade their skills

Technology Adoption

- Improve integration between designers and contractors through Building Information Modelling
- Step up use of prefabrication, dry construction and modular coordination through the buildability framework

Industry Awareness

- Encourage the public sector to take the lead in implementing good industry practices that promote greater integration along the design and construction value chain
- Include precast design and technology into the curriculum of relevant courses in tertiary institutions



Build Smart

To document and showcase leading firms, best practices and the latest technologies that could be adopted to boost productivity along the whole construction value chain, BCA published a new magazine, *Build Smart*, in August this year. *Build Smart* is the first bi-monthly publication dedicated to construction productivity in Singapore. The magazine will inform readers of BCA's schemes which they can leverage on to raise productivity within their firms, as well as to feature people and companies who are open to sharing, learning and embracing new means of enhancing their productivity journey.

Industry stakeholders who are interested to receive a copy of *Build Smart* can email bca_enquiry@bca.gov.sg.

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Look Out for the Industry's Most Promising Youths

Nominations Now Open for the Built Environment Young Leaders Programme

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Do you know of any talented young professionals with the dedication, passion and leadership qualities to steer the construction industry towards future progress? If so, we want them under BCA's Built Environment Young Leaders Programme (YLP)!

This programme is BCA's initiative to engage and give capable young professionals a greater stake in industry advancement. The pioneering batch of Young Leaders had the opportunities to participate in a series of activities such as team-building workshops, networking sessions and discussions with the International Panel of Experts on Construction

Productivity and Prefabrication. They also joined study trips to Australia, Japan and the United States to learn about best practices overseas, and went on technical visits to iconic projects such as Pinnacle@Duxton. In July this year, they gathered for the inaugural Young Leaders Retreat to discuss strategies and measures to enhance construction productivity with industry and government leaders.

BCA is now calling for fresh nominations for the YLP. If you know of any promising staff/colleagues who fit the bill, nominate them today!

What Our Pioneer Young Leaders Say

This initiative allowed me to connect with like-minded young professionals within the industry. More importantly, it has broadened my contact base and allowed me to be more participative in expressing the views of the younger generation in the industry. It is not everyday that you get to experience government policies formulation up close and to interact with the officers planning these policies."

Mr Eugene Seah
Joint Managing Director
Davis Langdon & Seah Singapore



"I had the opportunity to meet promising individuals from different trades within the industry. We also engaged in dialogue sessions with Government agencies to contribute and share new ideas to improve the sector. The exchange of ideas opened my mind to new concepts and also helped me understand the challenges faced by other disciplines. These engagements had definitely made me a more complete civil and structural engineer."

Mr Lee Yee Seng
Associate Director
KTP Consultants



"I had many opportunities to interact with other Young Leaders from the entire spectrum of our industry. But the most memorable activity for me was in supporting one of BCA's outreach efforts to attract young talent to join our industry where I gave a talk on the architectural profession to Secondary and JC students. With ever-growing project complexities, there is a great need to attract the best talent to join our profession. And I am most glad that BCA gave me a platform to do so."

Mr Tah Kong Han
Director (Projects)
Architects 61



Nomination Criteria

Young Leaders must be:

- Singaporean or Singapore Permanent Resident
- Below 45 years of age
- Dedicated and passionate about their career
- Relevant qualifications in built environment related courses
- Currently being groomed for future management positions
- Experienced in handling larger scale projects

Nominees will have to go through an assessment process, and a separate interview where necessary, to assess their eligibility. Each nomination must include a recent passport-sized photo and a detailed curriculum vitae indicating the age, qualifications and past project experiences. Interested firms can submit their nominations by 24 December 2010 to Mr Aaron Seow at aaron_seow@bca.gov.sg. For more information, visit www.buildingcareers.sg/ylp.

Young leaders and their contributions:

Integrating Sustainability into Designs

Jaye Tan from DP Architects is excited about her latest project that test-beds and incorporates energy-saving technologies for a cool, green home.



Jaye Tan Jia Yee
Architect, Certified Green Mark Professional
DP Architects Pte Ltd

It is the ultimate challenge in my career to date. We are building a Typology for Zero/Low Energy Sustainable House in Singapore. For the first time, we are featuring a number of test-bedding systems such as the Electric Vehicle Solar Charging Station, the Building Integrated Photovoltaic Venti-Insulated Roof System, the Solar Air-conditioning Trellis System and the Solar Hot Water with D.C Heater. The entire design and submission process of the project was assisted by the Building Information Modelling software to increase productivity within the design-workflow process of construction.

Needless to say, I am very excited about it. Not only have our team members gained new knowledge, the homeowner is also happy to showcase the green features to friends and neighbours. We hope that this inter-terrace residential project, slated for completion by the end 2010, will clinch the Green Mark Platinum award for landed homes.

This house was passively designed to optimally shade solar heat gain from the sun and increase natural ventilation through the entire house in our tropical sunny and monsoon weather. We selected sustainable construction systems and building materials, LED light fittings and energy-efficient appliances. And to create a perceived lowered ambient temperature for thermal comfort within this tight inter-terrace site, landscaping through a vertical green wall, shading climbers and tall trees were introduced around and within the house.

As a registered architect and a BCA-certified Green Mark Professional, I have been involved in sustainable design for master planning and buildings, as well as for numerous Green Mark projects. These include the NUS University Town, Resorts World Singapore, ITE College West, Tianjin Eco-City and other institutional and residential developments.

With growing concerns of the impact of the built environment's design and operations on our biodiversity, I believe architects play a pertinent global role in delivering green building and master plan developments. This philosophy is in line with the vision of DP Architects, where I work. In fact, DP Architects has set up a dedicated Environmentally Sustainable Design department to assess building design performance through advanced computer simulation.

I look forward to contributing further to the industry. On top of being an active member of the Singapore Green Building Council and Green Practice Committee of Singapore Institutes of Architects, continual knowledge upgrading is also on my agenda. Being well-informed of the latest sustainable design practices and advancements in building technologies is crucial in my work, therefore I am currently pursuing a part-time Master of Science in Sustainable Building Design with the University of Nottingham at the BCA Academy.



NUS University Town



ITE College West



36BTrd, the Zero/Low Energy Sustainable House

Insights from Germany

The 24 senior managers and executives who participated in the Executive Development Programme on Innovations in Sustainable Design and Technology are back from Freiburg, Stuttgart and Frankfurt in Germany. This inaugural run, which was conducted from 26 to 30 July 2010, was a great success. Lectures were delivered by professionals and experts from the leading universities and institutions supplemented by visits to exemplary sites like Sun Ship, Heliotrope, Solar Settlement, Scharnhauser Park, Quartier Vauban and FESTO.

Let's hear from the participants on their experiences!



How has the BCA-HFT Stuttgart programme benefited you and/or your organisation?

"It is important that Ngee Ann Polytechnic keeps abreast with new sustainable development technologies. The programme showed how sustainable technologies are implemented on whole communities and not just for isolated buildings on a pilot basis. Specific technologies and strategies, such as solar cooling and implementation of energy certificates, are useful, and could be incorporated in our teaching programme. Besides the hardware (technologies), it was also interesting to note the software (people's attitudes and commitment) to sustainable development. There is a collective consciousness in the community towards a greener environment." *Mr Ong Choong Seong, Lecturer, Ngee Ann Polytechnic*

"The highlight of the trip was the lectures given by the solar experts at the renowned Fraunhofer Institute for Solar Energy Systems (ISE). As we are starting to implement solar PV in Singapore, the lectures and discussions with the Fraunhofer ISE provided good insights and learning points on the German experience and their solar PV industry. It was also interesting to visit the solar housing near Freiburg." *Mr Lim Ah Hee, Principal Engineer, Housing and Development Board*



"The programme covered key developments and innovations in sustainable design and technology, focusing on the application of critical emerging technologies. The site visits to exemplary projects and real-life working systems were valuable learning experiences, and so was the sharing session with the local stakeholders and subject matter experts. We also gained insights into the practical issues of designing and implementing innovative sustainable solutions. The lessons learned could help us in our efforts to seek effective and efficient ways to utilise resources, better manage our energy consumption and reduce our carbon footprint. Some clean energy-generating technologies such as solar PV technology and mini windmill, are suitable and applicable to our local climate."

Mr Koh Swee Guan, Director (Estates Management), Nanyang Polytechnic

"The programme has enabled us to tour leading sustainability research institutes and network with green building experts from Germany. Apart from classroom lectures, the site visits took us to the world-famous Helitrope, a positive-energy house and Scharnhauser Park, the exciting eco-community in Freiburg. Another rare experience was the tour of Lufthansa Aviation Centre in Frankfurt, an exemplary green building which was highly restricted. The programme is definitely beneficial as we continue to seek best practices to propel sustainable innovations in our future projects. I look forward to applying the sustainable cooling strategies and technologies to suitable air-conditioned buildings in Singapore."

Mr Allen Ang, Assistant General Manager, Head of Department (Commercial), City Developments Limited

The use of alternative systems for cooling has also been discussed quite extensively over the course. Can some of these technologies be adopted for existing facilities as part of a sustainable retrofit initiative?

"Where sufficient waste heat can be recovered, the adsorption chilled water system is a good retrofit alternative for the normal air-conditioning system. This is particularly applicable to the industrial segment where process heat can be harnessed to drive the adsorption chillers. A good portion of the electrical energy is saved as a result, leading to greater system efficiency." *Mr James Chan, Senior Vice President, SMM Pte Ltd*

You were particularly enthused by the site visits to the Commerzbank Tower and the Lufthansa Aviation Centre in Frankfurt. Could you share your thoughts on the visits?

"During my course of study in the MSc Sustainable Building Design programme organised by University of Nottingham in partnership with BCA, there was special mention about these projects especially on the building planning for naturally ventilated offices. As much as this might be challenging for Singapore's climate and user acceptability, I believe that a comprehensive investigation into this building design might be able to shed some light on the possibilities of having such naturally ventilated design (with aided active systems for mixed mode) for offices." *Ms Jaye Tan, Architect, DP Architects Pte Ltd*

Professional Management of Complex Projects

Every year, large projects are completed after much hard work, extensive planning and execution. The challenges posed to the project teams and the solutions selected by them provide invaluable learning points to the project management fraternity. The recent BCA-SPM Annual Project Management Seminar brought project management professionals together to share their best practices and knowledge.

"The way forward will have to be driven by a willingness to change and to do things differently. If we continue to do things in the same old way, we cannot expect to obtain a different result."

This prognosis by Mr Benedict Tan, BCA Academy's Managing Director, at the recent BCA-SPM Annual Project Management Seminar best encapsulated the project manager's challenge with today's increasingly complex building and construction projects. Mr Tan was highlighting the importance of project management as a change agent for improving the outcomes of building and construction projects.

Organised on 1 October, as a first time collaboration between BCA and the Society of Project Managers (SPM), the seminar garnered the attendance of over 300 building and construction professionals and managers.



Mr Benedict Tan, MD of BCA Academy, giving the welcome speech.



Participants at the seminar include BCA Board Member Mr Lee Chuan Seng and all the Council Members of the Society of Project Managers.

The seminar included case studies from Khoo Teck Puat Hospital, The Pinnacle@Duxton, ION Orchard and the Kallang-Paya Lebar Expressway. Eight speakers from PM Link, RSP Architects Planners & Engineers, SIPM Consultants, Davis Langdon and Seah, Land Transport Authority and Samsung C&T Corporation, illustrated the complex nature of their projects, each focusing on particular management-related issues that challenged and tested the management skills and capabilities of the project management team.



The eight speakers with Mr Wong Wai Ching (fourth from left), Deputy MD of BCA Academy, and seminar moderator, Mr Lee Kut Cheung (first from right), MD of RSP Architects.

In his speech, Mr Tan also noted that the BCA had identified several areas for change and improvement. These included the greater usage of prefabrication and modular construction, the adoption of technology and more advanced construction methods, more buildable designs, the early involvement of the builder in construction procurement and a better trained construction workforce at all levels. Project managers could play a key role in the drive for higher productivity, through good planning and execution to lessen resource wastage and idle time for manpower and equipment. Contractual disputes should also be minimised as they are costly and time-consuming.

Mr Seah Choo Meng, President of the Society of Project Managers, reiterated the message that project managers must acquire new skills and knowledge to match the new complexity. "As projects become increasingly complex, every professional must not confine himself to his core capabilities but rather to expand his skill set to span the full spectrum of knowledge from inception of project to completion and eventually to asset management," he said.

Greenest Spark from NUS Team



Dr Maliki (centre in green), Parliamentary Secretary for National Development, Mr Benedict Tan (right, in white), MD of BCA Academy and Mr Lim Tow Fok (left, in white), General Manager of Property & Facilities Management, CDL, with the winning team from NUS.



Dr Maliki trying out a green feature.



Dr Maliki touring the presentation booths before the prize-giving ceremony.

A total of 20 student teams competed in the BCA-CDL Green Sparks Competition 2010. But it was Team 'Green Wednesday' from the National University of Singapore (NUS) that outshone the rest with its insightful and comprehensive presentation to emerge as champion. The second and third prizes were awarded to 'Team GBS' and 'Earthlink' from Temasek Polytechnic respectively.

The inaugural competition was aimed at engaging local tertiary students in the national effort to green the built environment. Each team had to submit a proposal to improve the energy efficiency of Fuji Xerox Towers so that it could qualify for the Green Mark Platinum rating. The 38-storey office building, owned by City Developments Limited (CDL), had attained the Green Mark Gold rating in 2008.

The winning team had presented a detailed plan and analysis of viable and practical green building solutions for Fuji Xerox Towers. Its holistic life-cycle approach covered the

implementation of energy efficient infrastructure, such as regenerative motors for lifts, as well as sustainable building management practices and stakeholder engagement initiatives, such as a green portal for tenants. Apart from practical solutions, interesting innovative ideas were also proposed by the other winning teams, which included the use of vertical axis wind turbines to leverage on the building's orientation and unblocked facing.

"Many of the green features proposed by the participating teams are refreshing, and we will conduct feasibility studies for the most viable ideas with our consultants, for possible implementation as part of our retrofitting plans for Fuji Xerox Towers," commented Mr Lim Tow Fok, CDL's General Manager of Property & Facilities Management.

Mr Tan Tian Chong, BCA's Director of Technology Development added, "We were impressed with the proposals submitted and encouraged by the strong support for this inaugural green competition. I hope the valuable experiences gained from this competition would spur these students to join us in our green building journey in the near future."

A panel of judges consisting of chief judge Er Lee Chuan Seng and Mr Tai Lee Siang from the Singapore Green Building Council, Mr Tan Tian Chong from BCA, Mr Lim Tow Fok from CDL, and Mr Vincent Low from G-Energy Global, selected the top three winners during the final presentation which was held at the BCA Academy on 31 August 2010. During the prize-giving ceremony on the same day, the winning teams received plaques and cash prizes of between \$1,000 and \$10,000 from Guest of Honour, Dr Mohamad Maliki Bin Osman, Parliamentary Secretary for National Development.

BCA Universal Design Awards 2011

Is Your Building Friendly Enough to Win?



Universal Design is to 'design for everyone'. It gears the built environment to address the needs of people of all age groups and abilities to allow them to live independently. If your building has been designed to cater for the diverse needs of the public, the BCA Universal Design Awards 2011 is calling for your submission.

Award background

The BCA Universal Design Awards recognises organisations and individuals for their efforts in embracing Universal Design in their developments. It also raises awareness among owners, developers, designers and builders when they start project conceptualisation and design, to incorporate features accommodating the widest possible range of human needs.

Entry criteria

The award is open to all owners, developers and professionals. There is no restriction on the number of entries that each applicant can submit. To qualify, the development must have obtained the Temporary Occupation Permit or the Certificate of Statutory Completion and be occupied at the time of entry submission.

Assessment criteria

Each building will be assessed for its features that benefit not only special groups, but the general public. Points are awarded for incorporating universal design features, which are over and above the regulations under the Code on Accessibility. The total number of points obtained provides an indication of the inclusiveness of the building design. Buildings are awarded Gold, Silver or Bronze ratings depending on the points scored.

Application and assessment process

Interested applicants can find out more about the award on the Friendly Built Environment Portal at www.friendlybuildings.sg and register their interest to participate by 5pm on 30 December 2010.

Please email bca_bfa_upgrading@bca.gov.sg for any clarification on the BCA Universal Design Awards.

BCA Academy recently welcomed the inaugural cohort of 24 students to its Master Programme for Facility and Environment Management. This two-year programme would build capability and expertise to support the national agenda for green buildings and sustainable development in Singapore.

At the welcome reception on 21 September 2010, Mr Benedict Tan, BCA Academy's Managing Director said, "As the pioneer batch of students, you will set the benchmark and blaze the trail for others who will follow your footsteps in the years to come."

The Programme's pedagogy which is developed by the University College London (UCL) and tailored for students in Singapore, will be taught by leading experts from UCL's Bartlett Faculty of the Built Environment at the BCA Academy. UCL Vice-Provost (International), Prof Michael Worton, Bartlett Faculty of the Built Environment Dean, Prof Alan Penn and Head of Graduate Studies, Prof Alexi Marmot

from UCL welcomed the students via pre-recorded video messages.

The students hailed from public sector organisations including DSTA, NUS and Jurong General Hospital as well as consultancies such as CPG FM and Keppel FMO. In addition, there were students from private companies such as Asiamalls and Far East Organization. Most students received a generous subsidy from BCA and are supported by their employers.

Highlighting the skills the students would acquire from the programme, Mr Tan added, "For the top-tier of facility managers, this UCL Master programme will provide them with the necessary credentials and intellectual understanding of the global, financial, technical and social issues to enable them to participate in the decision-making process at the corporate level and in helping to shape corporate policies on sustainable practices and standards."

For details of the Master of Science programme, please visit www.bcaa.edu.sg/MScFEM.aspx.

Pioneer Masters in Facility Management



Be Recognised for Safety Excellence

Did your project team achieve engineering feats by implementing innovative design solutions to overcome project challenges while ensuring safety excellence? If so, BCA is now calling for your nomination in the Design and Engineering Safety Excellence Awards 2011.

The Awards will be given out in five categories – residential; commercial; institutional and industrial; civil engineering, and overseas. Nominated projects must be new submissions and have obtained the Temporary Occupation Permit or Certificate of Statutory Completion – or the equivalent for overseas projects – between 1 January 2008 and 31 December 2010.

Qualified Persons and teams who have displayed leadership in design and engineering works are welcome to submit your nominations today! Nominations will close on 3 January 2011.

For more details on the entry requirements and assessment criteria, please visit www.bca.gov.sg.



Events

(Nov ~ Dec 2010)

Date	Event	Contact
3, 4, 10 & 12 Nov 2010	Geotechnical Instrumentation for Engineers	BCA Academy – Business Development Unit DID: 62489843/824 Email: bca_academy@bca.gov.sg
8 Nov 2010	Understanding the Green Mark Criteria for Existing Buildings and Office Interior	
8, 9 & 10 Nov 2010	Essential Knowledge in Construction Regulations & Management for Licensed Builders (English)	
11 & 12 Nov 2010	Planning & Management of Home Renovation	
11 Nov 2010	1-Day Workshop on Preparing and Defending Loss and Expense Claims	
11 Nov 2010	Conquas Training for Builders (Mandarin)	
18 Nov 2010	Conquas Training for Developers & Consultants	
18, 19, 22 & 23 Nov 2010	GMP Programme – CORE Module – Energy Management & Audit	
19 Nov 2010	Requirements for Environmental Sustainability in Building and the Green Mark Scheme	
22 & 23 Nov 2010	Construction Contract Administration	
23 Nov 2010	BizSAFE Workshop for Company CEO/Top Management (BizSAFE Level 1)	
24 & 26 Nov / 16 & 17 Dec 2010	Risk Management Course (BizSAFE Level 2)	
29, 30 Nov & 1 Dec 2010	Essential Knowledge in Local Regulations and Construction Practices	
3 Dec 2010	Code of Practice on Buildable Design	
7, 9, 14 & 16 Dec 2010	Site Investigation for Engineers	



EXECUTIVE PROGRAMMES



ACADEMIC PROGRAMMES



SKILLS TRAININGS



WORKSHOPS



SEMINARS

Building New Horizons

The BCA Academy of the Built Environment is the education and research arm of the Building and Construction Authority, Singapore. Founded in 1984, the Academy offers a wide range of training and education programmes tailored to the needs of the building and construction industry. These programmes include courses for professionals, management and executive personnel, and technical specialists.

In support of the national effort to transform Singapore into a green and sustainable global city, the Academy has initiated several training programmes to nurture and develop managerial and technical capability in such niche areas as green building design and technology programme, renewable energy, and sustainable facility and environment management. To enable our industry leaders and practitioners to learn from the experience and knowledge of leading experts, the Academy collaborates with established tertiary institutions (such as Carnegie Mellon University, Singapore Management University, UniSIM, University College London and University of Nottingham) to conduct degree and post-graduate degree programmes, and executive programmes.

