Voltek Energy

Solar ATAP
Pre-Survey Intelligence Report

Mega Plastics Industries Sdn Bhd

Shah Alam, Selangor (Seksyen 26)

CONFIDENTIAL

February 2026

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Pre-Survey Energy Report

Solar ATAP Feasibility Analysis — Confidential

Company	Mega Plastics Industries Sdn Bhd
Zone	Shah Alam, Selangor (Seksyen 26)
Sector	Plastics Manufacturing
TNB Account Type	Non-domestic (C1/C2 tariff)
Decision Maker	En. Ahmad Razak, Director — confirmed owner, direct line verified
Report Date	February 2026
Prepared By	Voltek Energy Intelligence Engine

1. ATAP Eligibility Assessment

Based on GP/ST/No.60/2025 (Solar ATAP Guidelines effective January 2026).

Criteria	Status	Detail
Single-tenant premise	**PASS**	Single occupant — owner-operated factory
Maximum Demand < 1MW	**PASS**	Estimated MD: 350 kW (within cap)
Ownership / TNB consent	**PASS**	Owner-occupied (no landlord consent needed)
Operating hours	**NOTE**	Day-dominant (7am-6pm) — optimal self-consumption
Sector eligibility	**PASS**	Manufacturing — no ATAP sector exclusion

VERDICT: ATAP ELIGIBLE — All hard gates passed. Proceed to system sizing.

2. Recommended System Sizing

Solar ATAP mandates system capacity at or below 100% of Maximum Demand, capped at 1MW. To minimize monthly energy forfeiture (no credit carry-forward under ATAP), optimal sizing targets 75-85% of MD for day-dominant operations.

Parameter	Value	Basis
Estimated Maximum Demand	350 kW	TNB bill band + sector benchmark
ATAP capacity cap	350 kW (MD) or 1MW	Whichever is lower = 350 kW

Optimal sizing range	263 - 298 kWp	75-85% of 350 kW MD
Recommended system size	**280 kWp**	Sweet spot for self-consumption
Estimated annual generation	364,000 kWh	280 kWp x 1,300 kWh/kWp (3.57 peak sun hours/day, Selangor avg i
Estimated roof area required	16,800 sqft	280 kWp x ~60 sqft/kWp

OVERSIZING WARNING: A roof-maximized 350 kWp system (100% of MD) would generate an estimated 455,000 kWh/year. At 80% self-consumption, approximately 91,000 kWh of excess export would be settled at SMP (~RM 0.20/kWh) rather than displacing TNB tariff (~RM 0.365/kWh) — a net value loss of ~RM 15,000/year versus the recommended 280 kWp sizing. Under ATAP's no-rollover rule, months with low factory load would also risk outright forfeiture of excess credits.

3. Financial Projection

CAPEX Estimate

Component	Rate	Amount
Solar PV system (280 kWp)	RM 1,800–2,200/kWp	RM 504,000 – 616,000
CAS fee (>180-425 kW band)	GP/ST/No.60/2025 schedule	RM 5,000
Structural roof assessment	Subject to roof condition	RM 3,000 – 8,000
Total estimated CAPEX		**RM 512,000 – 629,000**

CAS fee tiers per GP/ST/No.60/2025: >72-180 kW = RM 1,000; >180-425 kW = RM 5,000; >425 kW-1 MW = RM 8,000; HV PSS = RM 15,000. Structural assessment cost varies RM 3,000-8,000 depending on roof age and complexity. Savings model below uses midpoint CAPEX of RM 570,000 for payback calculation.

Savings Model (Annual)

Scenario	Self-Consumed	Export	Annual Savings	Payback
Conservative (70% self)	254,800 kWh	109,200 kWh	RM 106,803	5.3 yrs
Base case (80% self)	291,200 kWh	72,800 kWh	RM 111,821	5.1 yrs
Optimistic (90% self)	327,600 kWh	36,400 kWh	RM 116,838	4.9 yrs

Payback range across full CAPEX band: 4.4 – 5.9 years (base case RM 111,821/yr savings against RM 512,000 – 629,000 total investment). Midpoint RM 570,000 used for headline payback.

Assumptions and rates:

TNB tariff rate: RM 0.334/kWh blended effective rate across C1 demand blocks (peak block RM 0.365/kWh; lower blocks reduce blended average). Blended rate used for conservative savings estimate.

SMP export rate: RM 0.20/kWh (conservative floor estimate). Average SMP is the monthly average of SMP values between 07:00-19:00 daily for the preceding calendar month (per SEDA/NOVA guidelines). Published by Single Buyer

(www.singlebuyer.com.my). Historical range: RM 0.15-0.40/kWh. See sensitivity analysis in Section 4.

Solar irradiance: 3.57 peak sun hours/day average for Selangor (PVGIS/SolarGIS satellite-derived data). Yields 1,300 kWh/kWp annual specific yield.

System degradation: 0.5%/year; Panel warranty: 25 years

Monthly forfeiture: Any excess credit above consumption is forfeited each billing month (ATAP rule)

CAPEX range: RM 1,800-2,200/kWp for 200-500 kWp systems. Range reflects market variation in panel brand, inverter spec, and installation complexity.

4. SMP Sensitivity Analysis

The System Marginal Price fluctuates monthly based on fuel costs and dispatch order. This analysis shows how changes in SMP affect annual savings and payback period, assuming 80% self-consumption (base case) and blended tariff of RM 0.334/kWh.

SMP Rate	Export Revenue	Total Savings	Payback	Impact vs Floor
RM 0.15/kWh	RM 10,920	RM 108,181	5.3 yrs	-RM 3,640
RM 0.20/kWh (floor)	RM 14,560	RM 111,821	5.1 yrs	Base
RM 0.25/kWh	RM 18,200	RM 115,461	4.9 yrs	+RM 3,640
RM 0.30/kWh	RM 21,840	RM 119,101	4.8 yrs	+RM 7,280
RM 0.40/kWh (peak)	RM 29,120	RM 126,381	4.5 yrs	+RM 14,560

KEY INSIGHT: At 80% self-consumption, the full SMP range (RM 0.15-0.40) causes only a RM 18,200 swing in annual savings — a 16% variance. The primary savings driver is self-consumed generation displacing TNB tariff at RM 0.334/kWh, not export credits. This is why sizing at 75-85% of MD protects ROI regardless of SMP volatility.

NOTE: Monthly Average SMP is published by Single Buyer (www.singlebuyer.com.my/resources-marginal.php) under the Malaysian MESI framework. Average SMP reflects the monthly average of SMP values between 07:00–19:00 daily for the preceding calendar month. The RM 0.20/kWh floor used in this report is a conservative estimate. Final project economics should use the actual published SMP figure at time of proposal.

5. Monthly Forfeiture Risk Assessment

Under Solar ATAP, excess credits are forfeited at end of each billing month (no carry-forward). For a day-dominant factory in Shah Alam, key risk months are public holiday clusters and planned shutdowns. Cost estimates assume excess generation is exported at SMP (RM 0.20/kWh) rather than self-consumed at tariff (RM 0.334/kWh).

Risk Factor	Prob.	Est. Annual Cost	Mitigation
Hari Raya shutdown (1-2 weeks)	High	RM 1,000 – 2,000	Factor into annual model; accept ~2% forfeiture
CNY factory closure (3-5 days)	Medium	RM 400 – 700	Short closure; minimal impact at 280 kWp

Weekend generation excess	Low	Negligible	Day-dominant ops; sizing accounts for 5-day week
Unplanned downtime	Low	Negligible	280 kWp at 80% MD provides buffer

Total estimated annual forfeiture cost: RM 1,400 – 2,700 (0.4–0.7% of gross generation value). Calculated as shutdown days x ~1,000 kWh/day x RM 0.134 tariff-to-SMP spread.

6. Recommended Next Steps

1. Site Survey — Physical roof inspection, structural load assessment, TNB meter verification.

2. Detailed Design — Panel layout, inverter sizing, cable routing, single-line diagram.

3. ATAP Application — Submit to TNB with CAS approval (mandatory for >72 kW systems). Solar ATAP programme capacity is subject to Government availability decisions. Applications are processed on a first-come-first-served basis.

4. Installation — Estimated 6-8 weeks from approval for a 280 kWp system.

5. Commissioning — TNB inspection, meter installation, COD issuance.