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WK-AC100 PRO Fixed UAV automatic Airport Fully automatic flight of enabled UAV

— WALKERA industry applied UAV Flight System —



Industry application UAV

Need 2-3 person team to complete patrol inspection by traditional manual control .

Industry pain points

- **High cost of traditional inspection**

High labor cost of flying hand
Large expenditure
Complex environment



- **Difficult for personal operation**

Manual flight operation is difficult
Unable to control accurately and synchronously
High risk of liability



- **Poor timeliness**

UAV can't respond immediately
Unable to cope with emergencies



- **Single data management**

Unable to realize the value of data



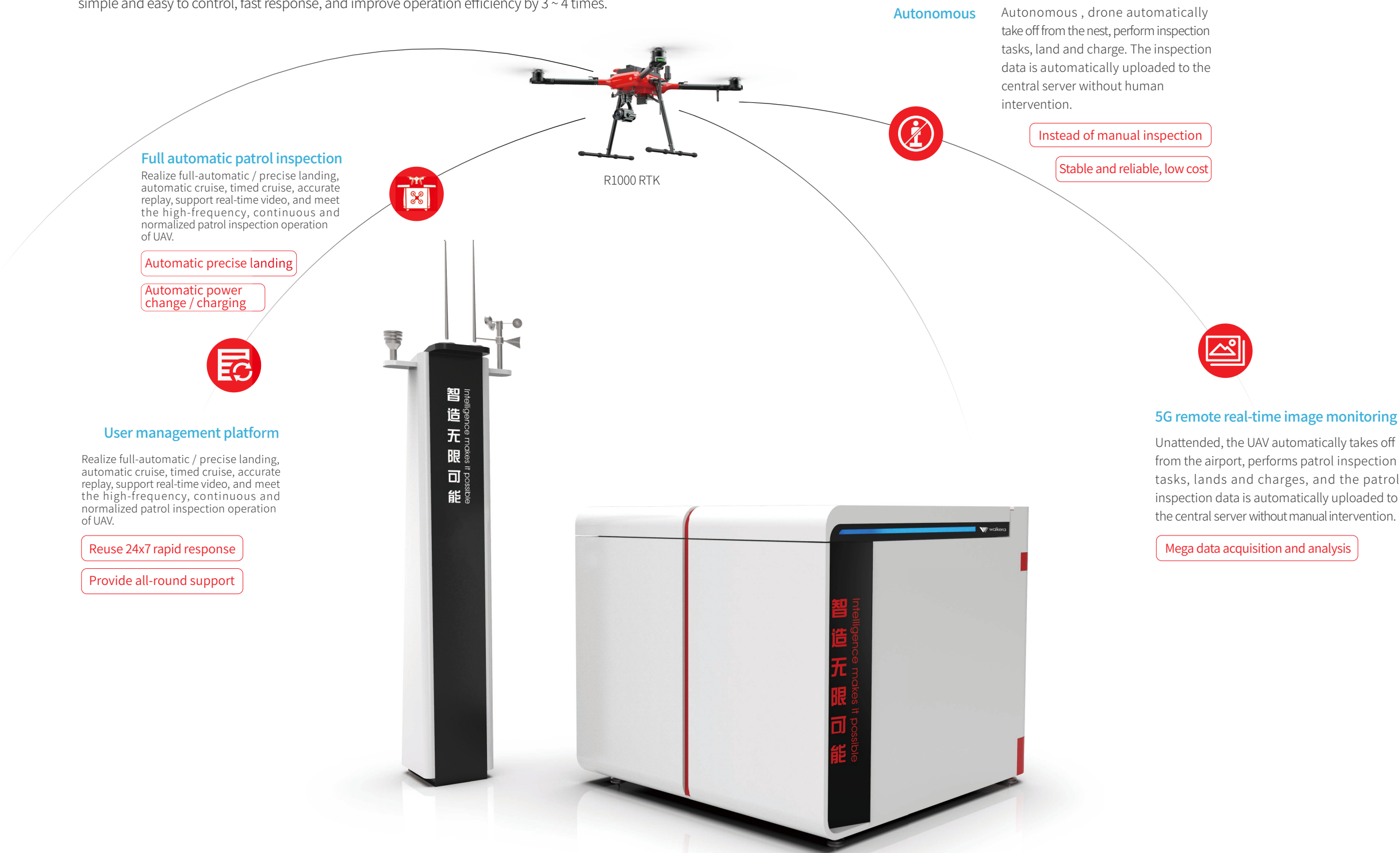
Industry application UAV

The operation mode of traditional manual control is limited by labor cost, flying hand and control skills, environmental scope, workload safety factors greatly restrict the rapid development of industrial UAV in the field of patrol inspection.

Industry application UAV

Fixed UAV automatic airport system platform

WALKERA fixed UAV fully automatic airport can realize fully automatic unattended, autonomous power exchange, remote monitoring and fully autonomous flight operation. Save labor cost, simple and easy to control, fast response, and improve operation efficiency by 3 ~ 4 times.



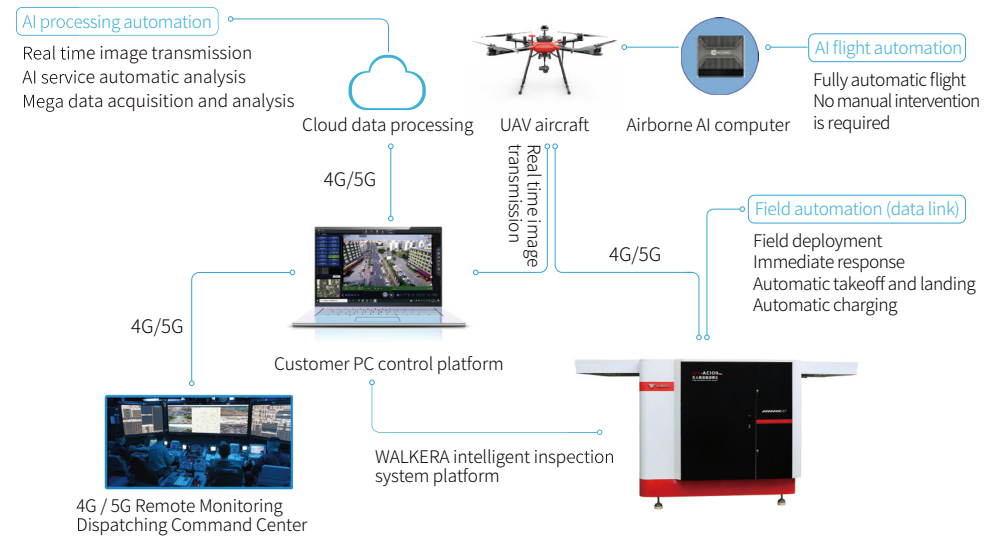


WK-AC100 PRO

Fixed UAV automatic Airport

WALKERA R1000 series high performance UAV
Realize fully automatic flight, precise take-off and landing,
remote control and automatic cruise

It is specially developed for patrol inspection applications such as police reconnaissance, power grid and river. Through 5G remote background control system and on-board monitoring platform, it can fully automatically realize the accurate take-off and landing, charging and power exchange and continuous patrol inspection of UAV during operation without manual control and intervention.



10 KM

Long voyage

The coverage radius is 10km but the size is only 2040x1850x1550mm



Automatic charge / change

The power change time is less than 2 minutes and the operation interval is less than 4 minutes to realize uninterrupted operation, automatic sleep and wake-up of UAV



24H

7x24 hours, all-weather unattended, supporting accurate landing at night and rapid response to tasks



Meteorological perception

The weather station can measure wind speed, wind direction, rainfall, temperature, humidity and air pressure



Intelligent temperature control

The integrated temperature control system of the whole machine has built-in dehumidification, cooling and heating constant temperature. Working environment temperature: -25 °C ~ 80 °C



Standard of protection

The whole machine has IP54 protection standard and waterproof and rainproof design to ensure the safe operation of electrical equipment in rainy days and adapt to complex working environment



5G remote control

Ensure real-time communication, monitoring and dispatching of remote command center; The data will be automatically uploaded to the cloud through 5G network server and command center



Multi airport cooperative operation

Support multi airport net working, communication relay and multi machine cooperative patrol operation.

Ground station control system

The user can log in and control the equipment at any time, and execute sudden complex flight commands through the ground station. The platform can formulate patrol missions for different application scenarios, realize different flight modes and acquisition modes, assign tasks through the control system and obtain real-time video data.



- Remote real-time control

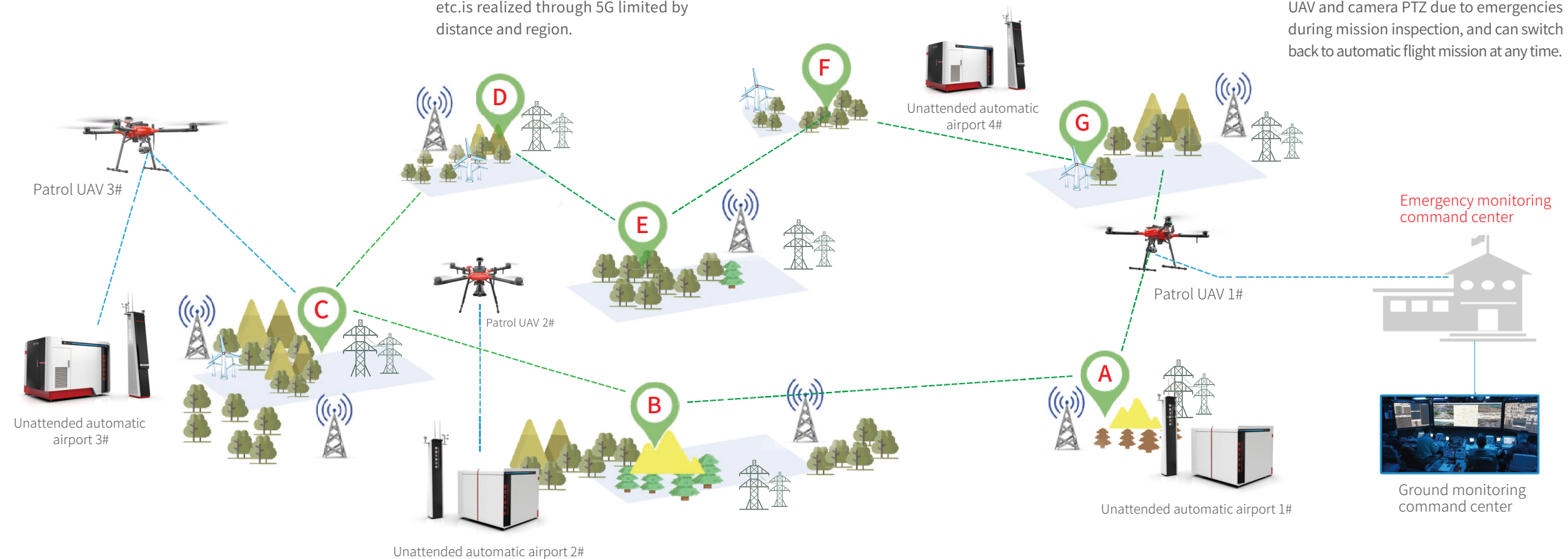
Remote real-time control of automatic change / charging, UAV take-off and landing, flight trajectory, PTZ angle, etc. is realized through 5G limited by distance and region.

- Diversified task setting

Multi task complex scene setting, which can set flight patrol information such as track, waypoint, angle and patrol target.

- Automatic / manual switching

The UAV control mode is equipped with one button switching function, which can temporarily switch the manual control of UAV and camera PTZ due to emergencies during mission inspection, and can switch back to automatic flight mission at any time.



R1000 RTK

New modular quick release structure and four axis folding machine arm design; It supports the mutual backup of dual magnetic compasses to ensure flight safety. GNSS + grid RTK dual redundant system brings centimeter level positioning accuracy and supports omni-directional obstacle avoidance, making operation safer a step. R1000 RTK has a long endurance flight time of 54 minutes and a maximum load of 8KG.



Patrol scene - Full automatic flight

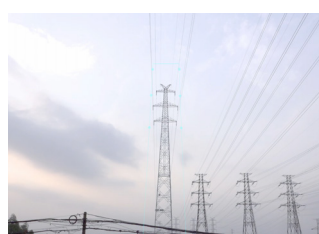
The fixed automatic airport provides a fully automatic flight scheme for UAV industry applications to realize unattended inspection in the inspection area without manual intervention and intelligent AI defect detection and identification.

1. Location data acquisition



RTK centimeter positioning
Automatically plan tasks with data

2. Route planning



On site real-time calculation
Patrol line

3. UAV flight operation



Automatically adjust the best route
Shooting defect target

4. Patrol shooting

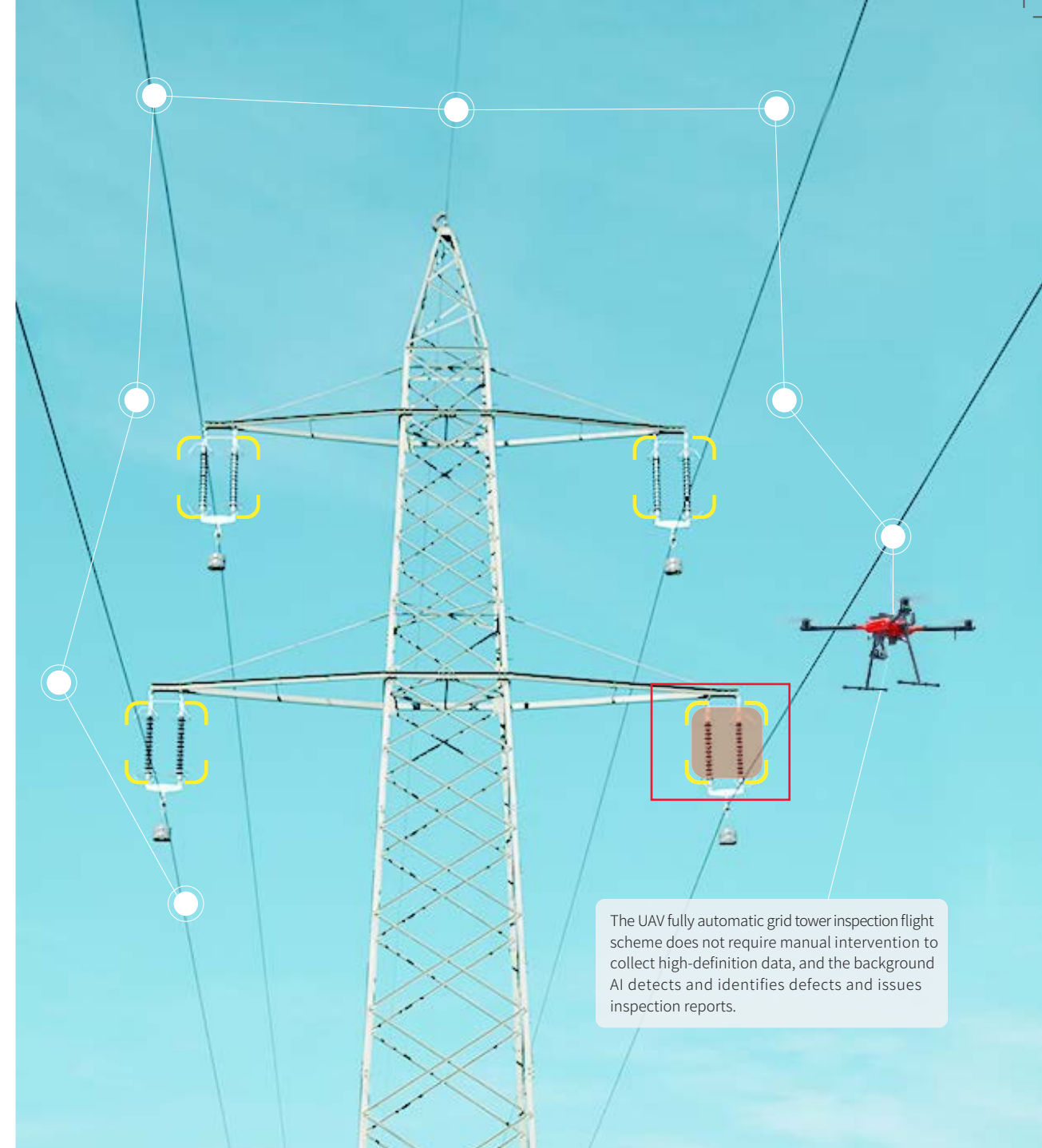


High quality, high efficiency
Multi-target intelligent continuous
photography

5. Data processing



Convenient
Issue patrol inspection report



Automatic path planning

The UAV can realize independent fine patrol inspection, carry out centimeter level high-precision hovering shooting on the designated line, and provide high imaging quality and automatically maintain the safe distance between the UAV and the target.

5G remote control

Uav can realize autonomous fine inspection, to perform centimeter-high precision on the specified line Degree hover shooting, providing high image quality, The inspection picture and automatically maintain no one, The safe distance between the aircraft and the target.

Based on power industry enabling services

It has a general SDK interface to transform the intention of the power industry into a scenario solution for the power industry and deploy it at the equipment layer implementation.

Full automatic fine inspection of power grid UAV



Water conservancy UAV automatic River patrol



Realize unattended and off line task planning, Remote fine high frequency normal automatic operation.

Reduce the pressure on power inspection personnel and cost improve the efficiency and accuracy of UAV patrol inspection.

Value of the solution

- It greatly reduces the labor intensity of power grid patrol operators and reduces the operation cost;
- No professional UAV flight control personnel are required; The system can independently carry out transmission line inspection without UAV inspection experience;
- The efficiency and refinement of full-automatic patrol inspection are at least three times higher than that of UAV manual patrol inspection;
- The AI image recognition algorithm is used to accurately identify the target defects, collect the image information of the inspection target, send it back to the cloud through 5g network, automatically analyze and detect the defects, and issue the inspection report;
- Automatic charging and power change to meet the high-frequency, continuous and normalized patrol inspection of UAV.

Equipment:

Wk-AC100 Pro fixed automatic airport + r1000 UAV (equipped with 30x dual light camera)



Fully autonomous patrol inspection

The fixed UAV automatic airport is deployed near the power grid. The full-automatic airport UAV carries out power inspection, and the operation efficiency and inspection refinement are more than 3 times higher than that of UAV manual inspection.



Autonomous route planning

Select patrol inspection areas, independently plan flight routes, freely set patrol inspection tasks, and greatly increase patrol inspection frequency Preset waypoint action and planned path.



Automatic charge / change

Perform automatic return and precise landing after completing the task, and the mechanical arm automatically changes power for 2 minutes to support continuous flight at breakpoints. Automatically sleep and wake up the UAV to realize unattended operation.



AI defect identification and accurate remake

The UAV can accurately record the operation waypoint, monitor and record the position of safety defects in real time, and lock target, conduct secondary multi angle accurate shooting.

Application industry solutions Water conservancy UAV automatic River patrol, Realize unattended and offline task planning, Long range normal high frequency automatic patrol operation.

Completely replace the traditional people and reduce the cost of river patrol inspection Cost, greatly improving the efficiency of automatic patrol inspection, Empowering intelligent water conservancy.

Value of the solution

- Automatic operation of UAV, no human intervention at the river patrol site, reducing manual cost;
- Deploy on the operation site, conduct efficient patrol inspection and improve the efficiency of patrol inspection;
- High altitude perspective, not limited by geographical environment, comprehensively collect river information, understand the overall situation of the river, remotely lock abnormal conditions, control UAV to approach, check and obtain evidence;
- Collect the image information data of patrol inspection target, record and store the floating object picture of each river patrol inspection, and send it back to the cloud through 5G network for archiving, playback and viewing.

Equipment:

Wk-AC100 Pro fixed automatic airport +R1000 UAV (30x 4K optical zoom camera)



Fully autonomous patrol inspection

The fixed UAV automatic airport is deployed in the open areas of rivers and reservoirs to realize the automatic takeoff of UAVs perform automatic return and accurate landing after completing the task. Automatic charging to realize unattended operation.



Autonomous route planning

Select patrol inspection areas, independently plan flight routes, freely set patrol inspection tasks, and greatly increase patrol inspection frequency preset waypoint action and planned path.



AI intelligent recognition

For ships and people with potential safety hazards, automatically identify and move tracking targets, monitor and record their positions in real time, Lock the target and take multi angle photos to obtain evidence; Automatically upload user management platform.



Accurate repeat

UAV can accurately record River operation waypoints and automatically identify and control ships and people with potential safety hazards monitor and record the position in real time, lock the target, and conduct secondary multi angle accurate shooting.

Fully automatic Airport



UAV automatic Airport

Total weight: less than 800kg
Total power: 500W (average)
Power input: single phase 220VAC 50Hz 13A
Size of shutdown platform: 1400x1400mm
Equipment size: LxWxH = 2040x1850x1550mm
Warehouse opening time: ≤ 150s (including battery loading time)
Warehousing and closing time: ≤ 120s (including charging time)
Waterproof performance: IP54
Dustproof performance: Class III dustproof
UPS power on time: equipment standby for 3-6 hours
UAV batteries: 4 sets of UAV batteries
UAV working hours: continuous and uninterrupted flight (weather permitting)
Operating temperature: - 25 °C ~ 80 °C
UAV power supply: automatic UAV charging / power change
Temperature monitoring: wind speed, wind direction, rainfall, temperature, humidity and air pressure
Anti theft reminder: UPS uninterrupted, internal and external 24H video
Working mode: manual operation / unattended



Smart Airport Weather Station

Rain and snow sensing: Sensing time :3 seconds	Temperature: Temperature range - 40 ~ 60 degrees Accuracy ± 0.2 °C
Wind direction detection: Range:0-359 degrees Accuracy: ± 3 degrees Resolution: 1 degree Starting wind force: 0.2 ~ 0.4m/s Operating temperature: 0 ~ 100% RH Working humidity:- 40 ~ 80 °C	Humidity: Humidity range: 0 ~ 100% RH Accuracy ± 3%
Wind speed detection: Range: 0 ~ 32.4m/s Accuracy :± 0.02v + 0.3 Resolution: 0.1m/s Starting wind force:0.2 ~ 0.4m/s Operating temperature: 0 ~ 100% RH Working humidity:- 40 ~ 80 °C	Air pressure: Air pressure range 100hp-1100hP Accuracy 0.1% (full scale)
	Illuminance: Illuminance range 200klx automatic range conversion Accuracy ± 5%

Aircraft parameters



Aerocraft

Symmetrical motor wheelbase: 1047mm
Body size: unfolded: 1140mm x1140mm x531mm
Folding: 514 mm x439 mm x469mm
(folding machine arm, blade, obstacle avoidance platform)
Motor: Kv value: 180rpm / V
Electric regulation: continuous current: 80A (good heat dissipation conditions)
Blade specification: diameter * pitch: 24x7.9 inch
Normal takeoff weight: 7.8 kg (including battery)
Maximum takeoff weight: 15.8 kg (near sea level)
Maximum rising speed: 5 m / S
Maximum descent speed: 3 M / S
Maximum horizontal flight speed: GPS mode: 5m / S (windless environment)
Cruise mode: 3-20m / s adjustable (windless environment)
Attitude mode: 25m / S (windless environment)
Maximum tiltable angle: positioning mode: 40 ° cruise mode: 40 °
attitude mode: 40 °
Maximum rotation angular velocity: 100 ° / S
Maximum allowable wind speed: 17m / S
Maximum flight time: 54 minutes (no-load)
Maximum flight altitude: 5000m
Recommended working ambient temperature: 0 °C to + 40 °C
Hover accuracy: enable RTK: vertical: ± 10cm horizontal: ± 5cm
RTK not enabled: vertical: ± 0.5 m horizontal: ± 0.1 M

Network RTK

Frequency band used: GPS: L1 / L2 / L5 GLONASS: F1 / F2
BeiDou: B1/B2/B3 Galileo:E1/E5
Orientation accuracy: 0.2 degrees / 1m baseline
Level: 1cm + 1ppm
Positioning accuracy: vertical: 2cm + 1ppm
1ppm: the accuracy becomes 1mm for every 1km increase.
Location update rate: 1Hz, 2Hz, 5Hz, 10Hz and 20Hz
Cold start: < 45s
Hot start: < 10s
Recapture: < 1s
Initialization reliability: > 99.9%
Differential data transmission format: RTCM 2. X / 3. X
Data link: 4G
Communication distance: unlimited distance
(with 4G network signal)
Working environment temperature: 0 °C to 45 °C

Heading following two axis PTZ Lidar obstacle avoidance system

Obstacle perception range:
0.5m- 40m@90 %Reflectivity (100klux)
0.5m-13. 5m@10 %Reflectivity (100klux)
FOV: horizontal 3 °
Measurement frequency: 50Hz
Horizontal rotation range: 360 °
Pitch rotation range: ± 90 °
Measuring distance: ≤ 40 m

Payloads



30x 4K Optical zoom camera



30x Dual light camera



30x Fill camera



Pager



Thrower



Searchlight