

SOLAR WATER PUMPING · SYSTEM 1 · BUDGET BOM & PRICE

Hilltop tank system

Borehole 30–40 m, water pumped 30 m uphill over 200 m into a tank on the hill. A TORQUE 1.1 kW borehole pump, sized for this head, is driven by a Novem ND1-2-003-S solar pump inverter from 8 × LONGi 650 W panels, with 220 V grid power as backup when the sun is weak.

TN-20261019-PUMP-03-S1

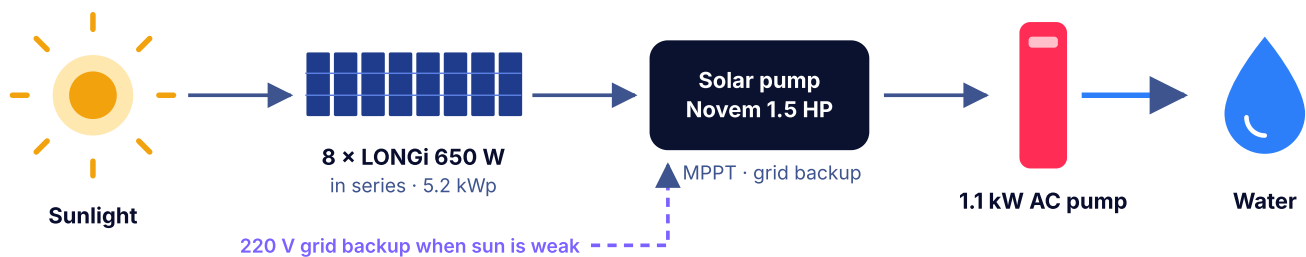
Rev07

20 October 2026

Chiang Rai, Thailand

Prices in THB, confirmed at order

How it works



1 Hilltop tank

Borehole 30–40 m, 200 m uphill pipe to a tank 30 m above the well.

≈ 70 m

Total dynamic head

12–18 m³

Water per sunny day*

200 m

Uphill pipe run

2–3 m³/h

Expected flow*

SYSTEM 1 PRICE

120,850 THB excl. VAT

129,310 THB including 7% VAT

The pump · TORQUE TQ-SP-2DLBM20-4/S

1.1 kW

1.5 HP motor

220 V

1-phase AC

130 m

Max head

53–119 m

Working head range

1½"

Outlet

20

Impellers · 4" well

8 × 650 W

LONGi panels · 5.2 kWp

Novem ND1-2-003-S

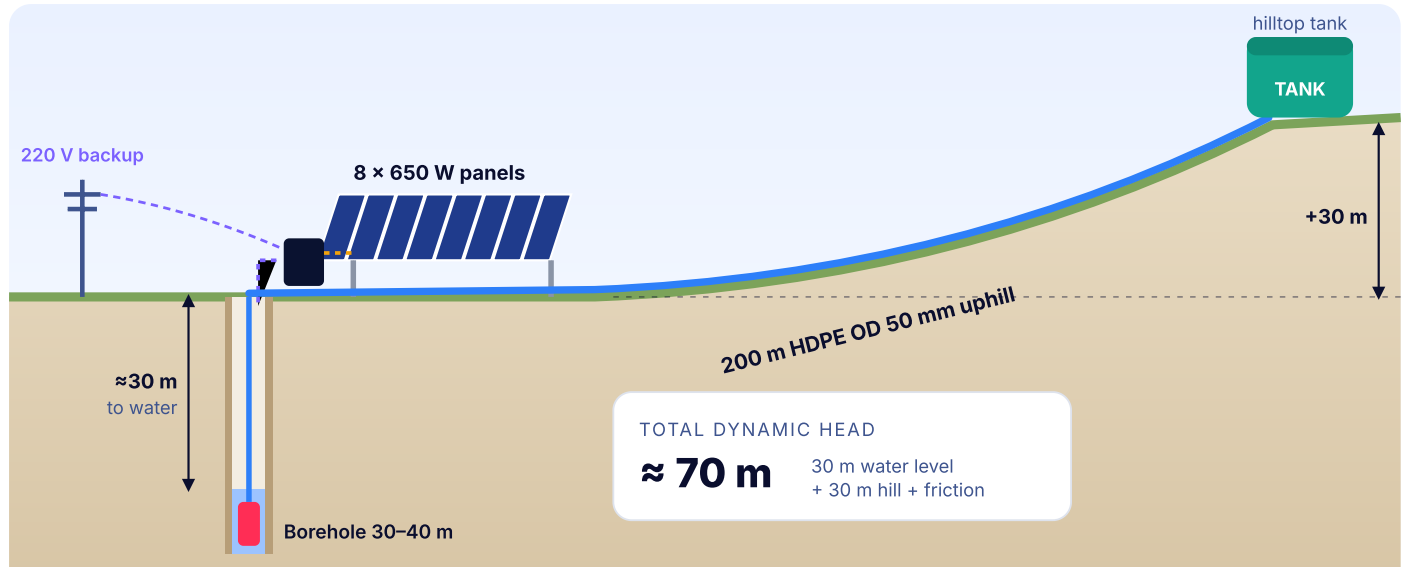
1.5 HP · 11 A pump inverter

* Flow and daily volume are estimates; the maker does not publish flow figures for this model. They will be confirmed with the pump curve at 70 m before the final quotation.

SYSTEM 1 · THE SITE

Borehole 30–40 m, pumped 30 m uphill over 200 m

Total dynamic head ≈ 70 m (water level ~ 30 m + 30 m hill + friction). Expected output about 2–3 m³/h into the hilltop tank, roughly 12–18 m³ per sunny day, to be confirmed with the pump curve.



HEAD
 ≈ 70 m

water level + hill + friction

FLOW
 2–3 m³/h

estimate, at ≈ 65 –70 m head

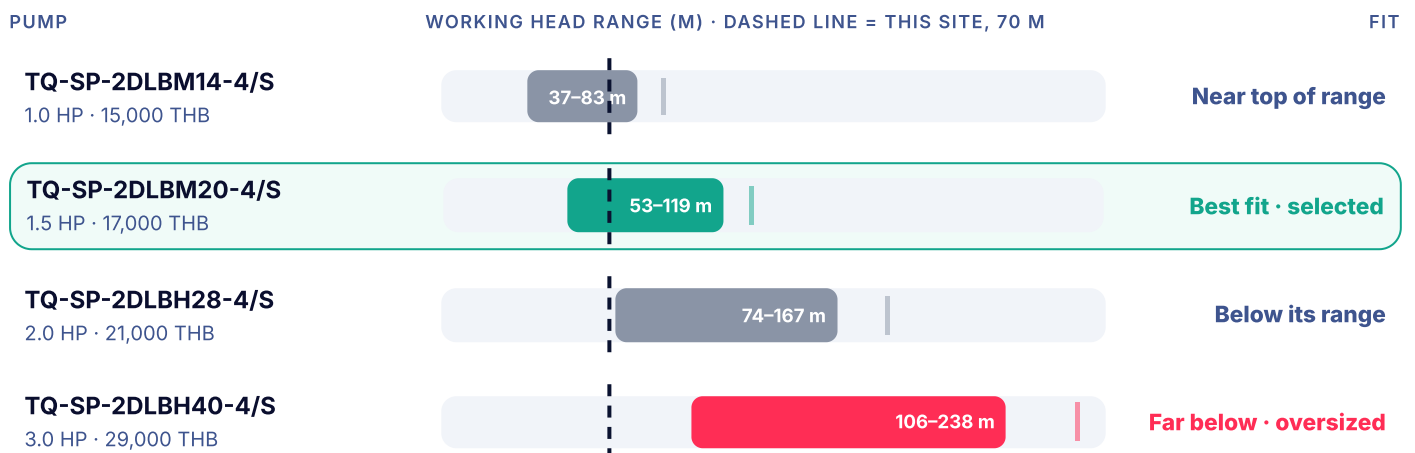
PER SUNNY DAY
 12–18 m³

12,000–18,000 L

PUMP CURVE
To confirm

flow at 70 m before final quote

Why this pump: which TORQUE pump works best at 70 m?



Each bar is the head range the maker recommends for that pump; the thin line is its maximum. The 1.5 HP TQ-SP-2DLBM20-4/S is the only one with 70 m comfortably inside its range: enough reserve for the hill and the 200 m pipe, without the larger pumps running off the end of their curves and wasting power.

SYSTEM 1 · BILL OF MATERIALS

Hilltop tank system · price

TOTAL EXCL. VAT 120,850 THB	VAT 7% 8,460 THB	TOTAL INCL. VAT 129,310 THB	OPTIONAL TANK ≈ 9,500 3,000 L PE + base, not in total
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Where the money goes



Itemised list

#	ITEM	QTY	UNIT (THB)	AMOUNT (THB)
1	TORQUE TQ-SP-2DLBM20-4/S borehole pump, 1.1 kW (1.5 HP), 1-phase 220 V, 1½" outlet, 20 impellers, for 4" well	1 set	17,000	17,000
2	Novem ND1-2-003-S solar pump inverter, 1.5 HP 1-phase 220 V output, 11 A, MPPT 250–450 VDC, hybrid PV + 220 V grid input, dry-run protection (budget price)	1	10,500	10,500
3	LONGi 650 W solar panel	8	3,800	30,400
4	Galvanised ground-mount frame, 8 panels	1 set	16,000	16,000
5	HDPE pipe OD 50 mm PN10 (well drop + 200 m uphill line)	240 m	45	10,800
6	HDPE fittings, 1½"→OD50 adaptor, check valve, gate valve	1 lot	4,500	4,500
7	Submersible pump cable 4 × 2.5 mm ²	50 m	55	2,750
8	PV cable 4 mm ² red/black + MC4 connectors	1 lot	2,000	2,000
9	DC breaker + DC SPD + steel enclosure	1 set	3,500	3,500
10	AC breaker for grid backup supply	1	800	800
11	Earth rod and earth cable	1 set	1,200	1,200
12	Tank float switch	1	600	600
13	Stainless safety rope + pump clamps + well cap	1 set	800	800
14	Installation, pipe laying and commissioning	1 lot	20,000	20,000
Total (excluding VAT)				120,850
VAT 7%				8,460
Total including VAT				129,310

Notes

B Prices are budget figures excluding VAT unless stated. Pump and inverter prices are from current market listings; other items are market estimates. Final prices are confirmed at order.

↗ The maker publishes maximum head (130 m) and working range (53–119 m) but no flow figures. At about 70 m the pump sits near the middle of its range, where a borehole pump is most efficient. The 2–3 m³/h estimate comes from the motor power and head; the pump curve will be obtained to confirm it before the final quotation.

≈ The Novem ND1-2-003-S (11 A) is rated for 1.5 HP single-phase 220 V motors, matching the 1.1 kW pump (about 7–8 A). 8 × 650 W in series (≈ 300 V MPP, ≈ 395 V Voc) stays inside its 250–450 VDC range even on hot days, and the extra array power starts the pump earlier and runs it longer. Its price and how it switches to grid power are confirmed with Novem before order.

⚡ All electrical work uses copper cable, proper DC protection and earthing, installed by a certified electrician.