



Case Study
Republic Polytechnic,
Singapore

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▲ Learning Pods

This is the fifth and newest of Singapore's technical institutions and with its completion marks a new era in the education process currently undergoing change in this island republic of nearly 4 million people.

The conventional lecture-based learning paradigm has given way to a new pedagogy which emphasizes interaction, parallel thinking and project research as a basis in its curriculum.

This is a major element in the overall planning and space utilisation which together with the desire to form a

friendly interface with the immediate community, have given shape to a vibrant, environmentally sensitive and user-friendly architecture. The two collaborating architects, Fumihiko Maki of **Maki and Associates of Japan** and **DP Architects of Singapore** have within this 20 ha site, created a design which

provides for a central “Nucleus“ of main educational programs serviced by five ancillary “Satellites”. The central “Nucleus” contains eleven identical 8 or 9 storey “Learning Pods” and a “Staff Administration Hub”. The “Satellites” are placed at an outermost ring and form the public face of the campus encouraging spontaneous dialogue with the community and inviting more involvement with the public. The “Nucleus” and “Satellites” are unified by two elliptical shaped decks of common facilities. The “Lawn” which is above the “Agora”, is open to the sky. These two decks are informal, large, continuous, non-hierarchical, semipublic domains for students to gather, meet and interact. The “Lawn” is in effect an elevated ground level and is the main organisational and orientation element from which the various buildings can be referenced. It unifies the campus and is a venue for communal open meetings for staff, students and public alike. The “Boulevard” which intersects it along a north-south axis provides a strong

a public space that sits on grade and terraced to respond to the change in terrain. Through discreet planning in placing rooms with openings facing north-south, it is possible to reduce the need for excessive use of shading devices. When used, as at the façade of the Administration Hall, shading devices can also redirect light to the interior ceiling and deep into the internal volume whilst also reducing the incidence of direct daylight glare. There are courtyards which through extensive use of landscaping provide inviting pockets of cool micro-climate to encourage activities outdoors.

EVALON[®], the ultimate roofing and waterproofing membrane produced by the german flat roofing specialist alwitra, was used extensively throughout the external roof and deck areas, covering an area of approximately 85,000 sq.m. The membrane was fully bonded onto the sloped reinforced concrete substrate surface, providing fall towards the rainwater discharge outlets.

At the landscaped roof areas, EVALON[®]



▲ Agora



▲ Republic Polytechnic Centre



▲ Campus Heights & Childcare Centre



▲ The Republic Cultural Centre



▲ Energy Centre & Multi-Storey Car Park

primary directional guide. The “Agora”, as inspired by its function in Ancient Greece, is a place of public assembly, a forum, marketplace and public square for the exchange of information and goods. At Republic Polytechnic this is re-interpreted in combination with the concept of an atrium at ground level,

was installed with a high compressive strength VersiCell drainage mat and geotextile cover. A major consideration in the use of EVALON[®] is the FLL root resistance properties of the membrane. This project is the 3rd polytechnic built in Singapore in the past 15 years and EVALON[®] has been installed for all these projects.



▲ Courtyard

alwitra in brief

alwitra is a leading German manufacturer of comprehensive flat roofing systems. The wide product range comprises the roofing and waterproofing membranes EVALON® and EVALASTIC®, the super modern and unique photovoltaic sealing membrane EVALON® Solar, as well as aluminium profiles for edge trims and integrated details such as rainwater outlets, vents and roof lights. alwitra is a member of European Single-ply Waterproofing Association, Bruxelles, Belgium. The alwitra flat roofing systems are so sophisticated and flexible that they can be implemented perfectly in various climatic zones and architectural concepts. Numerous architectural projects of high repute all around the globe document this impressively.



Green Mark Platinum

Green Mark for Environment-friendly Construction

Since 2005, the Singapore Government has been supporting environmentally conscious construction - ranging from project development to construction planning and especially the construction itself. Buildings that meet the respective standards receive an environmental certificate (BCA Green Mark, in four categories: Platinum, GOLD^{PLUS}, Gold or Certified), which must be certified every two years by a new inspection.

Republic Polytechnic's new Woodlands Campus was awarded the Building and Construction Authority's (BCA) Green Mark Platinum Award on 27 April 2006, at the BCA Awards Ceremony.

This award recognises excellence in environmentally friendly building design such as a building's capacity to save energy and water, provide a healthy

indoor environment and the use of vegetation in the project.

Key Green Features

- Among first few projects to use thermal energy storage system in the region.
- "Campus in the Park" feeling. Inspiration for the lawn came from well known campus grounds around the world, such as the Harvard Yard in Harvard University and Mills Yard in Cambridge University.
- Multiple ventilation modes for spots hall facilitate natural ventilation during normal usage and air conditioning during special occasions.
- "Chemical Free" water treatment for central cooling plant and ionisation water treatment for swimming pool.
- Photovoltaic solar energy panel for general lighting and general power.
- Use of pneumatic waste conveyance system.

People Involved:

Owner: Republic Polytechnic

Architects: DP Architects Pte Ltd & Maki & Associates

Structural Engineers: Meinhardt (Singapore) Pte Ltd

Main Contractors: China Construction – Taisei JV

Waterproofing Specialists: Elmich (Far East) Pte Ltd & Lee Construction Pte Ltd