SUNNY DAYS AHEAD!

Highlights from the Singapore Aerospace Industry Solar Adoption Report (SAISAR) 2021

In the context of increasing interest towards the use of renewable energy, the Association of Aerospace Industries (Singapore) (AAIS) has partnered with JTC to publish the inaugural Singapore Aerospace Industry Solar Adoption Report. The report aims to provide a glimpse of the industry's sustainability efforts, with a specific focus on the gains from implementing solar energy. It hopes to inspire companies from all industries to learn and be ready in greening their energy use.

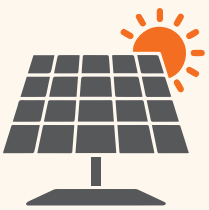
Highlights from SAISAR 2021

19,650 kWp

Total deployed solar capacity by the aerospace industry (as of June 2021)

Approximately[1]

65,000 solar panels



installed within aerospace facilities around Singapore

Total electricity produced annually

21,180 MWh

This amount of electricity is sufficient to power

4,900

4-room flats[2] in Singapore for **1 year**

By using solar energy, the Singapore aerospace industry avoids

8.65 million kgCO_2

of carbon emissions of in a year, which would be produced if the energy had been supplied by the national grid[3].

This is equivalent to the CO_2 absorbed by

393,360 mature trees[4]

Amount of building, hangar and car park roof space used

123,053 sqm

This amount of space, equivalent to **17 soccer fields** has been repurposed for economic and environmental benefits.

SOLAR ENERGY AS SHARE OF RESPONDENTS' OVERALL ENERGY CONSUMPTION

10.69%

weighted average

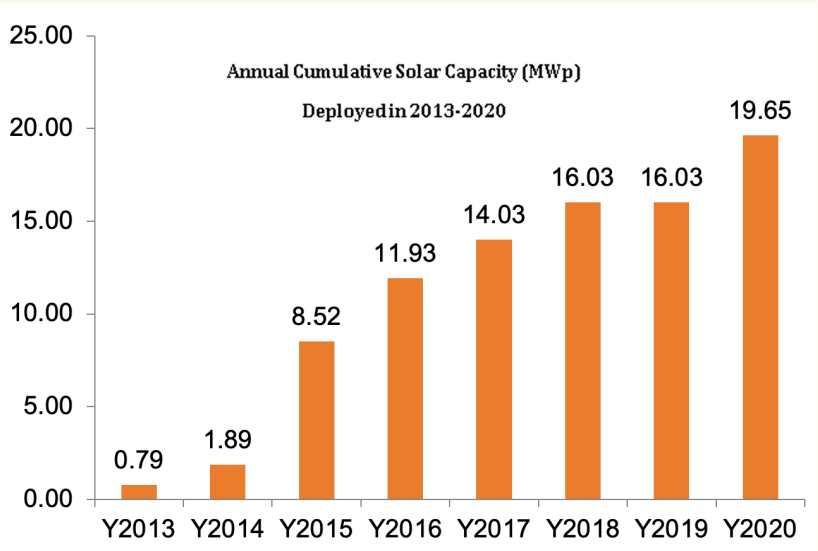
The aerospace industry contributes 4.4% of Singapore's current total installed solar capacity, and 8.3% of private-sector installations in Singapore.

1. Approximation assumes an average power rating of 300W per commercial solar panel (96 cell) measuring 1m x 1.9m
2. A 4-room Housing and Development Board (HDB) apartment consumes a monthly average of 359.1 KWh of power in 2019
3. This is using the grid system-wide emission factor of 0.4085 kgCO_2 per kWh for 2019
4. This is based on an estimate of 22 kg of CO_2 absorbed by a mature tree annually, published by the European Environment Agency in 2012

Annual average growth rate of solar capacity (from 2013 to 2020)

83.6%

The industry's solar adoption looks set to grow incrementally. There are 2 projects scheduled to be operational in 2021 and a potential pipeline of 12 additional projects planned for implementation in the near future.



Overcoming Implementation Challenges

1. Many aerospace companies are located near airports. Tests are needed to ensure rooftop solar panels do not interfere with radar and navigation systems or cause reflective glare for pilots, which is a safety concern.

2. For aerospace facilities that operate in the evening, additional upfront investment and space are required to install batteries (to store electricity for on-site usage during these hours). An alternative is to sell surplus solar energy generated in the daytime to the grid.

93%
of respondents employ **solar leasing aka power purchase agreement (PPA)**

VS

7%
of respondents that own the solar system

In solar leasing, a company leases its space to a solar vendor that will install, own and operate the solar panels. The company can choose to buy all or part of the solar energy generated. The contract duration for solar leasing varies between 10 and 25 years.

Benefits:
- No upfront capital costs for the company.
- Lower cost of electricity compared to buying from electricity retailers.
- More predictable energy pricing with the ability to lock in fixed electricity prices via negotiation with solar vendor.
- Limited risks from owning and operating an energy asset by only paying for solar energy generated.
- Solar developers install, manage and pay for the maintenance of solar panels.
- Enhance value of property/facility.

FACILITATING THE ADOPTION OF SOLAR ENERGY

To help more companies access the benefits of solar deployment and make industrial estates more environmentally friendly, JTC has introduced the SolarRoof initiative. It allows companies to engage an appointed system operator (Sembcorp Solar) to install solar panels on the roofs of their facilities and tap on agreed solar rates. There are two types of solar deployment business models offered by the operator:

1. Rooftop licensing – Property owner licenses its roof area to vendor for solar panel installation at no cost. The electricity generated from the solar system is then sold to the grid and the property owner will receive the rooftop license fee ($/m2 of roof area).

2. Solar leasing – Property owner allows a solar vendor to install solar PV on their roof at no cost. The property owner will then purchase the generated electricity from the solar vendor at a discounted rate on the solar rates.

For more information, please refer to **JTC's Solar Deployment Infokit** available via the QR code.