Operation Efficiency Estimate for Cleaning a 2MW Solar Power Station with One DJI T100S

I.Basic Parameters

1. Solar panel area: The total solar panel area of a 2MW solar power station is 9,000 ㎡
2. Cleaning equipment: DJI T100S, with an 85L water tank.
3. Operation standard: Each full tank supports 4 minutes of aerial spraying and can clean 140 m².
4. Total number of water tanks required: 9,000 ÷ 140 ≈ 65 tanks.
5. Water consumption calculation:
   Total water consumption: 65 × 85 = 5,525L.
   Average water consumption per unit area: 5,525 ÷ 9,000 ≈ 0.614L/m².

II. Standard Two-Person High-Efficiency Operation Plan

Required supporting setup to ensure completion within 8–9 hours:

1. Personnel: A 2-person team, including 1 professional pilot and 1 dedicated ground operator. Water refilling and battery replacement are carried out simultaneously.
2. Water supply conditions: A water supply truck or storage tank is positioned near the takeoff and landing point, with no need for long-distance hose-based water delivery.
3. Battery configuration: 6 fully charged battery sets are prepared. Batteries can be quickly replaced after landing, with no need to wait for on-site charging.
4. Rest arrangement: The 2 operators take turns resting while the drone continues operating. Only 1 short 15-minute break is arranged during the whole day.

Time loss standard per tank:

1. Fast water refilling by dedicated personnel: 2 minutes per tank.

2. Sufficient battery supply with quick replacement: 4 minutes per battery change.

Operation duration range:

For a continuous and well-organized site with an ideal water supply location, the cleaning operation can be completed in about 8 hours.

If the solar panel area is more scattered and the water supply equipment needs to be moved slightly, the total operation time will not exceed 9 hours, making it suitable for normal daytime work schedules.

III. Key Data Summary

1. A complete cleaning operation for a 2MW solar power station requires a total water consumption of 5,525L.
2. The average water consumption on the panel surface is 0.614L/m².
3. With a standard two-person operation setup, the cleaning time for a 2MW solar power station can be consistently controlled within 8–9 hours.