

GREEN BUILDINGS with nanoYo



Buildings that has achieved Green mark certification

Abbott Nutrition International Singapore (Milk powder manufacturing)



Award : Green Mark Gold

Architect : Jacobs Engineering Singapore Pte Ltd
Structural Engineer : Jacobs Engineering Singapore Pte Ltd
M & E Engineer : Jacobs Engineering Singapore Pte Ltd
Landscape Consultant : Martin Lee Designs
Main Contractor : Bovis Lend Lease Pharmaceutical Pte Ltd
Project QP : RSP Architects Planners & Engineers Pte Ltd
Project M&E PE : Squire Mech Pte Ltd

Project Description :

Proposed Single User Nutritional Manufacturing Plant Comprising 1 Block of 2 Storey Administration and Laboratory, 1 Block of Part 7 Storey, 6 Storey, 4 Storey, 3 Storey and 1 Storey Manufacturing and Warehouse Building and 1 Block of 1 Storey Utility Building at 26 Tuas South Ave 10.

Green Features :

- **Titanium Dioxide Solution application to improve indoor air quality.**
- Visitors viewing corridor.
- Use of RO plant reject water as rinse water for cleaning purpose.

Apple Operations Europe, Singapore Branch (Computer products)



Award : Green Mark Gold

Architect : Elton-Roade Architects

Structural Engineer : PnE Consultants

M & E Engineer : Unipac Consulting Engineers LLP

Quality Surveyor : Faithful + Gould

Main Contractor : Kenyon Engineering Pte Ltd

Project Manager : DTZ Dedenham Tie Leung (SEA) Pte Ltd

Project Description :

Apple building is an existing three-storey light-industrial building, completed in 1988, with a Gross Floor Area of 28,000.34 m², situated at 7 Ang Mo Kio Street 64, Singapore 569086. Apple occupies 21,688.30 m². It's tenant, ASE Singapore Pte Ltd, occupies 6,312.70 m² of the premises.

The building is of reinforced concrete with brick and wall plaster finish. It has metal roofing with steel truss. The building is fully air-conditioned and protected by water sprinkler fire fighting system. Apple's underwent renovation work to all their offices in September 2007 and is due to complete in July 2008. Efforts were made during the renovation to implement green features and systems.

Green Features :

- T-5 fluorescent light fitting with electronic high frequency ballast are used to provide good visual comfort with energy savings.
- Daylight-linking sensors are installed on light fittings near the windows to automatically dim the lights when there is sufficient daylight.
- **Titanium Dioxide Solution application to improve indoor air quality.**
- Variable Speed Drives are installed for all existing AHUs.
- The condensate water collected from the AHUs are recycled for the cooling make-up water.
- Carbon Dioxide Sensors are installed to automatically modulate the fresh air intake to AHUs to reduce the air-con heat load.
- Commitment and effort from the Apple management to protect the environment and to maintain a comprehensive yet practical environmental management system.
- Maintaining the indoor environmental quality through surveys and annual 3rd party audits.
- The estimated savings is S\$72,000.00 per year.

Genentech ECP-1 Facility - Roche Singapore (Biomedical manufacturing)



Award : Green Mark Gold

Developer : Roche Singapore Technical Operations Pte Ltd

Architect : RSP Architects Planners & Engineers (Pte) Ltd

Structural Engineer : RSP Architects Planners & Engineers (Pte) Ltd

M & E Engineer : Squire Mech Pte Ltd

Main Contractor : Bovis Lend Lease Pharmaceutical Pte Ltd

Design Engineering Consultant : Jacobs Engineering Singapore Pte Ltd

Project Description :

9,486.49m² green field facility built on 83,657m² at Tuas Biomedical Park. One contiguous facility built in two sections with admin of about 1,289m² on single level and production building of 8197.49m² on two levels. It also has a 1,000-liter E.coil manufacturing facility.

Green Features :

- 24mm thick double-glazed low-E glass wall used at Admin area.
- **Titanium Dioxide Solution application to improve indoor air quality.**
- AHU condensate are recycled back to Cooling Tower.
- Centrifugal chiller with a Variable Frequency Drive (VFD) to maximise part load efficiency and energy savings.
- Modular construction for entire production block.

Aquatic Science Centre (Learning Hub)



Award: Green Mark Gold Plus

Developer : National University of Singapore
Architect : Surbana International Consultants Pte Ltd
Structural Engineer : Surbana International Consultants Pte Ltd
M & E Engineer : Surbana International Consultants Pte Ltd
Landscape Consultant : Surbana International Consultants Pte Ltd
Quality Surveyor : Surbana International Consultants Pte Ltd
Main Contractor : C.P. Ong Construction Pte Ltd

Green Features :

- A well-ventilated, non air-conditioned research area with minimum west facing façade.
- Use of T5 lighting, high frequency ballast & motion sensors to minimize energy consumption.
- Rain water harvesting for research.
- Use of low VOC paint at research area (indoor & outdoor).
- **Use of titanium dioxide to remove odour.**
- Bicycle racks and aesthetic wall using wood from tree fell on site are placed at strategic location to raise awareness.

Environment Building Singapore (National Environmental Agency)



Award : Green Mark Platinum

Developer : Ministry of The Environment and Water Resources

Facility Manager : Keppel FMO Pte Ltd

ESD Consultant : G-Energy Global Pte Ltd

Project Description :
25 Storey Commercial Building with 2 Level Basement Carpark and a 6 Storey Annexe Block.

Green Features :

- Estimated energy savings: 549,701 kWh/yr; Estimated water savings: 26,927 m³/yr
- New chiller plant achieving efficiency of 0.6kW/ton.
- Replaced fluorescent tubes with LED lighting.
- Permanent measurement and verification instrumentation for the monitoring of chilled-water plant efficiency and heat balancing.
- Waterless urinal flushing system.
- Collection system for rainwater and condensates.
- **Titanium dioxide coating for all toilets.**
- Bio-composting system for horticulture waste.