GOODWE PV BUILDING MATERIAL

UP TO A SUSTAINABLE FUTURE

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GOODWE

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ARCHITECTURE IS THE TRIUMPH OF HUMAN IMAGINATION OVER MATERIALS, METHODS, AND MEN TO PUT MAN INTO POSSESSION OF HIS OWN EARTH.

FRANK LLOYD WRIGHT

ABOUT US

GoodWe is a world-leading PV inverter and energy storage solutions manufacturer and is listed as a public limited company on the Shanghai Stock Exchange (Stock Code: 688390).

With an accumulative delivery of more than two million inverters and installation of 23GW in more than 100 countries and regions, GoodWe solar inverters have been used in residential and commercial rooftops, industrial and utility-scale systems and range from 0.7kW to 250kW. GoodWe has more than 3000 employees situated in 20 different countries and is regarded as the Global No.1 storage inverter by Wood Mackenzie in 2020. GoodWe has also ranked as one of the Top 10 inverter suppliers by IHS Markit and has achieved 6 consecutive TÜV Rheinland 'All Quality Matters' Awards.

Technological innovation is GoodWe's main core competence. With more than 500 employees in two R&D centers, GoodWe can offer a comprehensive portfolio of products and solutions for residential, commercial and utility-scale PV systems, ensuring that performance and quality go hand-in-hand across the entire range. GoodWe has set up an integrated service system for pre-sales, sales and after-sales and has established service centers worldwide, aiming to offer global support to all customers including project consulting, technical training, on-site support and after-sales service.

TOP 10
Inverter Global Ranking

1 st
Energy Storage Inverter Global Ranking

2 million
Inverter Installations

26680 GWh
Annual Electricity Production

25 GW
Production Capacity

150,000 m²
Floor Space

130 +
Applications

2
R&D Centers

500 +
R&D Staff

UP TO A SUSTAINABLE FUTURE

TÜVRheinland®
Precisely Right.
ALL QUALITY MATTERS AWAED
2015-2021

Storage NO.1 Hybrid
Wood Mackenzie POWER & RENEWABLES
2020

EUPD RESEARCH TOP PV SUPPLIER INVERTERS NETHERLANDS AUSTRALIA 2020
2017-2020

reddot
2018

2010

Foundation of the company

2011

Completed the company team and started product research and development

2012

GW4000-SS inverter won PHOTON test double A certification, ranking top three in the world
GoodWe Solar Grid-connected Inverter Engineering Technology Research Centre approved in Suzhou

2013

Won Innovation Award
Top 10 PV Inverter in China

2014

ES series product launch
Approved as Jiangsu Renewable Energy Grid-connected Inverter Engineering Technology Research Center.

2015

Listed on the NEEQ
Awarded "PCS Power Converter Manufacturer of the Year" at China International Energy Storage Plant Conference

2016

Received TÜV Rheinland Laboratory accreditation
Signed Strategic Cooperation Agreement with Beijing Jiaotong University

2017

Shenzhen R&D Center was established
Approved as "National Postdoctoral Research Station".
Groundbreaking of intelligent photovoltaic inverter industrialization project
Listed by the Ministry of Industry and Information Technology

2018

GoodWe Europe GmbH Was established in Munich, Germany
Ranked top 7 by Wood Mackenzie.

2019

GoodWe was rewarded EuPD Top Brand for Australia
ET & DSS Series won TÜV Rheinland "All Quality Matters" Award
GoodWe Korea Co., Ltd was established in Seoul

2020

GoodWe listed on Shanghai Stock Exchange (Stock Code: 688390)
GoodWe ranked as Global No. 1 Hybrid Inverter Supplier by Wood Mackenzie
PV Building Materials BU was Established
GoodWe American Subsidiary was Established
GoodWe Japan Subsidiary was Established
Became General Electric Authorized Partner
Beijing Centre was Established

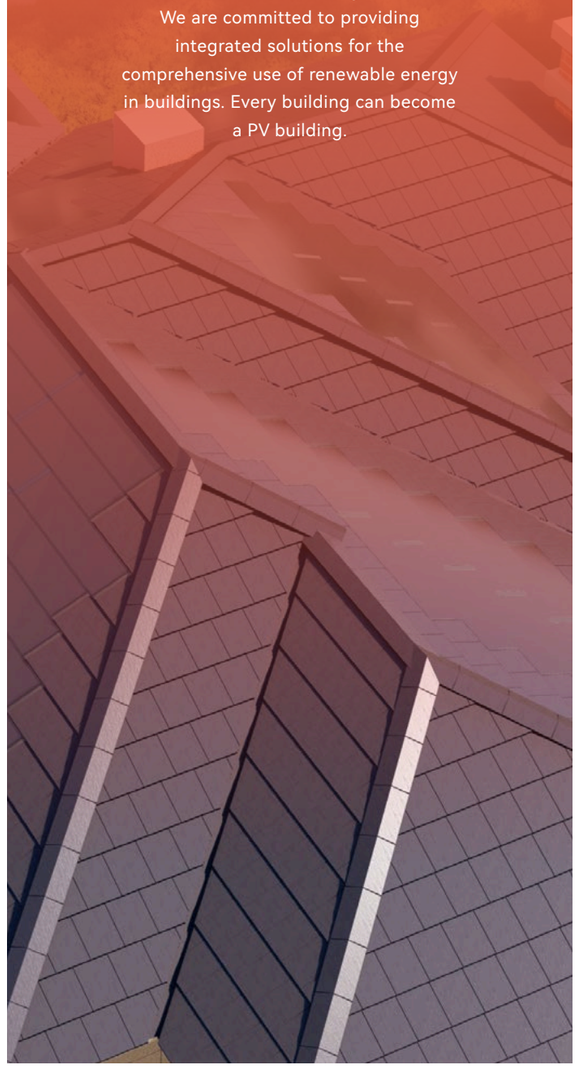
2021

Winner of the TÜV Rheinland "All Quality Matters" Award for Six Consecutive Years

PV Building Solution

Perfect Blend of PV and Architecture

Backed by power electronics technology, we created our PV building materials. We are committed to providing integrated solutions for the comprehensive use of renewable energy in buildings. Every building can become a PV building.



Smart Energy Management System

Hardware+Software /Integrated Service

Based on SEMS v1.3, the intelligent energy management system, GoodWe utilizes the Internet and AI technologies, various data acquisition equipment, and big data and cloud computing technologies to promote energy interconnection, regional autonomous and intelligent management and scheduling.

PV Inverter

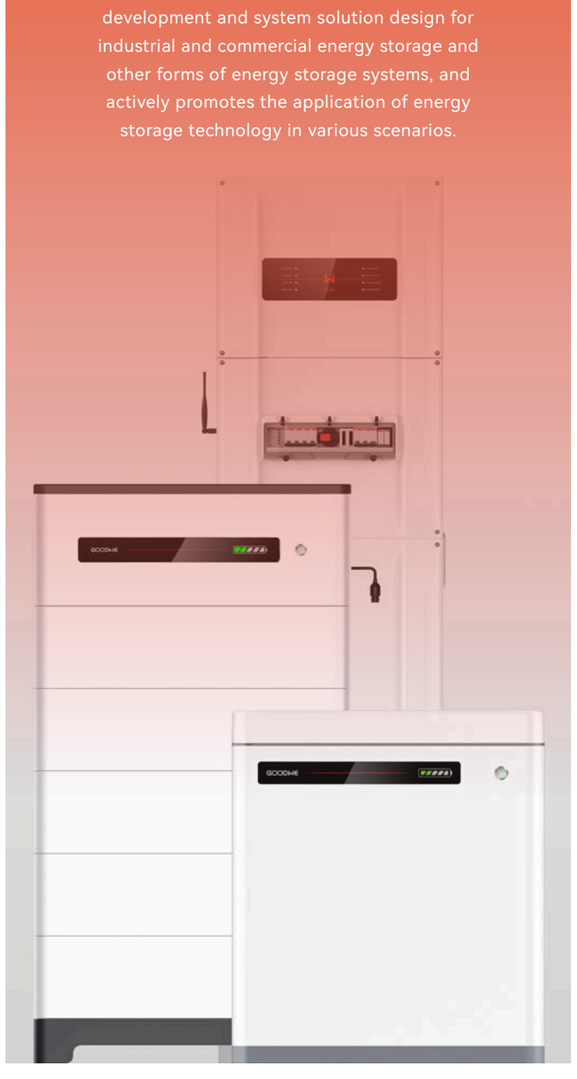
Full Coverage of Inverter Application Scenarios

We continue to explore and innovate, constantly enrich and improve the PV inverter product sequence. We develop products that address market needs by improving our technical knowledge and expanding the product range, which achieve comprehensive coverage.

PV+Energy Storage

Global Leadership in Energy Storage

GoodWe is deeply involved in energy storage technology, continues to promote product development and system solution design for industrial and commercial energy storage and other forms of energy storage systems, and actively promotes the application of energy storage technology in various scenarios.



Up to a Sustainable Future

Being the sole forerunner that leaves its solid technical capabilities in power electronic technologies, GoodWe endeavours into PV building material market wishing to create a safe and smart applicable ecosystem for clean energy. We hope to equip our customers with a gateway to intelligent energy utilisation by providing fully privately owned energy generation, convention, storage, monitoring, communication, management and integrated control systems.

GoodWe PV Building Materials BU is dedicated to providing customers with integrated PV building solutions based on the comprehensive use of renewable energy through PV building materials and their applications.

TOP 10

Power Solution Specialists

PV BUILDING

Solution Specialists

ELECTRICAL SAFETY

Application Specialists

SMART ENERGY

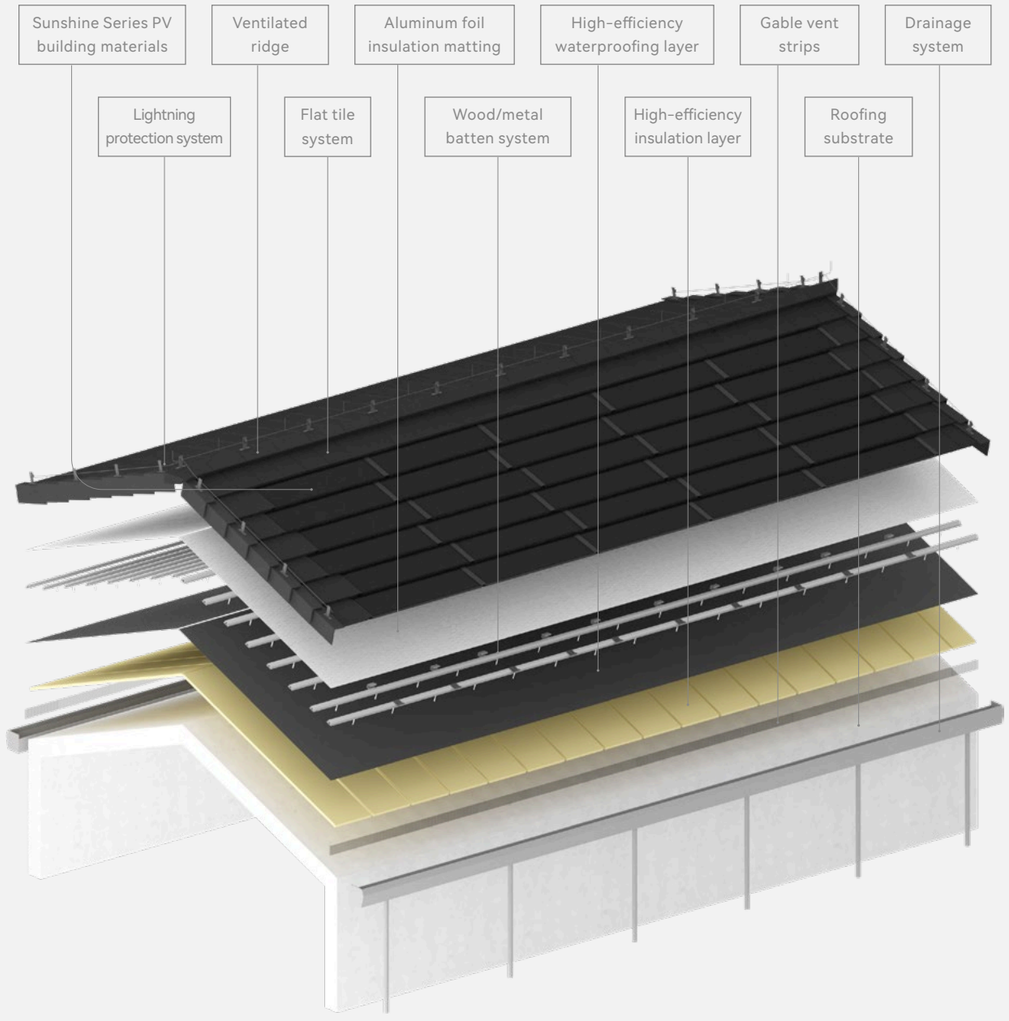
Control Specialists

ARCHITECTURE IS NOT ABOUT SPACE BUT ABOUT TIME.

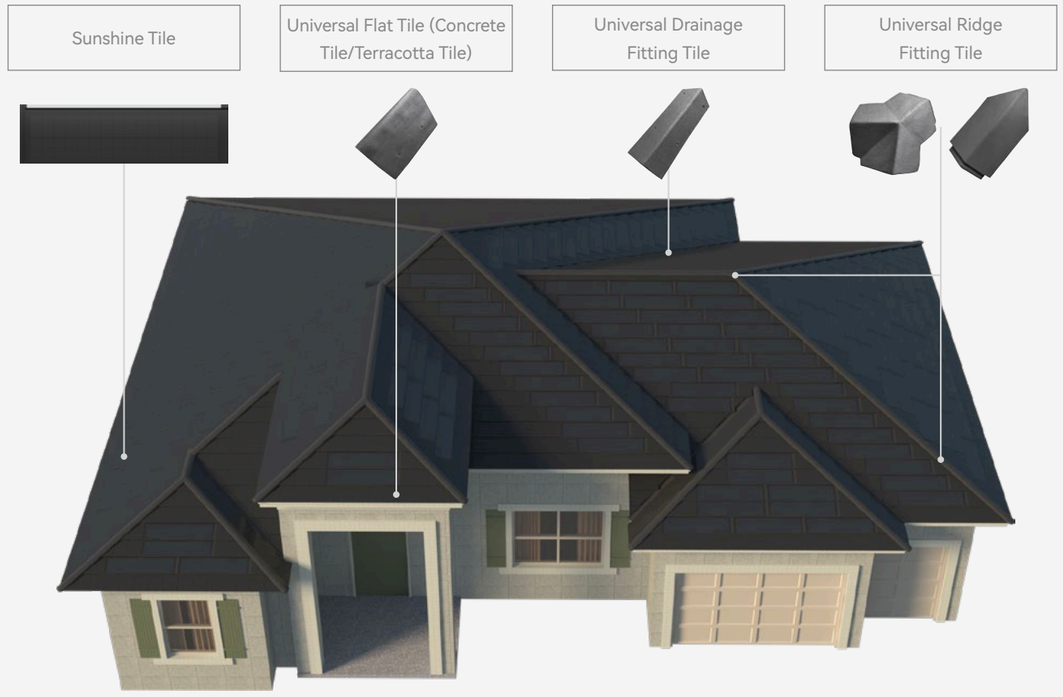
VITO ACCONCI

PV BUILDING SOLUTION

Sloped Roof Solutions



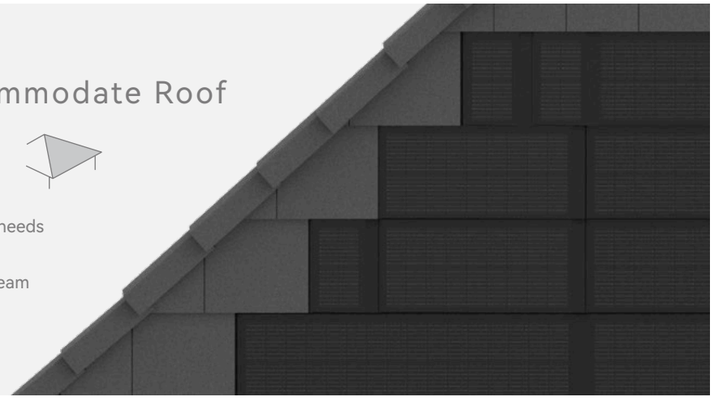
Fully Compatible with Traditional Roofing Tiles



Modular Design to Accommodate Roof

Flexible design and easy installation to meet the needs of all roofing applications

- Flush seam layout solutions
- Staggered seam layout solutions
- Dense Roofing Technology



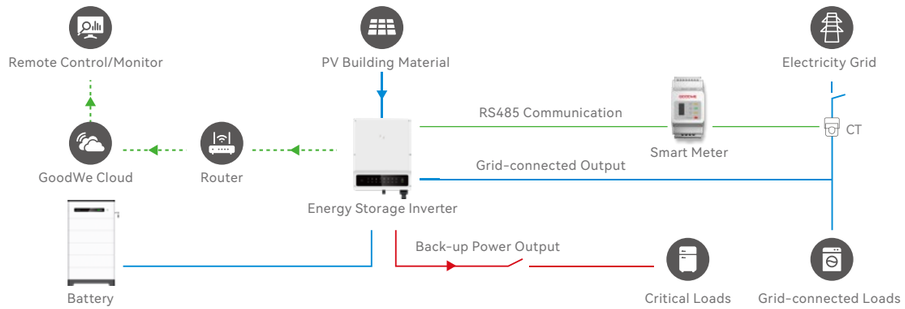
Schematic Diagram of the Photovoltaic Building System

Grid-connected Inverter

- Superior Power Density
- Wide Range of MPPT Voltage
- Low Start-up Voltage
- Built-in Export Limit
- 150% DC/AC Ratio
- AFCI

Energy Storage Series

- Integrated Charge Controller
- 8ms Backup Switch-Over
- Automatic Under-voltage Restart
- IP65
- Remote Diagnosis & Upgrades
- Modular Automatic Identification



Electrical Safety

The greatest advantage of the application of PV building materials is the guarantee of electrical safety in buildings by actively protecting your home in every situation.

AFCI 3.0

Arc detection technology, intelligent control by AI algorithm, 0.5 second response time, 100% shutdown rate.

RSD

Adapted to the module-level rapid shutdown function to completely disconnect any of the generating units.

Type II

The DC and AC terminals are protected at system level with secondary lightning protection modules.

Earth Leakage Prevention

The internal circuity of the GoodWe inverter is optimised to reduce the common mode voltage variation rate and suppress leakage currents.

Intelligent O&M

String-level monitoring technology with O&M platform for 24/7 multi-terminal real-time alerts.

Born with Full Strength
Empowering Carbon Neutrality

Extra Points for Green Building Rating

BREEAM®

U.S. GREEN BUILDING COUNCIL LEED USGBC

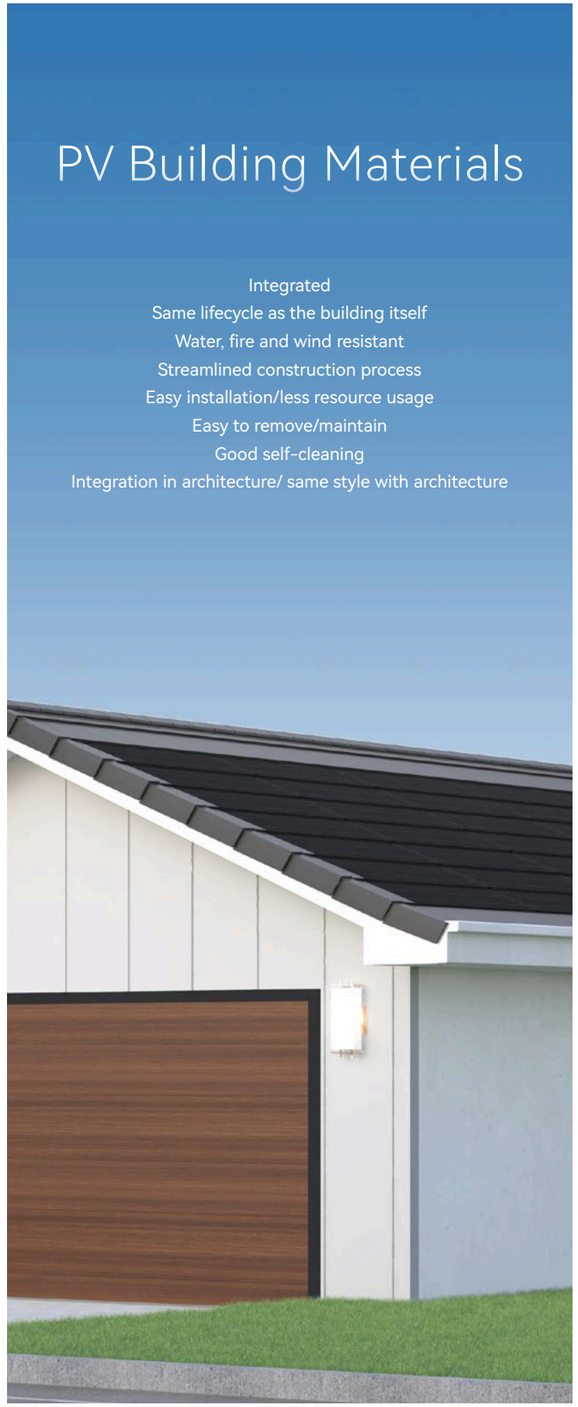
GBtools™

CASBEE®

- Compliance with green building assessment standards
- Conforms to the building materials evaluation criteria
- Efficient power generation of green energy
- Carbon reduction in buildings entry to carbon trading

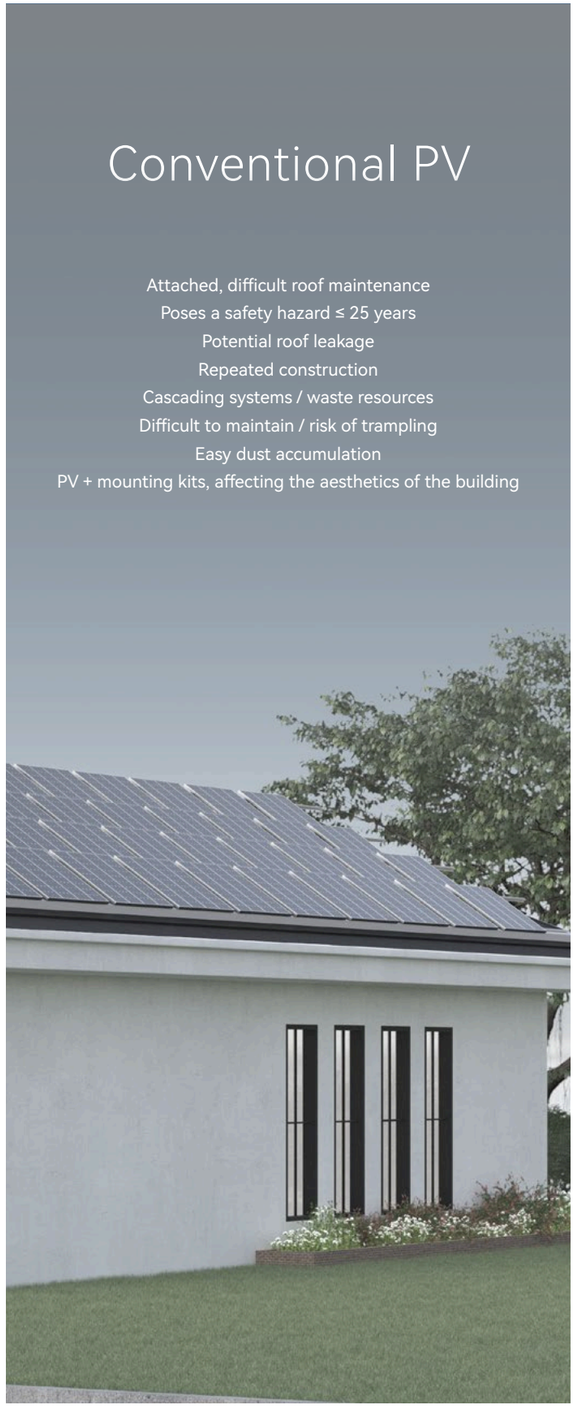
PV Building Materials

Integrated
Same lifecycle as the building itself
Water, fire and wind resistant
Streamlined construction process
Easy installation/less resource usage
Easy to remove/maintain
Good self-cleaning
Integration in architecture/ same style with architecture



Conventional PV

Attached, difficult roof maintenance
Poses a safety hazard ≤ 25 years
Potential roof leakage
Repeated construction
Cascading systems / waste resources
Difficult to maintain / risk of trampling
Easy dust accumulation
PV + mounting kits, affecting the aesthetics of the building



GOODWE PV BUILDING MATERIAL

Sunshine Series

GoodWe Sunshine Tile Series is compatible with traditional tile types and has a toughened double-glazed structure to ensure the structural safety of the roof. Equipped with roof ventilation, heat dissipation structure and dense drainage technology, Sunshine Tiles are easier to install. This created an energysaving and comfortable experience while effectively increasing the roof utilization area while generating more power.

Class A
fire protection

Level 15
Instantaneous wind protection

18kg/m²
Weight per square meter

- Compliant with mandatory certification standards for building materials
- Structural wind resistance
- Lightweight and rapid installation
- Self-cleaning and unobstructed drainage
- High impact resistance lifecycle comparable to building itself
- Structural waterproofing and cooling
- Traditional tiles compatible
- Low reflectivity panels

Structural Data	Sunshine Tile (Ebony)	Sunshine Tile (Ochre)
Product Model	BMT-S1/032A (92W)	BMT-S1/032A (70W)
Tile Size	1508mm*420mm*23.5mm	1508mm*420mm*23.5mm
Color	Ebony	Ochre
Tile Weight	11 ± 0.5kg	11 ± 0.5kg
Tile Area	0.633 m^2	0.633 m^2
Package Type	Double Tempered Glass	Double Tempered Glass
Battery Type	Mono PERC	Mono PERC
Installation Method	Integrated Batten Hook	Integrated Batten Hook
Waterproofing Method	Structural Waterproofing	Structural Waterproofing
Safety Data		
Mechanical Loads	≥ 5400 Pa	≥ 5400 Pa
Fire Test Rating	Class A	Class A
Windproof Rating	Wind resistance up to 15 gusts	Wind resistance up to 15 gusts
Hail Resistance Rating	IEC61215	IEC61215
Dirt-proof Rating	IP67	IP67
Electrical Data		
Max Power (Pmax)	92W	70W (92W)
Voltage at Max Power (Vmpp)	9.03V	9.26V
Current at Max Power(Impp)	10.19A	7.56A
Voltage at Open Circuit (Voc)	10.97V	10.87V
Current at Short Circuit (Isc)	10.73A	7.9A
Power per sq meter	170W	109W
Function configuration	Rapid Shut Down(RSD) compatible, SunSpec compliant/NEC2020-690.12 compliant	
Carbon Neutral Index (30 Years)		
Energy Output*	2703 kWh	2056 kWh
Equivalent to Standard Coal*	824 kg	627 kg
Converted to Carbon Emission Reductions*	2162 kg	1645 kg

* For reference only, acctural output may vary based on local environmental factors.

All-Round System for Structural Safety of Roof

Waterproof

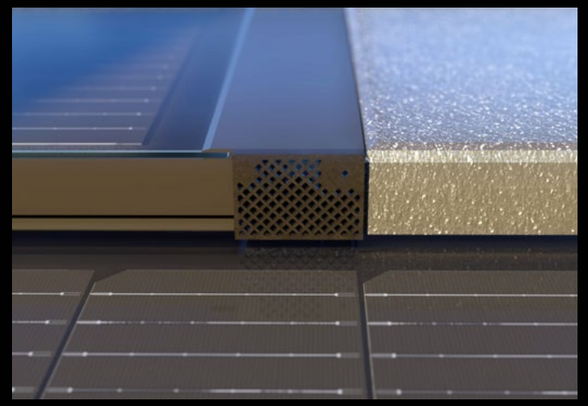
Impenetrable Waterproofing

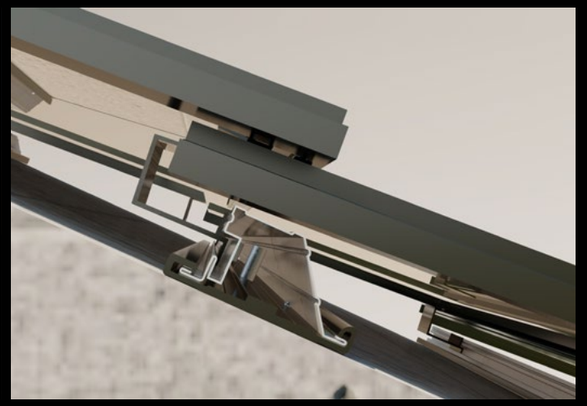
System Level
Structural Drainage

Perfectly Compatible
to Traditional Roofing Systems

Dry-fix
Roofing System

Double Layer Elastic
Water Barrier





Fire Prevention

Class A
Fire Testing

Wind Uplift Resistance

14 Gusts Instantaneous
Wind Protection

5400Pa+

3.2+3.2mm Double Toughened Glass
Construction
Higher Strength

Ventilation and Insulation

System Thermal Design Reduces
Energy Consumption
Higher Power Generation

Self-cleaning Properties

Toughened Double Glazing with
Hidden Edges
Self-Cleaning

Noise Protection

Passed Rigorous Acoustic Test
Comfortable White Noise

GoodWe SEMS Smart Energy Management Platform

GoodWe SEMS is a comprehensive energy management and O&M Platform that integrates multiple aspects in business architecture, including device layer, communication layer, information layer and application layer.

SEMS also uses advanced multi-dimensional technology to achieve intelligent management functions such as access, routing, scheduling and control of distributed and traditional energy sources such as solar energy, battery storage, etc. It also provides interfaces for future monitoring and management of other energy sources such as gas, water, heat and oil supply.

Power Station Health Diagnosis & Analysis

Energy Efficiency Management and Optimisation

Carbon Management

Muti-terminal Management

Monitoring

Meeting the 'Smart Operation' standard for green buildings, enabling the monitoring of building energy consumption

- Power Generation Enquiry
- Large screen Monitoring
- Operating Curves
- Equipment Analysis
- Alarm Push Notifications

O&M

Platform-based centralised urban management for green building 'smart city' needs

- Diagnosis & Analysis
- Health Diagnosis
- Task Management
- Remote Control
- Online O&M

Global Footprint

Asia

China
South Korea
Vietnam
India
Japan
Thailand
Malaysia

Europe

UK
Italy
Germany
Russia
Netherlands
Spain
Poland
Greece
Belgium
Portugal
Ukraine
Turkey

North America

United States
Mexico

South America

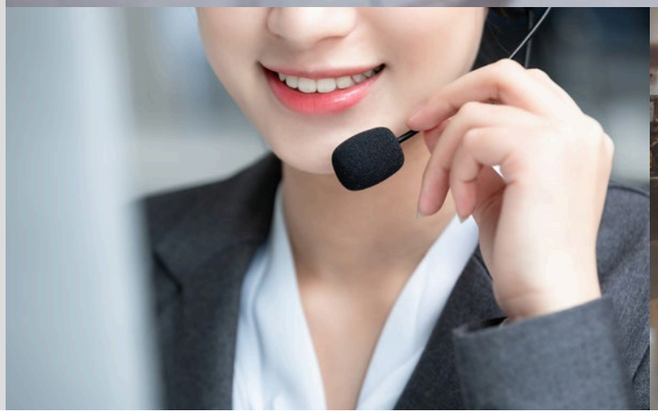
Brazil
Chile
Argentina

Africa

South Africa

Oceania

Australia



Installation & O&M

- Electrical installation and grid connection assistance
- Site inspection support
- Construction support
- Training and tender support
- 2-hour quick response
- 24 hour door-to-door service

ARCHITECTURE IS
FROZEN MUSIC.

JOHANN WOLFGANG VON GOETHE

TYPICAL APPLICATION SCENARIOS

Villa

80m²
Annual electricity production 13,900kWh

11 Tons
Equivalent reduction in CO^2 emissions

610
Equivalent trees planted

- Structural ventilation and heat dissipation
  Allowing more freedom of space
- Efficient and clean energy
  Better understanding of electricity consumption
- Active safety
  Intelligent control
- Innovative roofing systems empowering the roof

*The above figures are based on a 10kW public building roof solution. Average annual electricity generation may fluctuate due to weather and seasonal conditions and is for reference only.

B&B

64m²
Annual electricity production 12,000kWh

8.8 Tons
Equivalent reduction in CO^2 emissions

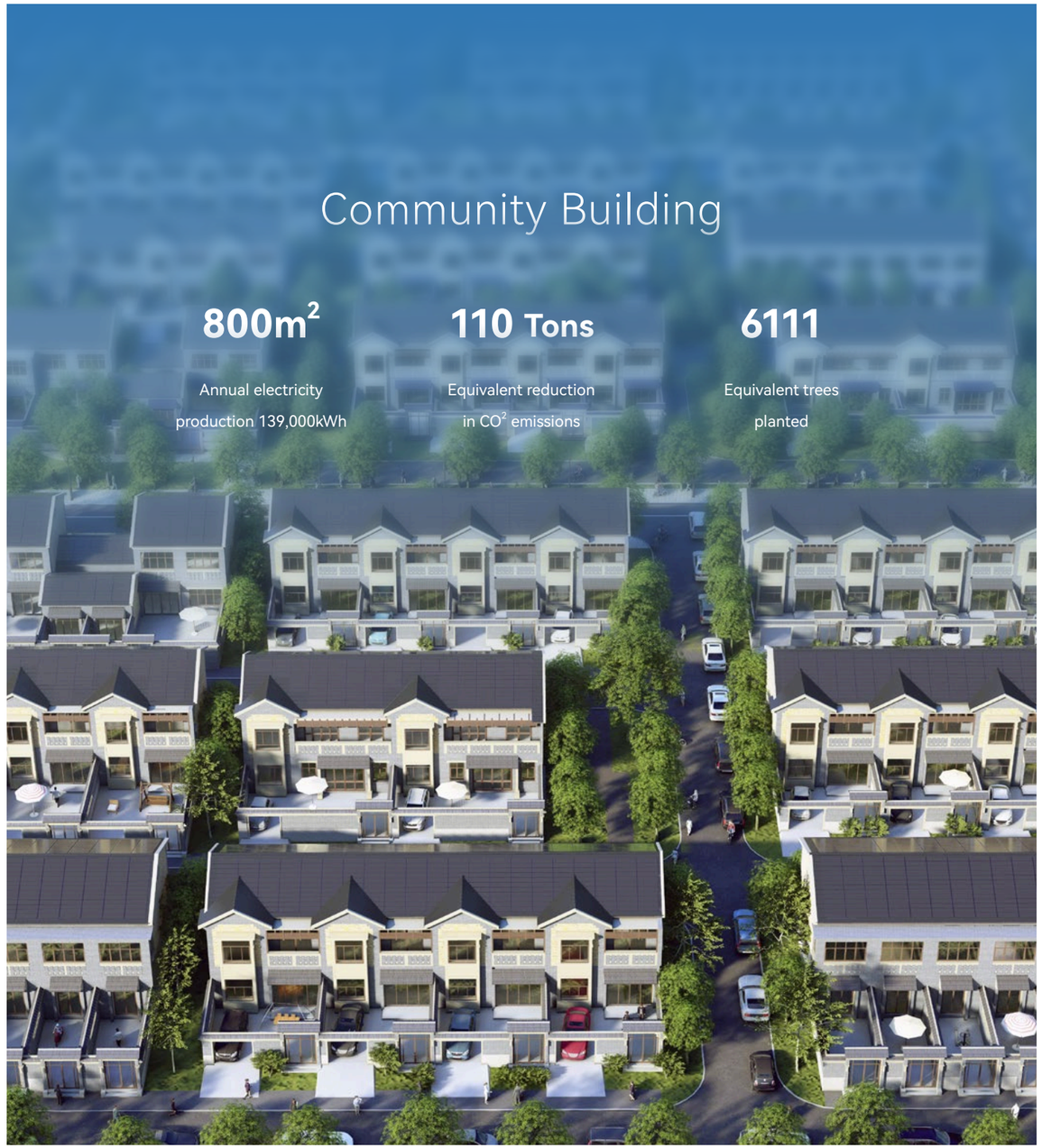
490
Equivalent trees planted

- Neumorphism
  Green power comes naturally
- Eco-friendly, clean and sustainable
  Assist in energy revolution
- Technological roofing
  Empowering architectural style
- Back to the design essence
  Balancing function and aesthetics

*The above figures are based on a 8kW public building roof solution. Average annual electricity generation may fluctuate due to weather and seasonal conditions and is for reference only.

- Smart energy management
  High percentage of green power applications
- Ancillary energy storage systems
  Emergency power supply
- Green power equiped building
  Energy consumption reduction
- CCER green power trading, CCER takes the lead in the market

*The above figures are based on a 120kW public building roof solution. Average annual electricity generation may fluctuate due to weather and seasonal conditions and is for reference only.



- Continuous power generation over 30 years
- Professional solution design
- Fire and water resistant
  Safe and durable
- Green power sustainable community

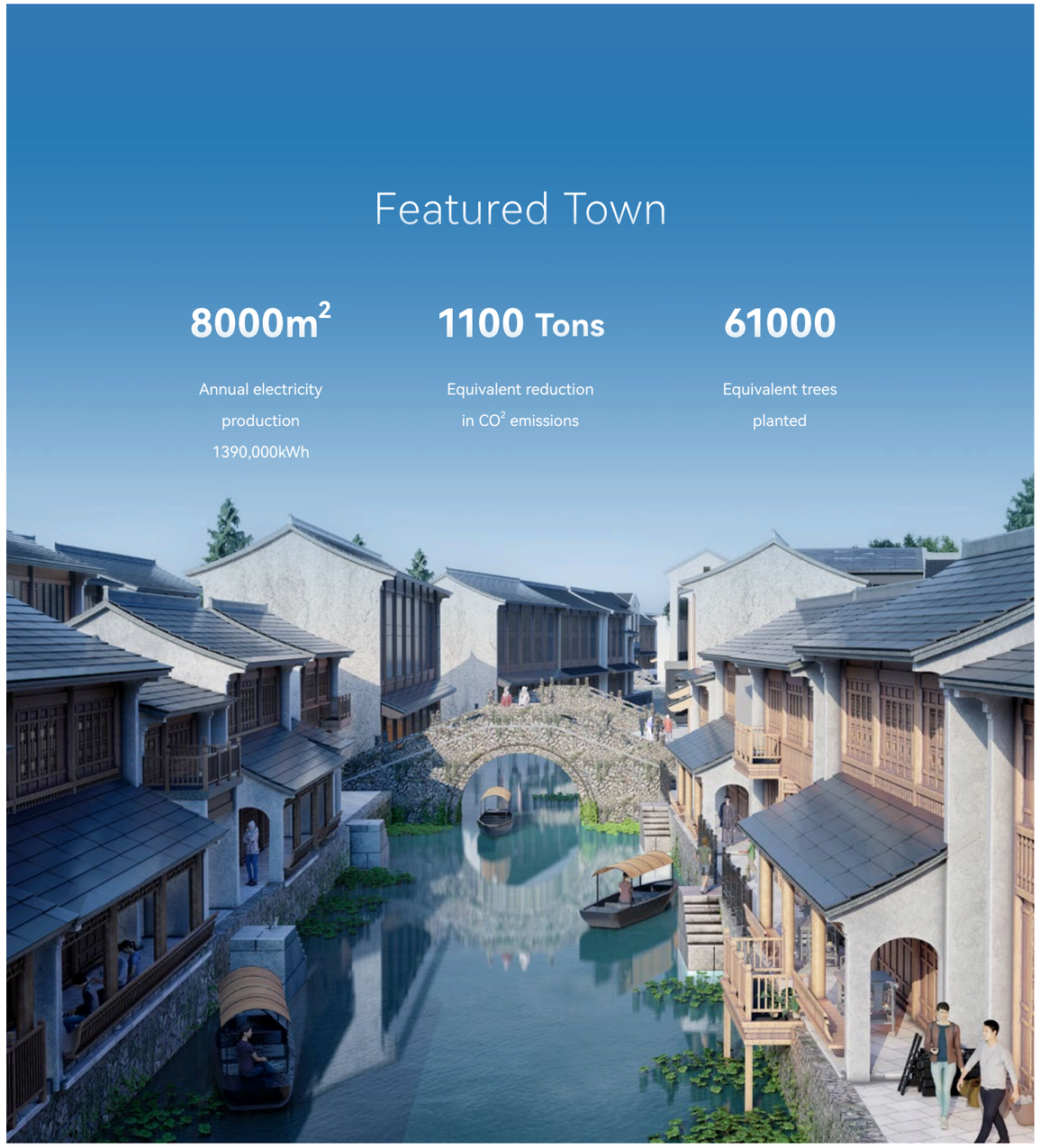
*The above figures are based on a 100kW public building roof solution. Average annual electricity generation may fluctuate due to weather and seasonal conditions and is for reference only.

Featured Town

8000m²
Annual electricity production 1390,000kWh

1100 Tons
Equivalent reduction in CO^2 emissions

61000
Equivalent trees planted



- Architectural photovoltaic integration
  Empowering architectural styles
- Simultaneous economical and ecological development
  Showcase cultural tourism
- Clean energy town
  Contributing to carbon neutrality
- Regional energy system management
  Demonstrat suistainable innovation

*The above figures are based on a 1MW public building roof solution. Average annual electricity generation may fluctuate due to weather and seasonal conditions and is for reference only.

Public Building

1630m²
Annual electricity production 276,000kWh

220 Tons
Equivalent reduction in CO^2 emissions

12220
Equivalent trees planted

- Net zero energy building
  Achieveing carbon neutrality
- UPS emergency power
  Load electricity security
- All-in-one design
  Perfectly matching the architectural style
- Safe and reliable
  Comparable to building lifecycle

*The above figures are based on a 200kW public building roof solution. Average annual electricity generation may fluctuate due to weather and seasonal conditions and is for reference only.

ARCHITECTURE BEGINS
WHERE ENGINEERING ENDS.

WALTER GROPIUS

GOODWE