

PILLARS

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

Building and Construction  Authority

Zero Energy Building: Behind the scenes • p4-5

Building Another Milestone • p8-9

Singapore Leading the Way • p16

BCA Signs MOU with UNEP • p17



PILLARS

contents

Mr Eugene Seah is an Executive Director for Davis Langdon & Seah Singapore. He joined the company as an Assistant Quantity Surveyor (QS) after graduation and worked his way up to Executive Director (ED) in ten years. As a QS, he takes care of the primary costs and contracts of a construction project, estimating and planning costs, preparing tenders, advising on procurement, and taking care of finances. Eugene's latest projects include the ION Orchard and the ZEB@BCA Academy.

Editorial Committee:

Chief Editor: Jeanna Das
Editor: Matthew Loh
Sub-Editor: Leong Ee Leng

Contributors for this issue:

Chia Yen Ling
Joe Woo
Letchimi Palanisamy
Matthew Loh
Tan Hoon Wee

Your views and contributions:

Let us know what you think about Pillars. You are also welcome to contribute an article, subject to our approval. Please attention it to **The Editor, Pillars** if you send by post or fax to the BCA address stated. Alternatively, you can email to bca_enquiry@bca.gov.sg.

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Tel: 6325 7720 Fax: 6325 4800
Email: bca_enquiry@bca.gov.sg
Website: <http://www.bca.gov.sg>

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CEO's Message • p3

Zero Energy Building: Behind the scenes • p4-5

Can't Get Greener Than This • p6-7

Building Another Milestone • p8-9

Refining Singapore's Green Plans • Interview with IPE Member, Ms Maria Atkinson • p10-11

Shaping a Greener, More Sustainable Built Environment • p12-15

Singapore Leading the Way • p16

BCA Signs MOU with UNEP • p17

SGBC Gains Worldwide Recognition • p18-19

Green Mark for Districts • p20-21

News Snippets • p22

Upcoming Events • p23

CEO's Message



Dear readers,

We hope you enjoyed our previous edition dedicated to leadership and capability development in the building and construction sector, and that you are looking to leverage on the opportunities of developing a competent, professional and productive workforce.

The month of October was exceptionally memorable for all of us in BCA and those in the industry who contributed in one way or another towards the development of Singapore's built environment. Launched by the Minister for National Development, Mr Mah Bow Tan, the Singapore Green Building Week (SGBW) was the culmination of months of planning, discussions and hard work aiming to highlight Singapore's achievements in developing a sustainable city. SGBW was a week of many firsts that raised our international profile and positioned Singapore prominently on the global map in the area of green buildings and environmental sustainability.

Foremost among these inaugural events was the launch of Singapore's first Zero Energy Building (ZEB) at the BCA Academy by Minister Mah. The ZEB is a visible demonstration of how an existing building could be retrofitted to achieve huge improvement in energy efficiency and sustainability. Scoring another first was our inaugural International Green Building Conference (IGBC), which presented a unique platform for industry experts, local and international leaders to network and exchange ideas on the green building movement front. The IGBC, launched by the Deputy Prime Minister and Minister for Defence, Mr Teo Chee Hean, was one of the biggest green building conferences in the region. It attracted close to 1,000 participants covering 23 countries from every continent in the world, including Africa. Participants found the conference inspiring, enlightening and informative. Together with its International Panel of Experts, BCA also reviewed Singapore's report card on the built environment and recommendations towards a greener future.

BCA, as a member of United Nations Environment Programme-Sustainable Buildings and Climate Initiative, UNEP-SBCI, a programme that gathers global building sector stakeholders to jointly promote sustainable buildings and construction practices, hosted two key UNEP events in Singapore – the

UNEP-SBCI Roundtable on the Sustainable Buildings and Climate Index, and the Regional Roundtable on Sustainable Buildings. A Memorandum of Understanding (MOU) was also signed between BCA and UNEP, reaffirming Singapore's strategic role in promoting sustainable building and construction in the region.

During SGBW, we also witnessed the formation of the Green Building Council, a private sector initiative to rally the industry to participate strongly in the green building movement in Singapore. Another noteworthy achievement was the conferment of Emerging Status on the Singapore Green Building Council, by the World Green Building Council, which was represented by its Chair, Mr Tony Arnel.

We also took the opportunity during the Week to introduce a new BCA Green Mark for Districts category, which will help Singapore progress towards a green paradigm of urbanism. Gold^{Plus} awards were presented to NUS University Town and Resorts World Sentosa for integrating many excellent sustainable development concepts into both their master designs and building development.

Throughout these events, it was also evident that global leaders and industry partners were keen to contribute to Singapore's vision in achieving sustainability in the built environment and for us to share our experience and expertise in green buildings in the region, and all these achievements have been documented in this issue. Kudos also goes to the BCA staff who worked tirelessly in making it all happen. We wish you all the best in the coming year and we hope you will continue your journey with us in shaping a safe, high quality, sustainable and friendly built environment for all.

Dr John Keung
Chief Executive Officer

Zero Energy Building:

The Zero Energy Building is BCA's showcase of how a building can be retrofitted with environmentally friendly features. We speak to some of the people involved in this flagship project, a crucial milestone in Singapore's journey to becoming a truly sustainable city.



Ang Kian Seng – Director, Research, Building & Construction Authority

What are your thoughts after the Zero Energy Building has been officially opened?

A great sense of satisfaction! Everything went smoothly without any hiccups. All the stars were aligned just like when we first conceptualised the project, and successfully obtained funding support from the MND Research Fund and the Clean Energy Research & Testbedding programme. Even the weather was favourable, generating more electricity than we expected during the days leading to the opening.

What response have you received from the industry since the official opening?

Although it is still early days, visitors to ZEB had only good things to say about the project. These include many experts and industry leaders from all over the world e.g. Prof Hartkopf from Carnegie Mellon University, Arup's Peter Head, UNESCO Prof Steffen Lehmann – UNESCO Chair on Sustainable Urban Development for Asia Pacific. As a showcase, I think the project has been very successful in generating greater interest in green building design and technologies among local practitioners.

On a personal note, which of the current technology being tested is the most interesting? And why?

Personally, I like the idea of the solar chimney best. Over the years, we have become too dependent on electricity and air-conditioning. We need to go back to basics and change our mindset that we can't live or work without air-conditioning. Air-conditioning should be provided as the last resort rather than by default.

Behind the scenes



Eugene Seah – Executive Director, Davis Langdon & Seah

"The ZEB is a showcase that incorporates the finer aspects of design and technology. Therefore, lessons learnt from the entire business process, construction and Whole Life Cost model can be emulated and permutated into the industry for us to learn. It is also a live project that says 'Hey, it is possible to get Net Zero Energy in an existing building.'

"The ZEB project was an excellent platform for us to put our research and knowledge to full use, together with the traditional and core Quantity Surveying services such as Cost and Procurement Management. It not only personifies what makes a building 'green', but also emulsifies the project team's belief, thinking and character into thinking green during the design process and workflows."



Arthur Loh – Consultant, DP Architects

"DP Architects has long been aware of the need to integrate good energy conservation practices into architectural designs. We welcomed the opportunity given by BCA to participate in ZEB as a demonstration of the use of various available technologies related to solar energy generation systems and passive systems such as optimising the use of daylight for indoor illumination. We also saw the working relationship with the NUS Academia as an interesting and engaging new experience.

"The more aware our potential clients are of being 'green' and conscious of energy conservation, the more we, as architects can move towards creating architectural solutions that will meet the challenges of the future when resource depletion will become a reality of life."



Leonard Ng – Senior Engineer, Beca Carter

"We consider this a meaningful way to show our commitment to environmentally sustainable development by contributing our core technical skills and design innovation.

"The close liaison with the principal investigators in the green concept development, design integration, coordination and final implementation has enabled us to better appreciate how such 'green' technologies can be effectively applied for functional use and at the same time serve as test bedding for research purposes."

Can't Get Greener Than This



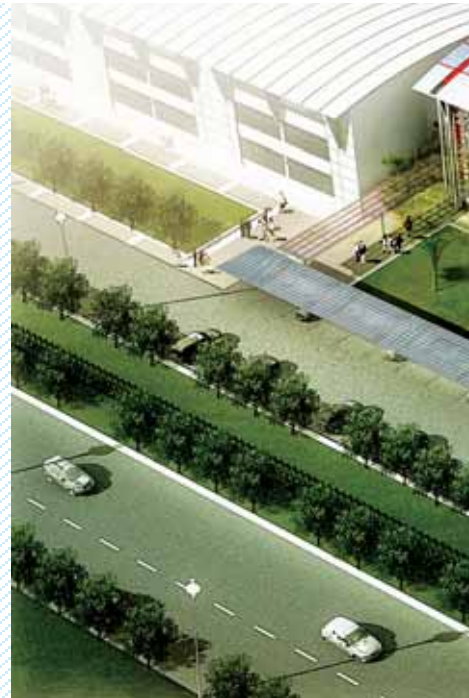
What makes Singapore's first Zero Energy Building so energy efficient? What are some of its key features? Here's a quick overview of some interesting green building technologies at work at the ZEB.

Key Facts & Figures

1. ZEB is powered by 100% clean energy from solar photovoltaic panels.
2. ZEB is about 40%-50% more energy efficient than a building (without lifts) of identical design and function. (The energy efficiency requirement for Green Mark Platinum Buildings is 30% better than the norm.)
3. Compared to an identical building of the same floor area, the estimated savings in electricity based on current tariff is about \$84,000 per annum.
4. Estimated Building Energy Consumption is about 206,000 KWhr/year.
5. Solar PV:
 - i. Installed = 190 KWp
 - ii. Energy output = 207,000 KWhr/year

This is enough to power 45 four-room HDB flats for one year.

6. CO₂ emission reduction:
 - Energy efficiency = 91 ton CO₂ per annum (savings of 40-50% of electricity)
 - Use of clean energy = 108 ton CO₂ per annum (based on 207,000kWhr/year)
7. Gross Floor Area = 4502m²



REDUCING HEAT ENTRY INTO THE BUILDING



1. Greenery Systems

- The Green Roof and Green Wall
- provide shielding from direct sunlight
 - absorb solar energy
 - reduce heat transmittance into a building

2. Shading Devices (embedded with PV panels)

- Reduce solar gain on the façade
- Help generate enough energy to power 24 45-Watts light bulbs



PROVIDING NATURAL LIGHTING

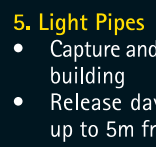
3. Mirror Ducts

- Capture and channel daylight into the building
- Involve no mechanical parts; require no power to operate



4. Light Shelves

- Provide shade against direct sunlight
- Reflect daylight deep into building space



5. Light Pipes

- Capture and redirect sun's rays into building
- Release daylight through ceiling up to 5m from roof



OTHER ENERGY SAVING FEATURES

Other Green Features

- Low E Glass
- Solar Film Coating
- Building Management System
- Dimmers
- CO₂ Sensors
- Motion Sensors
- Daylight Sensors
- Task lights
- T5 Lights
- Efficient Chiller Plant and Cooling Tower
- Variable Speed Drive to Control the Fresh Air Fan
- Single Coil Twin Fan Air Handling Units (AHU) & Fan Coil Units (FCU)



INTRODUCING COOL AIR AND VENTILATION

6. Solar Chimney (Solar Assisted Stack Ventilation)

- Uses buoyancy effect to remove heat from building interior
- Induces cooler air from outside to enter building spaces



7. Displacement Cooling

- Supplies cooler new air from the floor
- Heated polluted air is extracted from the ceiling



8. Personalised Ventilation

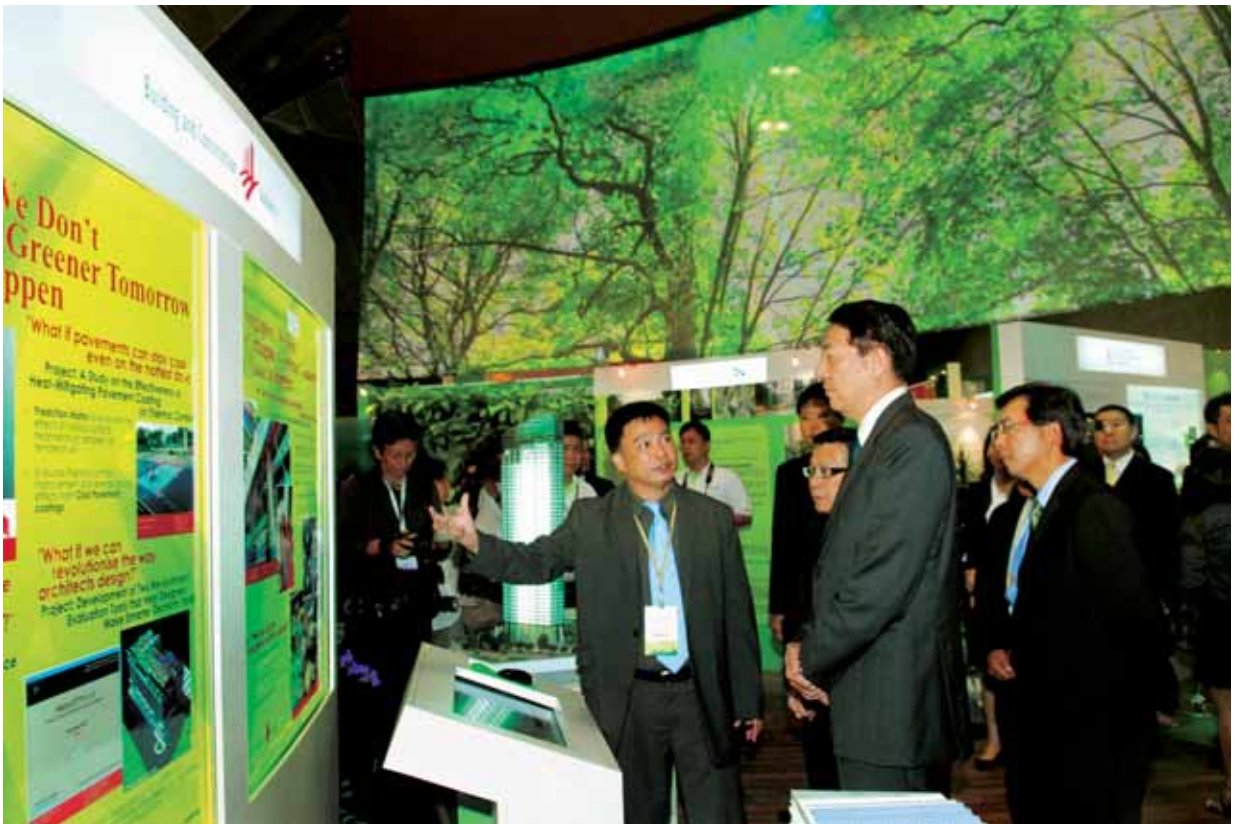
- Provides dedicated, individual cool fresh air supply
- Improves air quality in occupants' immediate breathing zone

HARNESSING ENERGY FROM THE SUN

9. Solar Photovoltaic Panels

- Provide 100% of ZEB's power needs
- Supply excess generated electricity to the main grid





Our garden city turned greener last October as thousands of visitors from all over the world converged on the island for BCA's first International Green Building Conference (IGBC) and the region's leading "Green Building" expo BEX Asia 2009.

The 3-day conference and exhibition was officially opened by Deputy Prime Minister and Minister for Defence, Mr Teo Chee Hean on 28 October at the Suntec Convention Centre.

Nearly 1,000 delegates from more than 20 countries turned up for IGBC, while more than 5,000 visitors from 23 countries attended BEX Asia, making the entire event one of the largest gatherings of green building practitioners and industry stakeholders in our nation's history.

In affirming the conference theme, "Build Green: The Future is Now", DPM Teo acknowledged the need for Singapore to balance economic growth and environmental sustainability, and reiterated the need to make energy-efficient buildings an integral part of the global strategy for sustainable growth and development.

"The building sector has great potential to further our goal for sustainable development and help mitigate the effects of climate change globally. Singapore can make a contribution to this effort as a regional green building hub – a centre of excellence for green building research and development, and technology test-bedding for the Tropics," said DPM Teo.

More than 90 percent of the 120 exhibitors at BEX Asia 2009 showcased green building or green-related products and services, reflecting the industry's growing emphasis on green buildings and sustainable construction. The trade event also brought together for the first time, prominent players such as Aristo, Autodesk, BASF, Carrier, Engro, KONE, Mapei, Sanyo, Siemens, and Trane to showcase and market their newest green products and services.

Building Another Milestone

BCA's milestone event gave international delegates and visitors a glimpse of the future of green buildings

The Singapore Green Pavilion – jointly set up by BCA, NParks and HDB – received a lot of interest from visitors to the exhibition. The Pavilion featured BCA's Green Building Masterplan, displayed the more outstanding Green Mark Platinum projects and showcased some unusual and innovative research projects spawned from the MND Research Fund for the Built Environment.

Delegates at IGBC heard from distinguished keynote speakers like Mr Arab Hoballah, Chief of Sustainable Consumption and Production at the United Nations Environment Programme (UNEP), and Ms Maria Atkinson, Global Head of Sustainability at Lend Lease Australia during the 3-day event.

The Conference also provided local perspectives on environmental sustainability from Mr Lam Siew Wah, BCA's Deputy Chief Executive Officer, who spoke on the Second Green Wave – The BCA 2nd Green Building Masterplan, and Mr Tay Kim Poh, Chief Executive Officer of the Housing and Development Board, who shared an interesting case study of PUNGGOL 21+ to demonstrate HDB's approach to environmental sustainability in the Heartlands.

The conference ended with the much anticipated BCA Green Mark Tours on the third day, where more than 200 delegates were bused around the city to visit outstanding Green Mark projects and developments. These on-site visits allowed the participants to witness the application and real-life benefits of green building technologies and best practices in award-winning buildings in Singapore.

The delegates visited many interesting developments like Changi Airport Terminal 3, Tampines Concourse and Tampines Grande, National Library Building, Poh Ern Shih Temple, Horticulture Park, Marina Barrage, and Samwoh Building and Aggregate Recycling Plant. Of course, the highlight of the tour was BCA's brand new Zero Energy Building.

IGBC and BEX Asia 2009 are part of the inaugural Singapore Green Building Week 2009, which was launched together with the official opening of BCA's Zero Energy Building at its BCA Academy campus on 26 October.

Refining Singapore's Green Plans

Experts return to advise on Singapore's plans to green the existing building stock

The International Panel of Experts (IPE) on Sustainability of the Built Environment comprising leading experts in green buildings and environmental sustainability convened in Singapore for the second time.

The meeting was co-chaired by CEO BCA, Dr. John Keung and BCA Board Member, Er. Lee Chuan Seng. The IPE shared international perspectives on energy laws and policies to improve energy and environmental performance in new and existing buildings, which are applicable to Singapore. These fresh perspectives and ideas are valuable contributions to BCA's approach to tackle the existing buildings and to shape a liveable and sustainable built environment.

The IPE also deliberated on issues such as green procurement policies, mandatory requirements such as energy disclosure and energy tax, and adopting green lease practices.

BCA will be reviewing these recommendations in consultation with the industry and stakeholders.



Interview with IPE Member, Ms Maria Atkinson

How well is Singapore's green building movement doing, compared to the plans and progress made in other countries? IPE Member, Ms Maria Atkinson tells us more.

How would you rate the progress of Singapore's green building journey? What have we done well?

As international experts, we are impressed with the quick, visionary and pragmatic response BCA has demonstrated in the last year. The next year offers an exciting time for innovation in demand management and clean energy and green jobs. The momentum we see in the BCA combined with the collaboration between government departments and industry is impressive. The clarity of regulatory requirements combined with fiscal incentives is to be commended. The leadership by the government to assist the transition of Singapore is real and will increase, and I believe long-term social, economic and environmental benefits will be obvious.

Can you share some of the energy policies in your country that Singapore could consider?

The 'National Strategy on Energy Efficiency' we submitted to the Australian Senate Economics Committee in July 2009 has four key platforms comprising:

1. Assisting households and businesses to shift to a low-carbon future;
2. Reducing impediments to the uptake of energy efficiency;
3. Making buildings more energy efficient;
 - mandatory disclosure of building energy performance by 2010
 - minimum standards for building energy efficiency by 2011
 - government review of energy efficiency standards every 3 years commencing 2012
4. Government working in partnership and leading the way.

We understand the bulk of the discussions this year focused on greening existing buildings. In your country, how is this issue tackled?

Besides the measures mentioned above, the Australian Institute supports a complementary mechanism such as the Building Carbon Trading Bill which will create a carbon trading scheme for buildings.

The Bill, which will be debated in the Australian Government in February 2010, proposes an Energy Efficient Non-Residential Building Scheme and will include also a building energy efficiency trading scheme. This trading scheme will set an emissions intensity baseline, which will decline over time, for each type of commercial building. Property owners that emit above the baseline will be required to buy emissions intensity certificates from those that emit below the baseline. In this way, the Bill offers an incentive for the commercial building sector to improve the energy efficiency of their buildings.

We believe it will maximise the benefits to the broad Australian economy, including job creation, avoided energy infrastructure investment, and better health and productivity outcomes. It will also maximise the benefits to the real estate and construction industry by providing investment certainty, stimulating innovation, driving domestic and international business opportunities for Australian companies, and increasing asset values, yields and returns on investment. Importantly, these benefits will exceed the costs of the Energy Efficient Non-Residential Building Scheme proposed in the Bill.



Shaping a Greener, More Sustainable Built Environment

Singapore Green Building Week
(26-30 October 2009)

It was probably the greenest week in Singapore's history. Green building experts, practitioners and industry players converged for a hectic week of events and a healthy dose of knowledge and inspiration for a greener future at the inaugural Singapore Green Building Week.





Launch of Singapore Green Building Week & Official Opening of Zero Energy Building



UNEP-SBCI Meetings





BCA-SGBC
Appreciation
Dinner



Launch of
International Green
Building Conference
and BEX Asia 2009





International Green Building Conference

Reception at IGBC



BCA Green Mark Tours



Singapore Leading the Way

An interview with Mr Tony Arnel,
Chair of the World Green Building Council



As a strong proponent of all things "green" among the built environments of the world, Mr Tony Arnel has given Singapore the plaudits for the formation of a local body that will actively promote sustainability in the building industry.

"Singapore has a reputation of a country that is willing to make a difference in sustainable development," said the current Chair of the World Green Building Council. "It can certainly take the lead in developing sustainability standards and rating tools for the tropics."

Mr Arnel, who was instrumental in implementing sustainability standards into Australia's building code, expressed his delight with the formation of the Singapore Green Building Council and its entry into the world union of councils.

"I'm excited about (Singapore) getting the status as an emerging member of the World Green Building Council," he added. "I'm pleased to confer the status to them and am impressed with the calibre of their Board."

With the formation of a local body that promotes green building design, practices and technologies in Singapore, Mr Arnel has also laid down the country's biggest challenge in sustainability. "The next step for Singapore would be to focus on creating sustainable whole neighbourhoods and precincts," he mentioned.

Mr Arnel was in Singapore during the Singapore Green Building Week. During his stay in Singapore, Mr Arnel, in his capacity as the Australian state of Victoria's Building and Plumbing Commissioner, also signed a Memorandum of Understanding with BCA to strengthen cooperation on building regulations standards, energy efficiency and green building standards, as well as joint research in building regulations.

BCA Signs MOU with UNEP

MOU signing reaffirms Singapore's strategic role in promoting sustainable construction in the region

In conjunction with the Singapore Green Building Week and alongside the inaugural International Green Building Conference (IGBC) 2009, BCA hosted the United Nations Environment Programme (UNEP) at two events – the UNEP-SBCI Roundtable on the Sustainable Buildings and Climate Index, and the Regional Roundtable on Sustainable Buildings from 26–27 October 2009.

A Memorandum of Understanding (MOU) was also signed between BCA and UNEP on 26 October to collaborate in cultivating attention and raising awareness on sustainable building and climate change issues, and in building a long-term capacity in the building and construction sector for sustainable building policies and tools.

The MOU will allow BCA to contribute to the region by gathering and sharing best practices and technologies that can aid the sustainable development of regional countries and the building sector.

BCA will also assist UNEP in advocating sustainable construction, and the mitigation and adaptation strategies of climate change, and support UNEP in the large scale collection of building performance data in the region.

UNEP is the designated body in the UN that coordinates the development of policy consensus on environmental issues and brings emerging issues to the attention of governments and the international community for action. BCA is a member of UNEP-SBCI (Sustainable Buildings and Climate Initiative), a programme under UNEP that gathers global building sector stakeholders to jointly promote sustainable buildings and construction practices.





SGBC Gains Worldwide Recognition



Singapore Green Building Council is the latest addition to a worldwide coalition of established and emerging green building councils

The launch of the Singapore Green Building Council (SGBC) on 28 October 2009 is a result of a strong public-private partnership that supports the Government's vision of shaping a world class and sustainable built environment.

As a strong affirmation of the Council's mandate and strategic purpose in Singapore, the SGBC was also conferred Emerging Member Status by the World Green Building Council (WGBC) at IGBC 2009.

The Council will help garner the support and active participation of the private sector in fulfilling its critical role of complementing and furthering the Government's lead in promoting environmental sustainability in Singapore.



For its inaugural year, the SGBC hopes to establish a green building product certification assessment framework together with industry stakeholders and develop a Green Building Product Directory that will be made available at the SGBC portal.

This information will provide building owners, developers, designers and facility managers with one-stop access to a reliable and standardised list of certified green building products that will assist them in achieving energy savings, resource conservation or improved indoor environment.

The SGBC will also be working towards providing an information resource and platform to facilitate knowledge-sharing and disseminate technical information among its members.

The formation of SGBC was an idea first mooted by BCA, which provided both the seed funding and secretariat support. It is currently headed by Er. Lee Chuan Seng, with Minister for National Development, Mr Mah Bow Tan as Founding Patron. The Founding Board of the SGBC consists of industry leaders from the private and public sectors, who are strong advocates of environmental sustainability in their own right.

The Council currently has 141 Founding Corporate Members of the Council and 28 Founding Sponsors to help drive the Council's mission in developing a greener building and construction industry. In particular, the Council is supported by strong environmental champions like City Developments Limited, CapitaLand Limited and Keppel Land, who have come in as SGBC's Diamond Sponsors.



Green Mark for Districts

BCA's new Green Mark Scheme now covers entire districts or precincts

Developers and master planners assessing the operational cost effectiveness for their cluster developments or large scale built environment developments can now leverage on BCA's newest rating scheme, Green Mark for Districts.

Green Mark for Districts evaluates the environmental performance of a district or precinct, comprising various types of infrastructures, buildings and public amenities as a holistic system.

BCA has worked closely with industry partners and master developers on two award winning projects under the new scheme. The first two projects certified under the new BCA Green Mark for Districts scheme - Resorts World Sentosa and NUS University Town - have been lauded for maximising sustainability by integrating green concepts into their master planning and building design. These two projects have also achieved the second-highest Green Mark rating of Gold^{Plus}.

Earlier this year, BCA expanded the Green Mark scheme to offer certifications in three more categories - infrastructure, office interiors and landed houses.

Key Categories of Assessment:

- Energy Efficiency
- Water Management
- Waste and Material Management
- Environmental Quality and Protection
- Innovations and Other Green Features

NUS University Town: Environmentally-friendly and Sustainable Campus for Integrated Living, Learning and Discovery

The University Town at the National University of Singapore (NUS) is a 19-hectare mixed-use residential, educational and research development situated along Clementi and Dover Road. University Town will pioneer an innovative model of learning and teaching integrated into residential colleges, creating a transformative educational experience for NUS students. The first phase of development is expected to be completed by 2011.

Summary of Green Features

- Urban Heat Island effect is greatly reduced by lush greenery shading roads and selection of hardscape materials as well as green roofs on buildings
- Salvaged demolition waste from neighbouring construction sites used as sub base fill material for roads and pathways
- Waste management recycling strategies involves dedicated collection areas of (1) recyclables, (2) food/organic waste, and (3) horticultural waste for offsite composting
- CNG-powered shuttle buses are used as internal loop transport
- Carbon sequestration computation is considered in greenery provision
- Biodiversity analysis was conducted to guide the selection of native plant species
- Storm-water management system to alleviate potential flooding
- Education web portal and programmes organised by NUS Campus Sustainability Committee for staff and students to track NUS' Green House Gases reduction target



Resorts World Sentosa (RWS)

Resorts World Sentosa (RWS) is a family holiday destination slated to take pride of place on a 49-ha site on Singapore's Sentosa Island. The S\$6.59 billion resort looks to welcome 15 million visitors in 2010. Set amidst lush greenery, the resort is built with the objective to be a sustainable development. Considerable efforts have been made during design stage to use breakthrough green technologies to conserve energy and water hence reducing the environmental impact.

Summary of Green Features

- An integrated water management system, which collects rainwater and condensate water from air-conditioning systems to be used for irrigation of landscapes
- A Solar PV system is installed on a building roof which can generate more than 547 MWH of electricity per year
- Widely used double-layered ETFE canopy systems with low heat transmission values and shading co-efficient to cut off substantial portion of the sun's heat
- Eco-coolers, with low energy consumption, to complement the ETFE canopy system by cooling the covered spaces to make them comfortable to the visitors
- Preservation of 3,000 trees and a coral fringe
- An Eco Lake that also allows water to be used for irrigation

News snippets



Bridge Challenge with Ngee Ann Poly

Bridge Challenge 2009 was organised by the Building and Environment Division, Ngee Ann Polytechnic, an event co-sponsored by BCA and Institute of Engineers (IES). Themed Building Bridges Building Passion, 55 teams from 35 secondary schools had to design and construct a pedestrian bridge model that could support a minimum load of 5 kg. Walking away with the GOLD award of \$500 and a trophy was Pasir Ris Crest Secondary. Students also gained insightful experiences from career talks by various industry leaders at the event.

Universal Design is Good Design

More than 268 participants learnt how "Universal Design is Good Design" at BCA's half day seminar at the BCA Academy. Together with four other key speakers who gave interesting insights into the latest UD applications in the built environment, CEO Dr John Keung shared 3 key learning points from the study trip to Shizuoko, Japan:

- The importance of upfront planning in achieving a friendly built environment
- The emphasis on public education
- Universal design is simply good design; not an add-on after design



Key to Healthy Buildings

When BCA held its "Structural Inspection and Maintenance of Buildings" seminar on 23 Oct 09, it received an overwhelming response from more than 500 participants comprising building owners, engineers, property managing agents and government agencies.

Speakers from BCA and the industry shared good practices in periodic structural inspection, assessment and rectification of structural defects, maintaining slope stability during rainy season and its corresponding preventive measures.

Three take-aways:

- Commit to mandatory periodic structural inspection
- Be proactive in regular inspection and maintenance
- Stay vigilant and take remedial measures promptly

Events

(Jan ~ Feb 2010)

Date

Event

Contact

5, 7, 12 & 14 Jan 2010

Supervision of Piling Works for Engineers & Supervisory Personnel

11 & 12 Jan 2010

2-Day Course on BMSMA for Building Management Personnel

11, 12 & 13 Jan 2010

Essential Knowledge in Construction Regulations & Management for Licensed Builders (Mandarin Class)

13 Jan 2010

Construction & Property Prospects Seminar 2010

18 & 19 Jan 2010

2-Day Course on Project Management

19, 21, 26 & 28 Jan 2010

Pile Foundations Design and Construction for Engineers

20 Jan 2010

Understanding the Green Mark Criteria for Existing Buildings and Office Interior

20, 21 & 22 Jan 2010

Certified QM/CONQUAS Managers Course

21, 22, 25, 26 Jan & 5 Feb 2010

Certification Course for Green Mark Manager (GMP Core Module)

1, 2 & 3 Feb 2010

Essential Knowledge in Construction Regulations & Management for Licensed Builders (English Class)

2 & 3 Feb 2010

Design & Installation Of Electrical Installation Complying With CP5 & CP88

23, 25 Feb, 2 & 4 Mar 2010

Site Investigation for Engineers

23, 25 Feb, 2, 4, 9 & 11 Mar 2010

Internal Audit (QEHS) Course Based on Quality ISO 9001, Environmental 14001 and Health & Safety OHSAS 18001

Marketing Dept
 DID: 6248 9843/824
 Email: bca_academy@bca.gov.sg

15 & 16 Jan 2010

BCA Academy Open House

Jaime Loong
 DID: 6248 9806
 Email: jaime_loong@bca.gov.sg

16 Jan 2010

BCA Built Environment Scholarship, Training and Career Fair

Manpower Planning Dept
 DID: 6325 5184
 Email: bca_job@bca.gov.sg

Let's Build A Green Future

THE BCA GREEN BUILDING EXHIBITION
11-14 MAR 10 • SUNTEC CITY • Admission Free (12 noon-8 pm)



WIN A
**SONY
LAPTOP!**

Take part in our
Green Building
quiz on **facebook**

Closing Date: 4 Jan 2010

Discover How The Little Red Dot Is Turning Green

Learn just how Singapore is leading a green revolution by greening all its buildings!



Walk Through A Captivating Green Home

Get a peek into the future with a tour of the fascinating green living room, bedroom, kitchen and bathroom of tomorrow.



Green City Painting Competition Showcase

What would a green future look like? Be blown away by the many imaginative, magical and colourful visions displayed at our painting exhibition.

Learn How Green Professionals Are Greening Your World

Architects. Developers. Engineers. Quantity surveyors. Builders. Facility managers. They all contribute to a greener world. Find out how.



WIN GREAT PRIZES At Our Gaming Booth And On Stage!

Loads of fun and exciting prizes await you in the Green Challenge and Green Mark Building Blocks Game.

PLUS
FREE GAME CARD! + KEY CHAIN!

A Public Exhibition by:

Building and Construction Authority

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



BCA GREEN MARK