

Monthly Report: Solar Performance

Off-grid café and homestay, Chiang Rai · 1 – 24 October 2026

Site	Café and homestay, Chiang Rai province (off-grid)
System type	Off-grid hybrid PV + battery (no grid connection, no generator)
PV array	20 × LONGi 580 W (monitoring configured as 10 kWp)
Inverter / battery	Deye 10 kW hybrid · 2 × 200 Ah lithium (≈20 kWh)
Monitoring	DeyeCloud – online, last update 24 Oct 2026 21:45
Report period	1–24 Oct 2026 (24 Oct partial, to 21:45)

Key figures – October to date

262.8 kWh PV production	230.8 kWh Site consumption	100 % Solar self-sufficiency	0 kWh Grid / generator energy
10.9 kWh Avg PV per day	9.6 kWh Avg use per day	9.4 kWh Deepest night (22 Oct)	22.3 kWh Best day (23 Oct)

Summary

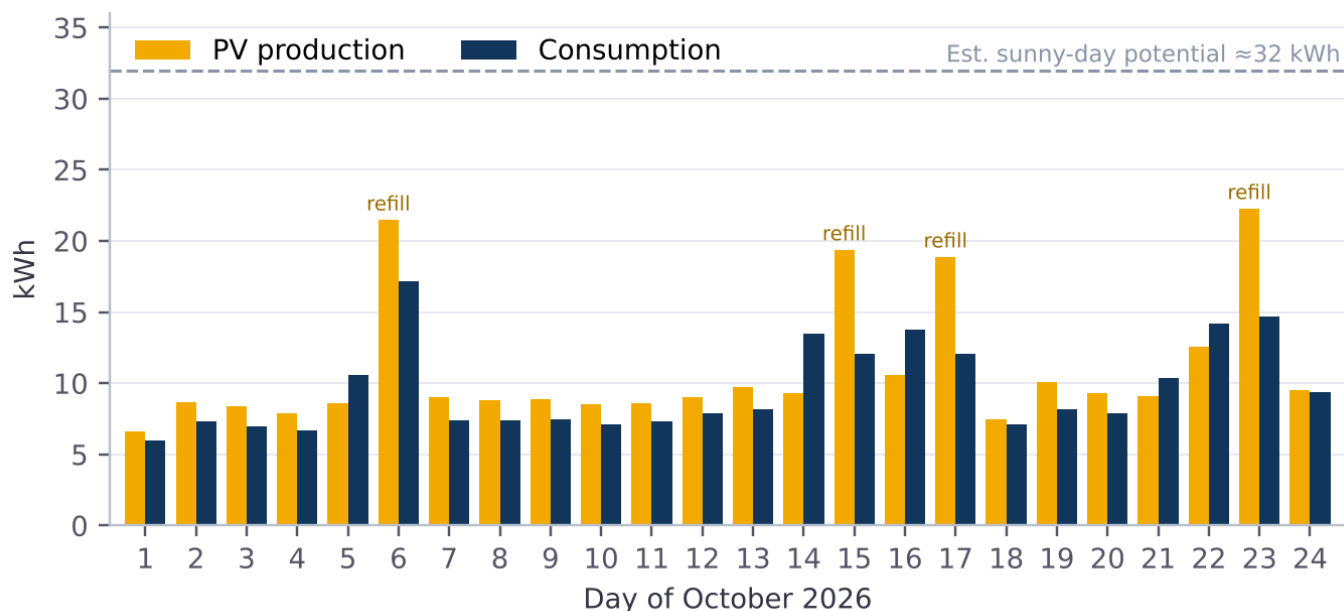
The system is **healthy and fully meets the site's needs**: every kWh used in October came from solar, with no grid or generator use. Monitoring, which had been offline since May, is working again and reporting live.

Daily production looks low (about 9 kWh on a typical day) only because this is an off-grid system: once the battery is full, usually by mid-morning, the inverter holds the panels back to match the load. On days after heavier use the array delivered 19–22 kWh, showing the panels can do far more. We estimate **roughly 20 kWh of solar energy per day goes unused**, and on a typical night only about a quarter of the battery is used.

Consumption is rising, from 8.3 kWh/day in early October to 11.0 kWh/day in the second half. Two items are worth checking at the next service visit: overnight standby draw and battery round-trip efficiency.

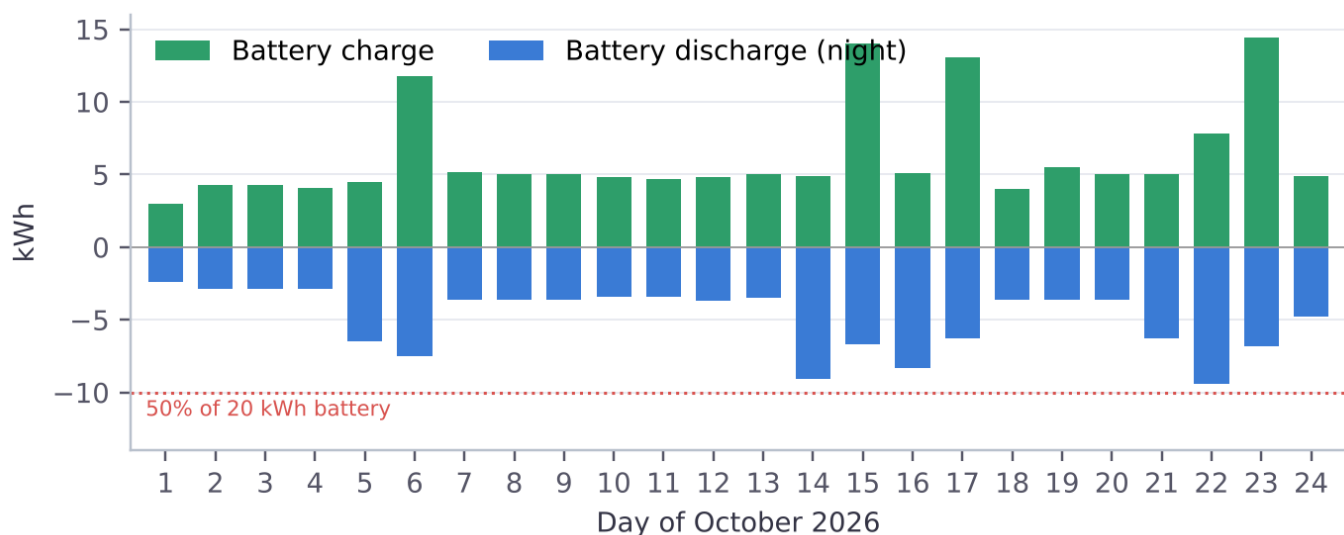
1. Daily production and consumption

Most days the system produces 8–10 kWh. The tall bars on 6, 15, 17 and 23 October come right after nights when the site used more than it produced. On those days the panels refilled the battery and then held back again. The dashed line shows an estimated output for a sunny October day if all the energy could be used.



Battery use - charge by day, discharge at night

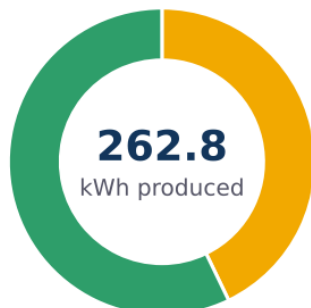
Night-time battery use is usually 3–4 kWh, rising to 6–9 kWh on busier nights. Even the heaviest night (22 Oct, 9.4 kWh) stayed below half of the battery's capacity.



2. Energy flows and utilisation

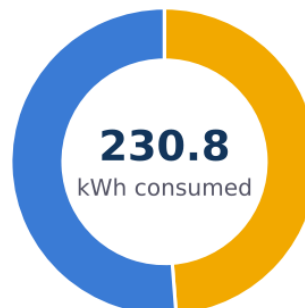
More than half of the solar energy is stored in the battery for evening and night use. The site is supplied entirely by solar: about half directly during the day and half from the battery at night.

Where the solar energy went



- Direct to loads 112.6 kWh (43%)
- Into battery 150.2 kWh (57%)

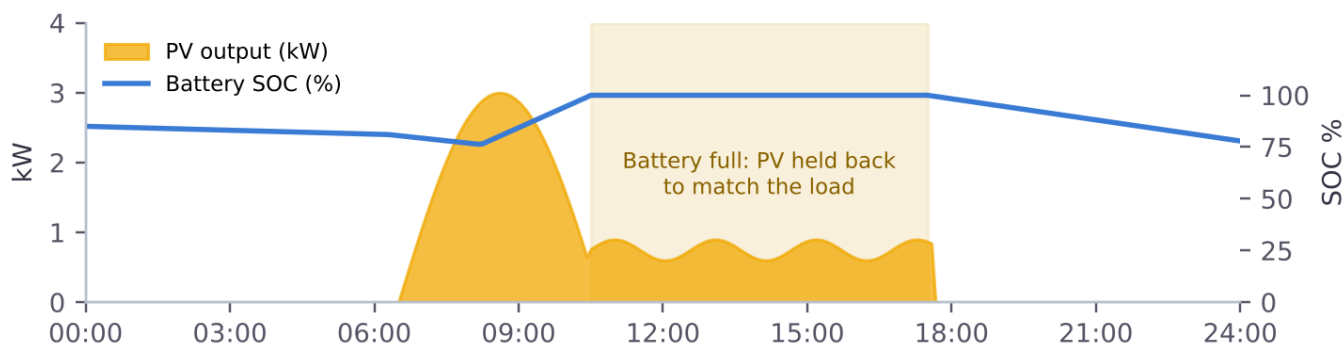
Where the site's energy came from



- From solar (daytime) 112.6 kWh (49%)
- From battery (night) 118.2 kWh (51%)
- From grid / generator 0.0 kWh (0%)

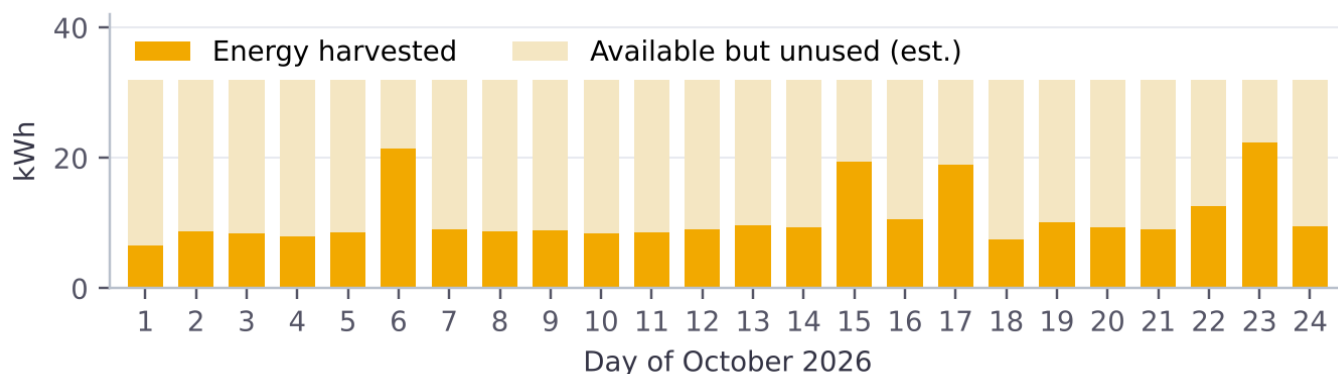
Typical day - 24 October (illustrative)

The panels reach about 3 kW in the morning while the battery charges. When the battery reaches 100% (around 10:30), output drops to under 1 kW for the rest of the afternoon, just covering the load. The battery then supplies the site through the night.



Harvested vs available solar energy (estimate)

The light area shows the estimated energy the array could have produced on each day but that had nowhere to go.



Estimate assumes ≈32 kWh/day potential for a 10 kWp array in Chiang Rai in October; actual potential varies with cloud cover.

3. Findings

#	Finding	Status
1	Monitoring restored – station online and reporting live after a logger fault.	Good
2	100% solar supply in October; no grid or generator energy used.	Good
3	PV array performing normally – reached 19–22 kWh on days with higher demand.	Good
4	About 20 kWh/day of solar energy unused once the battery is full (estimate).	Opportunity
5	Battery typically uses 15–25% of its capacity per night; max 47% (22 Oct).	Headroom
6	Consumption rising: 8.3 → 11.0 kWh/day between first and second half of October.	Watch
7	Overnight battery discharge (180–385 W) is much higher than recorded load (15–36 W).	Check
8	Battery returned 118.2 kWh of 150.2 kWh charged ($\approx 79\%$); typical is $\geq 90\%$.	Check
9	Monitoring capacity set to 10 kWp; installed array is 11.6 kWp (20 × 580 W).	Update

4. Recommendations

- Use the spare daytime solar.** Run daytime loads such as water pumps, water heating, laundry and cafe equipment between 10:00 and 16:00, when the battery is already full. This costs nothing and uses energy that is currently wasted.
- Service check at the next visit.** Measure the inverter's standby consumption and confirm all loads are on the measured load circuit; review the battery charge settings and cell balance to explain the $\approx 79\%$ round-trip result.
- Update the monitoring settings.** Set the installed capacity to 11.6 kWp so yield and performance figures are accurate.
- Plan for growth.** With consumption rising and new guest houses planned, night-time battery energy will be the first limit. The planned additional inverter and batteries address this; the existing array already has daytime capacity to spare.
- Keep monitoring monthly.** Solar ESS will continue to review the DeyeCloud data each month and flag any change in performance.

5. Recommended inverter settings

Setting (off-grid mode)	Value	Why
Generator charging starts	below 25% SOC	Recharges the battery before it runs low (once a generator is connected)
Generator charging stops	at 60% SOC	Leaves room for the next day's solar and keeps fuel use low
Low-battery warning	25% SOC	Early alert to the owner and Solar ESS
Load shutdown (protection)	15% SOC	Protects battery life
Installed PV capacity	11.6 kWp	Correct yield and performance figures in DeyeCloud

Prepared by Solar ESS Co. Ltd. from DeyeCloud monitoring data, 24 October 2026. Customer details removed for publication. Estimated values are marked as such and are for illustration.