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Young Leaders and Their Contributions

# Developing Innovations in Green and Recycled Materials

Dr Kelvin Lee is into research on how waste can be recycled into useful construction materials. Here, he describes the challenges and achievements in his work at Samwoh Corporation.

Dr Kelvin Lee  
Technical Manager  
Samwoh Corporation



As a Technical Manager of Samwoh Corporation, I play a key role in the company's research and development into innovative green and recycled materials as a substitute for imported natural materials. I hold a doctorate degree in civil engineering from the National University of Singapore, with over six years of research studies on waste materials for construction applications.

Samwoh Corporation is, in fact, a leading integrated construction company and green materials supplier in Singapore. It is here I can get involved in major green research projects, such as a recent groundbreaking project awarded by the Ministry of National Development Research Fund. The project involved the use of recycled concrete aggregate (RCA) to construct the Samwoh Eco-Green Building, the first building in the region to be constructed using up to 100% of this material. This revolutionary achievement in modern construction charted a positive direction for future sustainable design and was awarded the BCA Green Mark Platinum Award in 2010.



Aerial view of Samwoh Eco-Green Park





*Waste materials (asphalt waste and incinerator bottom ash) transformed for use in road construction.*

I am also involved in other intensive research studies to evaluate the use of RCA and other waste materials such as asphalt waste (derived from maintenance of road pavements) and incinerator bottom ash (from incinerated refuse waste) for road construction applications. The recycled materials developed from the studies have been approved by Land Transport Authority for use in road construction in 2010. These studies have also clinched several awards, such as the National Innovation & Quality Circles Assessment Star Award in 2009 and 2010 as well as the Minister's Innovation Award 2009 by the Ministry of Transport.



Apart from research work, I have participated in many international conferences and seminars to share my knowledge and experience on green technologies and the use of recycled materials for construction applications. At the moment, I am also serving as a Council Member in the Pavement Engineering Society in Singapore, a non-profit organisation that aims to promote knowledge exchange in pavement engineering among fellow professionals in the pavement industry.



A key challenge I am facing is the acceptance of recycled materials by industry stakeholders. There is a need for greater awareness that recycled materials can deliver comparable performance with that of natural materials. With the advent of technologies, recycled materials can be processed into building materials that can provide a substitute for natural materials.

Another challenge is the commercial viability of using recycled materials. Most industry stakeholders perceive that recycled materials have to be more economical than natural materials. However, this may not be the case as the cost of recycled materials is largely dependent on the market demand of building materials and the production cost of recycled materials. Nonetheless, with the government's call for sustainable development and the implementation of the BCA's Green Mark Scheme, I foresee a positive growth on the use of recycled materials in the construction industry in the near future.

In the meantime, I plan to continue exploring other potential waste materials that can be recycled for construction applications as we move towards a future where, hopefully, nothing will go to waste again.



## What is the Young Leaders Programme?

Dr Kelvin Lee and many other young professionals are part of the BCA's Build Environment Young Leaders Programme. This initiative was launched in 2009 to nurture young professionals with the dedication, passion and leadership qualities to lead the construction sector in the near future.

The programme aims to proactively engage these capable professionals within the industry by giving them a greater stake in the advancement of the industry. In addition, it facilitates their training and upgrading progression so that they can constantly enhance their competency and enjoy greater job satisfaction.

