



Create the future with heart

Sustaining Innovation since 1960

Shanghai Aerospace Automobile Electromechanical Co., Ltd. (HT-SAAE)

Australia May 2023

ABOUT HT-SAAE

HT-SAAE (Shanghai Aerospace Automobile Electromechanical Co., Ltd) owned and operated by China Aerospace Science Technology Corporation (CASC) since 1960.

Established to develop solar technology for Satellite program.

>USD 1.8 billion
Total asset

>500
R&D engineers

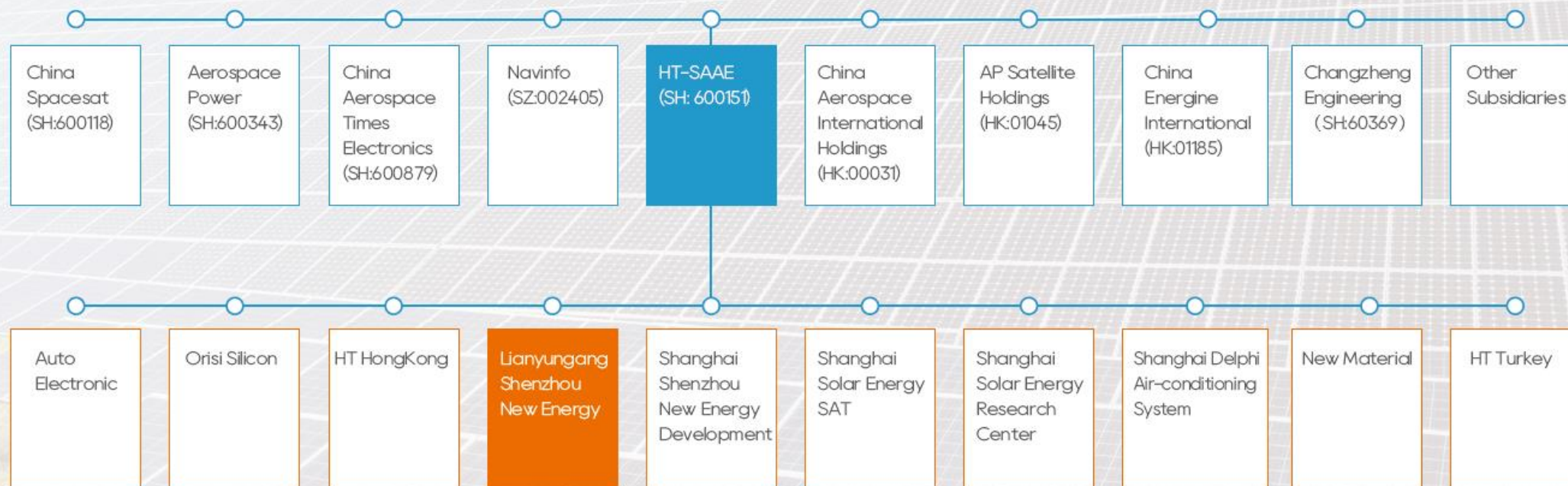
>200
Solar cell and module technical patents

50
Independent intellectual property
for cell & module

>USD 10 million
R&D investment per year

19
High-tech enterprises

ORGANISATION CHART



174000 employees

USD 55 billions total assets

YOUR BEST CHOICE FOR EXCEPTIONAL VALUE AND HIGH PERFORMANCE PANELS.

HT-SAAE MILESTONE

1970

First satellite
launched

1960

Started solar
technology research
on satellite application

2005

Establishment of
Shanghai Solar
Energy R&D center

1999

Reached 5MW
production capacity

2012

Establish vertical
integrated production
capacity

2009

HT-SAAE launched
in Australia

2014

Top 10 Chinese PV
module supplier;
Certified by TUV
Rheinland.

2013

No.2 EPC in China
No.4 EPC Worldwide

2016

HT Solar Energy
AŞ established
in Turkey.

2015

PV vertical capacity
reaches GW level.
Awarded "Bloomberg
TIER 1 Module Maker"

2018

- Adopt international
standard product mark
certificate
- Ganyu District Science
and Technology Award

2017

The photoelectric
conversion efficiency test
method of photovoltaic
modules for ground use
has passed the (CNAS)

2022

Top Performer in "2022PV
Module Reliability Scorecard",
undertaken by PVtech.
Class A fire prevention test
passed UL790 & IEC61730.

2019

Meets stringent
Munich Re warranty
Partner criteria.

HT-SAAE SOLAR competitive edge

Brand advantage

Aerospace photovoltaic

Relying on the aerospace brand, there are more than 50 years

Product superiority

High efficiency, high reliability, high quality is the photovoltaic can hold
The driving force of continued development. The company has formed a high quality

Technological superiority

Production line has a very high level of automation and informatization,

Service advantage

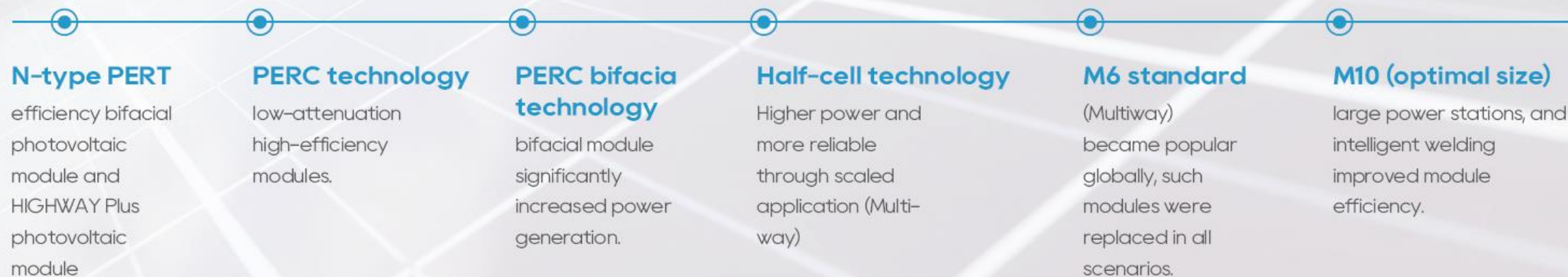
Quality insurance provided by Lloyd's and CITIC Insurance for customers
Household escort, customers at home and abroad can feel at ease to buy

Technology-led

Every technological innovation of ht-saae has become a guiding light of the industry, helping to build a new type of safe and reliable power system. ht-saae's technological innovation will be rapidly transformed into advanced production capacity on a large scale and will be promoted and applied among customers, which continuously brings down LCOE.



PVEL reliability ranks among the top in the world



Core values

Reliability, Value-add, Fulfillment

Innovation-driven development, value created by reliability. This is always the faith of ht-saae staff!

Reliability

Provide reliable products and services for customers; be a reliable corporation for customers, employees and other stakeholders; and be reliable people.

Value-add

Provide customers with highly cost-effective products and high value-added services; offer continuous growth to employees; constantly create value for other stakeholders.

Fulfillment

Care about customers' feelings and get along with them with a humble, respectful, friendly and cooperative attitude; Respect employees and pay attention to sharing and communication and be dedicated to making the atmosphere of "ht-saae family" featuring trust and inclusiveness; respect stakeholders in a frank and friendly manner.

GW level

vertical integration

industry chain



Silicon



silicon pellet



The battery



assembly



Inner Mongolia Shanghai Airlines

HTSOLAR A Turkish company

● Lianyungang Shenzhou New Energy Co., Ltd

Lianyungang shenzhou

Research and development and patent

The three-standard system is obtained after passing the SGS review

- The Lianyungang R & D Center was established in 2012
- The center focuses on multi-grid photovoltaic modules, slice photovoltaic modules, high-light gain photovoltaic modules, double-sided photovoltaic modules, smart photovoltaic modules and other module technologies
- The center has been approved by the National CNAS laboratory
- Up to now, with 101 authorization, 12 inventions and one Japanese patent



quality system

The three-standard system is obtained after passing the SGS review

ISO9001



ISO14001



ISO45001



SGS

Lianyungang shenzhou

product certification

Covering important global markets



Lianyungang shenzhou
cooperative
partner

HT-SAAE



Lianyungang shenzhou

The most brutal outdoor test ever done

The harshest outdoor test ever available

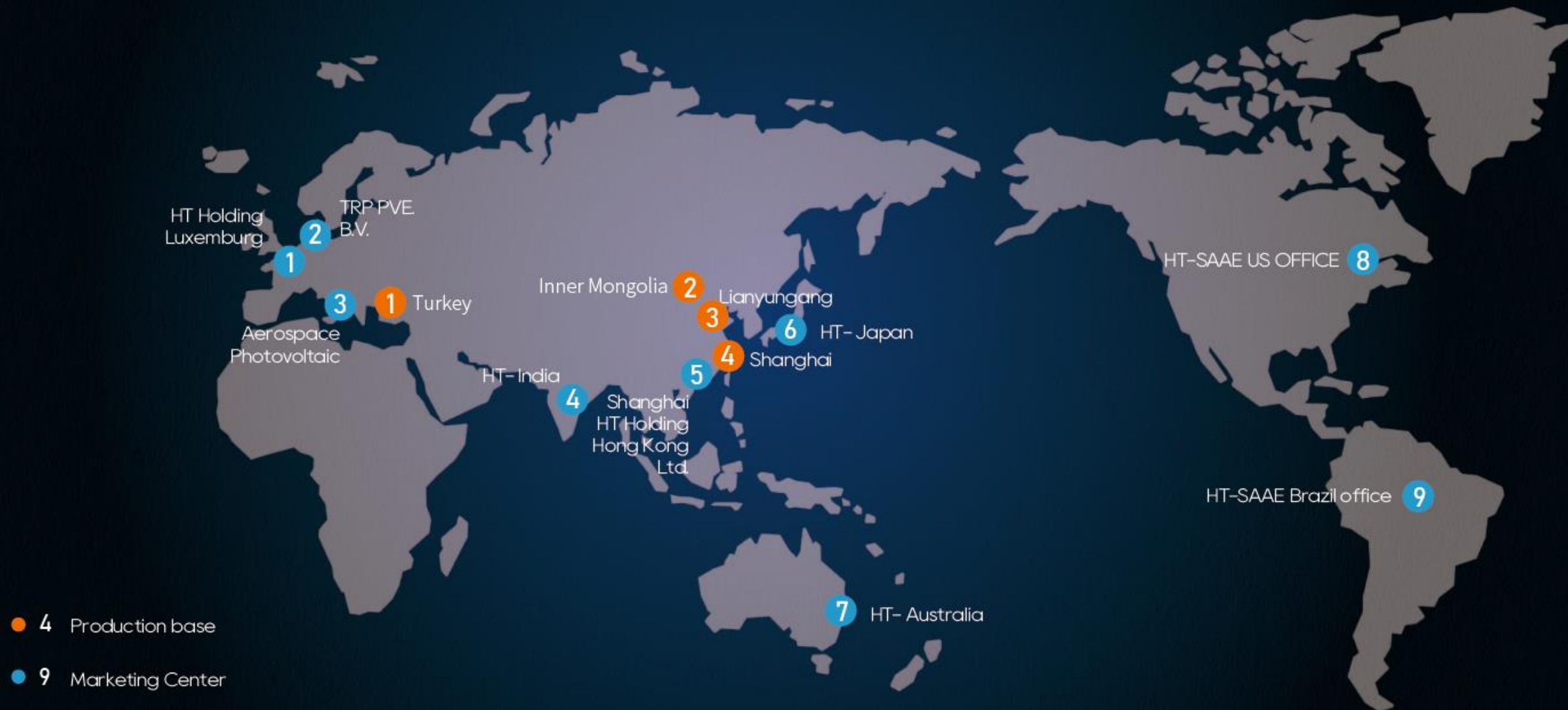
- Completed in January 2015, with 48kW in Zhangye, Gansu province
- The lowest temperature is less than -20°C
- The double-sided module has better snowmelt performance.



Laboratory high-standard
testing + outdoor verification
Ensure product quality



Space photovoltaic global sales network



HT-SAAE PRODUCT

182 TOPCon Single and Bi-facial modules

HT 54 Series 430-440W | HT 72 Series 570-580W

- The latest N-type technology, module conversion efficiency of up to **22.5%**
 - TOPCon Product attenuation rate is small, less than **1%** in the first year
 - Temperature coefficient is a low **-0.31%/°C**, maximising production throughout the day
 - Excellent low light performance extending morning and evening power generation
-
- A **30-year** product and linear performance warranty for **ALL** rooftop installations
 - Australian **local technical support**
 - All-black, Bi-facial and Conventional modules available
 - Performance warranty is back by Lloyd's and PICC insurance

HT-SAAE PRODUCT

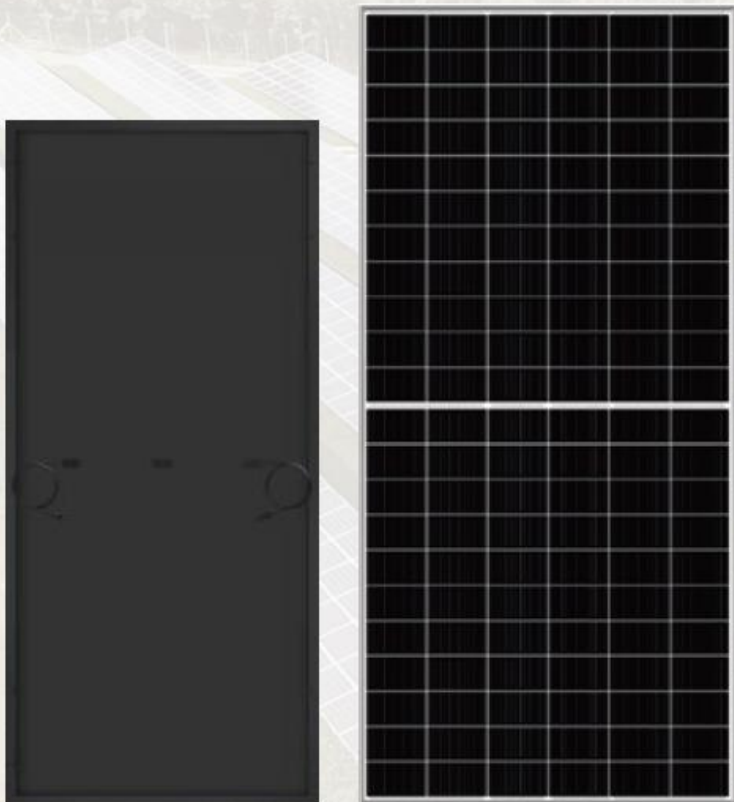
182 P-type Single & Bi-facial modules

HT 54 Series 410-420 | HT 72 Series 550-560W

- Large silicon wafer technology, using **182mm** chamfer single crystal cell
- Maximum cell size available for commercial production

-
- A **25**-year product and linear performance warranty for **ALL** rooftop installations
 - Australian **local technical support**
 - All-black, Bi-facial and Conventional modules available
 - Performance warranty is back by Lloyd's and PICC insurance

HT-SAAE PRODUCT



210 P-type Single & Bi-facial modules

HT 60 Series 605-615W | HT 66 Series 665-675W

- Mature application of large silicon wafer technology
 - MBB and half-cell technology is both efficient and reliable
 - Power is up to **675W**, significantly reducing the **LCOE**
-
- A 25-year product and linear performance warranty for **ALL** rooftop installations
 - Australian **local technical support**
 - All-black, Bi-facial and Conventional modules available
 - Performance warranty is back by Lloyd's and PICC insurance

PROJECT REFERENCES

Australia (C&I)



1



2



3



4

1. 99.6kWp, Fairfield VIC 3078
2. 100kWp, Bexley NSW 2077
3. 200kWp, Moorebank NSW 2170
4. 200kWp, Woolmar QLD 4515

PROJECT REFERENCES

Australia (C&I)



1



2

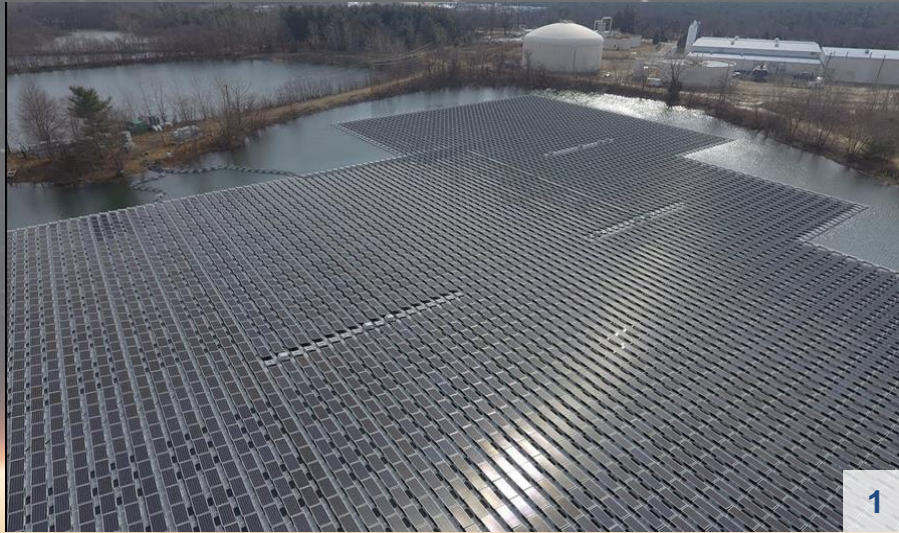


3

1. 100kWp, Tomago NSW 2322
2. 30kWp, Chatswood NSW 2067
3. 66kWp, Morayfield QLD 4506

PROJECT REFERENCES

Overseas



1. 4.4MWp New Jersey, USA
2. 4MWp Pennsylvania, USA
3. 5MWp, Cuba
4. 11MWp Italy

PROJECT REFERENCES

Overseas



1



2



3



4

1. 10MWp Adiyaman, Turkiye
2. 37MWp Bingöl, Turkiye
3. 128MWp Hybrid Project, Sivas Turkiye
4. 18MWp Germany

A space-themed background featuring a large, detailed Moon in the center-left, a smaller Earth in the upper right, and a satellite with solar panels in the lower right. A thin, golden-yellow orbital line loops around the Moon and extends towards the satellite. The background is a deep blue space filled with numerous stars.

THANK YOU

ht-saae.com.au