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COVER STORY:
The Pinnacle@Duxton



Samwoh unveils initiatives for green construction

In an effort to meet the stringent demands of today's construction market, Samwoh Corporation Pte Ltd (Samwoh) has invested in relevant leading-edge technologies and focused on the research and development (R&D) of green products. The company has also invested in recycling facilities to process construction and demolition waste, asphalt pavement waste and other industrial by-products, for re-utilisation in the construction industry.

Housing these activities is the Samwoh Eco-Green Park which was officially opened in late March this year, by Ms Grace Fu, Singapore's Senior Minister of State for National Development and Education.

Within the Samwoh Eco-Green Park are the Samwoh Eco-Green Building, an asphalt recycling plant, and a green concrete ready-mixed plant.

Samwoh Eco-Green Building

In response to the government's call, Samwoh embarked on an ambitious and forward-thinking demonstration project to construct what is claimed to be the first building structure in the region, using concrete with up to 100% recycled concrete aggregate (RCA) which is derived from construction and demolition (C&D) waste. The result is the Samwoh Eco-Green Building.

The facility, which houses a Learning Hub and the Samwoh R&D Centre, won a Green Mark for Buildings Award, under the highest Platinum category, at BCA AWARDS 2010.

C&D waste constitutes a significant proportion of solid waste generated in Singapore. Its disposal creates major environmental problems due to the limited land space available. In the past, when old buildings were demolished, the rubble was either discarded or used for low value works such as land filling. But today, through extensive R&D work undertaken jointly by Samwoh, Building and Construction Authority (BCA), and Nanyang Technological University (NTU), technologies have been developed to recycle the waste to produce RCA, to



At the Official Opening of Samwoh Eco-Green Park are, from left to right, Mr Eric Soh, Director, Samwoh; Mr Joseph Hui Kim Sung, Director-General, NEA; Mr Lam Siew Wah, Deputy Chief Executive Officer, BCA; Mr Manohar Khiatani, Chief Executive Officer, JTC Corporation; Mr Michael Lim Chairman, LTA; Ms Grace Fu, Senior Minister of State for National Development and Education; Mr Elwin Koh Managing Director, Samwoh; Mr Koh Hoon Lye, Director, Samwoh; Dr Ho Nyok Yong, Technical Director, Samwoh; Mdm Pang Kok Lian, Director, Samwoh; and Mr Yam Ah Mee, then Chief Executive, LTA.



Participants at the Official Opening of Samwoh Eco-Green Park.



The Samwoh Eco-Green Building – winner of the BCA Green Mark Platinum Award.

replace natural aggregate for structural concrete. The project received research funding from Singapore's Ministry of National Development (MND).

The project comprised two stages –

first, extensive laboratory evaluation of the performance of concrete with RCA, and second, the construction of the three-storey building using concrete containing RCA, with advanced instrumentation

installed to monitor the performance of the structure. The data obtained from the project can be used to update existing building code requirements, in order to allow the use of RCA in all buildings in the future.

Asphalt recycling plant

Every year, a large amount of asphalt pavement waste is generated during road maintenance and rehabilitation. The waste is largely used for temporary access roads or as a backfill material for the road sub-base, both of which have low economic value. The rising costs of primary materials have triggered a need to use wastes more effectively. Samwoh has undertaken research studies together with the Land Transport Authority (LTA) and National Environment Agency (NEA) to study the effective use of asphalt pavement waste in the production of asphalt mixtures for road construction. Both laboratory and field studies have shown promising results.

Following the success of the study, Samwoh has set up a new asphalt recycling plant with processing facilities using advanced technology to recycle asphalt pavement waste into reclaimed asphalt pavement (RAP) which contains mainly aggregate and bitumen that can be reused in asphalt mixtures for road construction.

This offers an important opportunity to achieve reductions in the use of natural aggregate and bitumen, conserve energy, divert materials from landfills, as well as reduce costs.

The announcement by LTA in March 2010, approving the use of RAP in asphalt mixtures for road construction, will accelerate the development of sustainable built environments for future generations.

Green concrete plant

The Samwoh green concrete plant is capable of producing green concrete certified under the Singapore Green Labelling Scheme, that contains recycled materials such as washed copper slag, recycled concrete aggregate, and green cements, for the construction industry. It can also produce high performance concrete and other concrete mixtures.

In addition, the plant has a recycling facility to separate sand and stone from



Through R&D work, technologies have been developed for recycling wastes to produce various green products.



Extensive R&D works have been carried out.



Concrete waste recycling plant.



Green concrete plant.

fresh waste concrete, which can then be reused for the manufacturing of green concrete. The concrete containing RCA used for the construction of the Samwoh Eco-Green Building, was delivered by this plant.

Educating the public

As part of the company's Corporate Social Responsibility programme, Samwoh Eco-Green Park and other Samwoh recycling facilities at Sarimbun Recycling Park are open to the public.

Summary

The completion of Samwoh Eco-Green Park has opened a new chapter in sustainable development in Singapore.

The Eco-Green Building represents a breakthrough in construction technology through its use of concrete with up to 100% RCA which is beyond the existing design code limits.

The asphalt pavement waste recycling plant converts the waste into asphalt mixtures, which alleviates waste disposal problems and saves on primary materials needed for road construction.

The green concrete plant not only produces green concrete for civil engineering and building construction, it can also reclaim sand and stone from waste concrete, thereby facilitating their reuse in concrete production.

These three facilities have demonstrated the possibilities for sustainable design in the future, where nothing goes to waste.

Samwoh

Samwoh started business in the early 1970s. Over the years, Samwoh has morphed into a leading integrated construction company and green construction materials supplier. Samwoh was the top winner at the 2009 Enterprise 50 Awards honouring local, privately-held companies which have contributed to economic development in Singapore and abroad. Samwoh also received the inaugural 'Outstanding Sustainability Award 2010' from the Singapore Business Federation.

Images by Samwoh.



Asphalt recycling plant.