A product of passion

Putting heart and soul into design construction enables the Green Building to achieve the BCA Green Mark Platinum

by mary lim

THIRTY years after acquiring its present building, the Institution of Engineers Singapore (IES) has added an annex — the Green Building.

This building is not only a functional space for members to gather, network and participate in numerous activities, it is also a building worthy of an eco-tour for visitors who are interested in learning about the green and sustainable design and construction that goes into its construction.

A building that speaks volumes

Apart from embodying the latest sustainable design and construction technology, the Green Building must be a place where "IES engineers call home... and be built by engineers for engineers", says IES deputy president and chairman of the Building & Redevelopment Task Force, Er Chong Kee Sen.

For that, his team consulted RSP Architects Planners & Engineers, Squire Mech and green specialist Er Joseph Goh Chee Chiang.

Built at a cost of about $5.9 million, the Green Building is poised to become an icon for sustainable development in Singapore.

For a start, heat from the sun is minimised by having the main entrance facing north and the offices directed towards the south. Interior spaces are thus kept cooler while the restrooms are located in a non-air-conditioned stretch in the eastern façade.

Where air-conditioning is available, it must be energy-efficient, as must lighting and the Chevalier passenger lift, equipped with energy-saving features supplied by IFE Elevator.

Half the energy consumption

Tapping on solar energy also helps to boost overall energy savings to nearly 50 per cent.

Solar panels on the roof not only help to cut heat transfer to interiors but also maximise the capture of renewal energy, Er Chong points out.

An array of original features adhering to PUB's Active, Beautiful, Clean (ABC) Waters guidelines has resulted in a compact rain garden to collect and treat storm water via bio-retention.

Storm water runoff, which can pick up debris and dirt from the ground, is cleansed before being discharged into the public water course. When there is heavy rain, the rain garden also slows runoff discharge into public drains to prevent flooding.

Adds Er Chong: "The Green Building will serve as a test bed for a porous road pavement to facilitate studies into effectiveness and challenges of such surfaces in managing storm water surface runoff."

Quiet construction

As the Green Building is near many schools, IES tried to keep construction noise to a minimum.

Instead of the conventional method of driving piles into the ground, the team, working with home-grown foundation and geotechnical engineering specialist CSC Holdings, opted for vibration-free jack-in piling.

"When we told our neighbours that the piling works were completed, they were pleasantly surprised and said they were not even aware that piling works had been going on," says Er Chong.

Using precast columns, in collaboration with Excel Precast, as well as precast hollow core slabs, enabled many structural elements to be built away from the site, cutting noise levels further.

And when concrete works had to be carried out on-site, building materials supplier Holcim (Singapore)'s self-compacting concrete eliminated the need to compact the wet concrete.

"Wet concrete is compacted using poker vibrators," says Er Chong, "and the screeching noise that occurs during the process is loud and irritating."

Chipping in, too, was Industrial Concrete Products, the largest manufacturer of prestressed concrete piles in South-east Asia.

High-strength, high-performance concrete-spun piles from the company, as well as high-strength hollow core slabs and effective structural designs, kept the use of concrete to a minimum.

A Green Mark Platinum award for the building is merely icing on the cake for IES. Er Chong describes the experience as "a great achievement for IES and engineers at large". He says "it is heart-warming to see individual engineers, companies and friends coming together by donating to the building fund as well as providing probono services and products for the project."

Members of the IES range from academics from local institutions of higher learning to engineers from local small and medium-sized companies, large local and multinational companies and public sector enterprises.

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Standing from left to right: Ms Vivien Sim Chay Eng, Ms Thong Lee Ying, Mr Tan Phay Ping, Mr Eric Chan Kin Hou, Er Dr Ang Choon Keat, Mr Tan Bee Loke and Mr Ng Meng Hui. Seated from left to right: Er Vincent Yoong, Er Joseph Goh Chee Chiang, Er Ong Ser Huan and Er Chong Kee Sen.