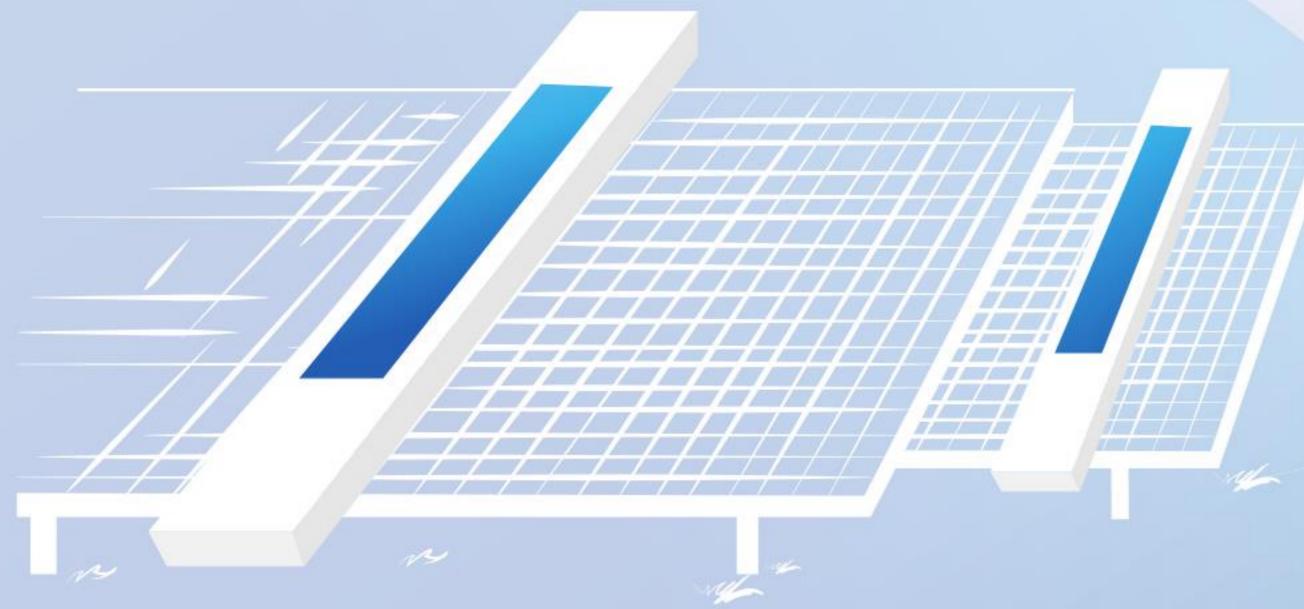






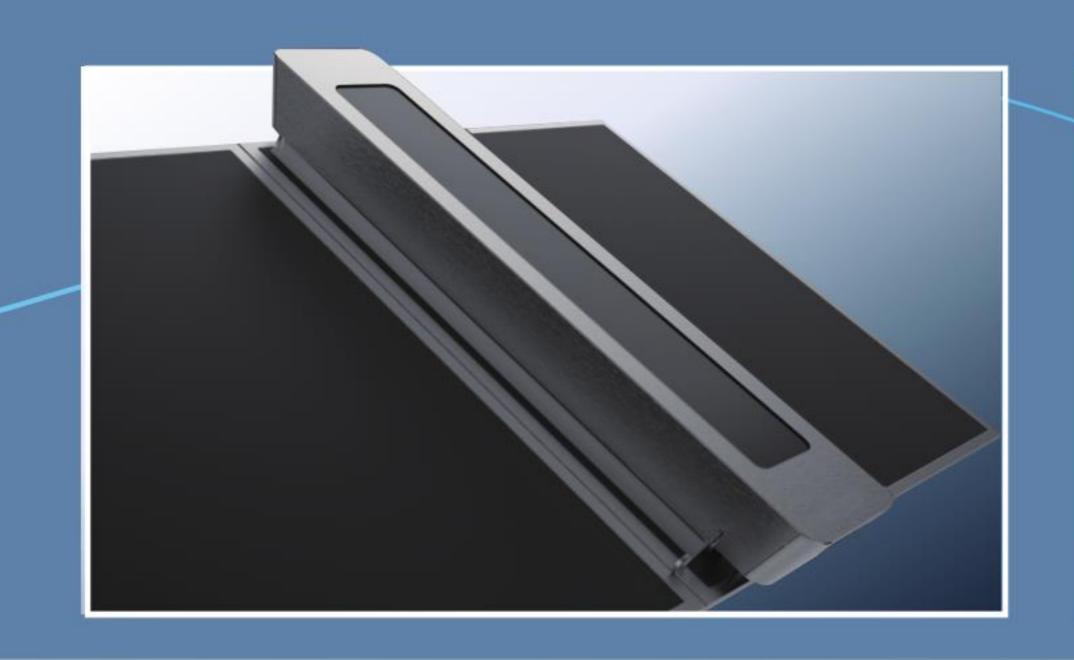
Photovoltaic Solutions

—Solar Panel Cleaning Equipment

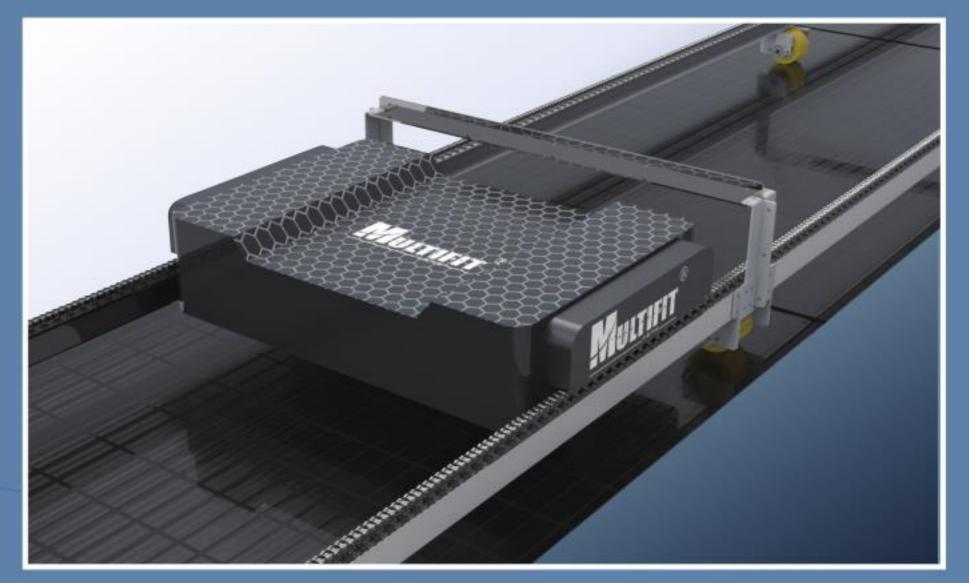


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COMPANY INTRODUCTION

Multifit Solar is a high-tech manufacture which is mainly dedicated to research and develop, produce, sale and construct of solar power systems and other green energy. The headquarter is located in Beijing and the production base is located in High-tech Development Zone, Shantou, Guangdong Province, China.

Multifit was founded in 2009, which has achieved ISO9001 certification, ISO14000 certification, OHSMS28001 certification, CE certification, FCC certification. We have more than 80 independent intellectual property rights, including patents, software copyrights and trademarks.

The solar panel cleaning robot independently developed and designed by our company can not only improve the power generation efficiency of solar panels by 8% to 30%, but also avoid equipment damage caused by hot spots effect. Currently, our cleaning robot has served many power stations, totally producing over 500 MW of electricity.

Our cleaning equipments include solar panel tracking cleaning robots, track-mounted fully automatic walking solar cleaning trolley, the third generation four-wheel drive mode of the solar cleaning robot with stronger cross-barrier ability, crawler-type upper and lower cleaning robot and semi-automatic photovoltaic cleaning brush for civil power stations.

Our cleaning robots realize the remote intelligent control and have many functions: automatic avoidance function to prevent the robot from slipping, automatic rectify correction mechanism and automatic adjustment to prevent the machine from deviation, running tilt, jamming, and good obstacle surmounting performance to surmount certain slopes, steps, and dislocations.

Also, a new intelligent management cloud platform for remote photovoltaic panel cleaning robot has been set up in our robot. And our cleaning robot has our own unique technology in intelligent cleaning of photovoltaic panels by robots, automatic detection, tracking and positioning, group communication and control functions, as well as the establishment of an intelligent management platform with multi-terminal control.

We obtained the national high-tech enterprise certification; In 2018, we were successfully listed on the Overseas Chinese Board; In 2019, we were certified as a national high-tech enterprise; And in 2022, we set up a branch company in Shenzhen, namely the R&D base. We have the following honorary titles: national technology-based small and medium-sized enterprises, contract abiding and creditworthy certification, Guangdong high-tech product certification, and the listed enterprise on the overseas Chinese board. Our own brands Vmaxpower and MULTIFIT have been registered at home and abroad, and have been registered with the Madrid trademark registration and with more than 20 countries and regions across the European Union, the African intellectual property system, Mexico, Vietnam, Russia, etc. The brand has been established for more than 10 years, and has a certain degree of overseas brand recognition. Enterprise pursuit: SUNSHINE FOR YOU, MULTIFIT TO ALL.

In the future, Multifit will be continually committing to improve the renewable energy industry and develop more efficient and cost-effective solar solutions.









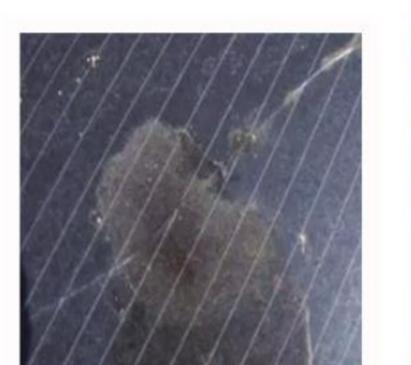


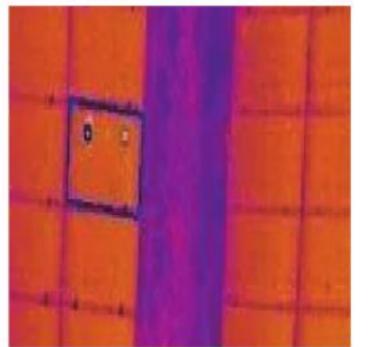
Impact of pollutants, dust, bird droppings, rust, etc. on power generation efficiency.

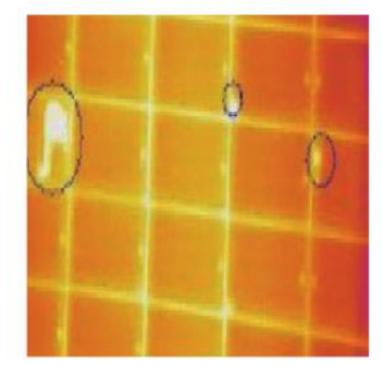


The solar panels covered by pollutant may cause hot spots, which will damage the panel and even make the panel burn.



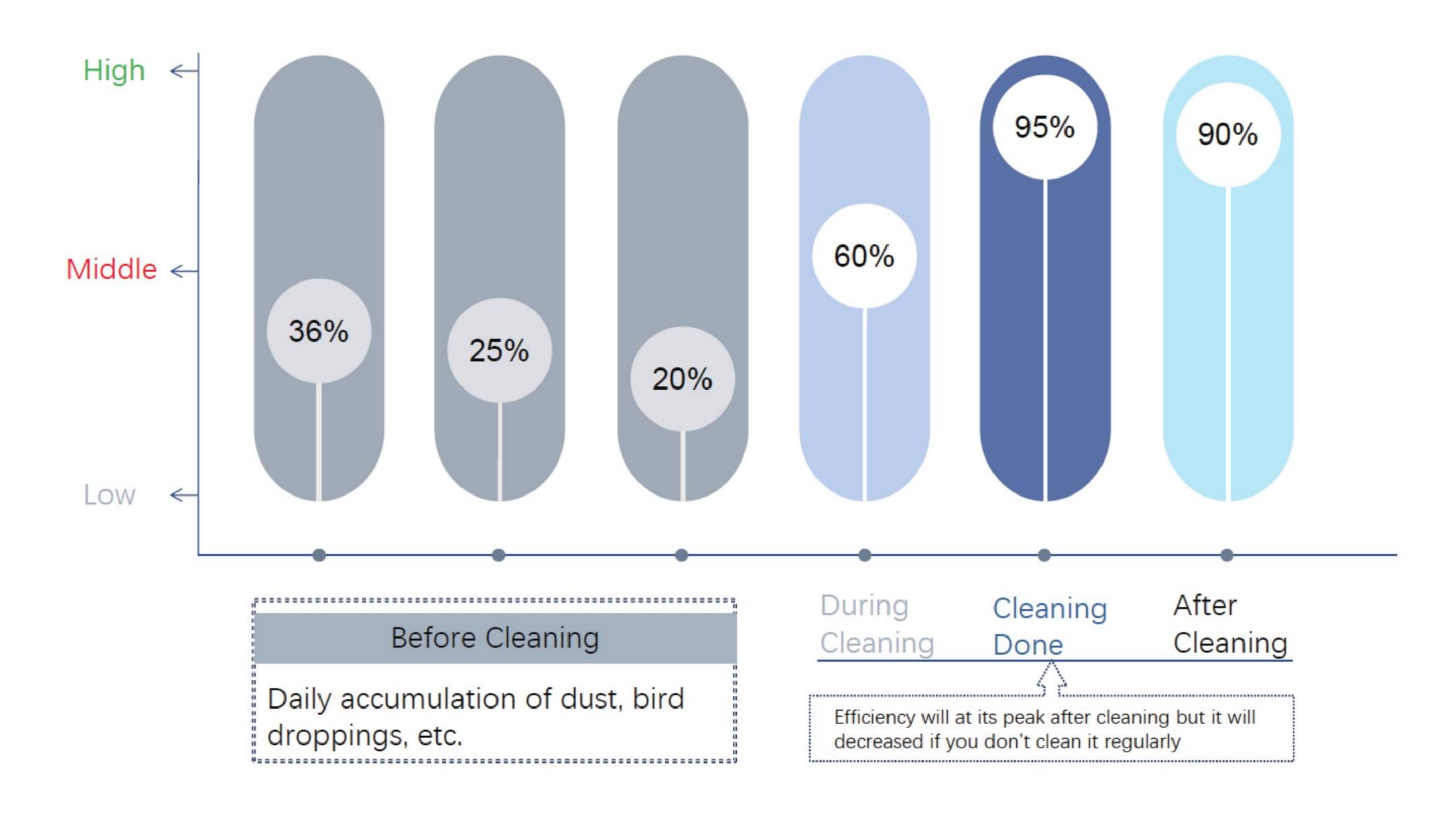






• THE IMPORTANCE OF CLEANING THE BATTERY PANEL

Solar Panel Power Generation



Solar Panel Cleaning Robot Customers

MULTIFIT Cleaing Robot Application Testing Result (FENGXI Project in China)

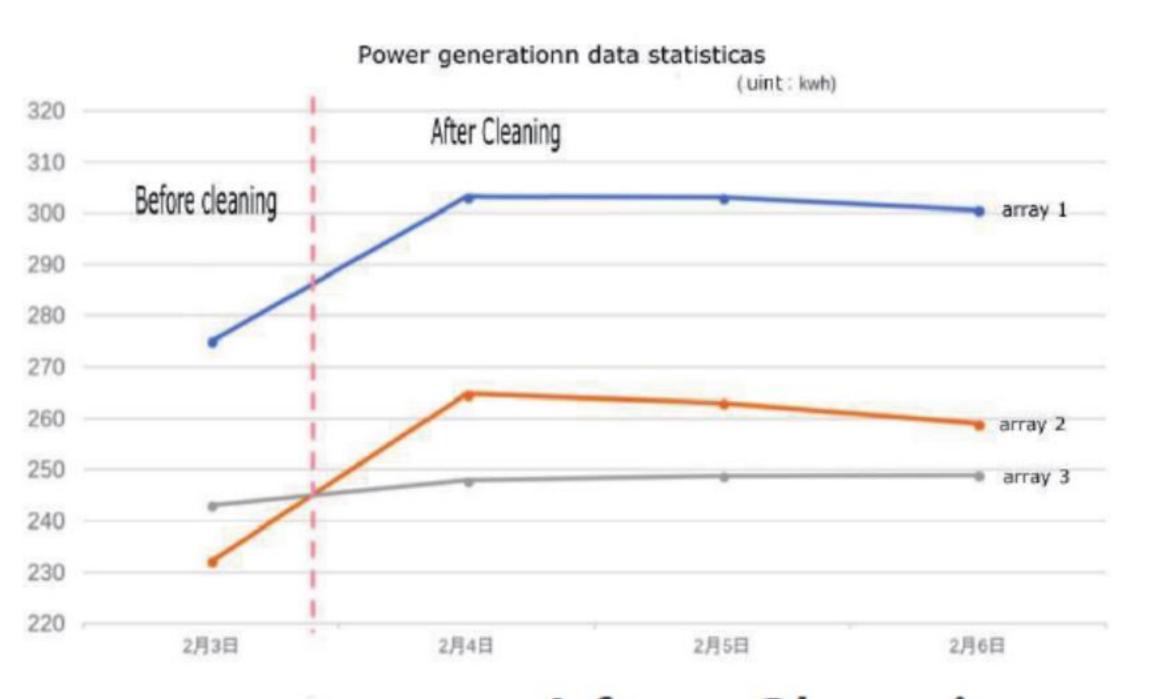
Cleaned array: array 1, array 2

Uncleaned array: array 3

Cleaning date: Feb 3

Data Sheet					
Solar Array	Feb 3	Feb 4	Feb 5	Feb 6	Power increase
array 1	275.1	303.2	303	300.6	10%
array 2	232.2	264.8	263	259	14%
array 3	243.1	247.9	248.82	249	1





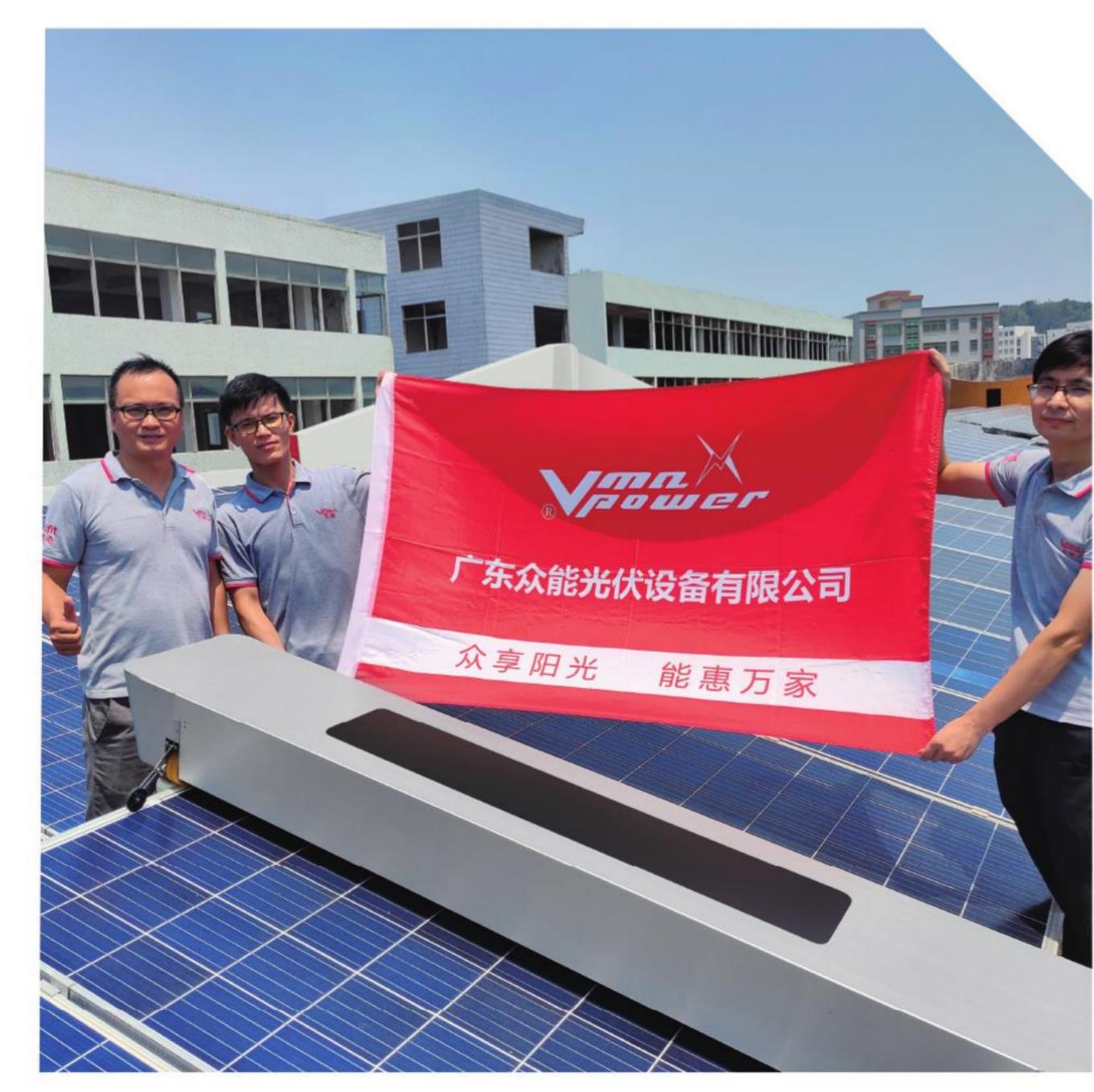




• CHOOSE THE CLEANING EQUIPMENT YOU NEED

















Cleaning
Method



EXCHANGE HIGH-QUALITY PRODUCTS FOR EFFICIENT CLEANING



• APPLICATION SCENARIO





Single/dual panel photovoltaic array

Three-plate photovoltaic array

Large area photovoltaic power station

Flat roof photovoltaic systems







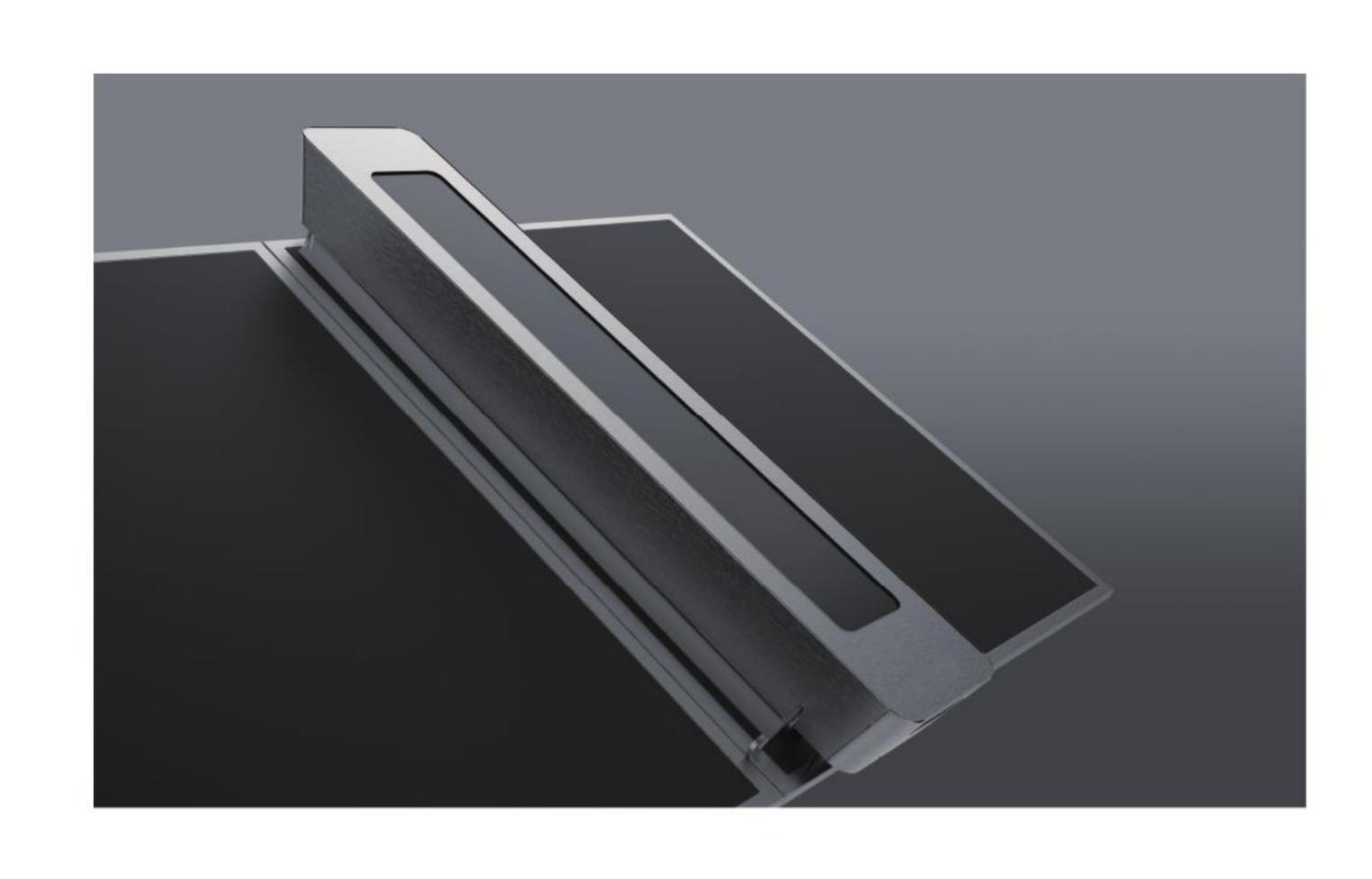
Customize the cleaning plan and maintain the photovoltaic system to ensure normal power generation



MULTIPLE CLEANING EQUIPMENTS, FOR VARIOUS SCENARIOS

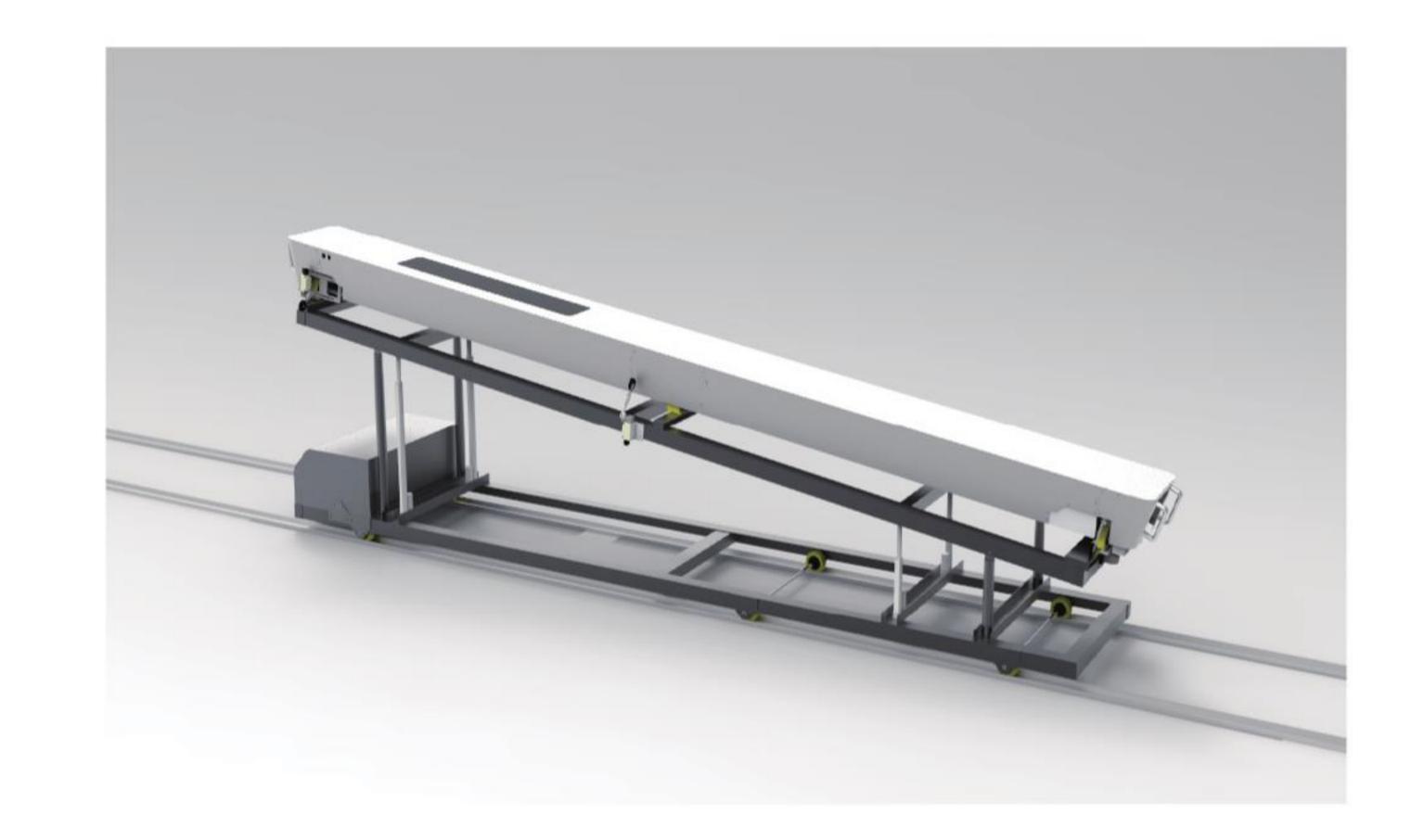


SOLAR PANEL CLEANING ROBOT



MR-G Series

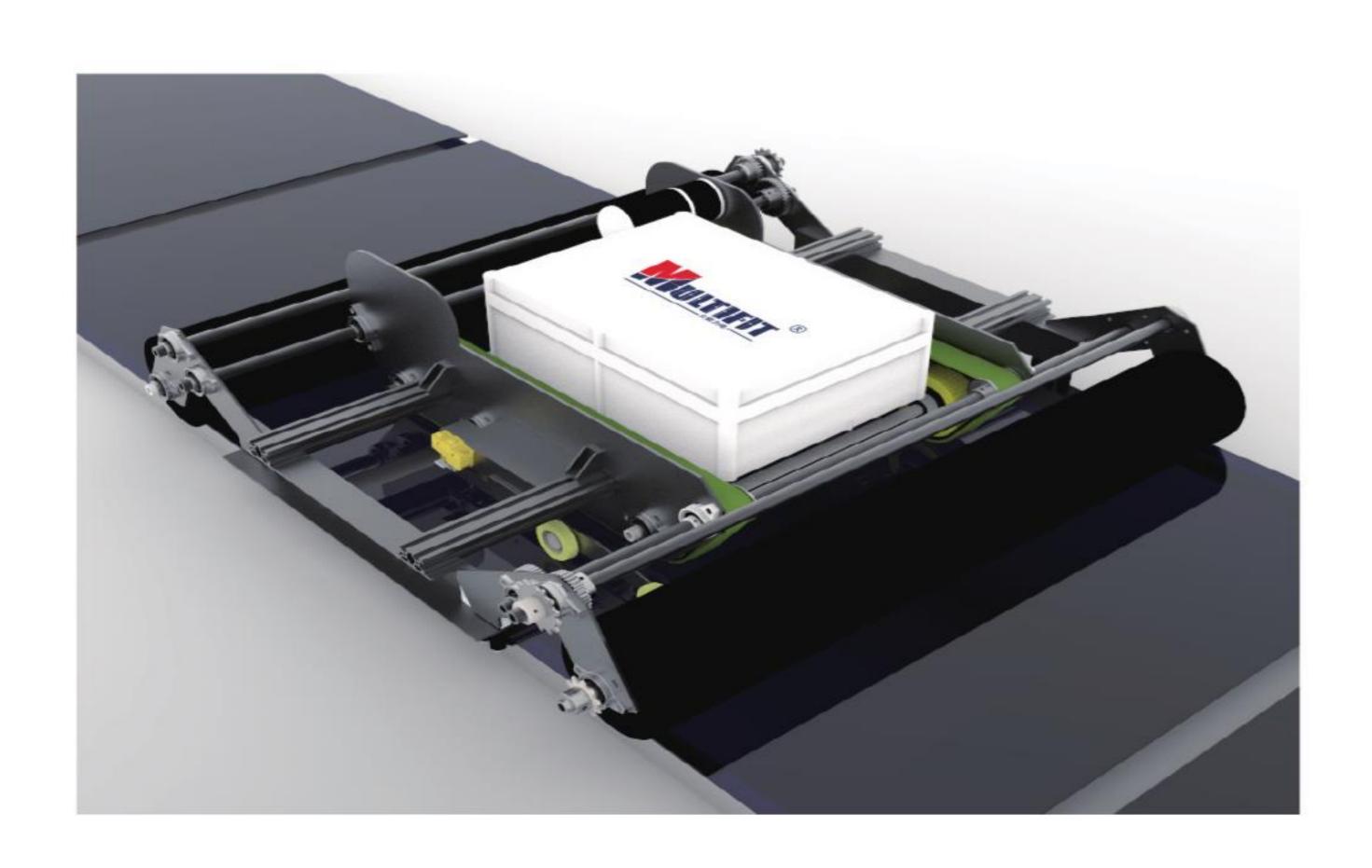
- MR-G1
- MR-G1-D(Double Brush)
- MR-G2



• TRANSFER VEHICLE MR-AR series

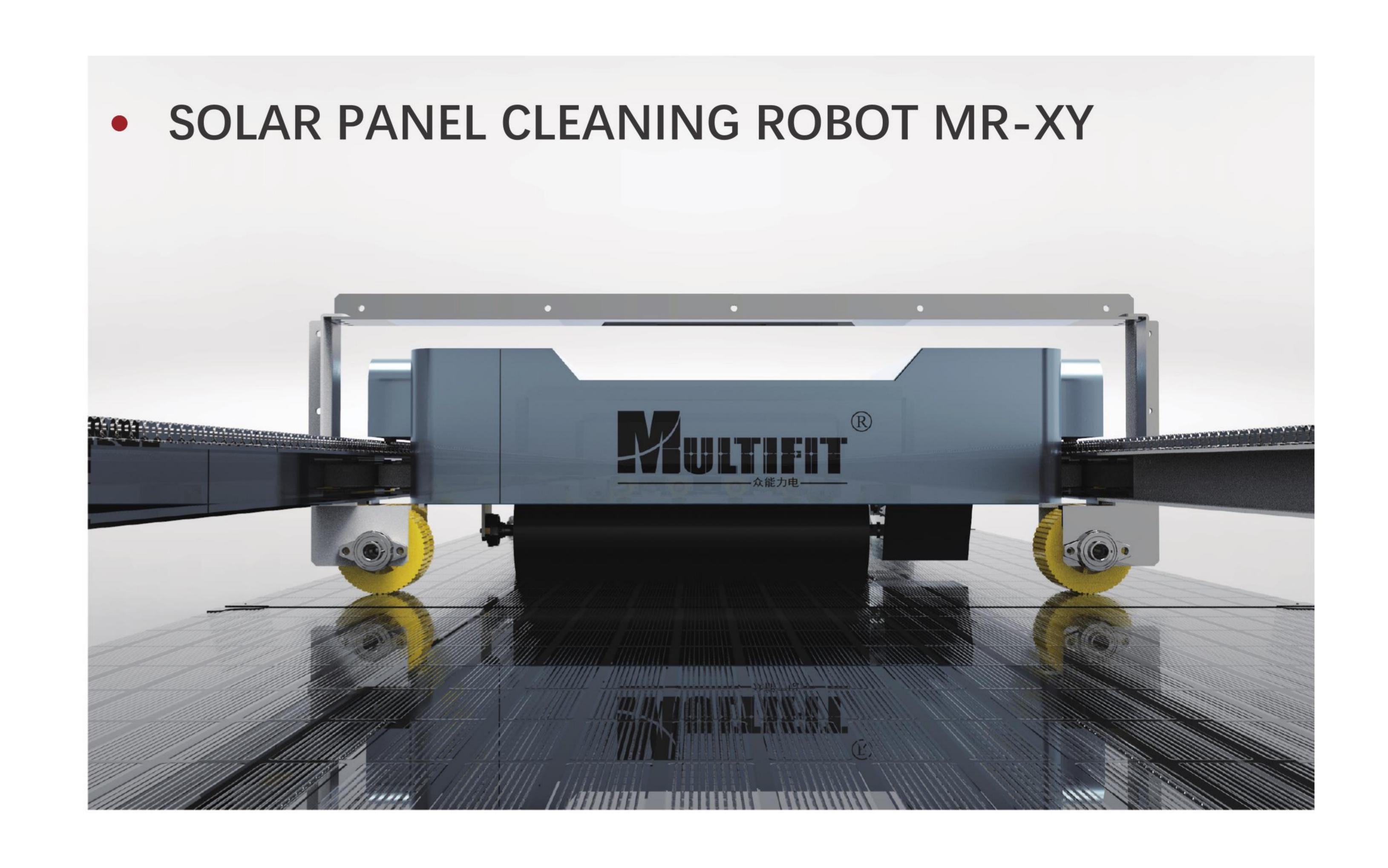
Bridging, apron, return space

Full-automatic rail-type transfer vehicle



CRAWLER CLEAING ROBOT TROLLEY series

- MR-T
- MR-P1



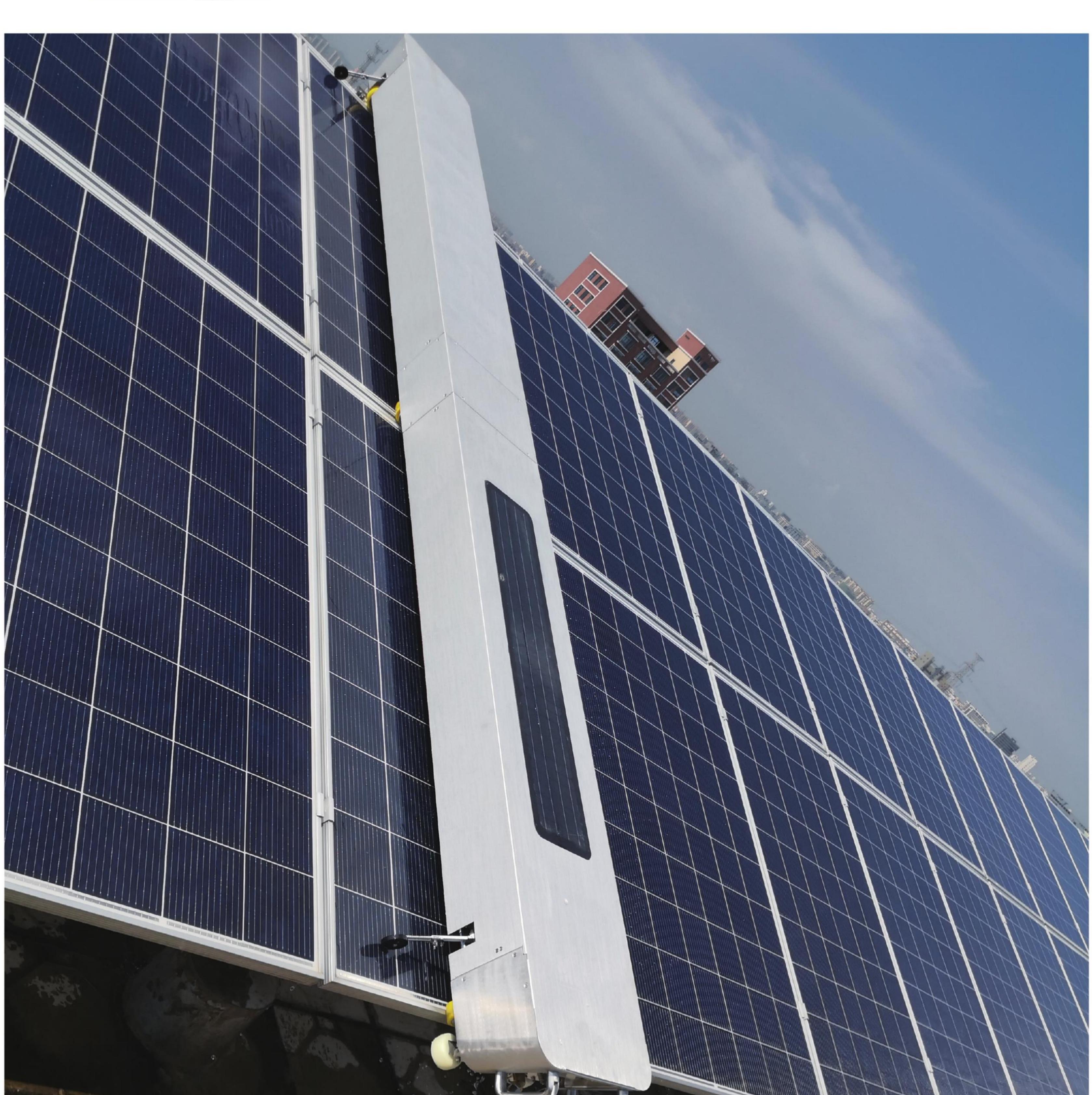
SOLAR PANEL CLEANING BRUSH series



- MULR-A
- MULR-B
- MULR-C
- MULR-D

SOLAR PANEL CLEANING EQUIPMENT





SOLAR PANEL CLEANING ROBOT

Solar Panel Cleaning Robot MR-G1:

Lightweight equipment ≈23 kg.

Applicable to various arrangement arrays and various power stations.

It has the automatic edge sensing technology to prevent itself from sliding down.

During running, it can automaticly correct and adjust itself, in order to prevent machine deviation and jamming.

Intelligent opening and cleaning mode in rainy days.

You can adjust the brush downward to increase the cleaning ability and double the service life of the brush.



Solar Panel Cleaning Robot MR-G2:

Include slope, step and misalignment.

It can clean 1.2MWp per day.

It can automaticly run and stop. And remotedlly controlled by the controller.

SOLAR PANEL CLEANING EQUIPMENT



Overview of Bridge, Apron and Parking Space



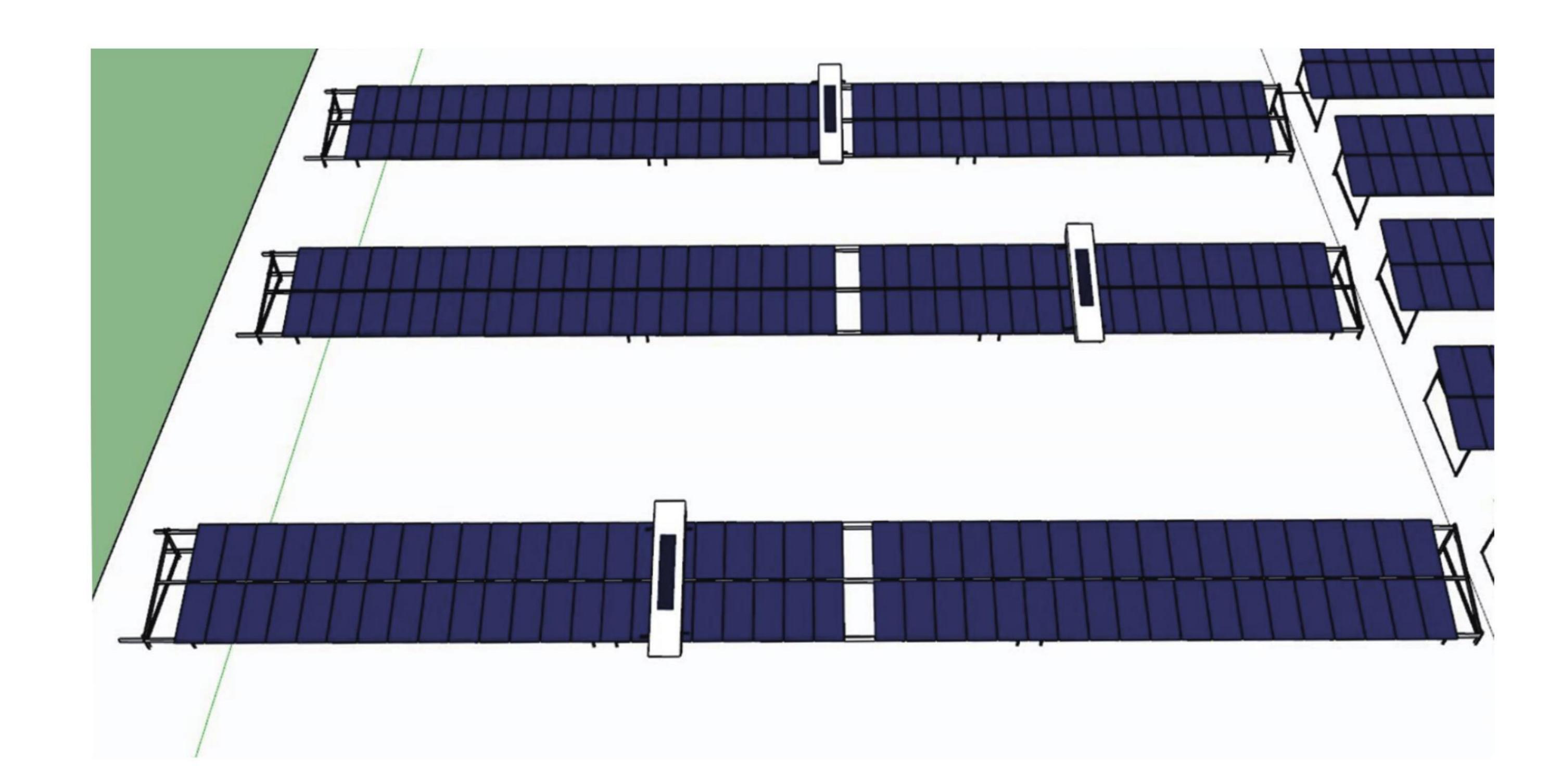
Bridging, apron and parking space are reserved facilities planned before the construction of photovoltaic system. If the power station does not have relevant supporting equipment, it can be built according to the rolling photovoltaic array.

The purpose of the construction is to make the cleaning robot work faster, start and stop smoothly, and reduce the number of times that personnel carry the cleaning robot.

Bridging: according to the ups and downs of the array, establish a link track to allow the cleaning robot to walk smoothly into the next PV panel cleaning range.

Apron: the harbor where the solar cleaning robot is parked. According to your needs, the cleaning work will be carried out at fixed time and fixed point. The solar cleaning robot will return to the apron and wait for the next cleaning service. The parking will not affect the power generation rate of the photovoltaic power station.

Return position: this is a position that is easy to be ignored. If there is no return position, there will always be an invisible position at the edge of the photovoltaic panel, which not only affects the power generation efficiency, but also affects the life of the photovoltaic panel. The return position is to allow the cleaning robot to extend the cleaning range and make each solar panel of the photovoltaic array clean in place, in addition, it can protect the cleaning robot from falling when the sensing wheel is out of control.



CLEANING ROBOT TRANSFER VEHICLE MR-AR series



Overview of Transfer Vehicle



It is used for the maintenance of large photovoltaic power station system, reducing the manual handling process, and can clean photovoltaic panels in time.

It is time-consuming and laborious to carry the cleaning robot manually. If the photovoltaic power station is built on a flat ground and roof, it is recommended that you equip a transfer vehicle that can walk automatically when purchasing the cleaning robot. Press the start switch, the transfer vehicle moves forward, the sensor on the transfer vehicle senses the photovoltaic array and aligns with the array, the transfer vehicle stops moving forward, at this time, the front and rear rods are adjusted and lifted to the level of the photovoltaic array, and the G1 solar cleaning robot senses and starts the equipment to start cleaning. After cleaning, the G1 solar cleaning robot moves to the transfer vehicle, and the transfer vehicle moves to the next array to continue cleaning.

Customization of Transfer Vehicle

According to the array data of your photovoltaic power station, the technical department will provide you with the design scheme.

The data required are:

- 1. Width of solar panel array;
- 2. The height (maximum and minimum dimensions) of the solar panel array and the angle of the photovoltaic panel;
- 3. Array drawings and panoramic photos of the photovoltaic power station.

SOLAR PANEL CLEANING EQUIPMENT





SOLAR PANEL CLEANING ROBOT MR-XY series

Solar Panel Cleaning Robot MR-XY

The cleaning robot can adapt to the photovoltaic system assembled by multiple rows of solar panels in an array.

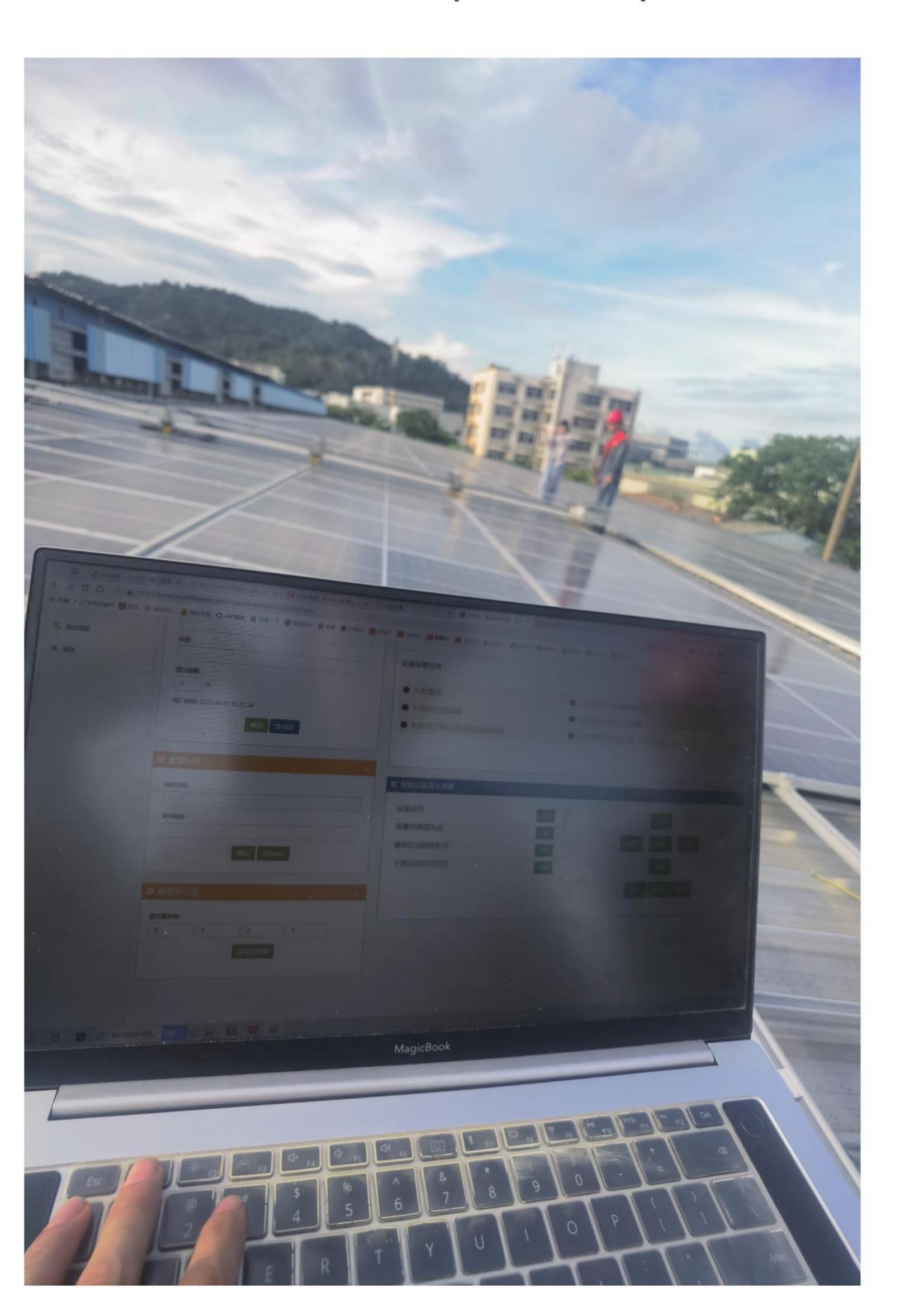
The aluminum alloy support. The frame part adopts multi segment splicing structure, which is convenient for transportation.

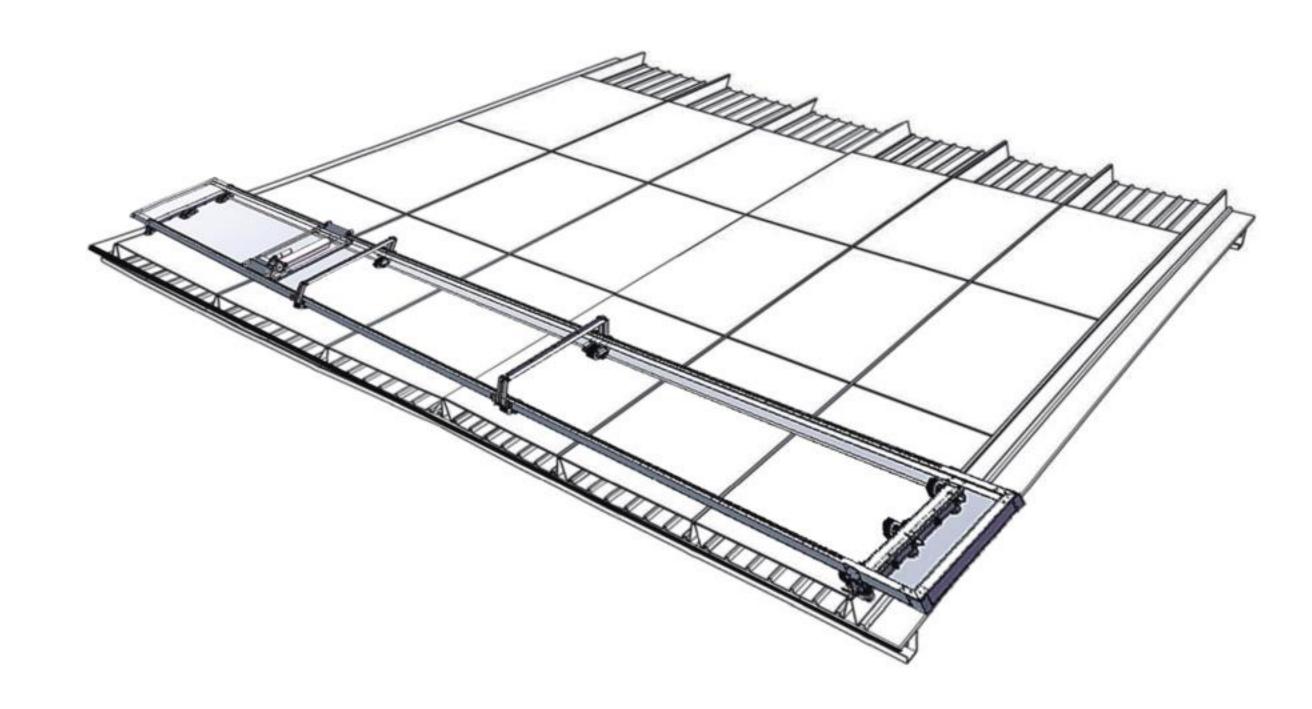
Without manual cleaning, integrated dry cleaning and water cleaning model.

It adopts lithium battery and brushless motor, which is durable.

Automatic edge sensing technology to prevent the robot from sliding. Autistic danger. The length of the equipment can be adjusted according to the size of solar panel

Convenient to use in different photovoltaic power stations. Remote control with independent power supply.





Smart Management Control System

Track the status of the MR-XY Cleaning Robot

- 1. Improve the transmission efficiency of solar panels.
- 2. Extend the service life of the panel.

Turn on the intelligently managing control system according to your needs, follow up in real time, and keep your solar panels as clean as new.

SOLAR PANEL CLEANING EQUIPMENT





Tank Solar Panel Cleaning Robot MR-T1

The visual positioning accuracy is less than 1 cm, and the accidental falling design is prevented.

Global power planning and intelligent alarm function.

Safe from falling, single person can move it, easier to transport and load, easily replace the consumable components, Multiple consumables can be reused, Eco-friendly economy.

The path planning passes 100% coverage at one time, and only needs one key operation. The new sensing system and the algorithm accomplish the fully autonomous operation.

A single machine can replace 10 labours, and one single person can monitor up to 100 MR-T1s. For large-scale photovoltaic power plants, they can realize large-scale manual replacement.

CRAWLER CLEAING ROBOT TROLLEY

Cleaning Ability

Sink-float dust (adhesion ≤10-6N) cleaning result ≥99%

Dust accumulation (adhesion ≤10-4N) cleaning result ≥99%

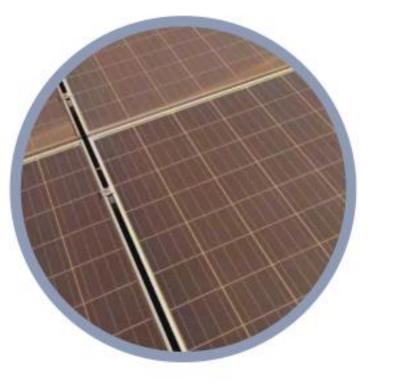
Dry bird droppings (adhesion ≤10-2N) cleaning result ≥99%

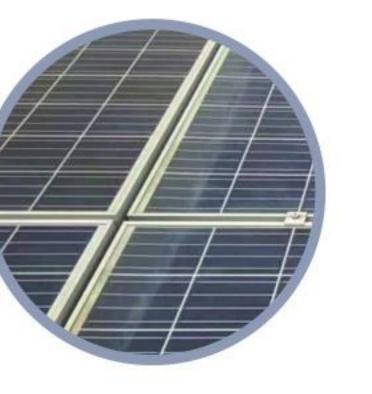
Heavy metal contamination (adhesion ≤20-10N) cleaning result ≥99%

Cleaning efficiency (square meter/hour) ≥ 600









Bird droppings

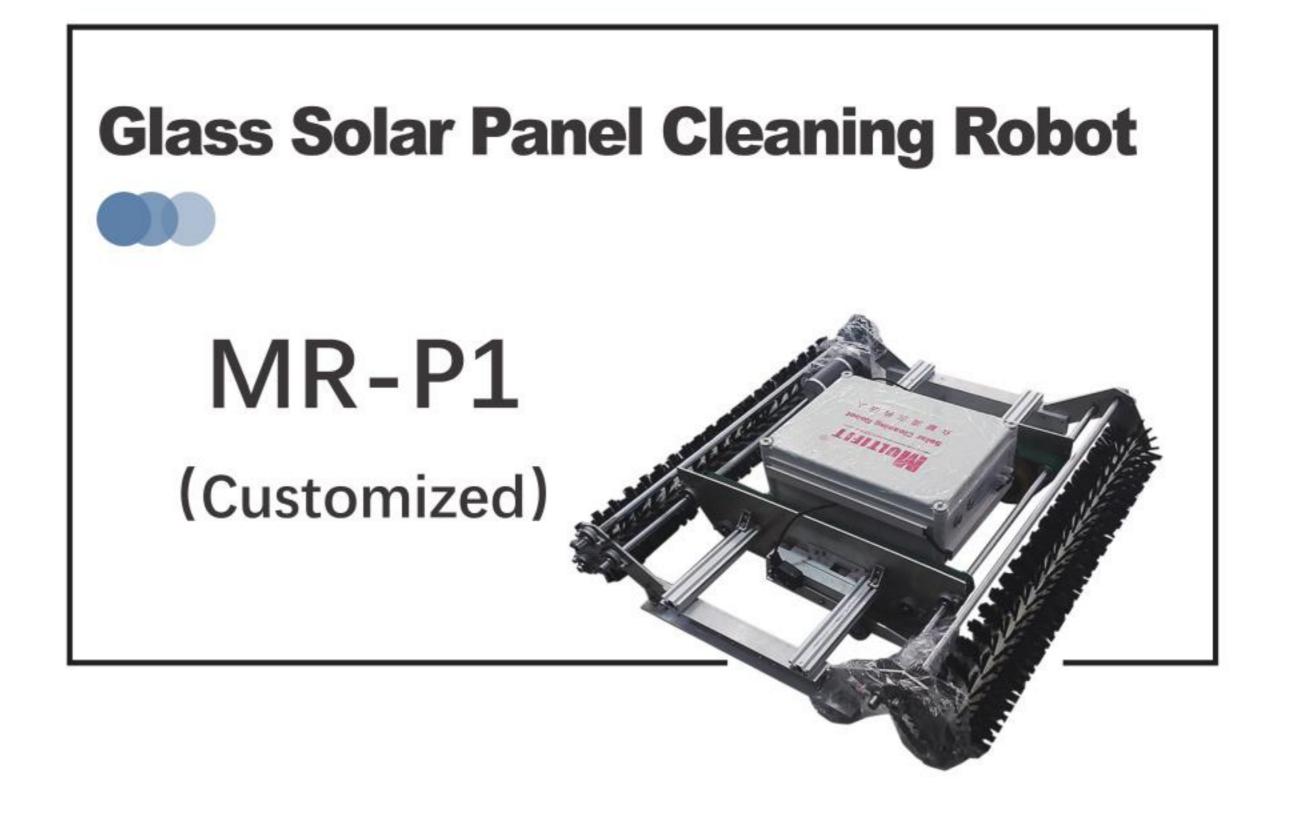
Dust accumulation

Pollution dust

Cleaning residue

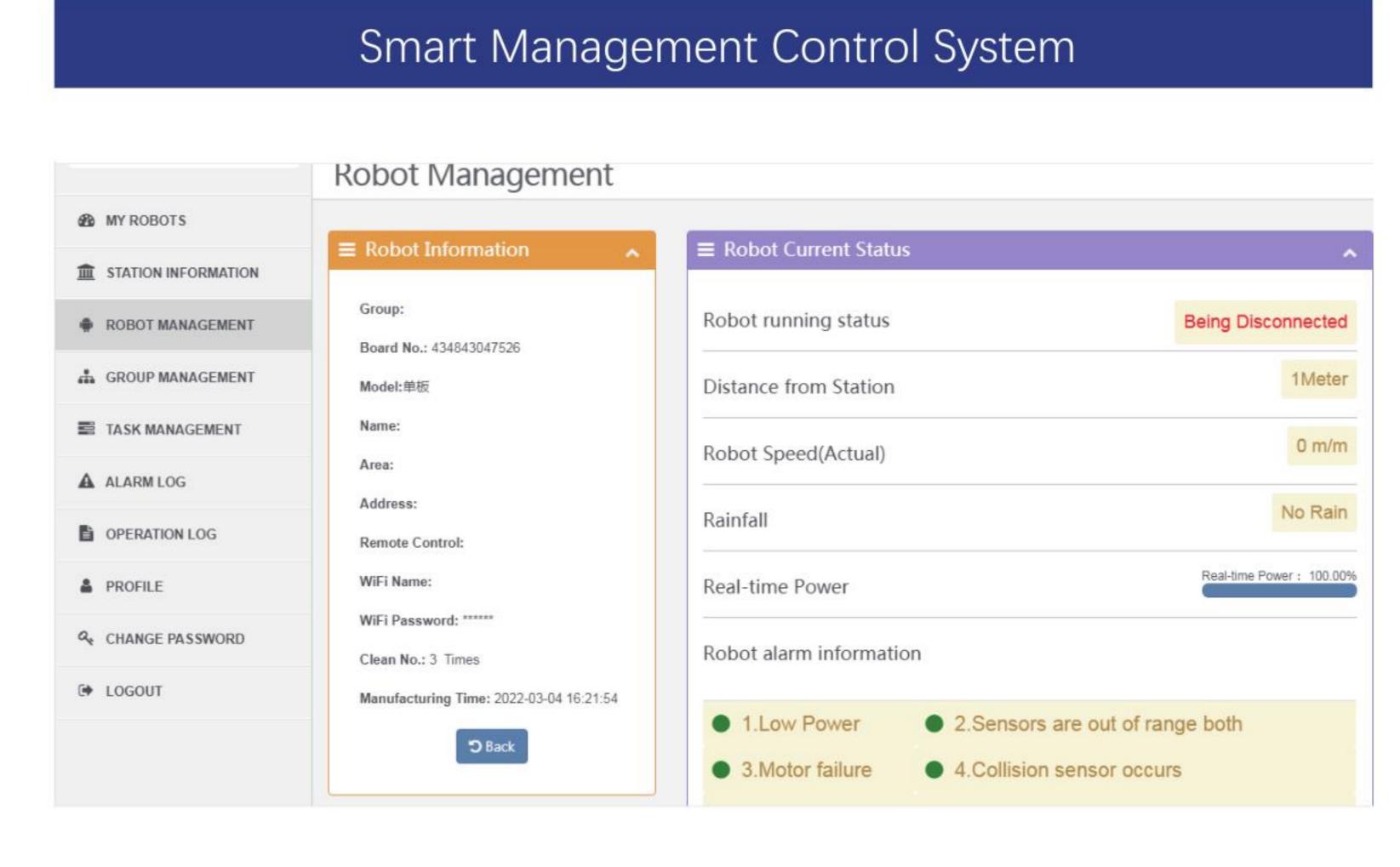


Fully automatic nmanned operation autonomous cross-barrier program array spacing bridging scheme



Platform Control Method:

APP platform
Remote controller

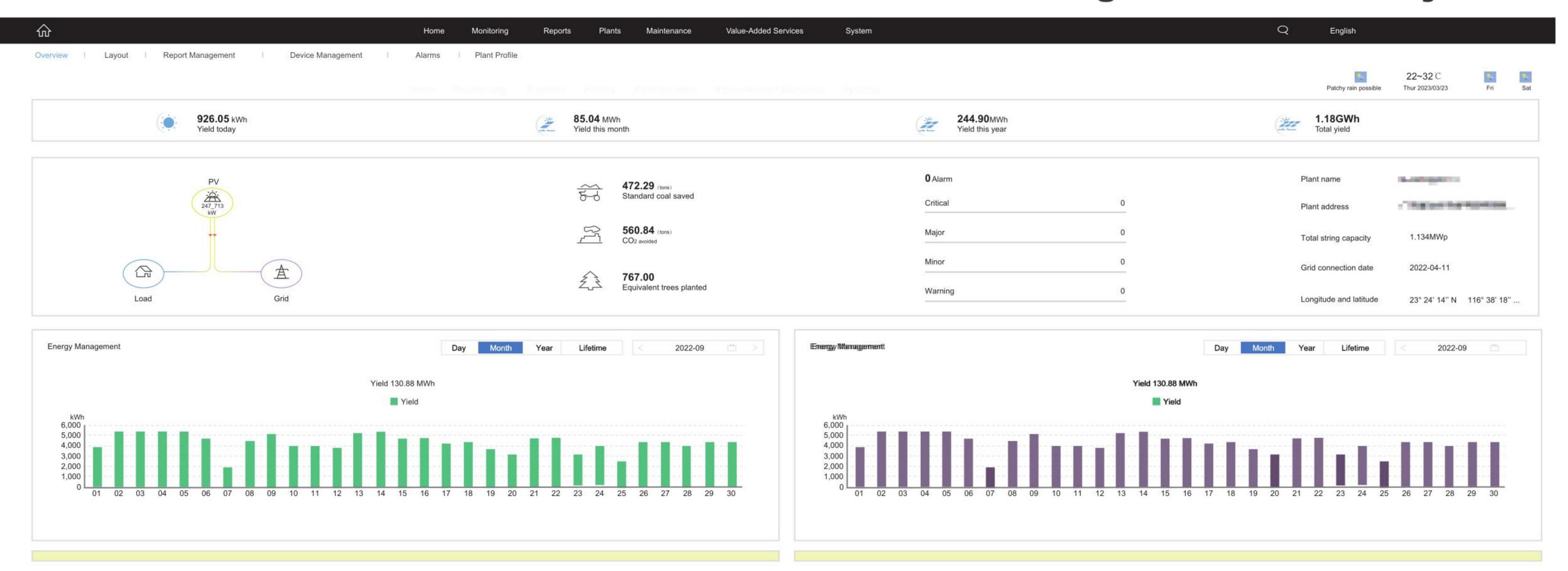


Based on Windows operating system
Based on Android and IOS operating systems
Based on the Navigation technology of Multifit vision
Based on the Path Planning Technology of Multifit Platform
Based on MR-T1 operating platform

SOLAR PANEL CLEANING EQUIPMENT



Smart Anagement Control System



SOLAR PANEL CLEANING CONTROL SYSTEM

Remote Controller

Start at any time, stop at any time, scrub repeatedly, where there is no network, you can use the remote control to start and operate the solar panel cleaning robot



MULTIFIT Platform

- 1. Fully automatic.
- 2. No need for you to be on site.
- 3. Multiple cleaning robots work simultaneously.





SOLAR PANEL CLEANING EQUIPMENT



SOLAR PANEL CLEANING BRUSH



MANUAL WATER FED BRUSH MULR-A

No ladder or stool is needed, just standing on the ground, you can easily finish. Cleaning, which is safe and convenient.

The back of the brush head can be used to scrape snow and water without leaving dust.

A brush and mop can be applied to one rod.



MANUAL WATER FED BRUSH MULR-B (Single-head)

Single-head cleaning brush can be used to clean small area solar panels.

The bristles are moderately soft and hard, and do not harm the photovoltaic panel.

The angle of the brush head fits the solar panel, which can be adjusted with the angle of the solar panel.



MANUAL WATER FED BRUSH MULR-C (double-head)

Cleaning brush can be used for double-speed and convenient cleaning.

The design of dual motors can maximally offset the centrifugal force which originated from the running of the motor, because of that the brush can runs smoothly, as the operation become easier with higher effeiciency for cleaning.

Lithium battery is carried in a backpack, no need to carry batteries, easy to carry.

The length of the water supply pipe can be customized, please call for consultation.

The angle of the brush head fits the solar panel, which can be adjusted with the angle of the solar panel.



PHOTOVOLTAIC CLEANINGROLLER BURSH MULR-D

It can be used for both washing and drying, which can adapt to various complex terrains and environments.

The lithium battery pack can last about 8-10 hours, it is more convenient to clean.

For water supply, this washing machine does not have its own water supply device, but provides a variety of water supply pump schemes for everyone to choose freely.

SOLAR PANEL CLEANING EQUIPMENT



PHOTOVOLTAIC POWER STATION CLEANING CASE



Sunshine for you Multifit to all

PHOTOVOLTAIC OPERATION AND MAINTENANCE

RECRUITMENT

RECRUITMENT

Hot blue ocean projects in emerging industry market.

ONE-STOP SUPPORT FOR ENTREPRENEURSHIP

The heart-level service of the headquarters saves you the trouble to start.

AUTHORIZED DISTRIBUTION

Franchised dealers sell products in authorized areas or channels.

FREE TRAINING

Provide marketing and technical training for franchised dealers.

REBATE REWARD

Complete the sales task and reward according to the incentive policy.

TECHNICAL SUPPORT

Assist in the design of schemes and comprehensive technical consulting services during the support period.

PRODUCT SUPPORT

Provide copies of relevant certificates and letters of authorization.







Dunhuang Case







Job Site





Shan Tou MR-XY



SOLAR PANEL CLEANING EQUIPMENT







America Case







Multi board Cleaning





Bird
Droppings



SOLAR PANEL CLEANING EQUIPMENT







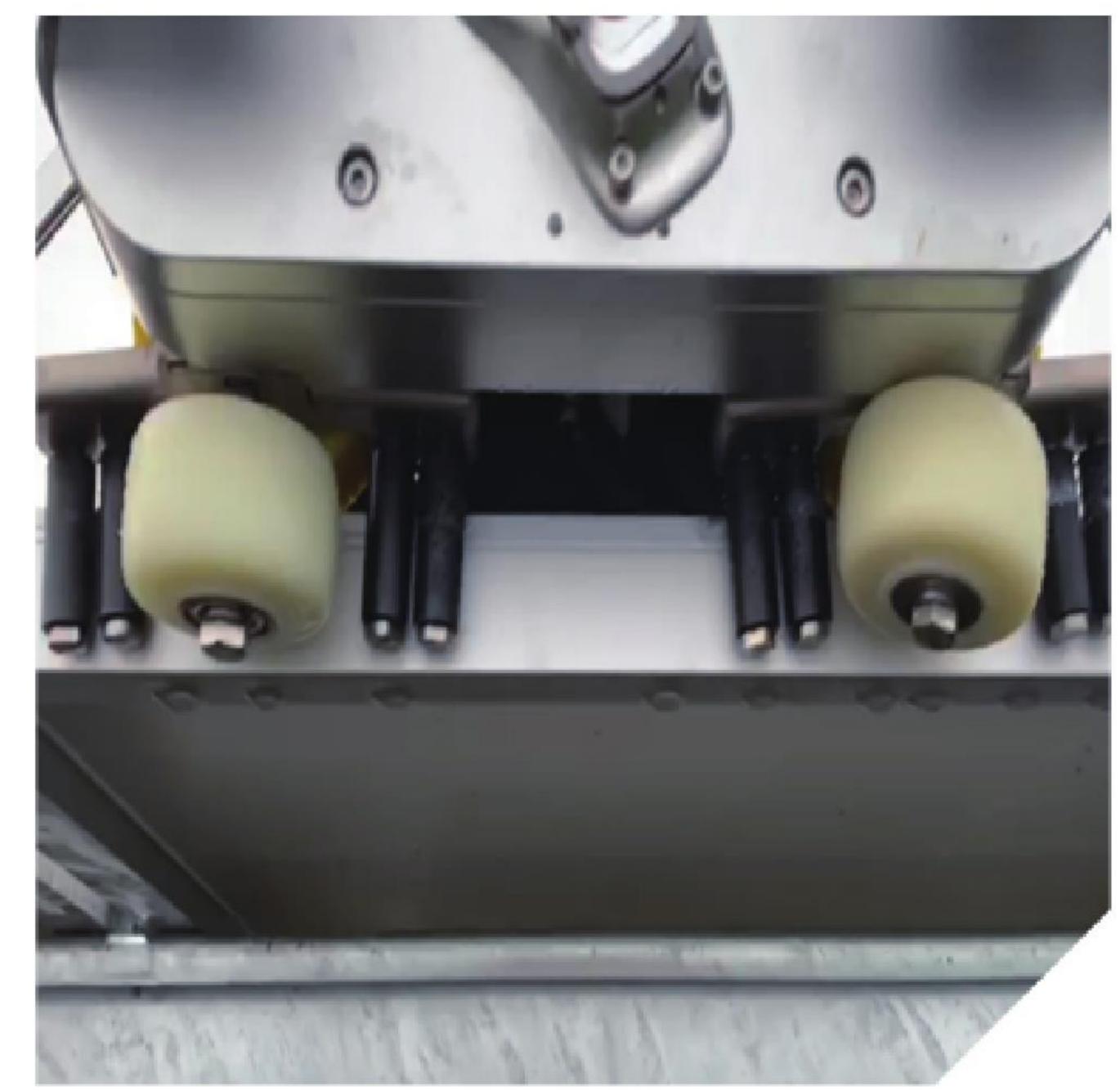
Qatar Case













Bridging Cases



SOLAR PANEL CLEANING EQUIPMENT





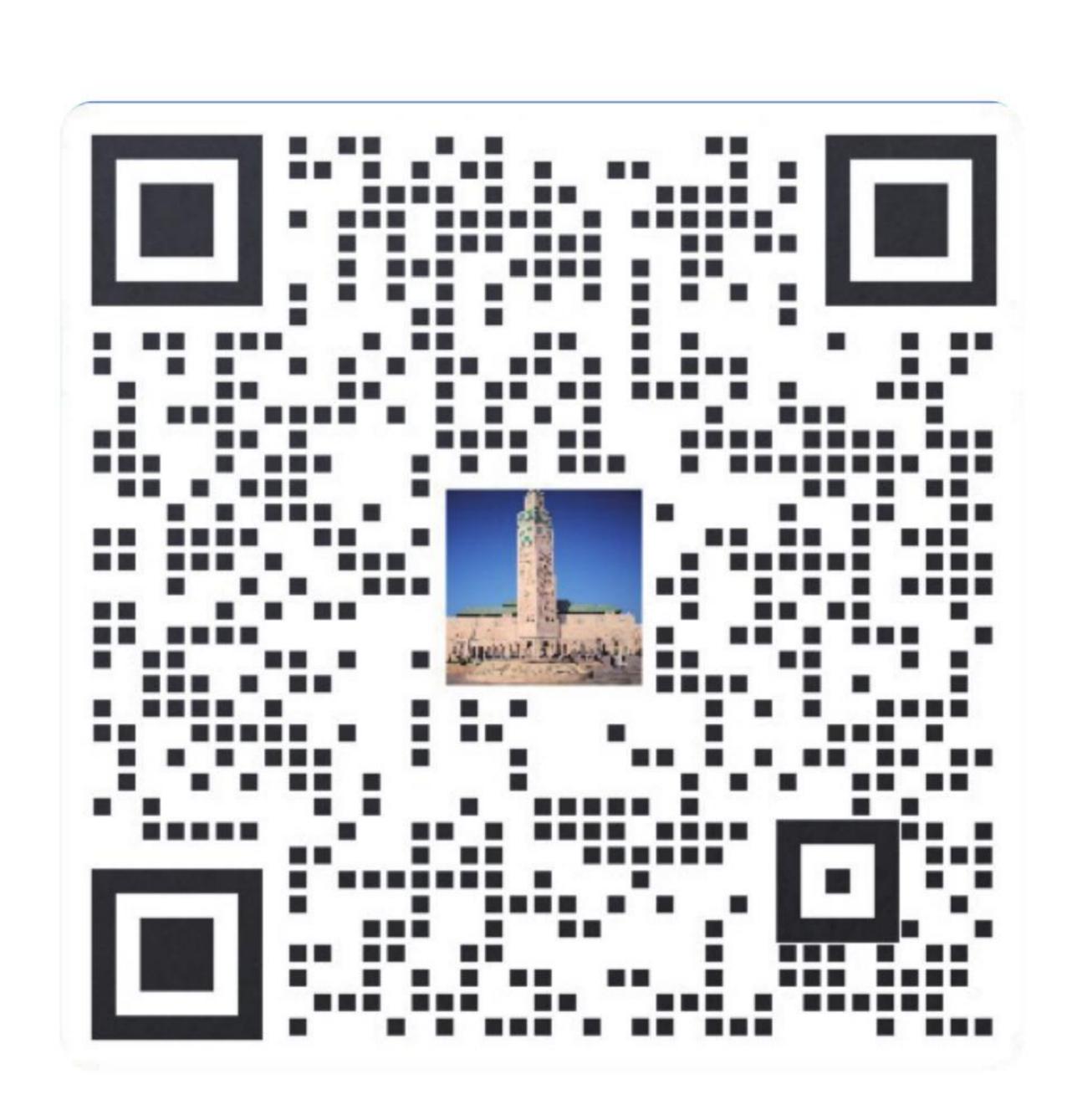


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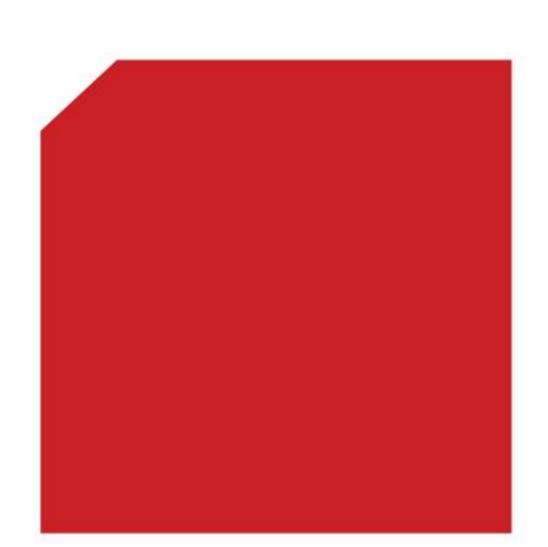








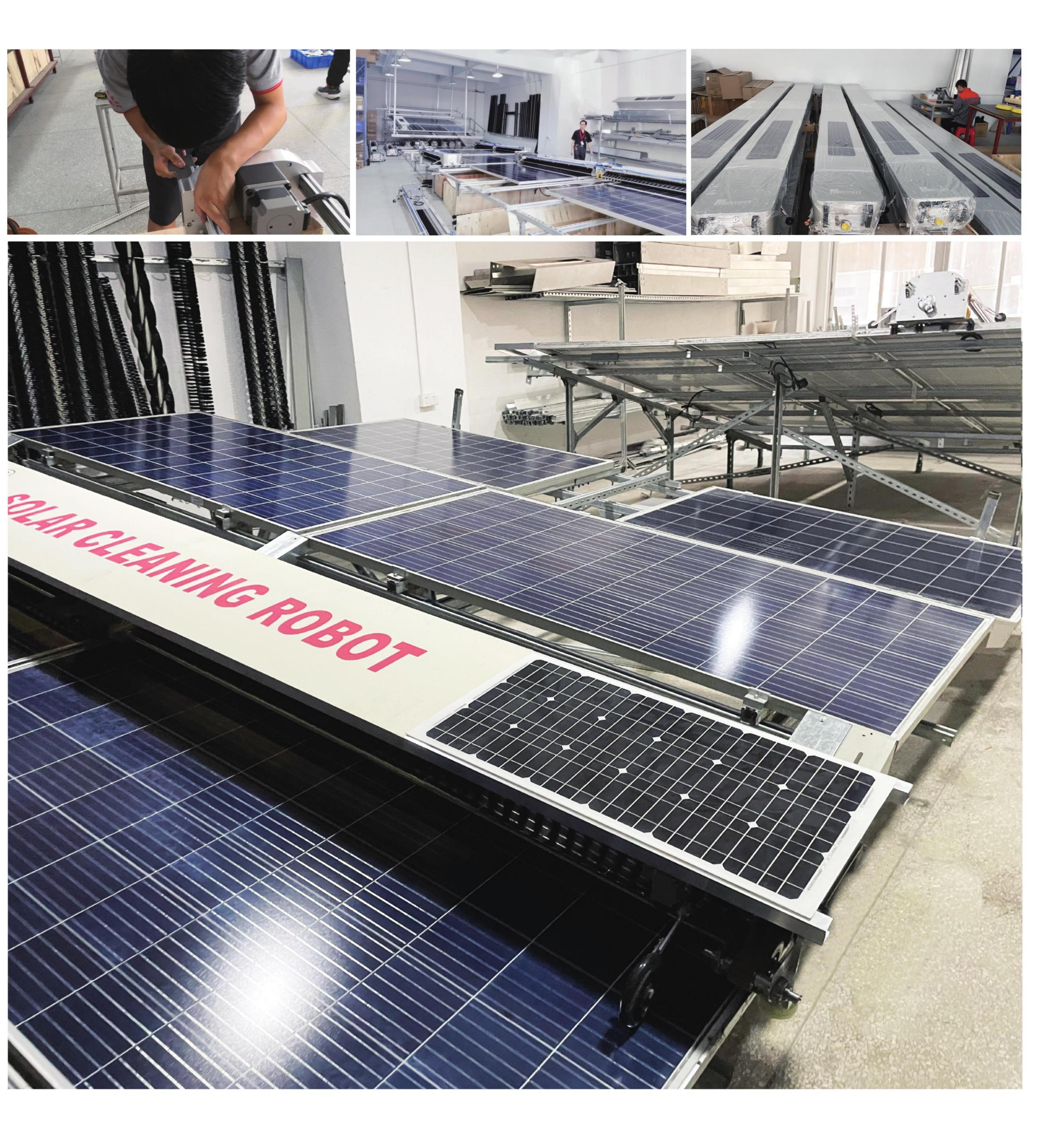




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