

Monthly Report - October 2026

10 kWp hybrid solar + battery system at an ecolodge, Chiang Mai

Monitoring data June 2024 - 24 October 2026 (DeyeCloud) | 10 kWp panels, 10 kW single-phase hybrid inverter, about 16.9 kWh lithium battery, zero export (no sale to PEA) | Prepared by Solar ESS, 24 Oct 2026

81% of the lodge's electricity comes from solar	434 kWh per kWp in 2025 (typical 1,350-1,450)	~1/3 of the array's potential is actually used	0 active faults; hardware online
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Summary

The system is healthy and does its main job: the lodge has been about **81% solar-powered** for almost two years, with no faults on the inverter, battery or monitoring. But the panels produce only about **one third of what a 10 kWp array in Chiang Mai can deliver**. This is not a panel or inverter defect. In zero-export mode the inverter may only produce what the lodge uses at that moment plus what the battery can take. The battery is full by about noon every sunny day, and from then until sunset the panels are throttled almost to zero. At night the battery stops at 40% charge, so the grid supplies the lodge while 40% of the battery sits unused.

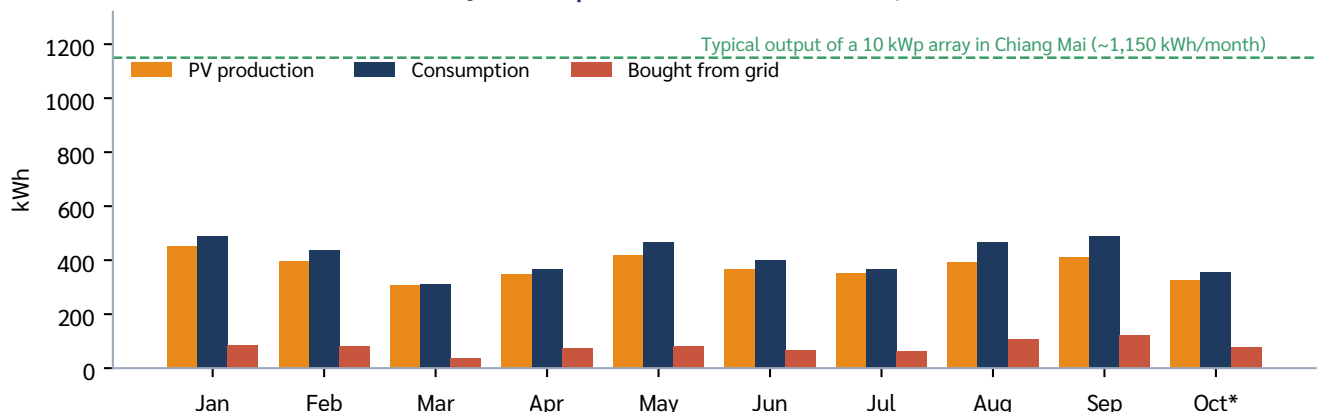
Three free remote setting changes (see Advice below) use more of the battery and stop buying grid energy to charge it. More storage is the long-term fix for the wasted afternoon sun.

Key figures

Year	PV production	Consumption	Bought from grid	Solar share	Specific yield
2024 (from June)	3,429 kWh	3,803 kWh	647 kWh	83%	-
2025 (full year)	4,339 kWh	4,507 kWh	878 kWh	81%	434 kWh/kWp
2026 (to 24 Oct)	3,767 kWh	4,138 kWh	795 kWh	81%	~455 kWh/kWp (annualised)
Benchmark	13,500-14,500 kWh				1,350-1,450 kWh/kWp

Solar share = (consumption - grid purchase) / consumption. The benchmark is a typical value for an unshaded, unrestricted 10 kWp array in northern Thailand, not a site-specific simulation.

2026 by month: production follows the load, not the sun





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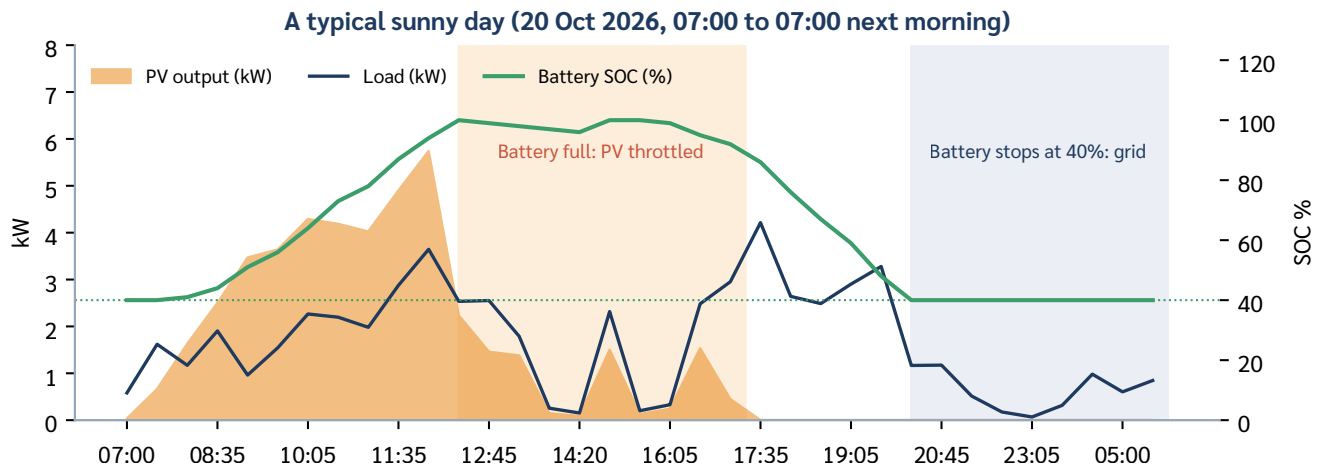
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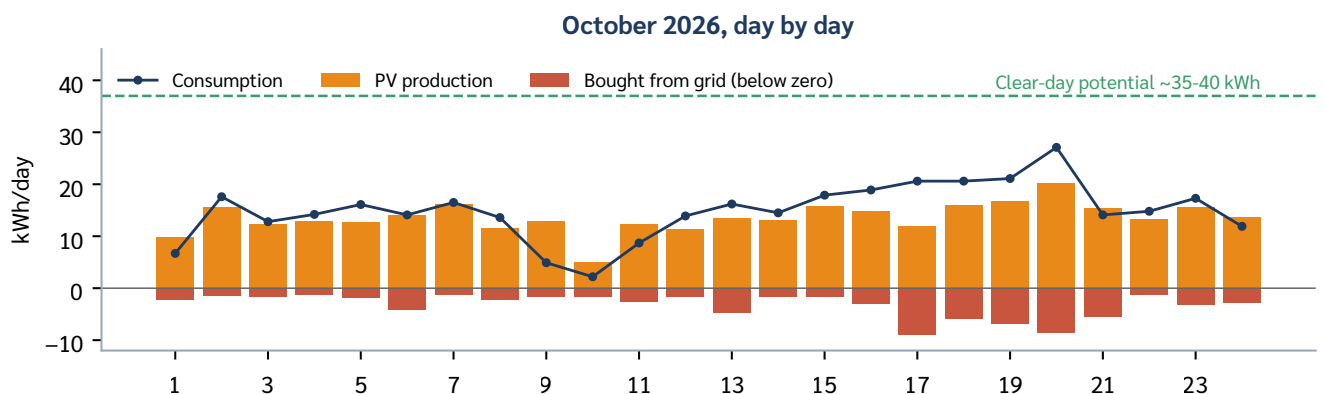
Monthly production stays at 300-450 kWh in every season, even in the sunniest months (Feb-Apr). An unrestricted array would swing with the weather; a flat line that tracks consumption is the fingerprint of an output limit, not of weak panels.

What happens during a day



#	Finding	Evidence (5-minute data, 20 and 24 Oct)	Effect
1	PV limited all morning	PV only 2.5-4 kW on clear mornings; battery charging capped at about 2.0-2.3 kW (40 A setting)	Morning output well below what the array can give
2	Panels almost off after ~12:15	Battery reaches 100% between 12:00 and 12:20 every sunny day; PV then drops to 0.1-0.3 kW until sunset	Est. 15-25 kWh of solar per sunny day never produced
3	Battery stops at 40%	Discharges 17:00-20:00 at 2-4 kW, then holds at 40% all night; grid supplies 0.3-1.2 kW until morning	40% of the battery never used; ~6-8 kWh bought each night
4	Battery charged from grid	Time-of-use slots have grid charging on; e.g. 09:20 on 20 Oct the battery charged at 2.1 kW while 2 kW was imported	Grid energy bought to fill a battery the sun would fill anyway

October in detail



October averages 13.6 kWh/day of production against a clear-day potential of 35-40 kWh. Grid purchases jump on high-load days (17-21 Oct, 5-9 kWh/day) because the battery is already at its 40% floor when the extra load arrives. Purchases also rose through the year: 108 kWh in August and 122 kWh in September, against 65 kWh in June, as consumption grew.



Battery: about 9 kWh charged and 8.3 kWh discharged per day (about 0.5 cycles), matching the 100% to 40% window it is allowed to use. Healthy, but underused.

Advice: adjusting the inverter settings

DeyeCloud > plant > Devices > inverter > **Device Control** > Batch Command. Change only the orange cells. Set the Battery Setting card first, because the time-of-use SOC cannot be lower than Batt Low.

Step 1 - Battery Setting card, then press Setup

Parameter	Before	New value	Note
Batt Low %	35%	25%	Lowest charge the battery is used down to while the grid is available
Max A Charge	40 A	100 A	Only if the battery is rated for 100 A charge or more; otherwise keep 40 A
Batt Shutdown % / Restart %	12% / 50%	keep	Shutdown must stay below Batt Low
Max A Discharge, type, capacity	200 A, BMS lithium, 300 Ah	keep	

Step 2 - System Work Mode-2 (Time of Use) card, then press Setup

Slot	Start	Power	Grid Charge before	Grid Charge new	SOC before	SOC new
1	01:00	10000 W	ticked	untick	40%	25%
2	05:00	10000 W	ticked	untick	40%	25%
3	09:00	10000 W	ticked	untick	80%	25%
4	13:00	10000 W	ticked	untick	80%	25%
5	17:00	10000 W	ticked	untick	40%	25%
6	21:00	10000 W	ticked	untick	40%	25%

Keep Time of Use switched on, all seven days ticked, Gen and Sell unticked. **Step 3:** System Work Mode-1 stays as it is (Zero Export To CT, Load First). After each Setup, press Read to confirm the inverter accepted the values.

What to expect: the battery now carries the lodge down to about 25% before the grid takes over (about +2.5 kWh per night), no grid energy is bought to charge it in the morning, and it charges faster when the sun comes up. The afternoon surplus is still limited by zero export; only more storage or more daytime use recovers it.

Recommendations

Step	Action	Cost	Expected benefit
1-3	The setting changes above	None - remote	Fewer grid hours at night; no grid charging
4	Move flexible loads into 12:00-16:00 (water heating, pumps, laundry, pre-cooling rooms)	Low - timers, habits	Uses solar that is currently thrown away
5	Add about 10-15 kWh of battery storage	Investment - quotation on request	Afternoon surplus carries the lodge through the night; biggest single gain



What we check next

- After 2-3 days: night-time SOC should fall to about 25% before the grid takes over, and daily grid purchase should drop.
- No battery or BMS alerts after the charge-current change; if any appear, return Max A Charge to 40 A.
- A midday on-site check of string voltage and current, to confirm the array reaches full output when the limit is lifted.
- One month after the change: compare purchased kWh with September and October 2026 to size the battery expansion.

Data from the plant's DeyeCloud account (daily, monthly and yearly statistics and 5-minute power records). Small grid feed-in (519 kWh in 2025) despite zero-export mode is normal during fast load changes and does not affect the conclusions. Owner details are left out of this public version.