PT. Azet Surya Lestari
Jl. Merpati Raya No.44 Kp. Sawah Baru, Bintaro, Tangerang 15413
Phone : (021) 7463 8606-08 HP 0816908122 Email : azet.info@azetsurya.id Web : www.azetsurya.id

Company Profile
Our History

AZET
Shining the Life

2003

KADIN INDONESIA

APAMSI

Bermula dari industry rumahan……ke industry padat teknologi…

2006

2010

2006

2007

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Company Profile
Core Competence

AZET
Shining the Life

3 CORE COMPETENCE

1. Distributorship :
   - Solar PV : Mitsubishi Heavy Industry-Japan;
   - Controller : Morningstar -USA;
   - Solar Pumping : Monopump –Australia;
   - Solar Grid Inverter : SMA-Germany;
   - Battery Inverter : Victron Energy BV
   - Wind Trubine : Zephyr-Japan

2. Services: Off Grid, On Grid, Hybrid for kW to MW range
   - System Design& Sizing
   - Distribution
   - Installation
   - Monitoring
   - Commissioning
   - Training etc
   - O&M

EPC & SYSTEM INTEGRATOR

3. Manufacturing	Product	Annual Capacity
Modul Surya/Solar Module	Poly/Mono Crystalline, Glass or Epoxy Resin, 5~200Wp/Module	12MWp
BOS/Balance Of System	Solar Power Storage (SPS), 6-10Amp, for 65-80Ah Battery	50.000 Units
Lampu LED/LED Lights	Indoor w/Li-Ion (Camelo, Out-G)	150.000 Units
	Outdoor (Street & Garden Lighting)	10.000 Unts
Penyangga Modul /Support Structure	HDG Steel (Ground Mounted, Roof Mounted)	36 MWp

ISO 14001

SNI TKDN

SMA MORNINGSTAR corporation Zephyr MITSUBISHI ELECTRIC Changes for the Better SOLAR FRONTIER victron energy

Cold Chain Infrastructure & Strategy
Asosiasi Rantai Pendingin Indonesia April 2019

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Company Profile
Project Experiences

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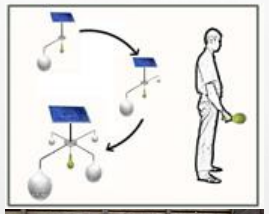
Small to Medium (s/d kW)

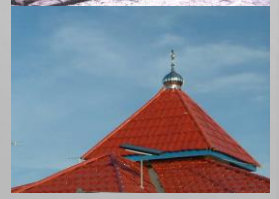


SLS:>300sites

Off Grid 5-100kW: 200 sites

Water Pumping
Rural Health
Street Lighting

Telecommunication:
- BTS : >10 Sites
- Rural Internet: 400 Sites



SHS:>300 Sites

PV-Wind Hybrid 14kW: 11 Sites

Large Scale-Power Plant (MW size)

PV-DG/Wind: 50-600kW

On Grid 5-50kW: 15 sites

First Largest 1MW

PLN's First Largest 1M

Cold Chain Infrastructure & Strategy
Asosiasi Rantai Pendingin Indonesia April 2019

Solar PV Technology & Applications

Basic Principles, On Grid, Off Grid, Hybrid

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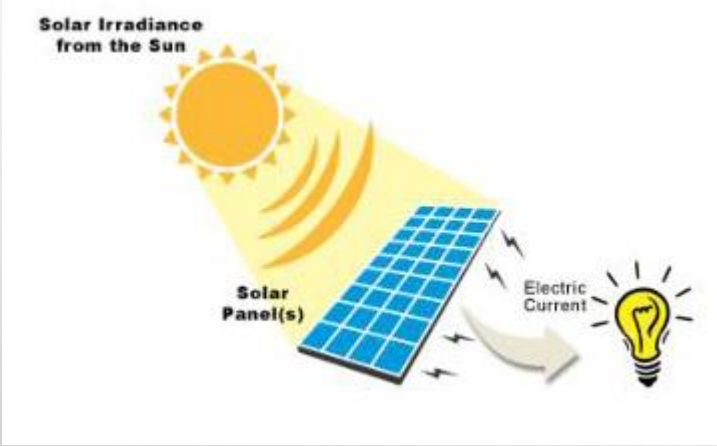
Cold Chain Infrastructure & Strategy

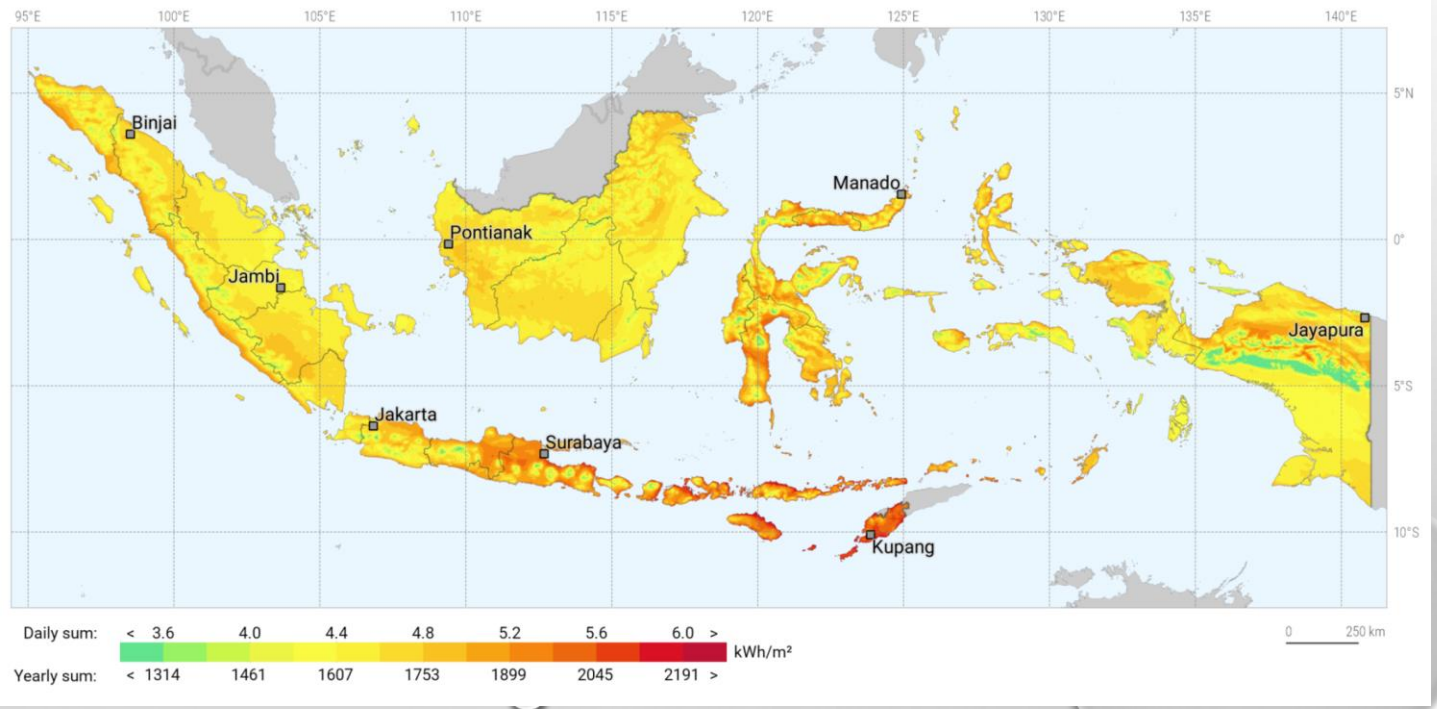
Asosiasi Rantai Pendingin Indonesia April 2019

Solar PV Technology & Applications

Basic Principles

Keunggulan: Tersedia secara cuma2 sepanjang tahun, dimana saja (insitu, tdk perlu dikirim)





Solar PV vs Solar Thermal

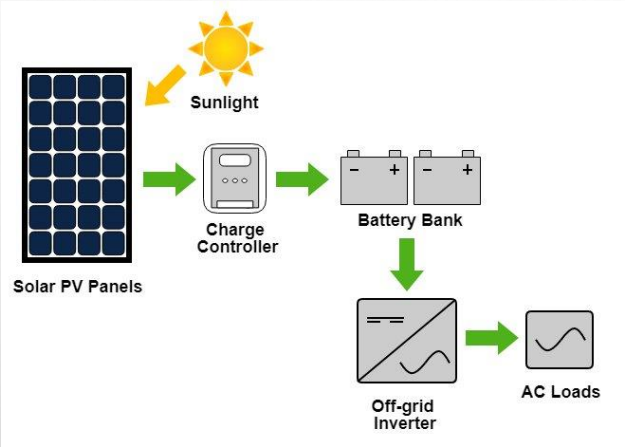
Solar Photovoltaic (PV):
merubah **cahaya (Photo)** menjadi listrik

Potensi dan Output yang dapat dihasilkan

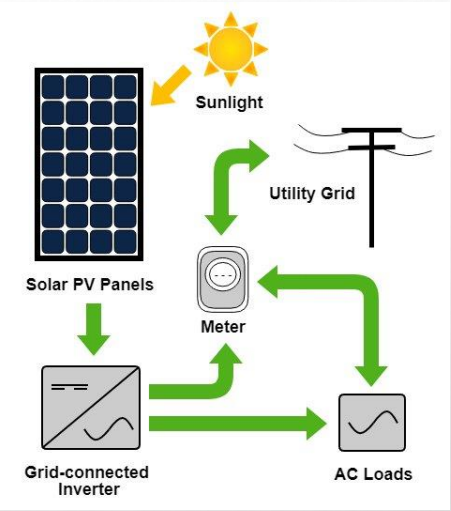
Solar PV Technology & Applications

On Grid-Off Grid

OFF GRID



ON GRID



DC

- Lighting (SHS, LTSHE dll)
- PJU
- BTS Power Supply
- Vaccine Refrig

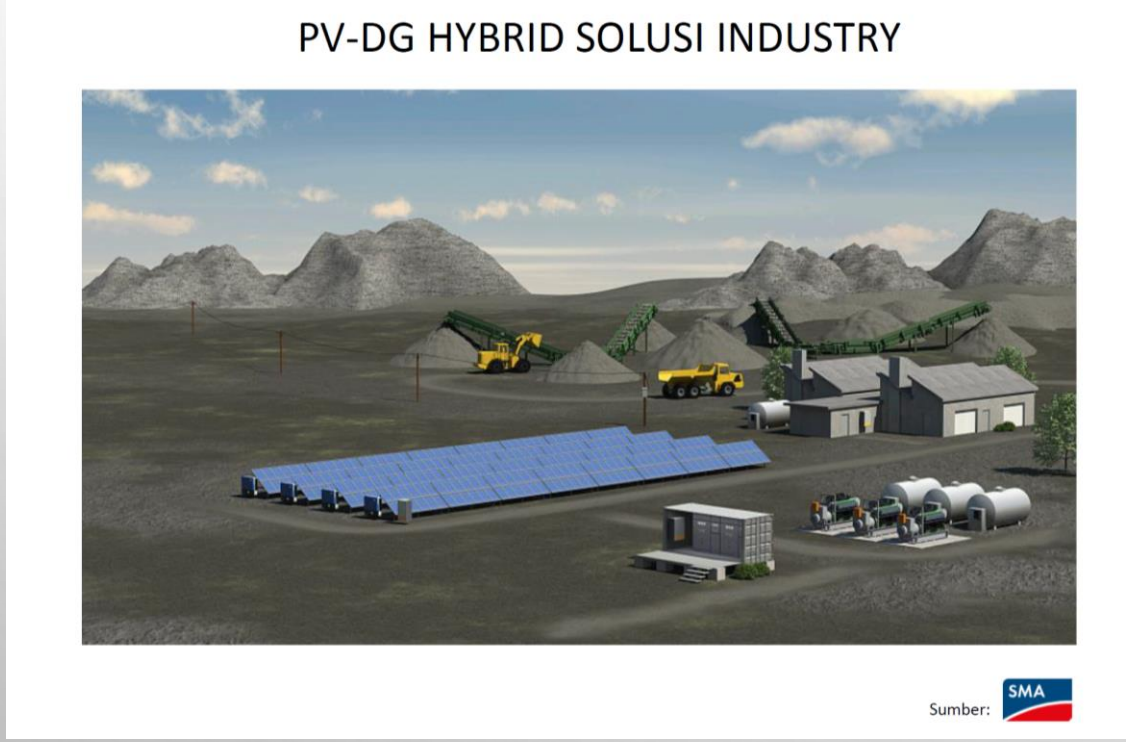
AC

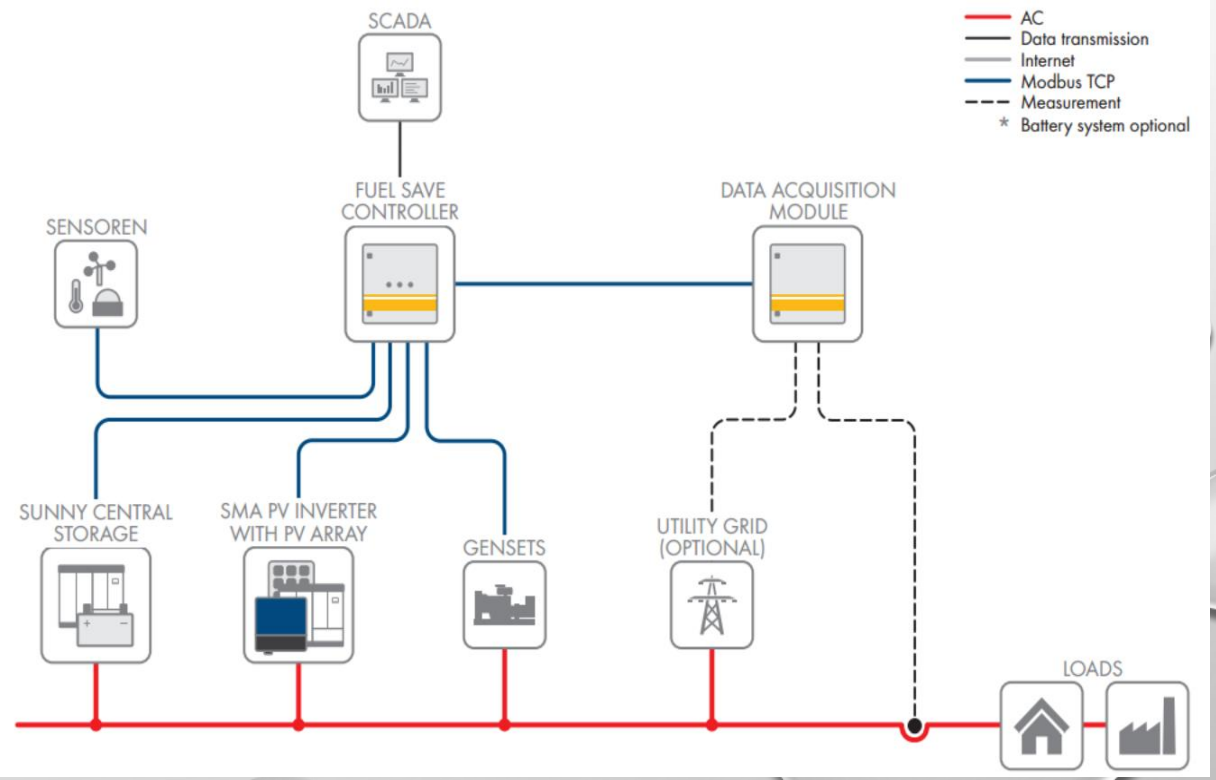
- Listrik Pedesaan
- Remote Industry

- Roof Top (Surya Atap)
- Net Metering
- Solar Power Plant

Solar PV Technology & Applications

Solar PV-DG Hybrid





Solar PV: Economics

Capex vs Opex, LCOE of Solar PV vs Genset & PLN

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Cold Chain Infrastructure & Strategy

Asosiasi Rantai Pendingin Indonesia April 2019

Solar PV: Economics

Capex vs Opex

Pembangkit	Capex	Opex
• Diesel Genset	Low	High
• Renewable Energy (Solar Pv)	High	Low

Hybrid Solar PV-DG : taking advantages of capex and opex

Solar PV: Economics

LCOE (Levelized Cost of Energy)

Tarif PLN:

PT PLN (PERSERO)

Jalan Trunojoyo Blok M 1/135 Kebayoran Baru - Jakarta 12160
Telp. : (021) 7261875, 7261122, 7262234
(021) 7251234, 7250550
Kotak Pos : 4322/KBB Faximile : (021) 7221330 Alamat Kawat : PLNPST

PENETAPAN
PENYESUAIAN TARIF TENAGA LISTRIK *(TARIFF ADJUSTMENT)*

BULAN JANUARI 2015

NO.	GOL. TARIF	BATAS DAYA	REGULER		PRA BAYAR (Rp/kWh)
			BIAYA BEBAN (Rp/kVA/bulan)	BIAYA PEMAKAIAN (Rp/kWh) DAN BIAYA kVArh (Rp/kVArh)	
1.	R-1/TR	1.300 VA	*)	1.352,00	1.352,00
2.	R-1/TR	2.200 VA	*)	1.352,00	1.352,00
3.	R-2/TR	3.500 VA s.d. 5.500 VA	*)	1.496,05	1.496,05
4.	R-3/TR	6.600 VA ke atas	*)	1.496,05	[illegible]
5.	B-2/TR	6.600 VA s.d. 200 kVA	*)	1.496,05	1.496,05
6.	B-3/TM	di atas 200 kVA	**)	Blok WBP = K x 1.077,18 Blok LWBP = 1.077,18	-
7.	I-3/TM	di atas 200 kVA	**)		
8.	I-4/TT	30.000 kVA ke atas	***)		
9.	P-1/TR	6.600 VA s.d. 200 kVA	*)		
10.	P-2/TM	di atas 200 kVA	**)		
11.	P-3/TR		*)		
12.	L/TR, TM, TT		-		

Catatan :
*) Diterapkan Rekening Minimum (RM):
RM1 = 40 (Jam Nyala) x Daya tersambung (kVA) x Biaya Pem
**) Diterapkan Rekening Minimum (RM):
RM2 = 40 (Jam Nyala) x Daya tersambung (kVA) x Biaya Pem
Jam nyala : kWh per bulan dibagi dengan kVA tersambung.
***) Diterapkan Rekening Minimum (RM):
RM3 = 40 (Jam Nyala) x Daya tersambung (kVA) x Biaya Pem
Jam nyala : kWh per bulan dibagi dengan kVA tersambung.
****) Biaya kelebihan pemakaian daya reaktif (kVArh) dikenakar (delapan puluh lima per seratus).
K : Faktor perbandingan antara harga WBP dan LWBP s (1,4 ≤ K ≤ 2), ditetapkan oleh Direksi Perusahaan Per

WBP : Waktu Beban Puncak.
LWBP : Luar Waktu Beban Puncak.

(2) Penyesuaian tarif tenaga listrik *(tariff adjustment)* sebagaimana dimaksud pada ayat (1) diberlakukan mulai 1 Januari 2015 dan dilaksanakan setiap bulan apabila terjadi perubahan, baik peningkatan maupun penurunan salah satu dan/atau beberapa faktor yang dapat mempengaruhi biaya pokok penyediaan tenaga listrik, yaitu:

a. nilai tukar mata uang Dollar Amerika terhadap mata uang Rupiah (kurs);

b. *Indonesian Crude Price (ICP)*; dan/atau

c. inflasi.

PT PLN (PERSERO)

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PENETAPAN
PENYESUAIAN TARIF TENAGA LISTRIK *(TARIFF ADJUSTMENT)*

BULAN JUNI 2015

NO.	GOL. TARIF	BATAS DAYA	REGULER		PRA BAYAR (Rp/kWh)
			BIAYA BEBAN (Rp/kVA/bulan)	BIAYA PEMAKAIAN (Rp/kWh) DAN BIAYA kVArh (Rp/kVArh)	
1.	R-1/TR	1.300 VA	*)	1.352,00	1.352,00
2.	R-1/TR	2.200 VA	*)	1.352,00	1.352,00
3.	R-2/TR	3.500 VA s.d. 5.500 VA	*)	1.524,24	1.524,24
4.	R-3/TR	[illegible] ke atas	*)	1.524,24	1.524,24
5.	B-2/TR	6.600 VA s.d. 200 kVA	*)	1.524,24	1.524,24
6	B-3/TM	di atas	**)	Blok WBP = K x 1.115,60 Blok LWBP = 1.115,60 kVArh = 1.200,65 ****)	-
			**)	Blok WBP = K x 1.115,60 Blok LWBP = 1.115,60 kVArh = 1.200,65 ****)	-
			***)	Blok WBP dan Blok LWBP = 1.070,42 kVArh = 1.070,42 ****)	-
			*)	1.524,24	1.524,24
			**)	Blok WBP = K x 1.115,60 Blok LWBP = 1.115,60 kVArh = 1.200,65 ****)	-
			*)	1.524,24	1.524,24
			-	1.661,01	-

ung (kVA) x Biaya Pemakaian.
ung (kVA) x Biaya Pemakaian LWBP.
an kVA tersambung.
ung (kVA) x Biaya Pemakaian WBP dan LWBP.
an kVA tersambung.
aktif (kVArh) dikenakan dalam hal faktor daya rata-rata setiap bulan kurang dari 0,85
WBP dan LWBP sesuai dengan karakteristik beban sistem kelistrikan setempat
aksi Perusahaan Perseroan (Persero) PT Perusahaan Listrik Negara.

WBP : Waktu Beban Puncak.
LWBP : Luar Waktu Beban Puncak.

LCOE: Levelized Cost of Electricity

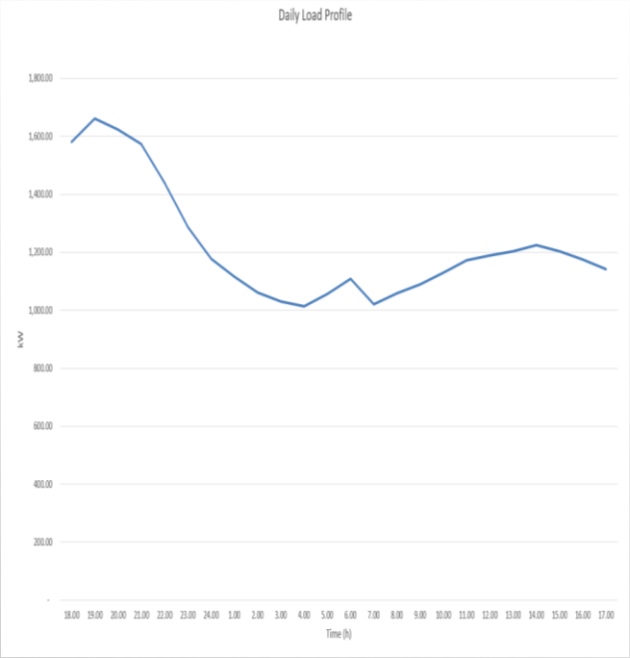
Membandingkan biaya energy dari system pembangkit dengan umur pakai yang berbeda
Asumsi= Disc Rate 6.5%, Escalation Rate 5%

LCOE PLN : 10 c$/kWh (0% Esc); 15.7 c$/kWh (5% Esc)
LCOE Genset : 34.6 c$/kWh
LCOE PLTS : 4.8 c$/kWh → 40-60% lebih murah

https://www.nrel.gov/analysis/tech-lcoe.html

CASE STUDY | SALAKAN

Electrical System: *Economics*

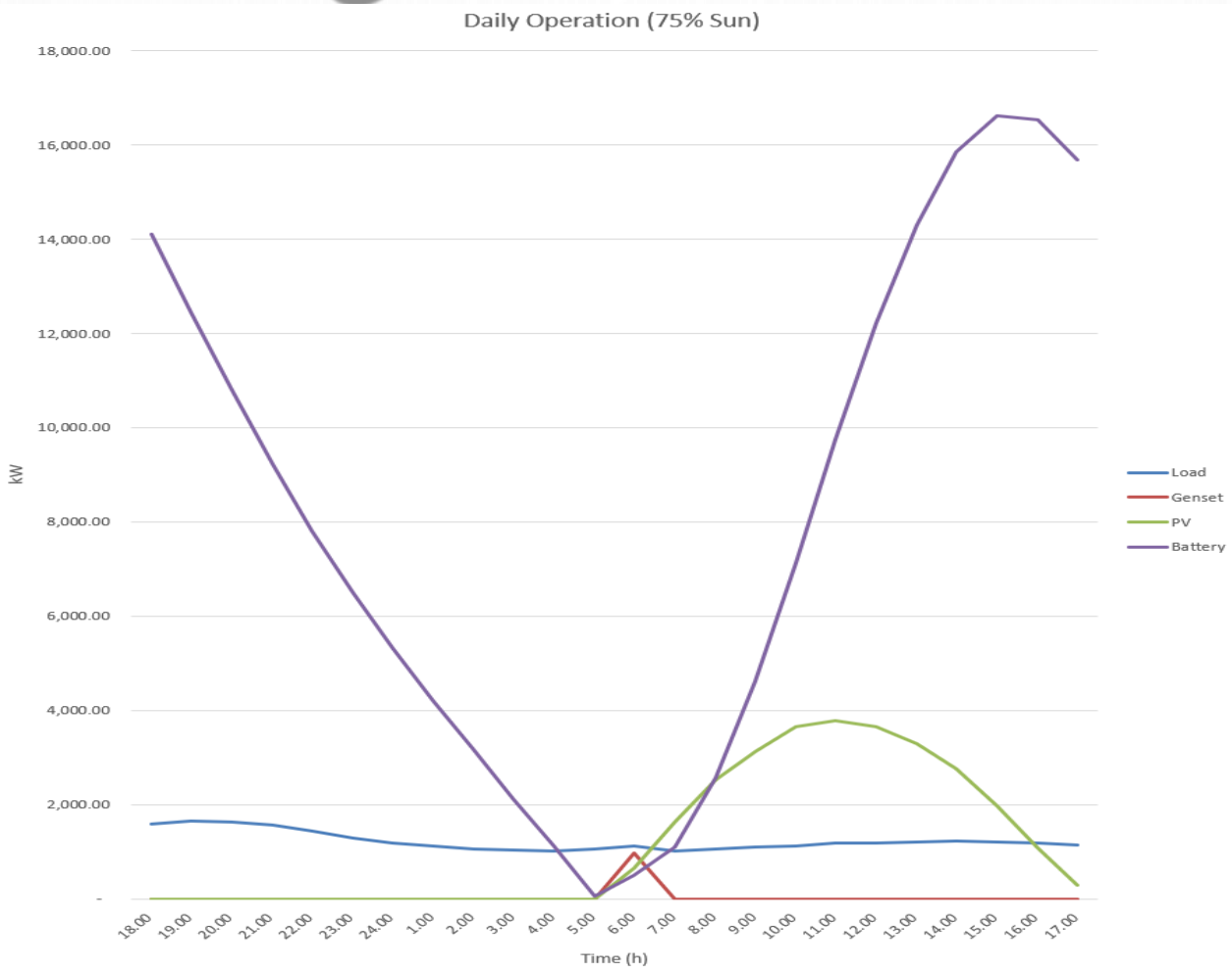


No	DG	PV	Battery	BPP		Fuel Cons.	Saving Diesel Fuel
	kW	kWp	kWh	Rp/kWh	c$/kWh	Liter/day	%
1	2.400	0	0	2.024	14.67	7.952	0%
2	2.400	2.000	2.500	1.705	12.36	6.065	24%
3	2.400	3.000	7.250	1.625	11.78	5.081	36%
4	2.400	4.000	13.100	1.581	11.46	4.117	48%
5	2.400	5.000	19.100	1.548	11.22	3.218	60%
6	2.400	6.000	25.200	1.536	11.13	2.426	69%
7	2.400	7.000	31.429	1.567	11.36	2.024	75%
8	2.400	8.000	37.579	1.605	11.63	1.712	78%

- DG Operation Hour: 24h/d → 4hr/d
- To be considered: LNG is about 20-30% cheaper

SALAKAN

Electrical System: *System Performance*



Regulation & Possible Collaboration

Collaboration
Collaboration Model's Proposal

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AZET

X-Co

Project Developer:
Site Nomination, Pre-FS, FS, Bid Prep, HoA-PPA

Local Production
Module Production Line
Improve production equipment to suit Int'l Standard
Mounting Production

EPC
DED, Procurement & Delivery to Site, Installation, Certification (SLO)

Local Partner Up To 30% of SPV
To form consortium (equity financing)

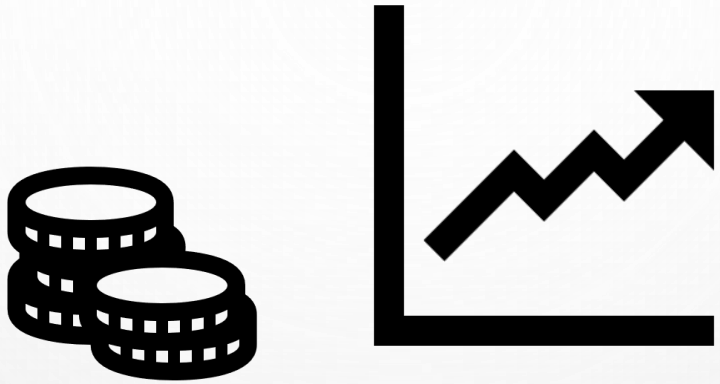
IPP Owner:
Potential Investor, Foreign Partner Owned 70% of SPV

Financing
Pre project financing
70% project financing
30% equity financing

Joint Production
Support local producer (improve equipments, Int'l certification etc)
Sourcing Raw Materials

OFF TAKER
(Cool Storage Coy)

PERMEN ESDM NO 50/2017
Pemanfaatan Energy Baru Terbarukan



Ultimate Goal: Mutual Cooperation and Collaboration for Profitable Business Growth

TERIMAKASIH