

**Sustaining innovation since 1960**

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



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# About HT-SAAE

Today, HT-SAAE stands as an advanced engineering leader with USD 1.8 billion in assets. Our dedicated, 500-strong Photovoltaic R&D team has secured more than 200 technical patents, including 50 independent intellectual property rights.

This fuels our commitment to R&D investment aimed at constantly improving our manufacturing processes and products. This dedication ensures that our customers receive exceptional value and high-performance solar solutions.



## MILESTONE

1960

Commenced Solar Research for satellite program

1970

First satellite launch with HT-SSAE solar module onboard

1999

First solar manufacturer to reach 5MW capacity

2003

Establishment of Shanghai Solar Energy R&D centre

2005

Establish Shanghai Solar Energy Engineering Research Centre  
Invented China's first photovoltaic laminating machine

2010

Complete the first phase of Shen zhou in Lianyungang  
Construction of a 500MW Photovoltaic Base

2012

Established vertical integrated production

2013

-No.2 EPC in China  
-No.4 EPC Worldwide  
-Sinosure option to overseas market

2014

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

2015

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

2016

The "Galaxy" Twin Star N-type double-sided half cell battery module has been successfully launched;  
Listed Bloomberg Tier 1 Solar Module Maker

2017

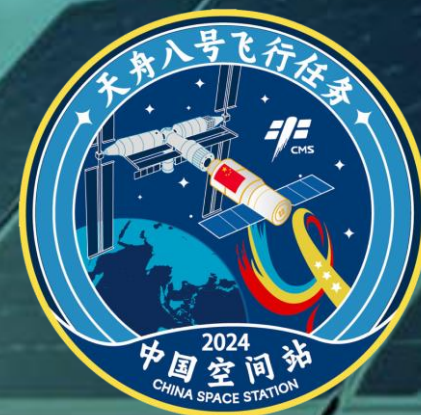
CNAS (China National Accreditation Service for Conformity Assessment)  
Accreditation achieved for PV conversion efficiency

2023

SA8000 Certification awarded in recognition of the highest social standards.

2024

Modules sales volume entering the top 20 globally





## CORE STRATEGY

Unleash solar potential with HT-SAAE PV



**5GW**

capacity of N-type products



**1000+**

number of employees



**Professional  
R&D team**

**Technology leader in the photovoltaic era Pioneering mass production of N-type products**



# Tier 1

## BLOOMBERG BNEF

HT-SAAE facilities and products are tested and certified by the world's leading verification and certification company, SGS (General Society of Surveillance) is recognised as the global benchmark for quality and integrity.

The Lianyungang R&D Center, recognised by China National Accreditation Service (CNAS), adheres to international ISO standards. Our cutting-edge manufacturing processes comply with global Restriction of Hazardous Substances regulation (RoHs), resulting in lead free modules that mitigate this harmful toxin and safeguard our environment.

Additionally, we have attained the acclaimed SA8000 Social Responsibility System Certification which reflects our enduring commitment to social responsibility. This accomplishment follows meticulous audits conducted by Intertek, an accredited organisation recognised by SAI Global. We also ranked among the world's top performers in the 2024 PVEL test.



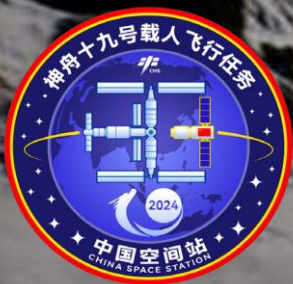
## CORE VALUES: RELIABILITY, VALUE-ADD, FULFILMENT

### Fueling Progress through Innovation: Harnessing Reliability to Drive Value

At HT-SAAE we hold a fundamental truth dear in the landscape of innovation-driven development, value originates from the bedrock of reliability. This principle has steadfastly guided every member of the HT-SAAE team since 1960.

### Reliability - The Foundation of Trust

Our commitment stands firm in delivering products and services that represent enduring reliability. We aim to be the cornerstone of trust for customers, dedicated employees, and stakeholders alike. This commitment resonates within us, both as individuals and as an organisation.



### Value-Add - Cultivating Excellence in All Endeavours

Our dedication and innovation lead to excellence in technology, enriching the value, quality, and reliability we provide to all stakeholders. We take pride in offering customers valuable, highly cost-effective products and services.

### Fulfilment - Nurturing Relationships, Fostering Harmony

At the core of our enterprise lies a sincere connection with customers, supporting enduring relationships. Our approach towards employees is built on respect, shared understanding, and open communication. Fostering an atmosphere akin to the 'HT-SAAE family' – a haven of trust and inclusiveness. Our engagement with stakeholders champions a partnership characterised by transparency and goodwill.

# HT-SSAE GLOBAL BUSINESS NETWORK

TRP PVE  
B.V. Netherlands

2

1 HT- Luxemburg

3

1 Turkiye

Aerospace  
Photovoltaic  
Italy S.R.L

2

Inner Mongolia

Lianyungang

3

6

HT- Japan

4

HT SAAE Shanghai

5

Shanghai HT Holding  
HongKong Ltd.

4

HT- India

7

HT- Australia

HT-SSAE USA

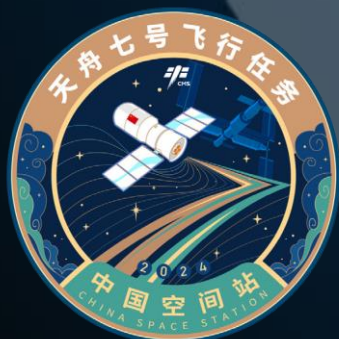
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HT-SSAE Brazil

9

4 factories

9 offices





# LEADING MANUFACTURER

**5GW**

Accumulated product shipments

**90.0%**

Proportion of N-type production capacity

**25.6%**

The highest conversion efficiency of N-type cell

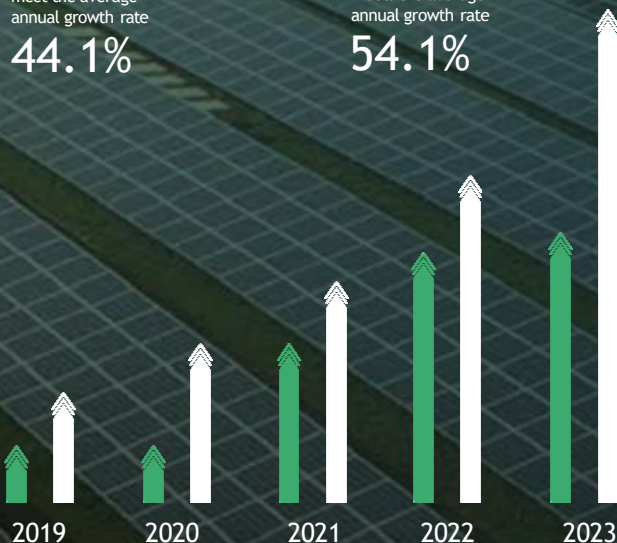
## Patent



Patent applications meet the average annual growth rate  
**44.1%**



Patent authorisation meets the average annual growth rate  
**54.1%**



**HT-SAAE has a module for all applications**

**Ground-mounted PV plant (580-725W)**

18X modules series  
210 modules series

**Industrial and commercial power stations (420-630W)**

18X modules series  
Lightweight modules series  
Anti glare modules series

**Residential & Commercial rooftop installation (200-610W)**

18X modules series  
Panda modules series

**BIPV/BAPV(200-420W)**

PV modules tiles  
PV curtain wall modules series

**Offshore PV (580-630)**

Offshore PV modules series

**Agricultural PV module series**

Agricultural PV modules series

**Smart Rapid shutdown**

Intelligent shutdown modules



# PV MODULES FOR UTILITEIS



High power, high efficiency

Higher conversion rate

Low attenuation

First year <1% attenuation  
decreasing by 0.4% annually

Temperature  
coefficient <0.31%

“700W+” Flagship

Higher double-sided gain  
Bifacial ratio 80 ± 5%

Excellent  
reliability

High quality  
packaging

Excellent low light  
performance

Cell	Ntype	Power Range Max	705 - 725W
No.of cells	TOPCon 132	System V Max	1500VDC
Size	P210*105	Conversion Product	23.3%
Weight	2384*1303*33	Warranty	15-year quality guarantee, 30-year power guarantee
	8.5kg		

# PV MODULES FOR RESIDENTIAL & C&I

HT54-18X(N/ND) 108 half cell 182 battery Single/Double glass modules	HT48-18X(N/ND) 96 half cell 210R battery Single/Double glass modules	HT60-18X(N/ND) 120 half cell 182 battery Single/Double glass modules	HT72-18X(N/ND) 144 half cell 182 battery Single/Double glass modules	HT66-18X(N/ND) 132 half cell 210R battery Single/Double glass modules
1722*1134*30 1762*1134*30	1762*1134*30	1909*1134*30	2278*1134*33	2382*1134*33
				
450 - 470W	450 - 470W	495 - 515 W	595 - 615W	610 - 630W

## Industrial and Commercial Power Generation Modules

High efficient technology  
with extended product warranty

Lower electricity cost,  
higher return on investment

High power modules

Application of N-type  
rectangular cells technology

## Attractive Black Aesthetic

Flexible handling and  
installation < 2sqm in size

Application of N-type  
rectangular cells technology

### HT72-18X(ND)

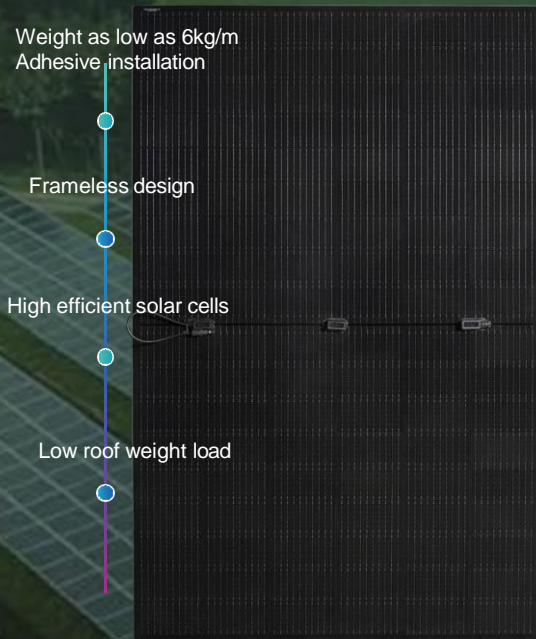
Size	2278*1134*33	Conversion rate	23.6 %
Output	595-615W	15/30-year quality assurance	
Weight	32.5kg	30-year power guarantee	

### HT54-18X(N)

Size	1762*1134*30	conversion rate	23.3 %
Output	445-470W	15/30-year quality assurance	
Weight	21.0kg	30-year power guarantee	



## INNOVATIVE PRODUCTS



Lightweight  
modules Series  
410-515W



Anti glare modules series  
440-610W

### Agricultural PV

High transmittance



HT40-18X(ND)

310-330W

### PV Tiles

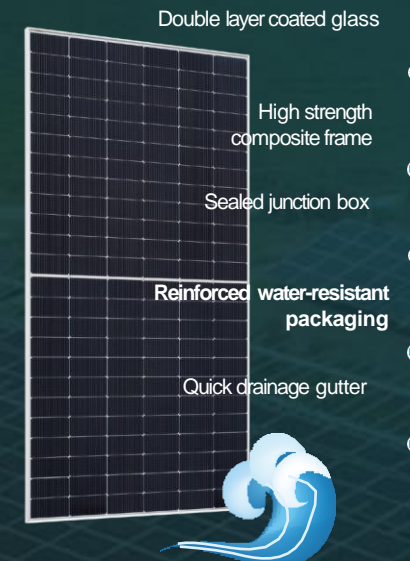
Aesthetic, reliable  
& highly efficient



Customisable options

### Floating PV

A reliable choice for  
high salinity, high  
humidity, strong wind  
and large waves



HT72-18X(ND) 590-610W

intelbras

中国华电  
CHINA HUADIAN  
CORPORATION

国家能源集团  
CHN ENERGY

国家电投  
SPIC

afianci  
global networking

WEG  
SOLAR

中国长城工业集团有限公司  
中国航天 China Great Wall Industry Corporation

江苏方洋集团  
JIANGSU FANGYANG GROUP

TATA

HERO  
FUTURE  
ENERGIES  
planet positive power

ひきだしたい、無限の太陽力。  
XSOL

BayWa r.e.

PVSelected

KLARZEN  
Green Technology

SCFAR

锦浪科技

GLOBAL PARTNERS



## PROJECTS - Utilities





## PROJECTS - Utilities



USA 112MW



Lianyungang 195MW



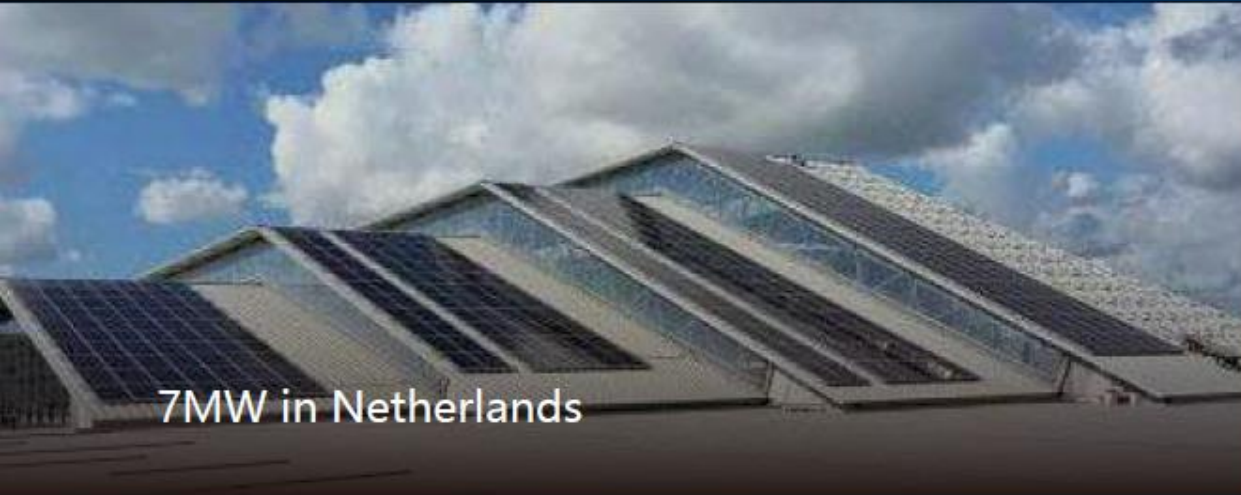
German 60MW



German 40MW



## PROJECTS – Commercial and Industrial





## PROJECTS – Commercial and Industrial





## INNOVATIVE PV PROJECTS



Largest agricultural project in the Netherlands



First agricultural project in Japan



31MW transparent PV project



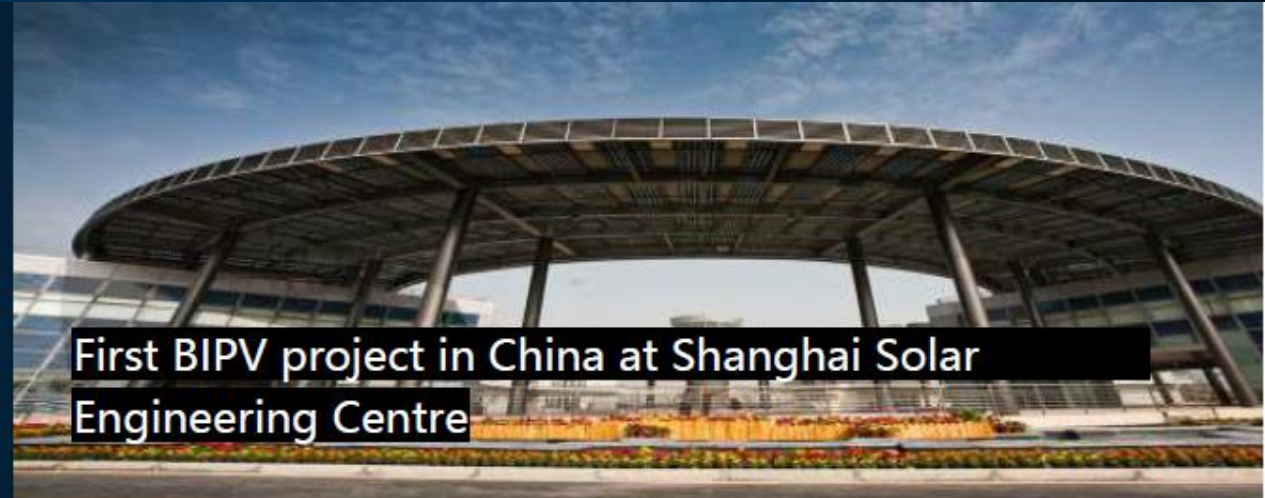
1MW transparent PV project



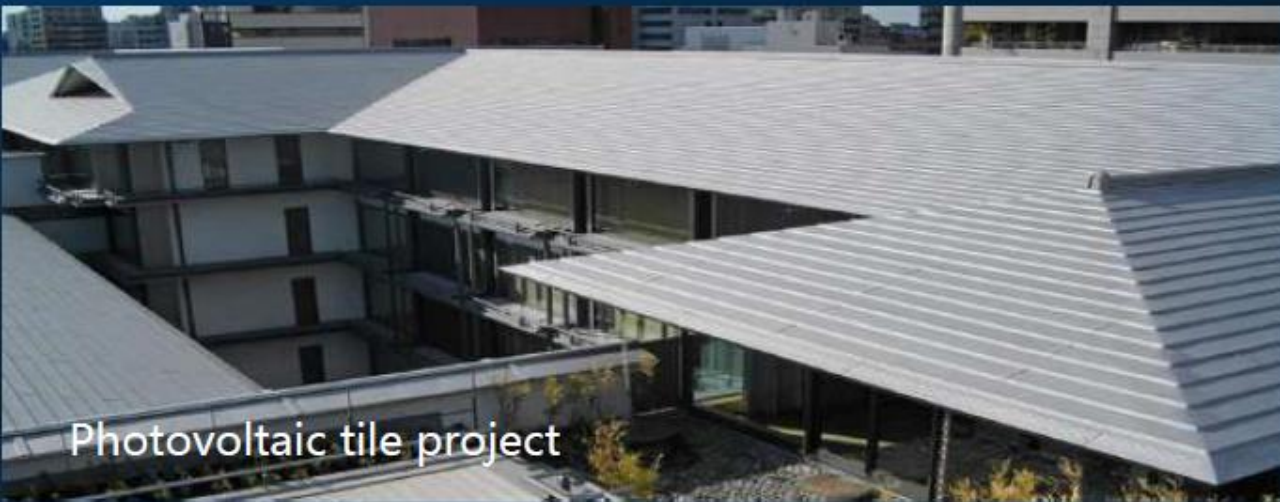
## INNOVATIVE PV PROJECTS



BIPV project at Shanghai Hongqiao Station



First BIPV project in China at Shanghai Solar Engineering Centre



Photovoltaic tile project



Agricultural transparent PV Project in Türkiye



# Unleash Your Solar Potential with HT-SAAE PV

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[HT-SAAE.COM.AU](http://HT-SAAE.COM.AU)