HED

2026

Product Catalog

SHANDONG HIGH END INTELLIGENT TECHNOLOGY CO.,LTD.

山东海恩德智能科技有限公司

CONTENTS

Company Profile>>>

- Position： A leading domestic power robot company
- Corporate philosophy： Integrity、Pragmatism、Innovation
- Target： Professionalization、Intelligentization
- Mission： Promote the intelligent upgrading of equipment in the power industry

Shandong HIGH END Intelligent Technology Co., Ltd. located in Jinan, Shandong Province. It is a national high-tech enterprise in the field of power robots The company focuses on the research, development, manufacturing, and application of Insulator Inspect robot 、Transmission Line Prevent-icing Robot 、 Transmission Line De-icing Robot、Transmission Line Broken Strand Repair Robot、Overhead Transmission Line Net Sealing Robot、UAV Carrying Tower Climbing Fall-Protection Device、UAV-Mounted Transmission Line Warning Device Installation Carrier.

While adhering to independent research and innovation and improving product quality, the company combines customers' pain points and market demands to provide complete intelligent solutions for the power industry.

Qualifications & Honors>>>

Product Introduction>>>

-Insulator Inspect Robot

-Airborne Insulator Inspect device

- Insulator Zero Value Inspection Device

-Transmission Line Prevent-icing Robot

-Transmission Line De-icing Robot

-Broken Strand Repair Robot

-Overhead Transmission Line Net Sealing Robot

-UAV Carrying Tower Climbing Fall-Protection Device

- UAV Carrying Warning Device Installation Carrier

Insulator Inspect Robot

UAV-mounted Version

The UAV-mounted insulator inspection robot, consisting of the robot body, drone mounting assembly and control terminal, is accurately mounted on insulator strings via drone to conduct high-voltage impulse, insulation resistance and appearance defect inspection. It eliminates the need for manual tower climbing, ensuring high efficiency and safety. Its control terminal supports real-time inspection data display, stores data and appearance videos, provides real-time alarms for deteriorated insulators, and can automatically generate and export status reports—realizing full-process data traceability and delivering an intelligent solution for power inspection.

UAV-mounted Insulator Inspect Robot

Robot Control Terminal

Manually-mounted Version

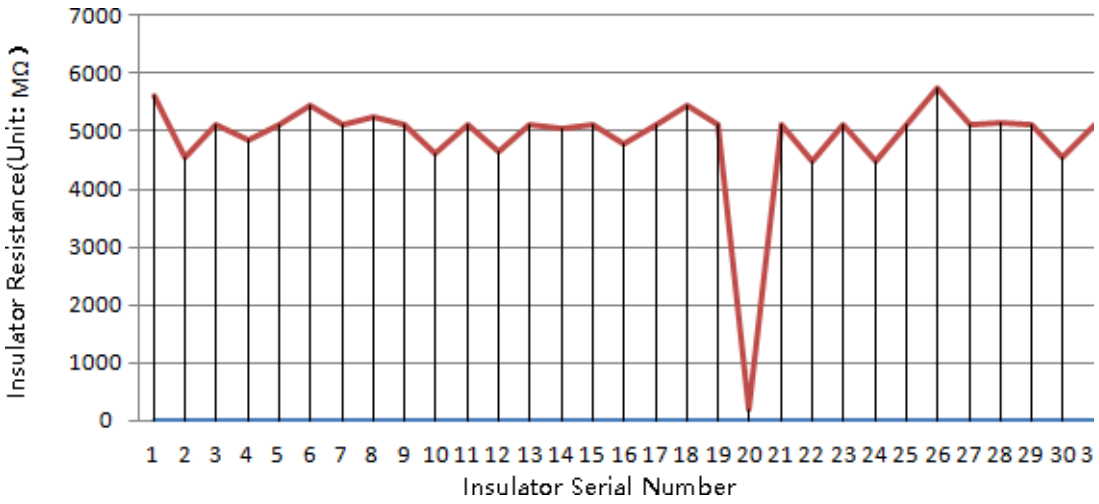
Manually-mounted Insulator Inspect Robot consists of the robot body and the robot control terminal. The robot is capable of conducting high-voltage impulse, insulation resistance and appearance defect inspection. The control terminal monitors in real-time, displays live video, records inspection data, and generates reports.

Manually-mounted Insulator Inspect Robot

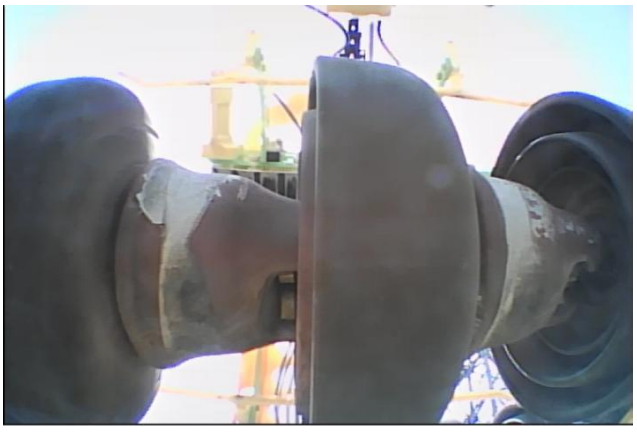
Robot Control Terminal

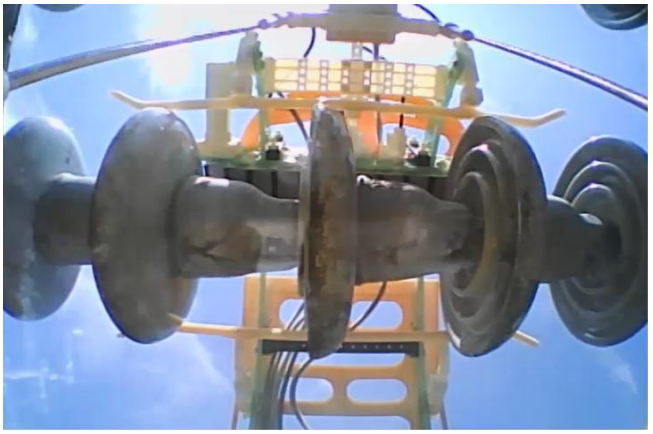
Insulator Inspect Robot Inspection Items

Resistance Measurement



|Automatic Inspection of low or zero-value insulator discs|
|Sound and light alarm|Resistance curve ploting|





Appearance Inspection

|Insulator damage|Insulator crack|
|Steel foot and steel cap connection status|Contamination

Insulator Inspect Robot VS Traditional Inspections

Traditional Inspection

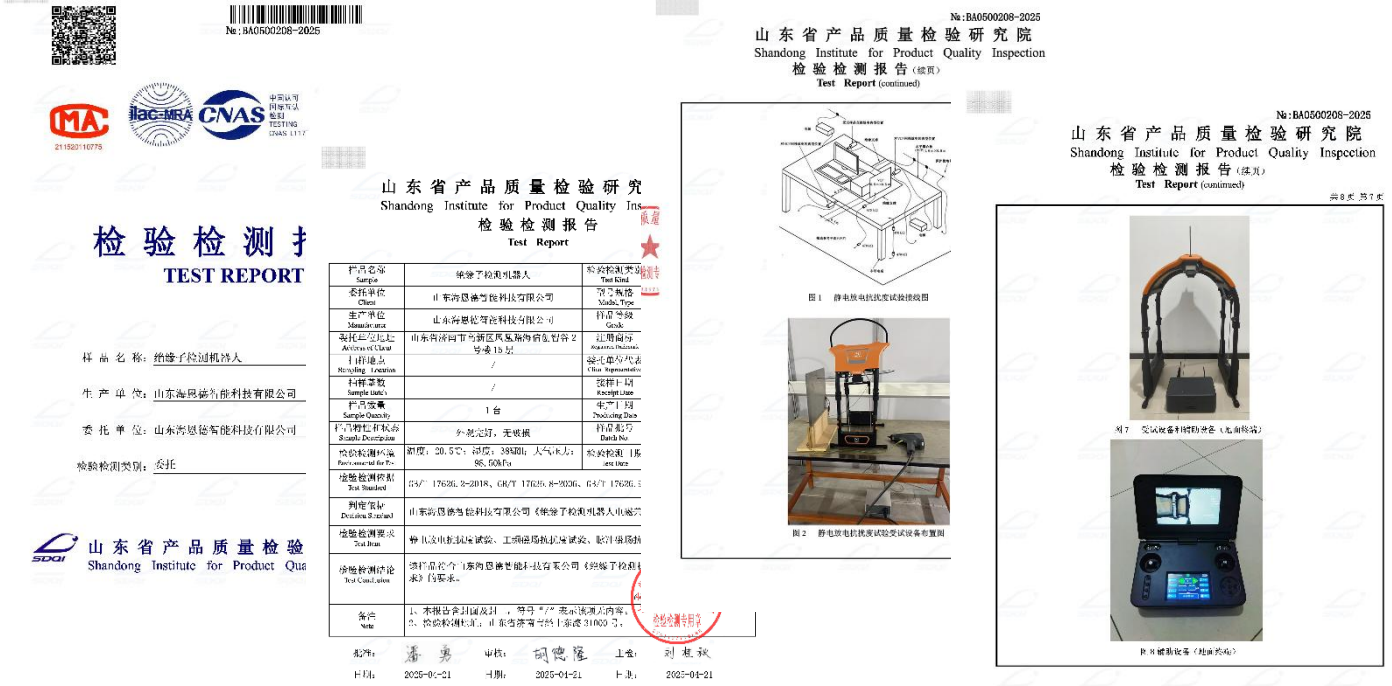
Robot Inspection

· Complex operations, high labor intensity · Insulated rods cannot reach insulator strings exceeding 5 meters	· The UAV-mounted version can complete the inspection without manual tower climbing · Only one person is needed to climb the tower to install manually-mounted robot, which will automatically inspect
· Can inspect live lines up to a voltage level of 500kV	· Capable of live inspection of insulator strings on lines with voltage levels up to 1000kV (AC) and 1100kV (DC)
· Single testing item · Live inspection can only inspect distributed voltage and cannot perform resistance measurements	· Diverse inspection items · High-voltage Impulse Inspection, Resistance Inspection and Appearance Inspection
· Poor inspection accuracy · Under live conditions, judging the state of insulator discs indirectly through distributed voltage is a qualitative assessment, often leading to misjudgments and missed inspections	· High inspection accuracy · It enables real-time display of insulator impulse voltage and insulation resistance with detection error within 1%. Featuring real-time alarm for deteriorated insulators, it accurately evaluates the condition of insulator slices and detects critically damaged ones in a timely manner.

· Technical Indicators

Insulator Inspect Robot Parameters	
Technical Indicators	Robot Parameters
Dimension	470*370*(580-800)mm (UAV-mounted)/ 500*480*680mm (Manually-mounted)
Weight	4kg（UAV-mounted）/ 7.5kg（Manually-mounted）
Operating Duration	Continuous Operating Duration of the Robot≥8h
Remote Control Distance	Under unobstructed conditions 6km
Walking Mechanism	Track-Type Walking Mechanism
Operational Capacity	High-voltage Impulse Inspection, Resistance Inspection and Appearance Inspection
Operating Environment	AC 110kV-1000kV；DC ±400kV-±1100kV
Applicable Insulators	Insulator Diameter: 260mm-420mm； Nominal Structure Height: 146-265mm Type: Glass insulators, Porcelain insulators； Insulator Shape: Bell jar insulators, Anti-pollution insulators, Straw hat insulators； Connection Form: Single link, Double link, Triple link, Quadruple link, Sextuple link, Octuple link
Moving Speed	≥130mm/s
Inspection Cycle	5s/piece
Inspect impulse voltage	45kV-80kV
Inspect rated charging energy	⩾5J
Inspection Resistance Range	0-9999MΩ
Inspection Error	≤±1%
Mode of Operation	Live Working | Power Outage Working
Working Conditions	Relative Humidity：≤85%；Temperature：-20°C-50°C Atmospheric Pressure：86KPa-106KPa
Storage Conditions	Relative Humidity：≤90%；Temperature：-40°C-65°C Atmospheric Pressure：86KPa-106KPa
Protection Device	The robot is equipped with a matching insulating protection rope
Inspection Report	China Electric Power Research Institute 1000kV Live Inspection Report
Robot Control Terminal Parameters	
Dimensions	250*160*90mm
Weight	1.6kg
Power Consumption	5W
Battery	12V，5Ah
Functions	Inspection of insulator resistance value display; low value, zero value alarm
Video	Real-time insulator video display, recording, and playback
Remote Control	Under unobstructed conditions 6km

Inspection Report (Excerpt)



山东省产品质量检验研究院
Shandong Institute for Product Quality Inspection
检验检测报告
Test Report

检验检测报告（续页）
Test Report (continued)

样品名称：绝缘子检测机器人
生产单位：山东海恩德智能科技有限公司
委托单位：山东海恩德智能科技有限公司
检验检测类别：委托

China Electric Power Research Institute Test Report（Excerpt）

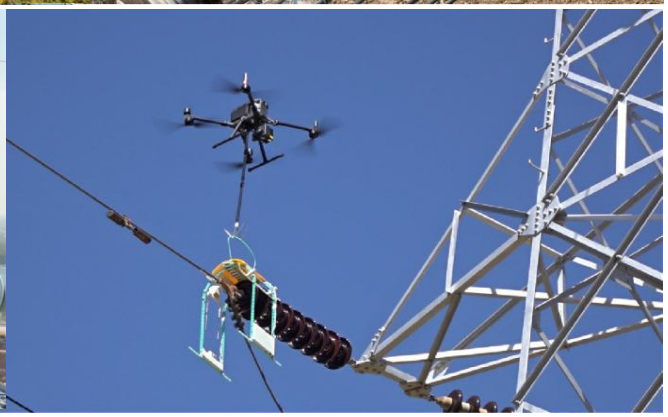
国家电网 STATE GRID
中国电力科学研究院有限公司

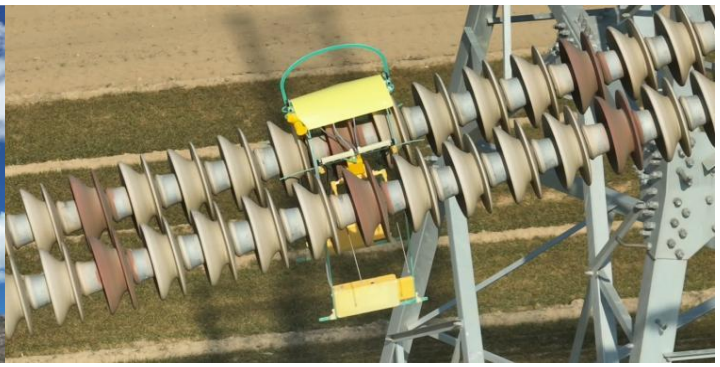
山东省产品质量检验研究院
检验报告

绝缘子串检测机

▪ Insulator Inspect Robot Application Cases












Airborne Insulator Inspect Device

Work Environment	35kV-220kV
Work Methods	Live working | Power outage operation
Work Methods	High-voltage Impulse Inspection, resistance measurement
Remote control distance	under unobstructed conditions 6km
Size/Weight	1600*200*200mm/1.2kg

The airborne insulator inspect device mainly consists of an inspection device and a drone. When in use, the inspection device is installed under the drone, and the drone carries the inspection device into the air. Conduct high-voltage impact testing and insulation resistance testing on insulators. The appearance of the inspection device is “Y” shaped, which can inspect both suspension insulator strings and tension insulator strings. The drone camera can monitor and inspect the device in real time, and can view real-time videos and record inspection data.

Inspection screen

· Technical Indicators

Airborne Insulator Inspect device	
Technical Indicators	Inspecting device parameters
Dimension	1600*200*200mm
Weight	1.2kg
Running time	≥8h
Remote control distance	Under unobstructed conditions 6km
Work Capacity	High-voltage Impulse Inspection;Insulation Resistance Inspection
Work Environment	35kV-220kV
Applicable Insulators	Insulator Diameter: 260mm-420mm; Nominal Structure Height: 146-265mm Type: Glass insulators, Porcelain insulators; Insulator Shape: Bell jar insulators, Anti-pollution insulators, Straw hat insulators; Connection Form: Single link, Double link, Triple link, Quadruple link, Sextuple link, Octuple link
Inspection Cycle	3s/piece
Inspection Resistance Range	0-9999MΩ
Inspection Error	≤±1%
Mode of Operation	Live Working | Power Outage Working
Working Conditions	Relative Humidity：≤90%；Temperature：-40℃-60℃； Atmospheric Pressure：86KPa-106KPa
Storage Conditions	Relative Humidity：≤90%；Temperature：-40℃-65℃； Atmospheric Pressure：86KPa-106KPa

▪ Airborne Insulator Inspect Device Application Cases

Airborne insulator inspect device

Airborne insulator inspect device take off

Inspecting tension insulator strings

Inspecting suspension insulator strings

Drone captured footage (tension string)

Drone captured footage (hanging string)

Insulator Zero Value Inspection Device

Portable

No-load output voltage peak	45kV–80kV
Single Inspection Speed	⩽1s/time
Operation Capability	High-voltage impulse detection insulation resistance detection
Continuous Working Time	⩾8h
Host Weight	1. 2kg

The portable insulator zero-value high-voltage inspection device applies the impulse voltage generated by the fast high-voltage generation technology to the caps at both ends of the insulator. By adopting high-precision impulse voltage detection technology combined with advanced machine learning algorithms, it realizes on-site detection of insulator zero values. Featuring safety, speed, accuracy and portability, the device prevents safety accidents caused by degraded insulator performance in power transmission lines.

Handheld

No-load output voltage peak	45kV–80kV
Single Inspection Speed	⩽1s/time
Operation Capability	High-voltage impulse detection insulation resistance detection
Continuous Working Time	⩾8h
Host Weight	1. 2kg

The handheld insulator zero-value high-voltage inspection device applies the impulse voltage generated by the fast high-voltage generation technology to the caps at both ends of the insulator. By adopting high-precision impulse voltage detection technology combined with advanced machine learning algorithms, it realizes on-site detection of insulator zero values. Featuring safety, speed, accuracy and portability, the device prevents safety accidents caused by degraded insulator performance in power transmission lines.

·Technical Highlights

1. 100% detection of porcelain insulators intolerant to impulse voltages: A fast high-voltage generator creates impulse voltages and steady-state high voltages attenuated by an RC circuit, enabling full detection of porcelain insulators that cannot withstand the electrical characteristics of insulation defects.

2. Accurate identification of zero/defective insulators: A high-precision data acquisition system detects the dynamic voltage variation of insulators and judges zero and deteriorated insulators based on their voltage variation characteristics.

3. Accurate measurement with advanced algorithms: Supervised learning algorithms are applied to accurately measure peak voltage and insulation resistance of insulators, realizing high-speed sampling and processing of insulator voltage variation.

4. Modular design for ease of use: High-integration modular design ensures easy operation and portability.

5. Comprehensive safety protection: A new safety protection strategy fully ensures the personal safety of operators.

·Functional Features

Zero-value judgment based on insulator voltage dynamic characteristics:

100% detection of porcelain insulators intolerant to high-voltage impulse; the device can distinguish intact insulators from zero/low-value insulators for those that can withstand high-voltage impulse.

Accurate insulation resistance measurement:

High-speed sampling and processing, combined with advanced learning algorithms, ensure accurate measurement of insulation resistance.

Measurement waveform playback function:

Supports playback display and export of voltage waveform data, as well as real-time display, storage and export of insulation resistance values, assisting inspectors in result judgment.

Fast and safe measurement:

The entire process of detection, judgment, display and storage is completed within hundreds of milliseconds, with no residual charge on the insulator after measurement.

Portable and convenient detection:

The device weighs only 1.2kg, ensuring easy operation and portability.

·Technical Indicators

Category	Technical Indicator	Portable Inspection Device	Handheld Inspection Device
Host	No-load Output Voltage Peak	45kV-80kV	
	Output Voltage Settings	switchable levels: 45kV, 50kV, 60kV, 70kV, 80kV	
	Dimensions	Detection unit: 470mm×200mm×60mm (with probe) Terminal: 175mm×100mm×85mm	450mm×200mm×120mm （with probe）
	Weight	Detection unit: ~0.6kg Terminal: ~0.63kg	~1.2kg
	Operation Mode	Touchscreen / Remote control	Physical buttons
	Result Prompt	Audio and text prompts	Acoustic-optical and text prompts
	Single Inspection Time	≤1s/ time	
	Result Feedback	-Auto feedback results: Normal, Zero-value - Playback display and export of voltage waveforms - Real-time display, storage and export of insulation resistance values	
	Full-charge Detection Cycles	≥6000 times	
	Display Screen	5.0-inch visible angle display Resolution: ≥480×800 pixels	
	Storage Capacity	16GB	
	Battery Capacity	5000mAh	
	Continuous Working Time	≥8h	
	Operating Temperature	-20℃-60℃	
	Operating Humidity	30%~90% RH , non-condensing	
Insulation Test Rod	Inspection Probe	Magnetic suction type	
	Lever Arm	Suitable for one-handed or two-handed operation scenarios Rod Insulation Resistance ≥1GΩ Test Rod Length 1.2m-2m/3m (optional) Fork-shaped Probe Angle Adjustable range: 0°–150°	-
	Weight	~1.3kg (3m rod)	-

Transmission Line Prevent-icing Robot

UAV-mounted

Work Environment	≤220 kV line conductor and ground wire； ≥500kV line grounding wire
Work Methods	Live working | Power outage
Work Speed	500m/h
Spraying Thickness	0.1-0.5mm
Size	600*520*630mm (excluding handle)
Weight	19kg

The UAV-mounted Transmission Line Prevent-icing Robot consists of a mounting device, a walking mechanism, a spraying mechanism, and a remote control system. The mounting device can be adapted to various types of unmanned aerial vehicles, and the robot can be installed on power transmission lines through unmanned aerial vehicles. The walking mechanism is capable of carrying anti-icing materials along the power line, with a certain climbing ability, and the operating speed is adjustable. The anti-icing material supply device accurately controls the supply of anti-icing materials, delivering them through an anti-icing material conduit to the anti-icing material spraying mechanism. The anti-icing material spraying mechanism is placed at the back of the robot to evenly spray the anti-icing material on the power line. By replacing the inner core of the anti-icing material spraying mechanism, it can adapt to different types of lines.

Manually-mounted

Work Environment	≤220 kV line conductor and ground wire； ≥500kV line grounding wire
Work Methods	Live working | Power outage
Work Speed	500m/h
Spraying Thickness	0.1-0.5mm
Size	550*300*450mm
Weight	16kg

The manually-mounted Transmission Line Prevent-icing Robot is mainly composed of a walking mechanism, an anti-icing material supply device, an anti-icing material spraying mechanism and a hoisting mechanism. The robot can be installed online via a high-altitude boom truck, or it can be manually hoisted online using a pulley block through a hoisting mechanism.

▪ Features of the Transmission Line Prevent-icing Robot

--Anti-Icing material spraying function：Capable of completing the spraying of anti-icing materials for wires and ground wires, with uniform coating thick- ness controlled at around 0.2mm, without affecting the heat dissipation of the circuit.

--Communication control function：It can achieve remote control of anti-icing material spraying robot, control of travel speed, and on/off feeding.

--Wireless Image transmission function：Realize real- time image monitoring of the anti-icing material spraying operation and inspect the spraying effect of the anti-icing material.

--Practical and compact structure：Practical design easy for robots to go online and offline.

▪ Advantage comparison of the Transmission Line Prevent-icing Robot

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√ Simple operation： low power consumption, available for construction at any time, preventing problems before they occur.

√ Long effective time： Spraying once does not require repeated spraying within three years.

√ Wide range： Rapid construction in heavy icing areas, covering large areas.

√ Safety： Effectively prevent people from climbing the tower to remove ice in ice disaster weather.

VS

Laser Cannon De-Icing：
High power consumption, small range

Flame Ice Removal：
Small range, poor effect

Robotic Mechanical De-Icing：
It is difficult and highly dangerous to install robots on iron towers after they have iced up.

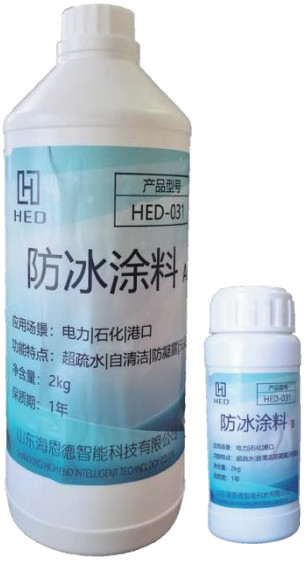
Direct Current De-Icing：
Operation is complex energy consumption is high.

▪ Robot Technical Indicators

Technical Indicators	Technical Parameters (UAV-mounted/Manually-mounted)
Robot Weight (without material)	19kg/16kg
Robot Weight (with full material load)	29kg/21kg
Dimensions	600*520*630mm/550*300*450mm
Speed	500m/h
Climbing Angle	45°
Spray Thickness	0.1-0.5mm
Continuous Operation Duration	3h(Can replace the battery)
Robot's Voltage Withstand	1000kV
Remote Control Distance	6km
Spraying Distance/Material Consumption	~50m/kg
Operating Environment	Live working | Power outage operation

Anti-icing Material

Anti-icing Material have characteristics such as superhydrophobicity, self-cleaning, and anti condensation. Can be used for anti-icing of power equipment such as transmission lines, insulators, towers, and wind turbines. It does not affect the heat dissipation of power equipment, has no corrosion to lines and power equipment, isolates air and pollution, reduces power transmission energy consumption, and extends the service life of lines.



- Unique and durable anti-icing coating.
- Excellent resistance to UV rays, moisture, wear, and corrosion.
- Single-layer spraying, no primer needed (except for metal and polyethylene, where primer is recommended).
- 100% volume solid content, VOC-free.
- Operates without the need for heating or external force factors.
- Can be applied by brushing or rolling.
- Drying and curing time of 24 hours or less.


➢ Performance data：

• Product Color	Yellow transparent and colorless transparent
• Finished Surface	Luster
• Components	3 part（A/B/C)
• Curing Mechanism	Chemical Reaction RT (Room Temperature）
• Volume solid content	100%
• Dry film thickness	125-250 μm (0.125-0.25mm)
• Theoretical coverage rate	4.4-6.6 m^2 /L

➢ Curing time (at 21°C or room temperature)

• Touch dry	2 hours
• Fully dry	10 hours
• Fully cured	1 day

➢ Storage temperature (Between 0°C and 20°C)

• Part A and Part B	Within 1 year atier leaving the factory

➢ Wear (ASTM D4060)

•1 kg load/1000 cycles	Weight loss
• CS-17 wheel (a type of wheel used for measuring abrasion)	72mg
• Adhesion Reduction Factor (ARF)	25 or above

➢ Ultraviolet (UV) accelerated weathering

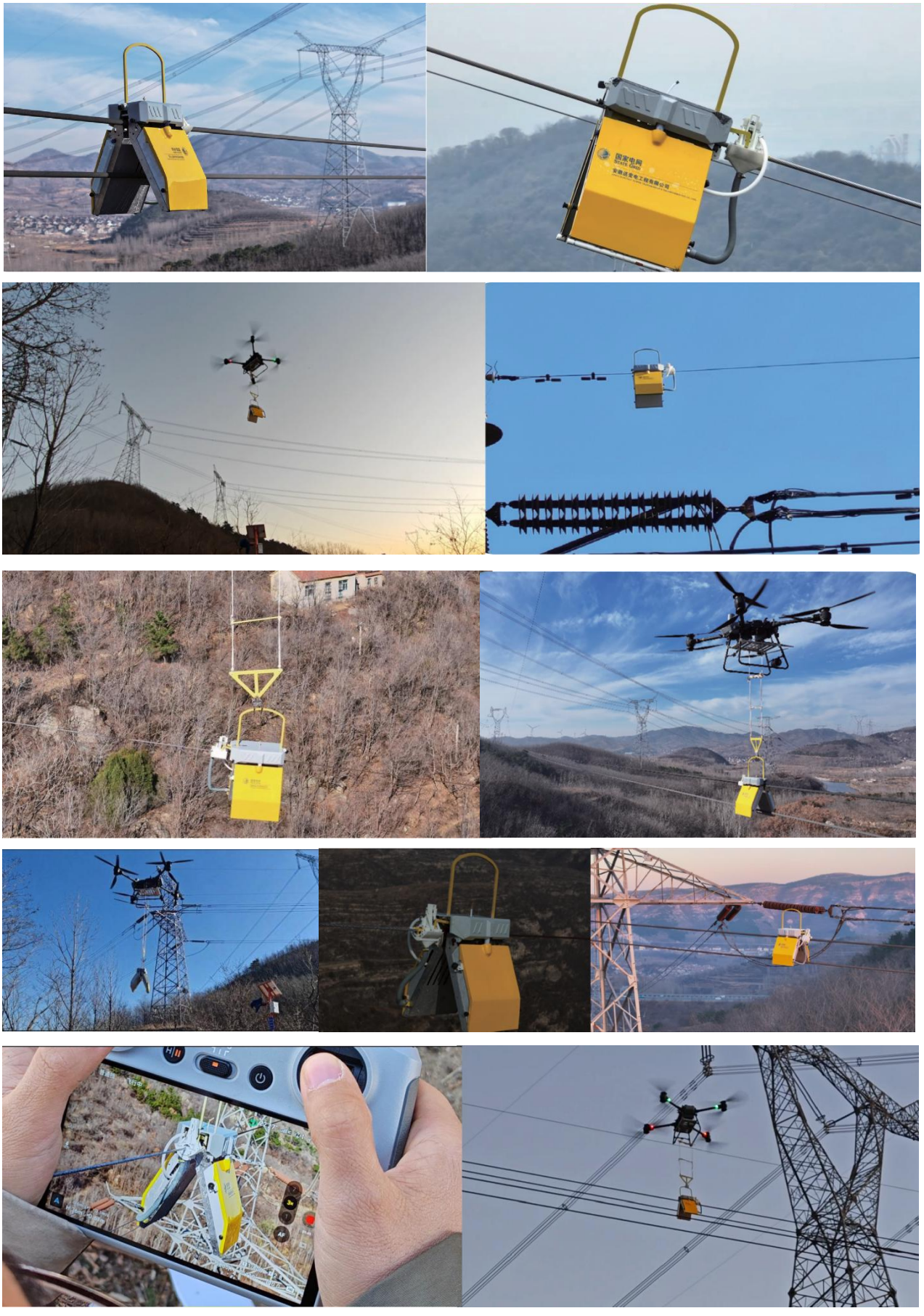
• ISO 16474-3	1 month
• QUV-A（Ultraviolet lamp）60℃	336 hours
• 50℃ water condensation	336 hours


Anti-icing Material Parameter Indicators

Project	Basis	Indicators
Appearance	GB/T 19250-2013	The product is a uniform viscous body free of gel and caking.
Nonvolatile Content	GB/T 1725-2007	≥45%
Drying Time (Surface Drying)	GB/T 1728-2020	≤2h
Drying Time (Practical)	GB/T 1728-2020	≤24h
Pencil Hardness (Abrasion)	GB/T 6739-2022	≤F
Impact Resistance	GB/T 1732-2020	50cm
Adhesion (Pull off Method)	GB/T 5210-2006	≥5MPa
Resistance to liquid media	GB/T 9274-1988	168h without any abnormalities
Alkali	GB/T 9265-2009	168h without any abnormalities
Adhesion	GB/T 9286-2021	≥130mm/s
Water Resistance	GB/T 1733-1993	≤ level 1
Abrasion Performance	GB/T 1768-2006	0-9999MΩ
Contact Angle	GB/T 30447-2013	≥1000r
Self-cleaning Property	GB/T 30191-2013	≥ level 1
Temperature Resistance	GB/T 17748	-60°—120°

Anti-icing Material Inspection Report

Transmission Line Prevent-icing Robot Application Cases



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HED HIGH-END INTELLIGENCE


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Transmission Line De-icing Robot

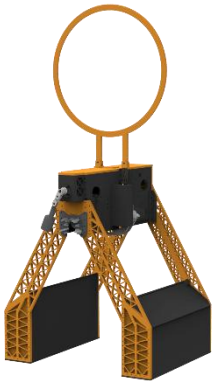
Standard De-Icing Robot

Work Environment	10kV–1000kV live transmission lines
Installation Mode	Drone Hoisting
Work Speed	0-2m/s
Spraying Thickness	≥-40℃
Size	≤75°
Work Methods	Live working | Power outage operation

The standard drone-mounted de-icing robot mainly consists of the robot body and a control terminal. Adopting a wheeled moving mechanism, the robot is equipped with de-icing cutters and ice hammers. It is hoisted onto and off the line by a drone, and capable of mechanical impact de-icing, ice knocking and rolling compaction de-icing, which can live-line remove icicles attached to transmission lines.It supports a single operation duration of 3 to 4 hours. The battery adopts a quick-release structural design for convenient replacement.

Lightweight De-Icing Robot

Work Environment	10kV–1000kV live transmission lines
Installation Mode	Drone Hoisting
Work Speed	0-1.5m/s
Spraying Thickness	≥-40℃
Size	≤75°
Work Methods	Live working | Power outage operation



The lightweight drone-mounted de-icing robot consists mainly of the robot body and a control terminal. Equipped with a wheeled moving mechanism, de-icing cutters and ice striking hammers, the robot is lifted onto and off transmission lines by a drone. It can perform mechanical impact de-icing, ice striking and rolling compaction de-icing to remove icicles on power transmission lines under live-line conditions. The single operating duration lasts 3 to 4 hours. The battery adopts a quick-release structural design, allowing quick and convenient replacement.

Flying De-Icing Robot

Work Environment	10kV–1000kV live transmission lines
Installation Mode	Autonomous flight deployment
Work Speed	0-2m/s
Spraying Thickness	⩾-40℃
Size	⩽75°
Work Methods	Live working | Power outage operation

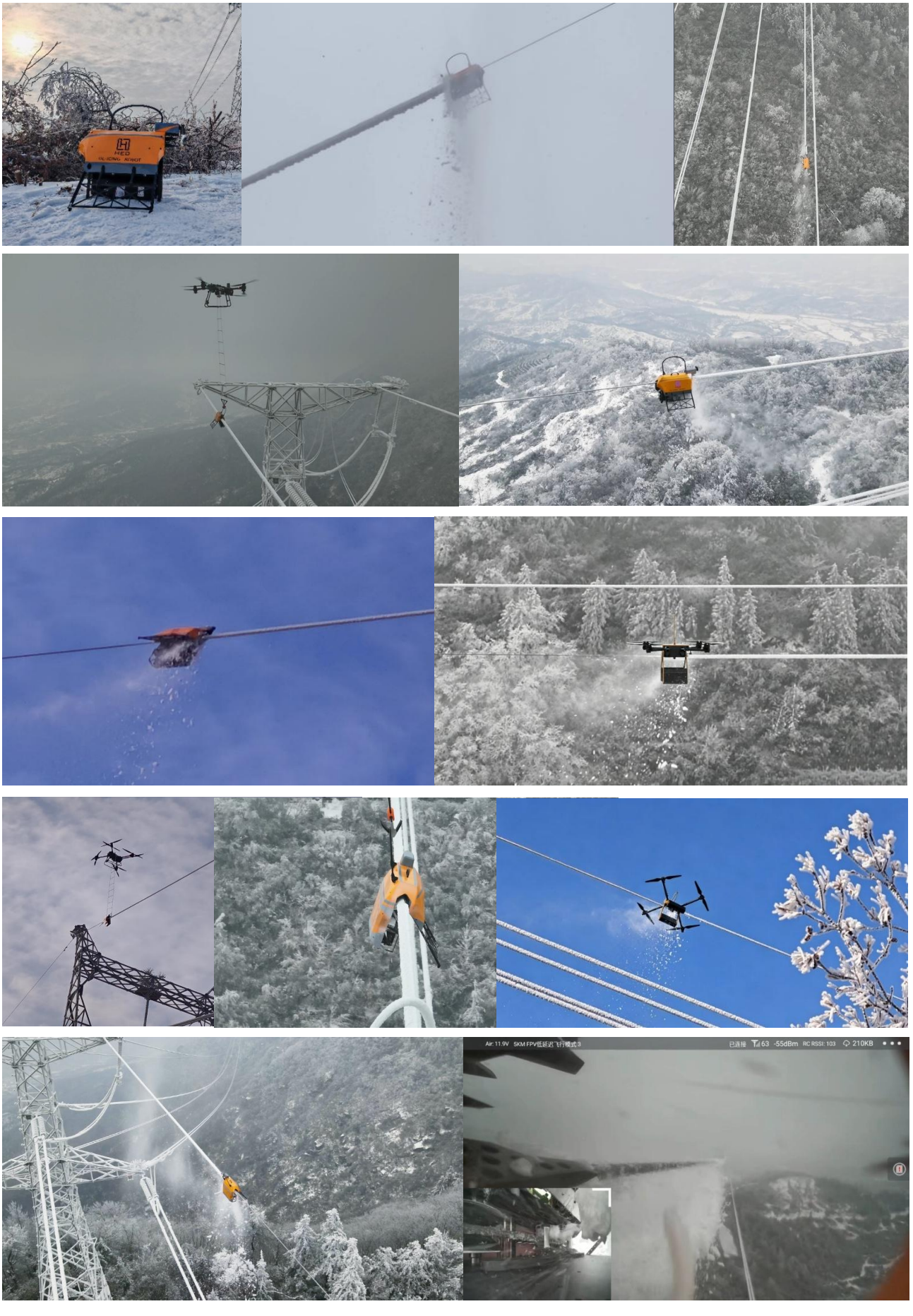
The flying de-icing robot is mainly composed of the robot body and control terminal. Adopting a wheeled moving mechanism and equipped with de-icing cutters and ice hammers, the robot can take off and land on transmission lines by autonomous flight. It is capable of mechanical impact de-icing, ice knocking and rolling compaction de-icing, so as to remove icicles attached to live transmission lines. The single operation duration is about 30 minutes. The battery adopts a quick-release structure design for easy replacement.

▪ Current Icing Condition of Power Transmission Lines

·Technical Indicators

Transmission Line De-Icing Robot Parameters				
Type	DEICE-ROB-01 	DEICE-ROB-02 	DEICE-ROB-03 	DEICE-ROB-04 
Dimension	500*420*500mm（Without de-icing cutters and lifting rings）	480*460*456mm（Without de-icing cutters and lifting rings）	500*420*530mm（Without de-icing cutters and lifting rings）	1450*1450*456mm（Propeller unfolded dimension, excluding lifting rings）
Weight	22kg	16kg	25kg	32kg
De-icing Method	Squeeze De-Icing Impact Cutter De-Icing	Squeeze De-Icing Impact Cutter De-Icing Ice Hammer	Squeeze De-Icing Impact Cutter De-Icing Ice Hammer	Squeeze De-Icing Impact Cutter De-Icing Ice Hammer
De-icing Speed	1.5m/s（5.4km/h）	1.5m/s（5.4km/h）	2m/s（7.2km/h）	2m/s（7.2km/h）
Applicable Conductor Diameter	8mm-30mm（Intelligent Conductor Diameter Adaptation）	8mm-30mm（Intelligent Conductor Diameter Adaptation）	8mm-40mm（Intelligent Conductor Diameter Adaptation）	8mm-40mm（Intelligent Conductor Diameter Adaptation）
Number of Cameras	2 (Front View; Ice Pressing)	2 (Front View; Ice Pressing)	2 (Front View; Ice Pressing)	2 (Front View; Ice Pressing)
Climbing Angle	≤75°	≤55°	≤75°	≤55°
Line Access Method	Drone Hoisting			Autonomous flight deployment
Single Operation Duration	3h (Replaceable & Quick-release Battery）			30min (Replaceable & Quick-release Battery）
Applicable Voltage Level	10kV–1000kV live transmission lines			
Communication Mode	Wireless			
Communication Distance	≥2km (Unobstructed)			
Operating Ambient Temperature	≥-40℃			
Traveling Mechanism	Wheeled Traveling Mechanism			
Video Function	Real-time Display, Recording & Playback of De-Icing Video			
Remarks	The battery supports quick-release replacement, and additional lithium batteries can be equipped.			

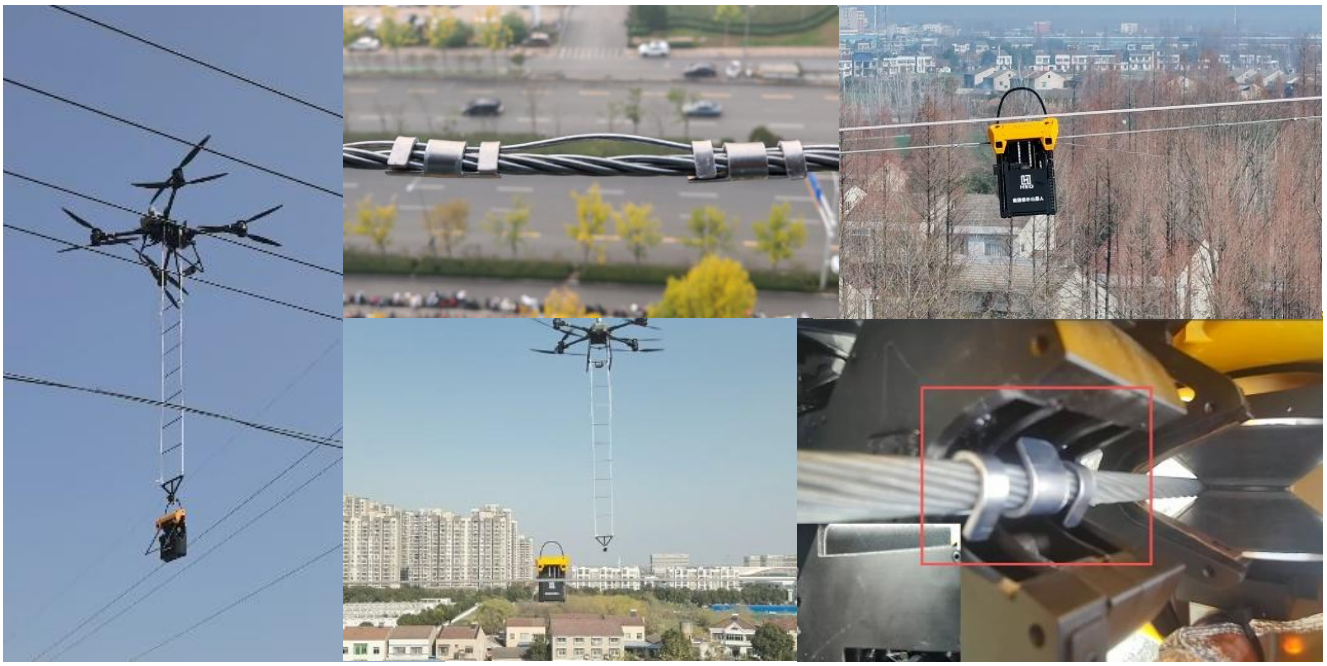
▪ Transmission Line De-icing Robot Application Cases



Transmission Line Broken Strand Repair Robot

Installation method	Drone lifting
Applicable Wire Diameter	7mm-30mm
Voltage Level	10kV-1000kV
Climbing Angle	≤45°
Weight	15kg

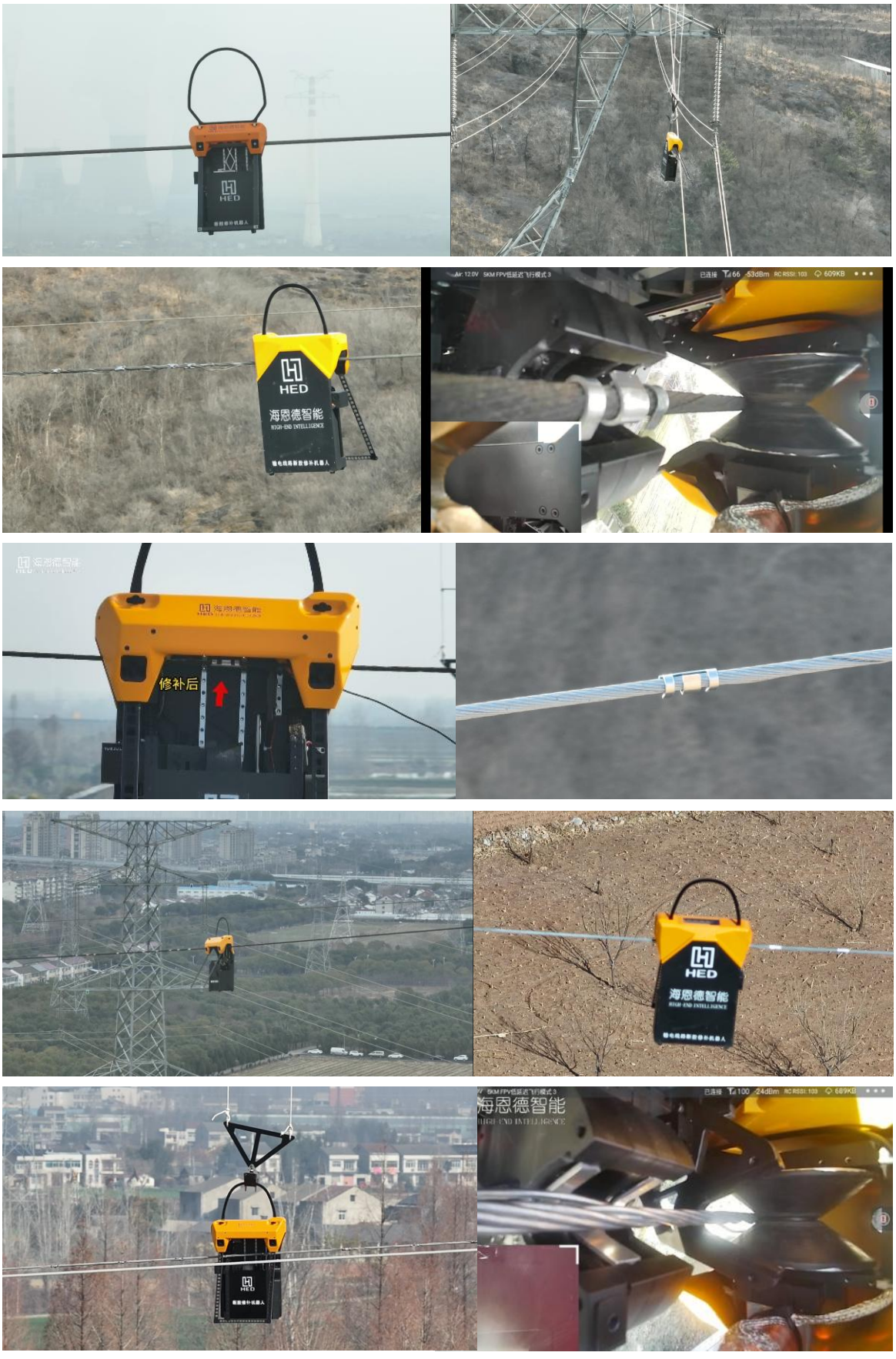
The Broken Strand Repair Robot can be lifted up and down by drones, and the robot completes the task of repairing broken wires in conductors and ground wires by carrying specialized tools for repairing broken wires. Robots have advantages such as large climbing angles, high repair efficiency, and visual operations, which solve the difficulties of equipment up and down, poor environmental adaptability, and low safety faced by the current high-altitude electrified environment for repairing broken transmission lines.



·Technical Indicators

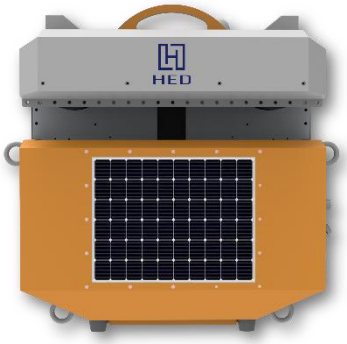
Transmission Line Broken Strand Repair Robot Parameters		
Type	HED-BSRR-01	HED-BSRR-02
Weight	10kg	12kg
Dimension	600mm*420mm*400mm	620mm*430mm*410mm
Applicable Conductor Diameter	**7-19mm**	**7-30mm**
Voltage Level	10kV-1000kV	10kV-1000kV
Traveling Speed	0.5m/s	0.8m/s
Repair Speed	22s per repair point	12s per repair point
Camera	Front-view camera, repair operation camera	Front-view camera, repair operation camera
Resolution	1080P	4K
Communication Mode	Wireless	Wireless
Remote Control Distance	4km	6km
Climbing Angle	≤45°	≤45°
Line Access Method	Drone lifting	Drone lifting
Operating Environment	Live working | Power outage operation	Live working | Power outage operation

- Transmission Line De-icing Robot Application Cases



Overhead Transmission Line Net Sealing Robot

Maximum Traction Force	900N
Applicable Wire Diameter	7mm-40mm
Walking Speed	0-12m/min
Climbing Angle	≤60°
Weight	15kg

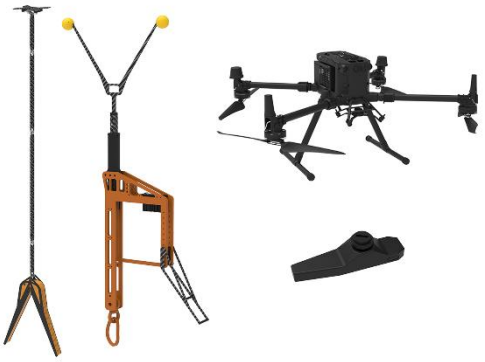


The Overhead Transmission Line Net Sealing Robot is mainly composed of a robot body and the robot remote control. The robot adopts a wheeled mobile mechanism and can work collaboratively with multiple machines. A group of 4 robots travel along 2 lines to pull and erect a power construction protection net. After the robot reaches the designated location, the safety net will be deployed. The robot is fixed and locked at a precise position. Complete the erection of protective net.

UAV Carrying Tower Climbing Fall-Protection Device

The DJI Intelligent Control Version

The DJI Intelligent Control Tower Climbing Fall Protection Device consists of a gimbal camera, a connector and an anti-fall hook. The gimbal camera can be connected to the transmission link of DJI drones to conduct real-time monitoring of the mounting and dismounting of the fall protection device. The connector can identify the anti-fall hook, and the internal lock pin closes automatically to realize automatic mounting and dismounting, featuring convenient and efficient operation.



Type	DJI AI Automatic Mounting & Dismounting Version	DJI Intelligent Control Version
Drawing		
Supporting Materials	1. Flexible Mount (Figure-eight Fork) 2. V-type Hanging Point Device 3. Protective Case **4. Gimbal Camera 3.0** 5. Safety Lanyard 6. Fall Arrester & D-shackle	1. Flexible Mount (Figure-eight Fork) 2. V-type Hanging Point Device 3. Protective Case 4. Gimbal Camera 2.0 5. Safety Lanyard 6. Fall Arrester & D-shackle
Parameters	1. Mounting & dismounting method: Adopt figure-eight connector and V-shaped guide fork for connection, allowing a drone drift error of 0.18 m; 2. Bearing capacity of anti-fall hook: 30 kN; 3. Camera resolution: 1080P; 4. Transmission distance: 7 km line-of-sight over the ground; 5. Status feedback: Real-time feedback of lock pin state; 6. Semi-automatic mounting & dismounting: Automatic detection supported, with automatic lock pin closing. 7. **Full-automatic mounting and dismounting:** The drone realizes AI autonomous identification of angle steel, independently plans flight routes and adjusts flight attitudes. The anti-fall device can be automatically mounted and dismounted without manual intervention. 8. It supports the drone to **automatically** retrieve the flexible anti-fall device.	1. Mounting & dismounting method: Adopt figure-eight connector and V-shaped guide fork for connection, allowing a drone drift error of 0.18 m; 2. Bearing capacity of anti-fall hook: 30 kN; 3. Camera resolution: 1080P; 4. Transmission distance: 7 km line-of-sight over the ground; 5. Status feedback: Real-time feedback of lock pin state; 6. Semi-automatic mounting & dismounting: Automatic detection supported, with automatic lock pin closing.
Applicable Size	Suitable for angle steel with cross arm size of 40-150mm (custom sizes available free of charge)	

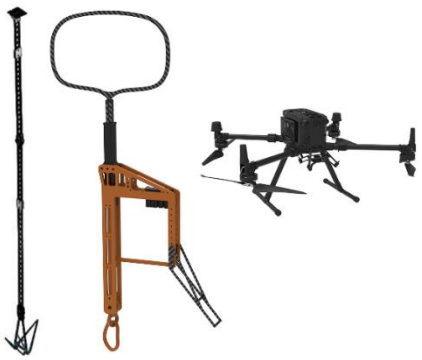
Intelligent Version

The intelligent power tower climbing fall protection device consists of an anti-fall hook, a connector and a ground monitoring system. In operation, the connector is mounted under the drone, which carries the anti-fall hook and installs it on the tower cross arm. The whole installation process is visualized, effectively reducing operation difficulty. During tower climbing, the operator's self-locking device slides along the safety lanyard at all times, achieving the purpose of fall protection.

Type	Intelligent Version
Drawing	
Supporting Materials	1. Flexible Mounting Device 2. Hanging Point Device 3. Protective Box 4. Ground Terminal Remote Control 5. Safety Protection Rope 6. Fall Arrester & D-Shackle
Parameters	1. Mounting & dismounting method: Figure-eight connector connects with V-shaped guide fork, allowing a drone drift error of 18cm; 2. The mount is equipped with two cameras; 3. Bearing capacity of anti-fall hook: 30KN; 4. Camera resolution: 720P; 5. Transmission distance: 1.3km line-of-sight over the ground; 6. Battery life: 3 hours.
Applicable Size	Suitable for 40–150mm angle steel of cross arm (custom sizes provided free of charge)

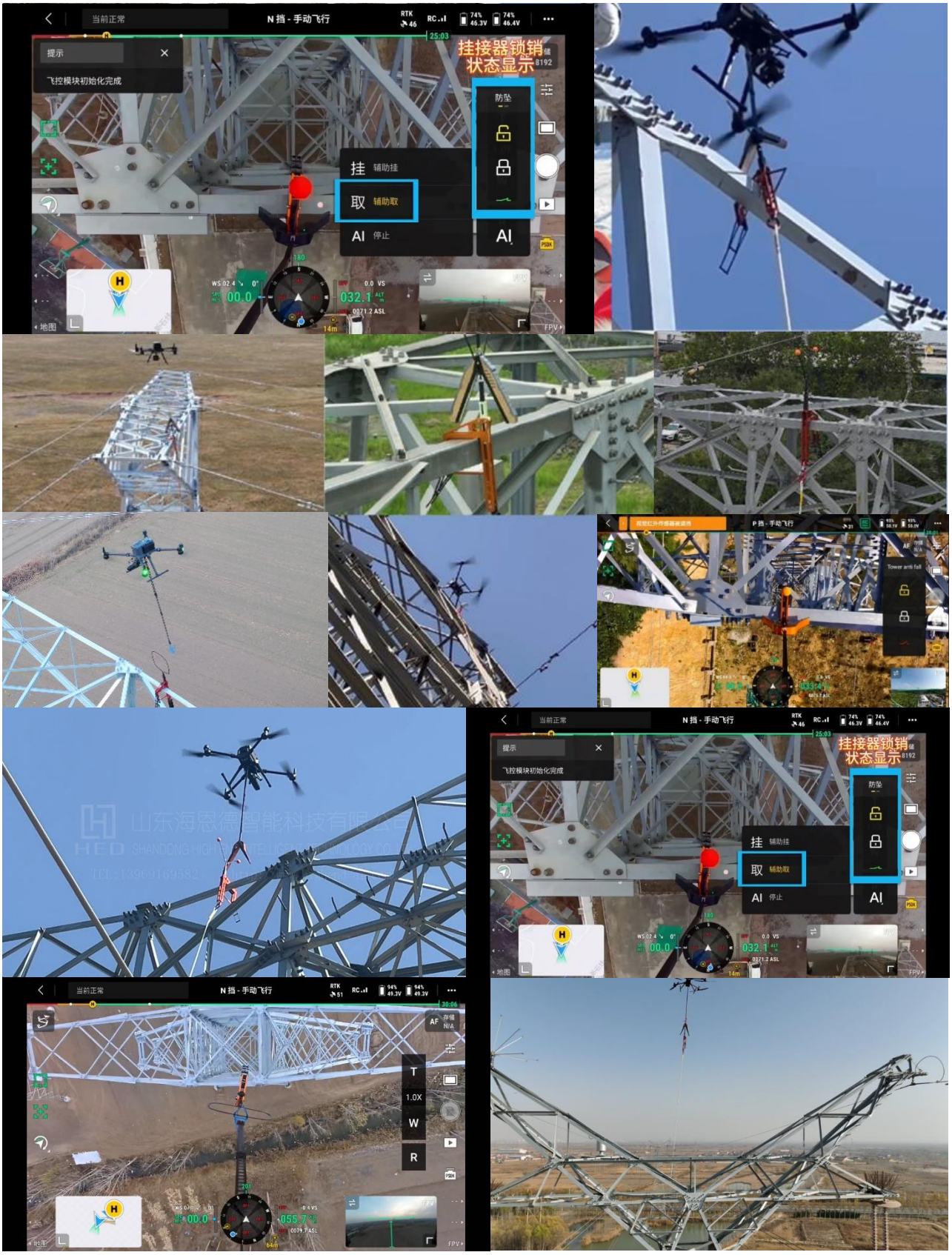
Simplified Version

The simplified power tower climbing fall protection device is composed of an elliptical fall protection hanging ring and a quick mounting and dismounting device.The whole set of device only requires one drone and one drone operator for operation. The operator simply controls the attitude of the quick mounting and dismounting device to dock with the elliptical fall protection hook, so as to complete the mounting and dismounting of the fall protection device.



Type	Gimbal Version	Upgraded Simplified Version	Mechanical Version
Drawing			
Supporting Materials	1. Flexible Mounting Device 2. Hanging Point Device (Circular Ring) 3. Safety Lanyard 4. Protective Case 5. Fall Arrester & D-Shackle 6. Gimbal Camera 1.0	1. Flexible Mounting Device 2. Hanging Point Device (Circular Ring) 3. Safety Lanyard 4. Protective Case 5. Fall Arrester & D-Shackle 6. Visual Camera 7. Mini FPV Monitor	1. Flexible Mounting Device 2. Hanging Point Device (Circular Ring) 3. Safety Lanyard 4. Protective Case 5. Fall Arrester & D-Shackle
Parameters	1. Mounting and dismounting method: Hook type 2. Bearing capacity of anti-fall hook: 30 kN 3. Camera resolution: 720P 4. Transmission distance: 1.3 km line-of-sight over ground 5. The gimbal camera is compatible with DJI drones and can transmit video to the DJI remote controller	1. Mounting & dismounting method: Hook type 2. Bearing capacity of anti-fall hook: 30 kN 3. Camera resolution: 720P 4. Transmission distance: 1.3 km ground line-of-sight 5. Battery endurance: 1.5 hours 6. Equipped with an independent auxiliary mounting/dismounting camera and a visual FPV display screen	1. Mounting & dismounting method: Hook type 2. Bearing capacity of anti-fall hook: 30 kN
Applicable Size	Suitable for cross arm angle steel of 50-135mm in size		

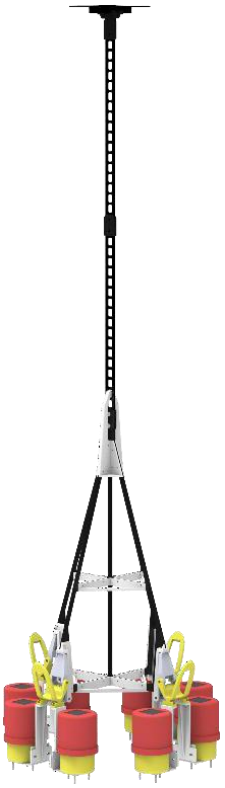
- UAV Carrying Tower Climbing Fall-Protection Device Application Cases



UAV-Mounted Transmission Line Warning Device Installation Carrier

When using it, connect the dedicated installation tool and warning light to the bottom of the drone, control the drone to fly to the line to find a suitable installation position, lift it up, and the dedicated fixture on the warning light touches the line and closes. The warning light is then firmly hung on the line, and the drone returns to the ground with the installation tool. The installation of the warning light is completed.

It has a wide range of applications and can replace the warning lights below with other line warning devices. When used, it is not limited by terrain and environment, making it safer and more efficient compared to traditional installation methods. It reduces the labor intensity and installation risks of operators, greatly improves work efficiency, and has received widespread praise.



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