

ADMIRALTY MEDICAL CENTRE A HEALTH-PROMOTING MEDICAL FACILITY

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Introduction

Admiralty Medical Centre (AdMC) is a unique public healthcare facility in Singapore which provides specialist care and is housed within a mixed-use development called 'Kampung Admiralty' (KA). KA is a **one-stop integrated complex designed for Singapore's ageing population** and the community staying in the heartlands. It was awarded the 'World Building of the Year' title at the World Architecture Festival 2018 in Amsterdam, Holland.

Key Design Features



Image 1: Admiralty Medical Centre is located on the 1st, 3rd, and 4th storey of the first-of-its-kind integrated development, Kampung Admiralty

- Green Transport** - good access to public transport services for patients.
- Thermal Comfort** - indoor temperature maintained at 24-26 degrees C with relative humidity below 65%.
- Spaces designed with **well-moderated ambient noise levels**.
- Minimal Indoor Air Pollutants** – at least 90% of internal wall area uses low volatile organic compound (VOC) paint.
- Large windows on Level 3 / Landscape Courtyard** - the reception, waiting area and recovery room are designed around a central courtyard, promoting well-being and healing.
- Stairway to Health** - For patients and care-givers in the reception area, the distinctive staircase is in their line-of-sight while the lift lobby is behind them, encouraging exercise.
- Retro Furnishing and Fittings** - The old-school look and feel of the medical centre bring back fond memories for our patients.



Image 2: Large windows on Level 3 with a view of the Landscape Courtyard from the medical centre



Image 3: Retro furniture at Waiting Areas



Image 4: Stairway to Health leading from L3 to L4 of the medical centre

Sustainability Achievements

- Thermal Performance of Building Envelope (design ETTV is **38.67 W/m²**).
- Water-cooled chilled water plant- design peak efficiency: **0.61 kW/RT**.
- Air-Distribution System- design efficiency improvement of **34%**
- Artificial lighting power budget had an improvement of **44%** through installation of Light Emitting Diode (LED down lights, LED lamps, T5 lights since the inception of the medical centre.
- Use of automatic water efficient irrigation system with rain sensor with at least **50%** of landscape area served by the system.

Energy Efficiency

- Thermal Performance of Building Envelope (design ETTV¹ is 38.67 W/m²)



Image 5: Careful glass selection for external façade and extensive sun-shading elements to reduce heat gain into the building.

¹ ETTV: Envelope Thermal Transfer Value takes into consideration the three basic components of heat gain through the external walls and windows of a building. These are:

- Heat conduction through opaque walls,
- Heat conduction through glass windows,
- Solar radiation through glass windows.

A lower ETTV value minimizes energy transfer from the building façade, which in turn reduces the cooling load of the building.

- Air-Conditioning System



Variable Speed Control (VSD) on CHWP



Permanent Measuring Instrument on chilled water plant



Efficient AHU

Image 6: Key features implemented to improve air-conditioning system efficiency

- Day lighting through the landscape courtyard at L3: The 16.5m x 6m windows maximise natural lighting thus reducing electricity consumption needed to illuminate the main reception lobby.

Water Efficiency

- Water fittings such as bib taps, urinals, basin taps are rated excellent under the Water Efficiency Labelling Scheme (WELS) Design.
- Use of non-potable water including rainwater for landscape irrigation.
- Use of automatic water efficient irrigation system with rain sensor with at least 50% of landscape area served by the system.

Environmental Protection

- Use of sustainable and recycled materials such as green cements, recycled concrete aggregates (RCA) and washed copper slag (WCS) from approved sources.
- Use of environmentally friendly products, which were certified by approved certification body such as, water proofing, carpet tiles, internal dry walls, and vinyl floor.

Indoor Environmental Quality

- The indoor operative temperature at the medical centre is maintained between 24-26 degrees C with relative humidity below 65%.

Conclusion

For its innovative design and approach, KA, where AdMC is based, has bagged several awards since its completion. These include the Universal Design Mark Award (Platinum) for its extensive adoption of Universal Design and user-friendly environment for residents of all ages to live comfortably and independently. The inter-agency effort to build this integrated development to facilitate ageing-in-place has also earned KA the inaugural May Day Innovative Breakthrough Award.

Patient Friendly Design

The patient-friendly design and initiatives at AdMC have been built into the design and operations of the centre.

Active, Beautiful and Clean (ABC) water features such as rain gardens and bioswales treat surface water runoff and further help to enliven the central courtyard and the overall landscape.

Other sustainable features include a Pneumatic Waste Conveyance System (PWCS) that serves the entire development and removes the need for manual waste collection from individual refuse chutes.