

Hong Kong Academy: Integrating Sustainability into a High Performance School

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Tai Hollingsbee is a specialist in the design of high performance buildings that strive towards a zero carbon foot print. As an engineer with expertise in architectural science, he has extensive international experience across a range of landmark projects with world leading architects. His portfolio of work includes educational institutions in Australia and the UK, large residential and embassy projects in Africa, 'greening' one of the world's tallest buildings in Chicago, commercial developments in the Middle East and China, and art galleries in Europe.

What would a school which has been purposefully designed as an educational tool on sustainability look like? A school which encouraged students to take a hands-on approach to learning about sustainability, to the point of being able to experiment with sustainable building design features and measure their effects – but where the building design itself is far from an experiment.

This was the design philosophy behind the new Hong Kong Academy campus, which will be located in coastal Sai Kung, Hong Kong. Based on the idea of a communal learning “village”, the vision for the school was not only to be a leading example of sustainable design in the South-East Asia region, but to develop a building where the culture of environmental awareness and minimisation of our ecological impact is manifested in the building design and in how everyone uses the building.

Performance targets of the new building have been set high, with the goal of achieving a ‘Gold’ rating under the Hong Kong Building Environmental Assessment Method (HKBEAM). Sustainable design strategies have been incorporated into every facet of the building’s design. The building envelope has been optimised for solar penetration, good daylight dispersion and insulating from heat conduction. Strategically positioned openings in the façade naturally ventilate the building outside of the summer season. During hot and humid conditions, the building seals itself and is conditioned with an innovative displacement ventilation system. An advanced Building Management System controls the operation of the building and, coupled with solar thermal systems for hot water generation, wind power and photovoltaic cells for generating electricity, the building will be unique in its aspiration for an intelligent, low carbon emissions education building in Hong Kong.

Beyond the adoption of these sustainable design features, the vision of the building as an educational tool has been realised in a number of ways. Fundamental principles in climatic design for humid environments with passive ventilation, daylight, comfort control, on-site renewable energy and efficient building systems have been purposefully planned into the building in a visible and tangible sense, where staff and students can experience the effects of their operation firsthand.

There is also provision for these features to be tested and a certain degree of experimentation can be carried out during classes for educational purposes.

This paper explores the sustainable design features and strategies used for the new Hong Kong Academy building, and how these have been incorporated with the design philosophy of building user education in mind. The aim here is twofold: firstly, to provide insight into the specific strategies which can be used when designing an exemplary sustainable design educational facility in the tropical climate of South-East Asia; and secondly, to highlight the potential for community education and integration that such a development can achieve.