AIRCRAFT HANGAR OBTAINS
GREEN MARK PLATINUM (POSITIVE ENERGY) AWARD

An eco-friendly development by MINDEF, SAF and DSTA.

The hangar for the Republic of Singapore Air Force's (RSAF) A330 Multi-Role Tanker Transport (MRTT) aircraft is located at Changi Air Base (East).

In line with the whole-of-nation response to tackle climate change, the Ministry of Defence (MINDEF) and Singapore Armed Forces (SAF) are doing their part to be environmentally sustainable. Initiatives include the implementation of eco-friendly solutions such as the development of infrastructure with a focus on sustainable design, construction and operations, as well as utilising hybrid vehicles and food waste management.

Together with the Defence Science and Technology Agency (DSTA), MINDEF/SAF has incorporated green features upfront in the design of its new buildings. Besides making use of renewable energy and sustainable building materials, these facilities maximise water and energy conservation through water-efficient fittings as well as energy-efficient lighting and air-conditioning systems.

HANGAR FOR THE A330 MULTI-ROLE TANKER TRANSPORT AIRCRAFT

Completed in March 2020 at Changi Air Base (East), the hangar for the Republic of Singapore Air Force's (RSAF) A330 Multi-Role Tanker Transport (MRTT) aircraft is the SAF's first net positive energy building. For this achievement, the building obtained the Green Mark Platinum (Positive Energy) Award from the Building and Construction Authority (BCA) in February 2020.

The hangar will be able to generate 30% more electricity than it consumes. The additional electricity generated will be used to supplement other energy demands within the air base.

The development incorporates several green features:

Naturally ventilated interior space

The building is designed with a north-south orientation, to reduce heat gain. Airflow into the building is optimised for natural ventilation and a pleasant working environment, through vertically lifting, large front doors made of translucent, panelled fabric, and large-span louvres at the back of the hangar. High-volume low-speed fans further augment thermal comfort.

By allowing light to pass through, the translucent panelled fabric door also serves to reduce the artificial lighting requirements within the hangar.

Green roof

Besides serving as a rest and recreation area, a green roof also acts as an insulation layer to reduce solar heat gain into the building.

Sustainable building materials.
Eco-friendly products have been used in the construction of the building, such as low-VOC (volatile organic compounds) paint, green concrete, and other green materials each of which has been certified as a Singapore Green Building Product.

Power from renewable energy sources
The hangar uses solar PV panels as the source of renewable energy, to generate 1,225 MWh of electricity a year.

Energy-efficient design.
The building has an energy-efficient air-conditioning system and uses LED lighting, to conserve electricity.

Water conservation
Rainwater is harvested and recycled for general washing, auto-irrigation of the hangar's green roof, and flushing of toilets. Water-efficient fittings are also used, with total annual water savings estimated at 5,460 m³.

PROJECT CREDITS

Developer
Defence Science and Technology Agency

Architect
3HPArchitects Pte Ltd

Mechanical & Electrical Engineering Consultant
Bescon Consulting Engineers Pte

Environmental Sustainability Consultant
GreenA Consultants Pte. Ltd.

Civil & Structural Engineering Consultant
KTP Consultants Pte Ltd

Main Contractor
Sanchoon Builders Pte Ltd

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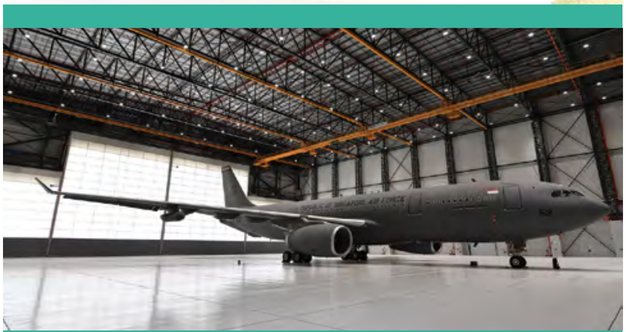
Rainwater is harvested and recycled for general washing, auto-irrigation of the hangar's green roof, and flushing of toilets, so as to conserve potable water.



The hangar with the panelled fabric doors lifted (image above) and lowered (image below). The translucent fabric doors allows natural light transmission into the building, thereby reducing the artificial lighting requirements.

Large-span louvres located at the back contribute to natural ventilation of the building.

The green roof acts as an insulation layer to reduce solar heat gain into the building.