Voltek Energy

Solar ATAP
Intelligence Dossier

Mega Plastics Industries Sdn Bhd

Shah Alam, Selangor (Seksyen 26)

Independent Roof & Energy Feasibility Analysis

CONFIDENTIAL

February 2026

Executive Snapshot

Recommended Size	**280 kWp**
Annual Savings Range	**RM 108,181 – RM 126,381**
Payback Range	**4.5 – 5.3 years**
Export Exposure	**20%**
Forfeiture Risk	**Low (RM 1,400 – 2,700/yr)**
ATAP Eligibility	**PASS**

● Technical Fit ● Financial Viability ● SMP Sensitivity ● Policy Compliance

Facility Intelligence Overview

Industry	Plastics Manufacturing
Operation Pattern	Day-dominant (7am–6pm)
Tariff Type	Non-domestic (C1/C2 tariff)
Estimated Maximum Demand	350 kW
Decision Maker	En. Ahmad Razak, Director — confirmed owner, direct line verified

Solar Fit Score: 84/100 (Tier A)

Component	Score	Max	Weight
ATAP Regulatory Compliance	27	30	30%
Operational Suitability	17	20	20%
Asset Control (Ownership)	20	20	20%
Decision-Maker Access	13	15	15%
Trigger Signals	7	15	15%
TOTAL	**84**	**100**	**100%**

Roof Intelligence Analysis

Using satellite analysis and site geometry estimation, the facility provides approximately 16,800 sqft of usable roof area suitable for PV installation.

SATELLITE ROOF IMAGE

Insert annotated satellite image here
showing usable panel area, obstruction zones,
and north orientation marker.

Source: Google Static Maps API

Parameter	Value
Estimated total roof footprint	~18,480 sqft
Usable after obstructions	16,800 sqft
Roof type (estimated)	Metal deck (industrial profile)
Structural risk level	Low–Moderate (to verify on site)
Tilt assumption	5–10° metal deck pitch
Orientation	North–South alignment (optimal for equatorial)

Preliminary Layout Concept

The conceptual layout illustrates optimal panel alignment oriented to maximise daytime generation while maintaining safe maintenance corridors and inverter clustering efficiency.

PANEL LAYOUT OVERLAY

Insert roof overlay showing 510 panels
in grid formation with row spacing,
inverter cluster position, and cable routing.

Subject to site verification

Panel count	~510 x 550W panels
Row spacing	1.0m maintenance corridor
Inverter cluster	Central location (minimise DC cable run)
AC routing	To main switchboard (shortest path)

This layout is indicative and subject to physical survey validation. Final design will account for roof penetrations, drainage paths, and structural load limits.

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.

Sizing Strategy & Oversizing Risk

Solar ATAP mandates system capacity at or below 100% of Maximum Demand, capped at 1MW. To minimise 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	262 – 297 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 p
Estimated roof area required	16,800 sqft	280 kWp x ~60 sqft/kWp

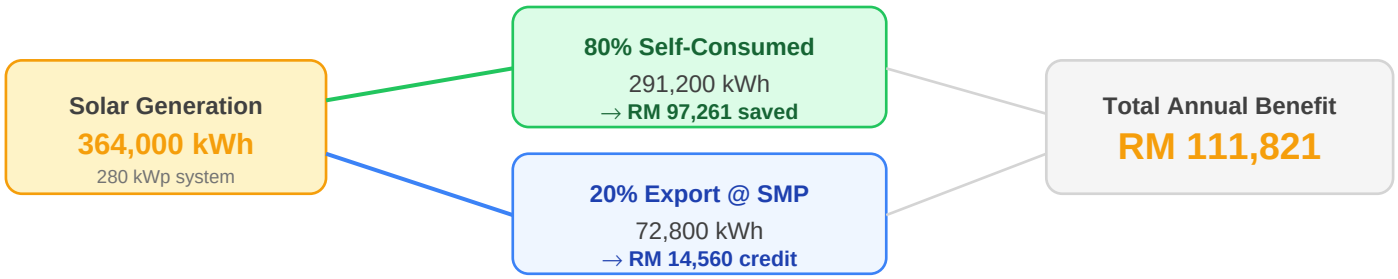
Sizing Comparison

Size	Self-Use %	Export %	Annual Export	Value Loss vs Optimal
280 kWp (recommended)	80%	20%	72,800 kWh	—
350 kWp (roof-max)	80%	20%	91,000 kWh	~RM 15,000/yr

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. Under ATAP's no-rollover rule, months with low factory load would also risk outright forfeiture.

Energy Flow Analysis

At 80% self-consumption, the majority of generated energy displaces TNB tariff directly, with controlled export exposure settled at SMP rates.



ROI stability is primarily driven by tariff displacement rather than export dependency.

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**

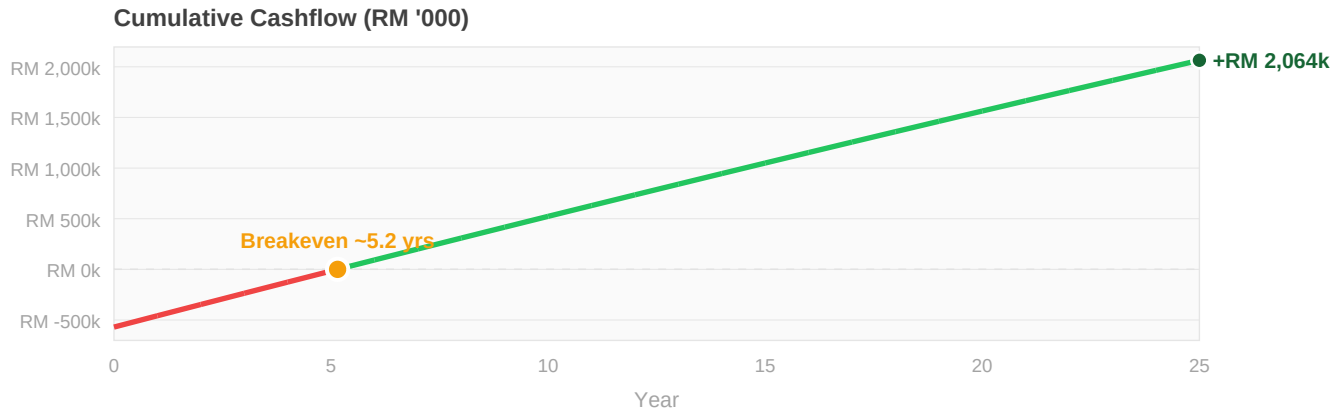
Savings model uses midpoint CAPEX of RM 570,000 for payback calculation.

Savings Model (Annual)

Scenario	Self-Consumed	Export	Annual Savings	Payback
Conservative (70%)	254,799 kWh	109,201 kWh	RM 106,943	5.3 yrs
Base case (80%)	291,200 kWh	72,800 kWh	RM 111,821	5.1 yrs
Optimistic (90%)	327,600 kWh	36,400 kWh	RM 116,698	4.9 yrs

Payback range across full CAPEX band: 4.6 – 5.6 years (base case RM 111,821/yr against RM 512,000 – 629,000).

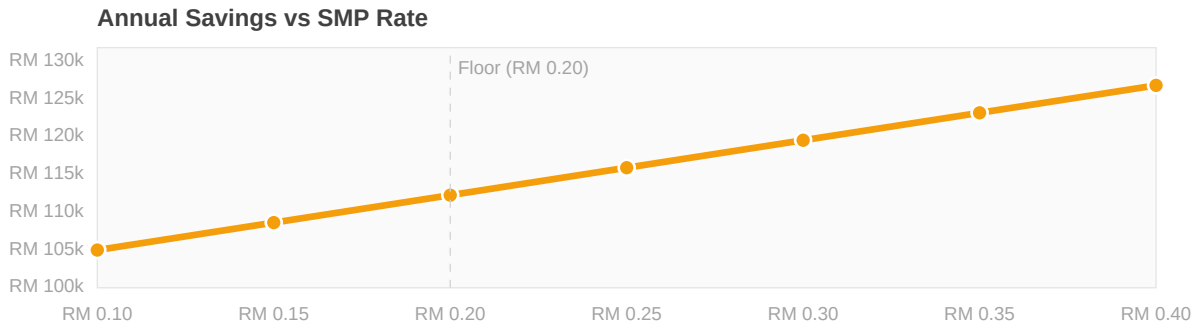
25-Year Cumulative Cashflow



Over 25 years with 0.5% annual degradation, cumulative net benefit reaches approximately RM 2,064k after midpoint CAPEX recovery.

SMP Sensitivity Analysis

The System Marginal Price fluctuates monthly based on fuel costs and dispatch order.



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 — ~16% variance. The primary savings driver is self-consumed generation displacing TNB tariff, not export credits.

NOTE: Monthly Average SMP is published by Single Buyer (www.singlebuyer.com.my/resources-marginal.php) under the Malaysian MESI framework. The RM 0.20/kWh floor is a conservative estimate. Final economics should use the actual published SMP figure at time of proposal.

Monthly Forfeiture Risk Assessment

Under Solar ATAP, excess credits are forfeited at end of each billing month. Cost estimates assume excess generation exported at SMP rather than self-consumed at tariff.

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).

Carbon & ESG Impact

Based on 364,000 kWh annual generation displacing grid electricity with Malaysian grid emission factor of ~0.7 kg CO2/kWh:

Metric	Annual Impact
CO2 emissions avoided	**~255 tonnes/year**
Equivalent: vehicles removed from road	**~55 passenger cars**
Equivalent: trees planted	**~4,000 trees**
25-year lifetime CO2 avoidance	**~5,992 tonnes**

This carbon reduction supports alignment with Bursa Malaysia Sustainability Reporting Framework and corporate ESG disclosure requirements. Solar ATAP installations provide verifiable renewable energy generation for annual sustainability reporting.

Implementation Roadmap

Phase	Duration	Description
1. Site Survey	2–3 weeks	Physical roof inspection, structural load assessment, TNB meter verification.
2. Detailed Design	2–3 weeks	Panel layout, inverter sizing, cable routing, single-line diagram.
3. ATAP Application	4–8 weeks	Submit to TNB with CAS approval. Capacity subject to Government availability. First-con
4. Installation	6–8 weeks	Panel mounting, inverter installation, wiring for 280 kWp system.
5. Commissioning	1–2 weeks	TNB inspection, meter installation, COD issuance.

Estimated total timeline: 4–6 months from survey to commissioning.

Strategic Recommendation

Based on financial modelling, roof intelligence, and policy compliance review, this facility demonstrates **high suitability** for a 280 kWp ATAP-compliant installation with controlled export exposure and strong self-consumption economics.

We recommend proceeding to:

• Physical survey and structural validation

• Detailed load profile analysis (TNB bill data)

• Structural assessment by certified engineer

• ATAP application to secure capacity allocation

This dossier is designed to eliminate oversizing risk, quantify export volatility exposure, protect against policy misinterpretation, and provide board-ready financial clarity.

The assessment fee is deductible upon project award.
