

ION We Renew Energy



Ho Chi Minh 2022

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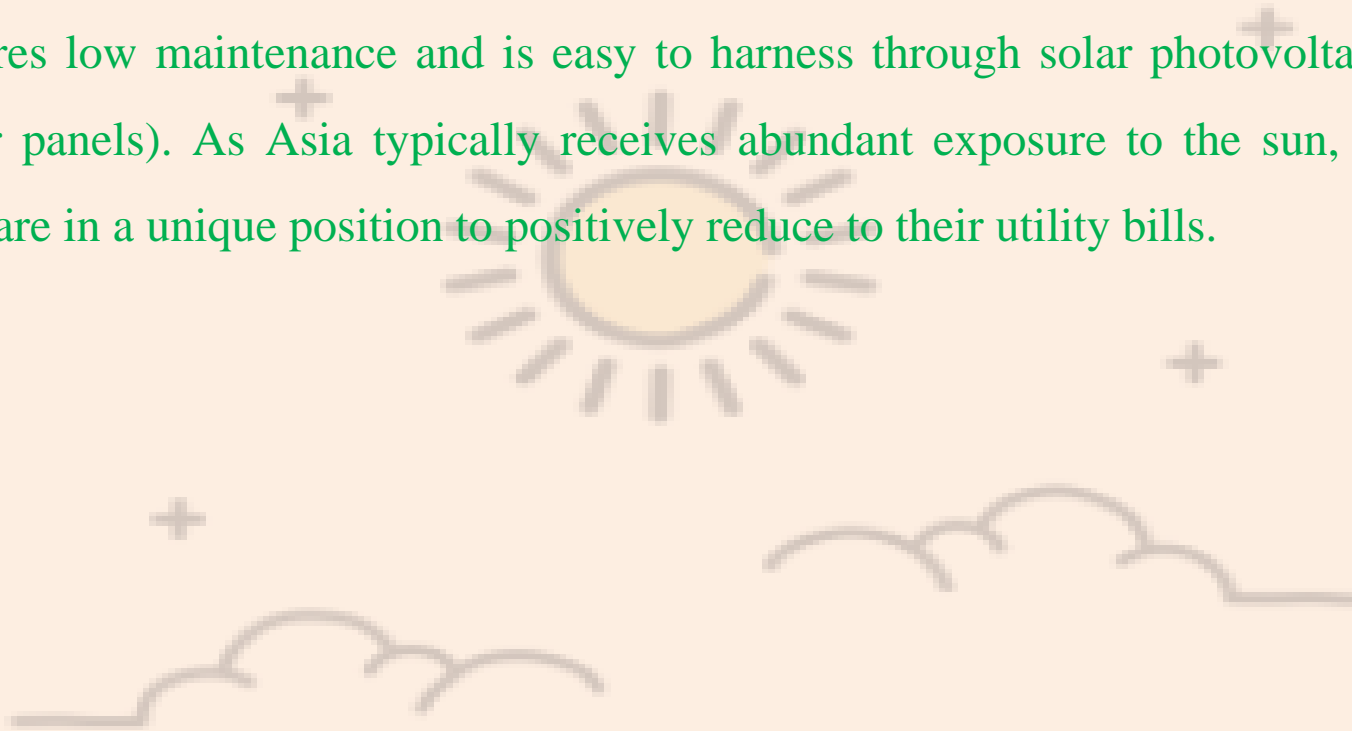
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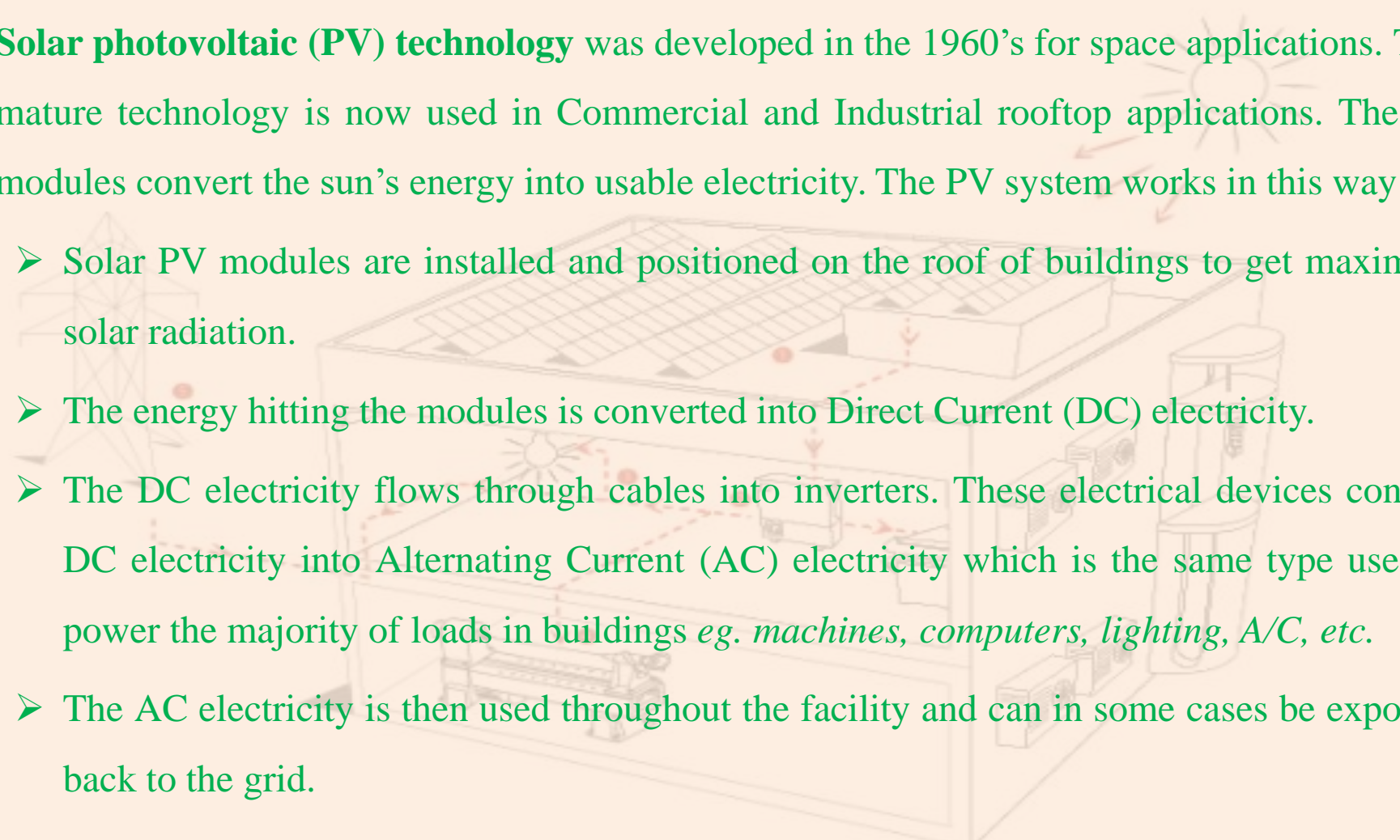
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A.1 Why Solar?

- The sun has produced energy for billions of years. We call this solar energy. Solar energy does not produce any pollutants and is one of the cleanest sources of renewable energy. It requires low maintenance and is easy to harness through solar photovoltaic technology (solar panels). As Asia typically receives abundant exposure to the sun, companies in Asia are in a unique position to positively reduce their utility bills.

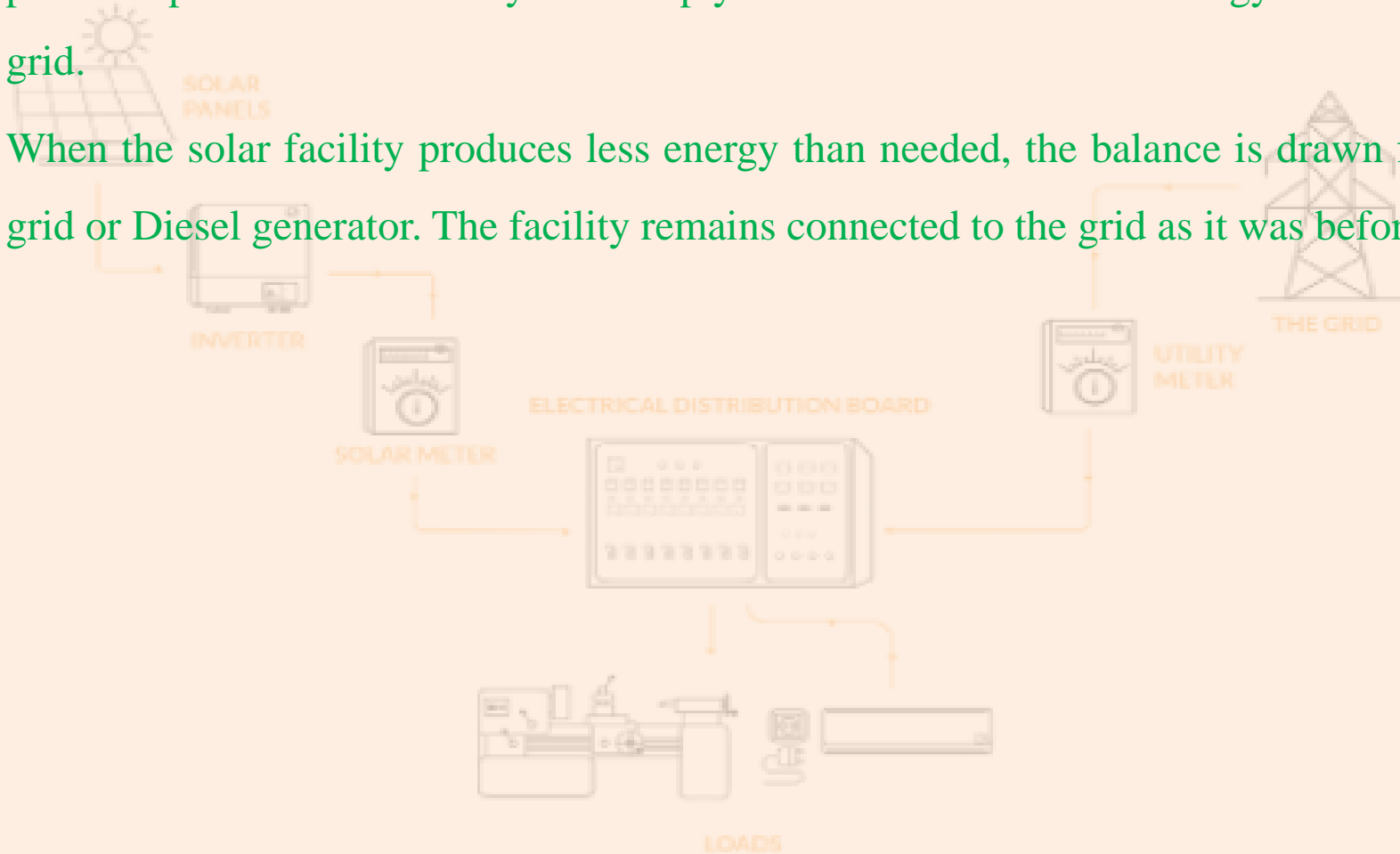


A.2 How Do Solar Panels Work?

- ❖ **Solar photovoltaic (PV) technology** was developed in the 1960's for space applications. This mature technology is now used in Commercial and Industrial rooftop applications. The PV modules convert the sun's energy into usable electricity. The PV system works in this way:
- Solar PV modules are installed and positioned on the roof of buildings to get maximum solar radiation.
 - The energy hitting the modules is converted into Direct Current (DC) electricity.
 - The DC electricity flows through cables into inverters. These electrical devices convert DC electricity into Alternating Current (AC) electricity which is the same type used to power the majority of loads in buildings *eg. machines, computers, lighting, A/C, etc.*
 - The AC electricity is then used throughout the facility and can in some cases be exported back to the grid.
 - All generated AC electricity is tracked and easily accessible by the facility owner.
- 

A.3 How Will This System Reduce Energy Cost For Us?

- We does not disconnect or replace your current utility connection. The system installed provides power to the facility and simply reduces the amount of energy taken from the grid.
- When the solar facility produces less energy than needed, the balance is drawn from the grid or Diesel generator. The facility remains connected to the grid as it was before.



A.4 What We Offer?

- ION M&E Company Limited specializes in providing solutions for investment, engineering, procurement, construction (EPC) of rooftop solar power system.. Together with a team of experienced engineers, who have directly participated in engineering, we understand deeply the factors that make high quality and best investment efficiency.
- ION is built on the basis of core values with customer focus, reliable, professional, continuous improvement, strive non-stop for mission – bring green energy to community, contributing to sustainable socio-economic development.

- ✓ Soil expertise: ION is focused on the development of a renewable energy ecosystem and provides a team of highly skilled engineers with extensive experience.
- ✓ Good reputation: ION always follows through on its commitments, ensuring the quality, safety, and aesthetics of each project completed.
- ✓ Attentive attitude: ION is dedicated to providing thoughtful services and advising customers on the best solution.



- ✓ Professional system design by a highly qualified and experienced team of engineers. Furthermore, the solar power system will be meticulously calculated so that it does not interfere with existing activities on the roof...
- ✓ Providing genuine, carefully selected materials: To ensure overall system quality, we carefully selects all materials from leading domestic and international prestigious brands. For main materials such as solar panels and inverters, in particular we only uses genuine products from leading, globally prestigious brands, and all products have Certificates of Origin (CO) and Certificates of Quality (CQ).
- ✓ Construction and installation meet design standards: ION's experienced construction engineers will ensure that technical standards are met following design drawings and standards such as ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018. In particular, after construction, the solar power system will be checked by engineers using the specialized testing equipment to ensure safe operation of the system and effectiveness after handing over to the customer.

OUR COMMITMENT TO YOU

- ✓ 10 years preventive maintenance service.
- ✓ 02 year system defects liabilities warranty.
- ✓ 06 years Inverter warranty.
- ✓ 10 years solar panel warranty.
- ✓ 24/7 standby emergency service.

- Licensed Electrical Engineer by Energy Market Authority in Singapore
- Professional Engineer (Electrical) by Professional Engineer Board in Singapore
- Master Business Administration
- Certificate of Competence, Design & Installation of Grid Connected Photovoltaic Training course by Pusat Tenaga Malaysia (PTM) (16-27 June 2008) Cert: PTM-08/015
- Certificate in Construction Safety for Project Managers, 19 Jan – 06 Feb 2009, approved by Ministry of Manpower in Singapore
- Certificate for CEO/Top Management (bizSAFE Level 1), 21 Sep 2018, approved by Ministry of Manpower in Singapore
- Certificate in Risk Management (bizSAFE Level 2), 18-19 June 2009, approved by Ministry of Manpower in Singapore
- Certified First Aider by Singaporean Red Cross Society 04 Feb 2009. Cert: 59022



Amega Precess Management Pte Ltd

GST & Company Registration No. 201209699W

Curriculum Vitea

Director



Er Tan Kok Ann

- Licensed Electrical Engineer by Energy Market Authority in Singapore.
- Professional Engineer (Electrical) by Professional Engineer Board in Singapore.
- Master Business Administration.
- Certificate of Competence, Design & Installation of Grid Connected Photovoltaic Training course by Pusat Tenaga Malaysia (PTM) (16-27 Jun 2008) Cert: PTM-08/015.
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Amega Precess Management Pte Ltd

GST & Company Registration No. 201209699W

Curriculum Vitea Experiences

S/N	Project Description	Project Duration	Contract Value (Estimate)
01	Project management and ensuring the smooth implementation of the underground cable tunnels for 400kV transmission cables. Singapore	03 years	S\$ 120m
02	Renewal of 22kV service cables to Tg Pagar Conservation projects. Singapore	05 years	S\$ 1.2m
03	22kV Temporary supplies to the construction of Tuas Power Station. Singapore	0.5 year	S\$ 1.1m
04	Upgrading of supplies to offshore island and commissioning of new 22kV electrical substation. Singapore	03 months	S\$ 2.3m
05	Installation and commissioning of 22kV supplies to factories in the Tuas development. Singapore	12 months	S\$ 3.3m
06	Installation and commissioning of 15.66kWp PV system for private residence. Singapore	02 weeks	S\$ 150-200k



Amega Precess Management Pte Ltd

GST & Company Registration No. 201209699W

Curriculum Vitea Experiences

S/N	Project Description	Project Duration	Contract Value (Estimate)
07	71.4kWp Grid-connected PV system on the Malaysian Ener Singapore gy Commission Diamond Building, Kuala Lumpur, Malaysia (Surahanjaya Tenaga). Turnkey system design, simulation, equipment sizing and selection, supply and installation. Malaysia	02 months	RM 1.5-2.0m
08	300.37kWp grid-connected PV system on rooftop of REC Solar water factory. Turnkey system design, simulation, equipment sizing and selection, supply, installation and commissioning. Singapore	02 months	S\$ 2.5-3.0m
09	206.532kWp Grid-connected PV system for a carport in Laguna, Philippines. Turnkey system design, simulation, equipment sizing and selection, supply, installation and commissioning. Philippines	05 months	USD 1.1-1.2m



Amega Precess Management Pte Ltd

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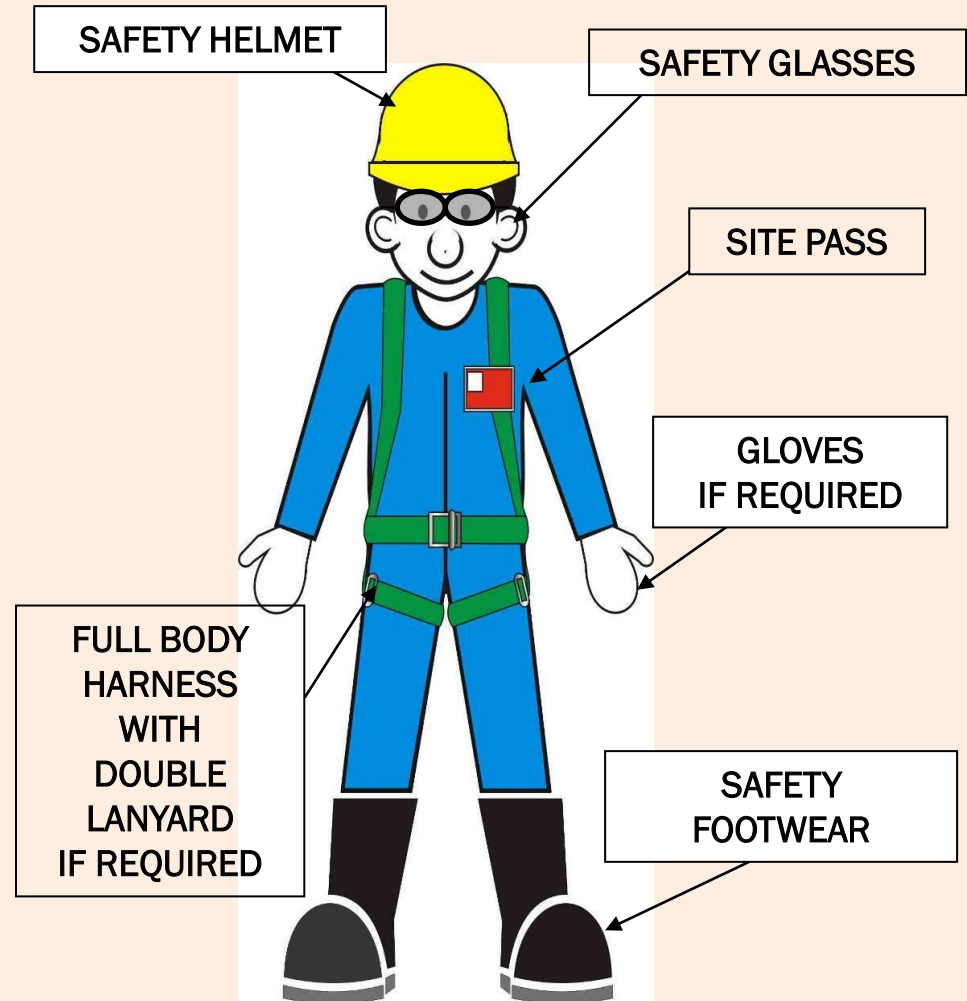
Curriculum Vitea Experiences

S/N	Project Description	Project Duration	Contract Value (Estimate)
10	1088kWp Grid-connected PV system on ground mounted for Maan University in Jordan Turnkey system design, simulation, commissioning. Singapore.	02 months	USD 1.9m
11	Project & Technical Advisor to a consortium to develop a ground mounted 60 MWp Grid-connected PV system mounted in Bangladesh	12 months	USD 110m
12	Project & Technical Advisor to the EPC on the design, install and commission of roof and ground mounted of Grid-connected PV system in Singapore and Vietnam	Ongoing	More than USD 5m
13	Project & Technical Consultant to developer on the design, install and commission of ground mounted 60MW soar PV system for multiple sites in Singapore	Ongoing	More than USD 60m

1. Personal Protective Equipment (PPE)

Ensure that all employees have to equip all mandatory PPE.

Other PPE are required dependance on the method of statement, risk assessment (such as: leather gloves, leather apron, welding shield for welders)

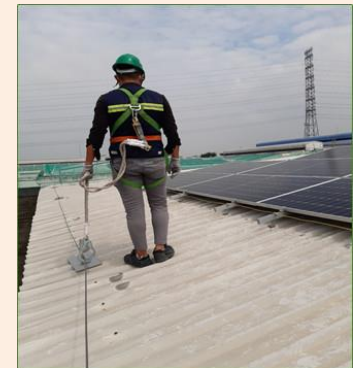


2. Safety measures

Walking on the roof



Install Life line



Install barrier to cover the roof



G.1 GreenCross RTS in Binh Duong Province

G.1.1 General Brief

Project address: Green Cross Factory VSIP 01, Binh Duong Province.

Investor: Vietnam - Singapore Smart Energy Solutions (VSSSES).

Solar PV System Size: 577 KWp.

Total Modules: 1300 Nos. Longi 445Wp - Model No. LR4-72HPH-445M.

Module Dimension (LxWxH): 2094x1038x35 mm, 23.5 kg.

Inverter 1: HUAWEI SUN2000-100KTL-M1 .

Inverter 2: HUAWEI SUN2000-60KTL .

G.1 GreenCross RTS In Binh Duong Provice

G.1.2 Photos of Completion



G.2 II-VI RTS In Binh Duong Provice

G.2.1 General Brief

Project address: II-VI Factory VSIP 01, Binh Duong Province.

Investor: Vietnam - Singapore Smart Energy Solutions (VSSSES).

Solar PV System Size: 638 KWp.

Total Modules: 1434 Nos. Longi 445Wp - Model No. LR4-72HPH-445M.

Module Dimension (LxWxH): 2094x1038x35 mm, 23.5 kg.

Inverter: HUAWEI SUN2000-100KTL-M1 .

G.2 II-VI RTS In Binh Duong Provice

G.2.2 Photos of Completion



G.3 VBL RTS Project (Heineken Factory)

G.3.1 General Brief

Project address: Heineken Factory 12 Distric, HCM City.

Investor: Heineken Factory.

Solar PV System Size: 52.205 KWp.

Total Modules: 197Nos. TRINA 265Wp Multi-C Module.

Module Dimension (LxWxH): 1650x992x40 mm, 19.6 kg.

Inverter: SMA STP 20000TL.



G.3 VBL RTS Project (Heineken Factory)

G.3.2 Photos of Completion



G.4 Sao Dau RTS Design Proposal

Engineering, Procurement and Construction (EPC)

- 1. Design roof top solar system.**
 - 2. Supply and installation.**
 - 3. Testing and commissioning.**
 - 4. Handover to operation.**
 - 5. Defect liability warranty and maintenance proposal.**
- 
- An aerial photograph of a large industrial complex, likely a factory or warehouse. The main building has a long, low profile with a flat roof covered in a grid of solar panels. To the right, there is a large parking area with several semi-trailers parked. In the foreground, there is a paved area with a small landscaped garden featuring a fountain and some trees. The background shows a line of trees and a hazy sky.

G.4 Sao Dau RTS Design Proposal

ASTRONERGY-CHINT solar system use as the base reference system of our solar system design proposal:

- Solar panel: **CHSM72M-HC-545W**
- Solar Inverter: **CPS SCA110KTL-DO/EU**





ASTRO 5 Semi
Create Sustainable and Efficient Green Energy

CHSM72M-HC
Monofacial Series (182)

535~550W

PERC+ / Multi-busbar / Half-cut
Non-destructive cutting
PID resistance
Lower BOS cost & LCOE

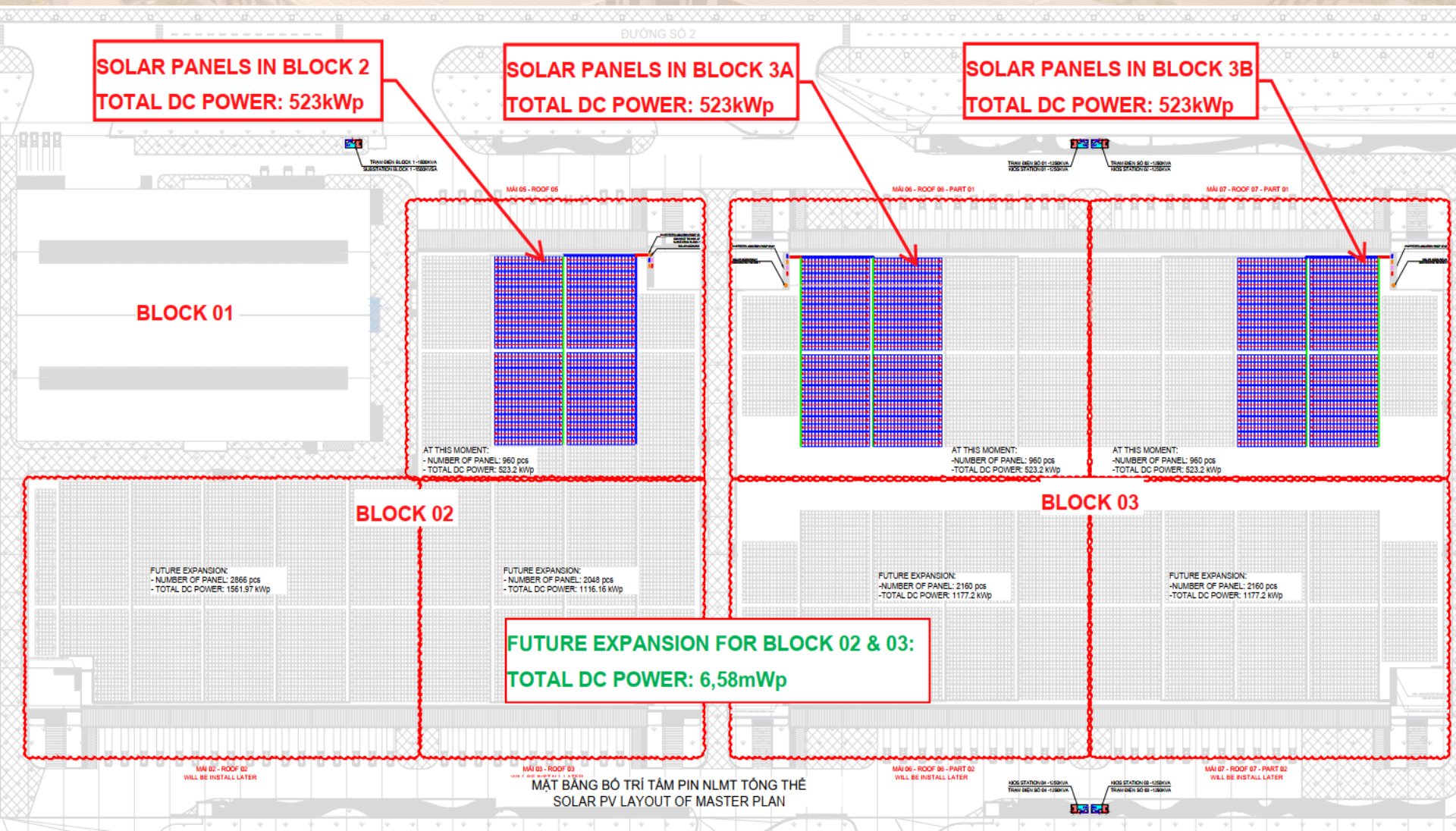


CPS SCA110KTL-DO/EU
Chint Power Three-phase Inverter
High Return of the Whole Life Cycle



G.4 Sao Dau RTS Design Proposal

Solar panel master plan



G.4 Sao Dau RTS Design Proposal

PVsyst Report Calculation data



PVsyst V7.2.0

VCO, Simulation date:
07/04/22 11:29
with v7.2.0

Project: Solar Dau Giay Factory

Variant: New simulation variant

Project summary

Geographical Site

DAU GIAY FACTORY
Vietnam

Situation

Latitude 10.93 °N
Longitude 107.15 °E
Altitude 158 m
Time zone UTC+7

Project settings

Albedo 0.20

Meteo data

DAU GIAY FACTORY
Meteonorm 8.0 (1996-2015), Sat=100% - Synthetic

System summary

Grid-Connected System

Simulation for year no 1

Tables on a building

PV Field Orientation

Fixed plane
Tilt/Azimuth 1 / 180 °

Near Shadings

Linear shadings

User's needs

Unlimited load (grid)

System information

PV Array

Nb. of modules 960 units
Pnom total 523 kWp

Inverters

Nb. of units 3.6 units
Pnom total 360 kWac
Pnom ratio 1.453

Results summary

Produced Energy	738.6 MWh/year	Specific production	1412 kWh/kWp/year	Perf. Ratio PR	78.01 %
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G.4 Sao Dau RTS Design Proposal

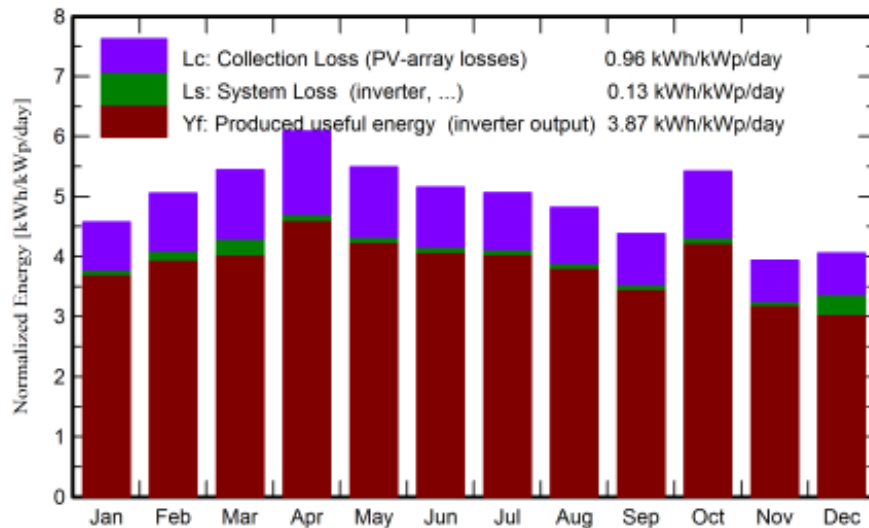
PVsyst Report Calculation data

Main results

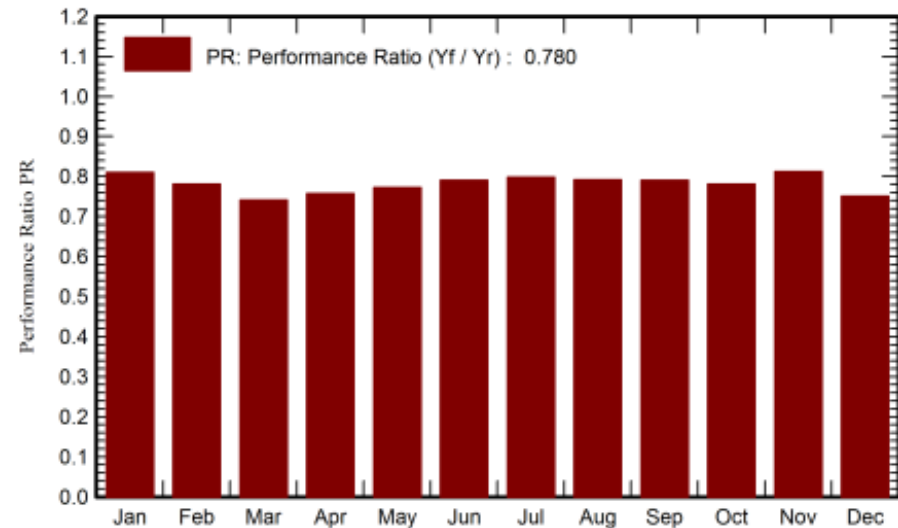
System Production

Produced Energy (P50)	738.6 MWh/year	Specific production (P50)	1412 kWh/kWp/year	Performance Ratio PR	78.01 %
Produced Energy (P90)	721 MWh/year	Specific production (P90)	1378 kWh/kWp/year		
Produced Energy (P95)	716 MWh/year	Specific production (P95)	1368 kWh/kWp/year		

Normalized productions (per installed kWp)



Performance Ratio PR

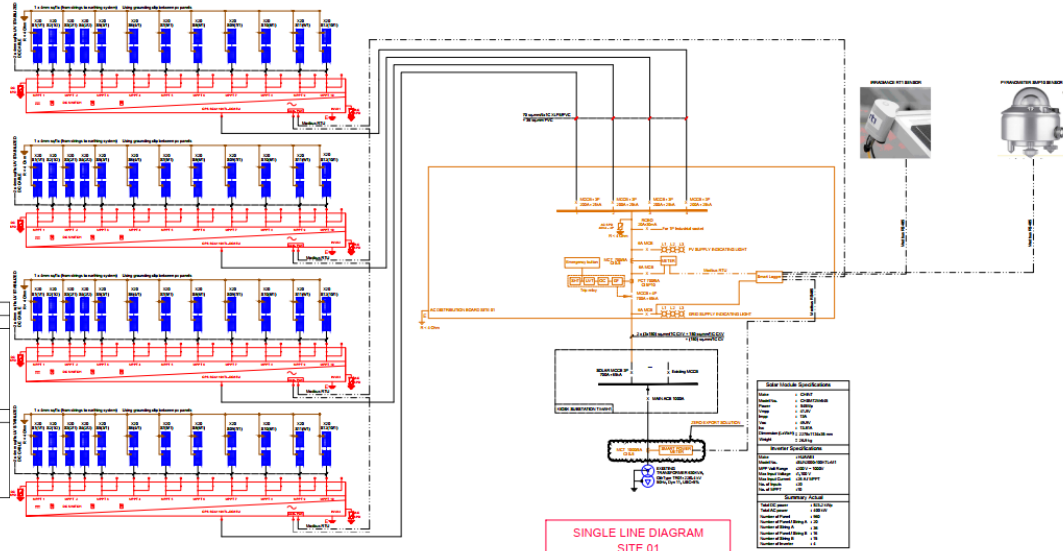


G.5 Bac Ninh RTS Design Proposal

Solar panel master plan



SITE 01		SITE 02		Summary Site-01	
Model No. :	CHNT	Model No. :	CHNT	Total DC power :	523.2 kWp
Power :	5400W	Power :	5400W	Total AC power :	440 kWp
Vmp :	41.83V	Vmp :	41.83V	Number of Panel :	960
Imp :	13A	Imp :	13A	Number of Panel String A :	20
Voc :	48.8V	Voc :	48.8V	Number of String B :	15
Isc :	13.81A	Isc :	13.81A	Number of String C :	15
Dimension (LxWxH) :	2278x134x35 mm	Dimension (LxWxH) :	2278x134x35 mm	Number of inverter :	4
Weight :	22.8 kg	Weight :	22.8 kg		
Inverter Specifications (5000W)		Inverter Specifications (5000W)		Summary Site-02	
Model :	HUWIBE	Model No. :	HUWIBE	Total DC power :	158.9 kWp
Model No. :	50000200-000001401	Model No. :	50000200-000001401	Total AC power :	122 kWp
MPP Volt Range :	200 V ~ 550V	MPP Volt Range :	200 V ~ 550V	Number of Panel :	288
Max Input Voltage :	1.150 V	Max Input Voltage :	1.150 V	Number of Panel String A :	16
Max Input Current :	26 A / MPPT	Max Input Current :	22 A / MPPT	Number of String B :	16
No. of Strings :	2	No. of Strings :	2	Number of inverter :	2
No. of MPPT :	1	No. of MPPT :	1		



Model	Manufacturer	Power	Voltage	Current	Frequency	Phase	Protection	Material	Color	Weight	Dimensions	Notes
CHNT	CHNT	5400W	41.83V	13A	50Hz	3-Phase	IP20	Aluminum	Grey	22.8kg	2278x134x35mm	
HUWIBE	HUWIBE	5000W	200V-550V	26A	50Hz	1-Phase	IP20	Aluminum	Grey			

Solar PV Layout of Master Plan

Single Line Diagram ACDB-Site 01

G.6 Video of Latest Job Reference.



Thank you

