

Small and Medium PV System Database in the APEC Region

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Honolulu, Hawaii, USA
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1. To compile, collate, analyze, report, disseminate profiling of small to medium scale PV system information in selected Grid Connected and Off-Grid PV systems.
 - **Compiled Data for 45 PV systems**
2. To initiate a strong institutional network for collecting, updating and maintaining the database for the PV systems in the APEC member economies.
 - **Indonesia, Malaysia, Thailand, United States & Viet Nam**
3. To share the information of small to medium scale PV system status in selected GC and OG PV systems in a common platform as an information cloud sharing environment.
 - **www.apecpv.cmru.ac.th**

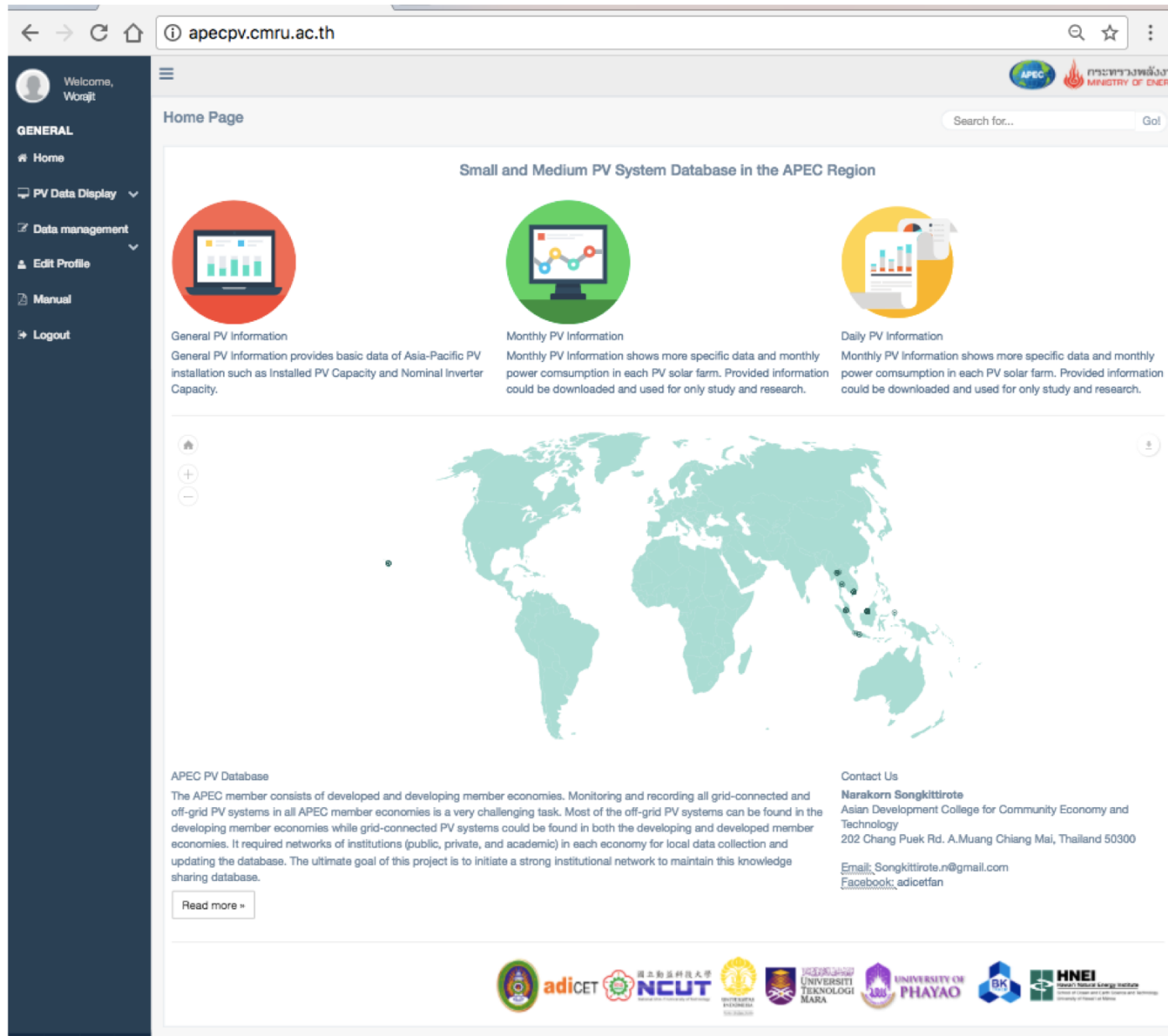
1st APEC Workshop on Small and Medium PV System Database in the APEC Region at Chiang Mai, Thailand



Develop structure of the database platform & create institutional network



Experience of database usage and way forward with stakeholders, reporting and data analysis



The screenshot shows the PV Database Portal website. The browser address bar displays apecpv.cmru.ac.th. The website has a dark blue sidebar on the left with a user profile (Welcome, Worajit) and a menu with options: Home, PV Data Display, Data management, Edit Profile, Manual, and Logout. The main content area is titled 'Home Page' and features a search bar. Below the search bar, there is a section titled 'Small and Medium PV System Database in the APEC Region' with three circular icons representing different data types: General PV Information, Monthly PV Information, and Daily PV Information. Each icon is accompanied by a brief description of the data provided. Below this section is a world map with a green overlay. At the bottom of the page, there is a section titled 'APEC PV Database' with a detailed description of the project's goals and a 'Read more' button. To the right of this section is a 'Contact Us' block with the name 'Narakorn Songkittirote', his affiliation 'Asian Development College for Community Economy and Technology', his address '202 Chang Puek Rd. A.Muang Chiang Mai, Thailand 50300', and his email 'Email: Songkittirote.n@gmail.com' and Facebook 'Facebook: adicetfan'. The footer of the website contains logos for various institutions: adiCET, NCUT, Universiti Teknologi MARA, University of Phayao, and HNEI.

Welcome, Worajit


GENERAL

- Home
- PV Data Display
- Data management
- Edit Profile
- Manual
- Logout

Home Page


Search for... Go!

Small and Medium PV System Database in the APEC Region




General PV Information

General PV Information provides basic data of Asia-Pacific PV installation such as Installed PV Capacity and Nominal Inverter Capacity.




Monthly PV Information

Monthly PV Information shows more specific data and monthly power consumption in each PV solar farm. Provided information could be downloaded and used for only study and research.



Daily PV Information

Monthly PV Information shows more specific data and monthly power consumption in each PV solar farm. Provided information could be downloaded and used for only study and research.








APEC PV Database

The APEC member consists of developed and developing member economies. Monitoring and recording all grid-connected and off-grid PV systems in all APEC member economies is a very challenging task. Most of the off-grid PV systems can be found in the developing member economies while grid-connected PV systems could be found in both the developing and developed member economies. It required networks of institutions (public, private, and academic) in each economy for local data collection and updating the database. The ultimate goal of this project is to initiate a strong institutional network to maintain this knowledge sharing database.

[Read more »](#)

Contact Us

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APEC PV Database

Worajit

apecpv.cmru.ac.th/tables_dynamic.php

List of Small and Medium PV System Database in the APEC Region

Data sharing platform for Small and Medium Scale PV systems in the APEC Region: Please click for PV System Data in General, Monthly and Daily PV Data

Show 50 entries

Economy	PV System Name	Size (kWp)	Grid-Connected/Off-Grid	General PV Data	Monthly PV Data	Daily PV Data
Indonesia	IFC Rooftop	28	Grid-Connected	View Data	View Data	View Data
Indonesia	Koloral Island	1.86	Off-Grid	View Data	View Data	View Data
Indonesia	JATENG006	15	Off-Grid	View Data	View Data	View Data
Indonesia	MALS11	50	Off-Grid	View Data	View Data	View Data
Malaysia	UITM-GERC Mono System	9	Grid-Connected	View Data	View Data	View Data
Malaysia	UITM-GERC Poly System	5	Grid-Connected	View Data	View Data	View Data
Malaysia	UITM-GERC Thin Film	1	Grid-Connected	View Data	View Data	View Data
Malaysia	Telok Melano	66.3	Off-Grid	View Data	View Data	View Data
Malaysia	Anur Dalan	56	Off-Grid	View Data	View Data	View Data
Malaysia	Long Semadoh Naseb	106.92	Off-Grid	View Data	View Data	View Data
Malaysia	Long Kajang	69	Off-Grid	View Data	View Data	View Data
Malaysia	Lusung Laku, Balanga	226.8	Off-Grid	View Data	View Data	View Data
Malaysia	Long Sukang, Lewas	238.14	Off-Grid	View Data	View Data	View Data
Malaysia	Rumah Dau Sri Anan	129	Off-Grid	View Data	View Data	View Data
Malaysia	Bario Central	887	Off-Grid	View Data	View Data	View Data
Malaysia	Long Lellang Bario Baram	127	Off-Grid	View Data	View Data	View Data
Malaysia	Long Peluan Bario Baram	69	Off-Grid	View Data	View Data	View Data
Malaysia	Long Seridan Bario Baram	112.32	Off-Grid	View Data	View Data	View Data
Malaysia	Pa' Dalih Bario Baram	108	Off-Grid	View Data	View Data	View Data
Malaysia	Pa' Lungan Bario Baram	68.12	Off-Grid	View Data	View Data	View Data
Malaysia	Pa' Mada Bario Baram	48.86	Off-Grid	View Data	View Data	View Data
Malaysia	Pa' Remudu Barion Baram	40.32	Grid-Connected	View Data	View Data	View Data
Malaysia	Sungai Tunoh	288.12	Off-Grid	View Data	View Data	View Data
Malaysia	Nanoa Janan	164.64	Off-Grid	View Data	View Data	View Data

<u>Economy</u>	Number
Indonesia	5
Malaysia	23
Thailand	8
United States	4
Viet Nam	<u>5</u>
	45

<u>Type</u>	
Grid-Connected	23
Off-Grid	<u>22</u>
	45

<u>Size kWp</u>	
1-100	31
100-200	7
200-1,000	<u>7</u>
	45

The screenshot shows a web browser at the URL `apecpv.cmru.ac.th/basicdetails.php?id=25`. The interface has a dark blue sidebar on the left with a user profile (Welcome, Worajit) and a menu with options: GENERAL, Home, PV Data Display, Data management, Edit Profile, Manual, and Logout. The main content area is titled 'General PV System Data' and displays details for the 'UITM-GERC Mono System'. The data is organized into three sections: General, System, and Geographical.

Section	Field	Value
General	PV System Name	UITM-GERC Mono System
	Economy/Country	Malaysia
	City	SHAH ALAM
	Date Commissioned	2012-04-17
	Grid-Connected/Off-Grid	Grid-Connected
	Funding Source	Private
System	Module Type	Monocrystalline
	Installed PV Capacity	9 kWp
	Nominal Inverter Capacity	8 kWp
	Peak Sun Hour	4.7 h
	Battery Type	-
	Battery Capacity	-
	System Voltage (DC)	-
	Inverter Nominal Rating (AC)	-
	Auxiliary Generator Type	-
Geographical	Auxiliary Generator Capacity	-
	GPS	3.068734, 101.496945

Welcome,
Worajit

GENERAL

Home

PV Data Display

Data management

Edit Profile

Logout

Manual

Monthly PV Data: PV System Operation Data

Search for... Go!

adiCET 702 kW

-The Monthly PV Data comprised of Electrical Data (Power, Voltage, Current) and Ambient Condition Data (Irradiance, Ambient Temp, Module Temp, Wind Velocity, Rainfall)

-The data are updated monthly.

Copy CSV Print

Search:

Upload Date	Total Power (kW.)	Average Voltage (V.)	Average Current (A.)	Average Irradiance (W/m ²)	Average Ambient Temp (°C)	Average Module Temp (°C)	Average Wind Velocity (mm)	Total Rainfall (m/s)
2017-02	333.64	658.59	511.9	604.54	34.1	47.12	0	0
2017-03	319.7	648.35	497.03	639.41	34.21	43.54	0	0
2017-04	189.15	662.86	294.52	693.15	32.94	44.67	0	0
2017-05	142.12	645.97	222.2	639.73	32.05	42.15	0	0

Showing 1 to 4 of 4 entries

Previous 1 Next

Welcome,
Worajit

GENERAL

Home

PV Data Display

Data management

Edit Profile

Logout

Manual

⋮

Daily PV Data: Detailed PV System Performance

UP Eng BDLG_4

The Daily PV Data comprised of system performance data collected from the data logger such as: Electrical Data (Voltage, Current, Power) and Ambient Condition Data (Irradiance, Module Temp, Ambient Temp)


Show entries

Search:

Date Upload	Performance (V, A, kW)	Irradiance (W/m ²)	Ambient Temp (°C)	Module Temp (°C)
2016-06-01	Download / View Chart	Download / View Chart	Download / View Chart	No Data
2016-06-02	Download / View Chart	Download / View Chart	Download / View Chart	No Data
2016-06-03	Download / View Chart	Download / View Chart	Download / View Chart	No Data
2016-06-04	Download / View Chart	Download / View Chart	Download / View Chart	No Data
2016-06-05	Download / View Chart	Download / View Chart	Download / View Chart	No Data
2016-06-06	Download / View Chart	Download / View Chart	Download / View Chart	No Data
2016-06-07	Download / View Chart	Download / View Chart	Download / View Chart	No Data


Showing 1 to 7 of 7 entries


Previous 1 Next





Welcome,
 Worajit


GENERAL


 Home

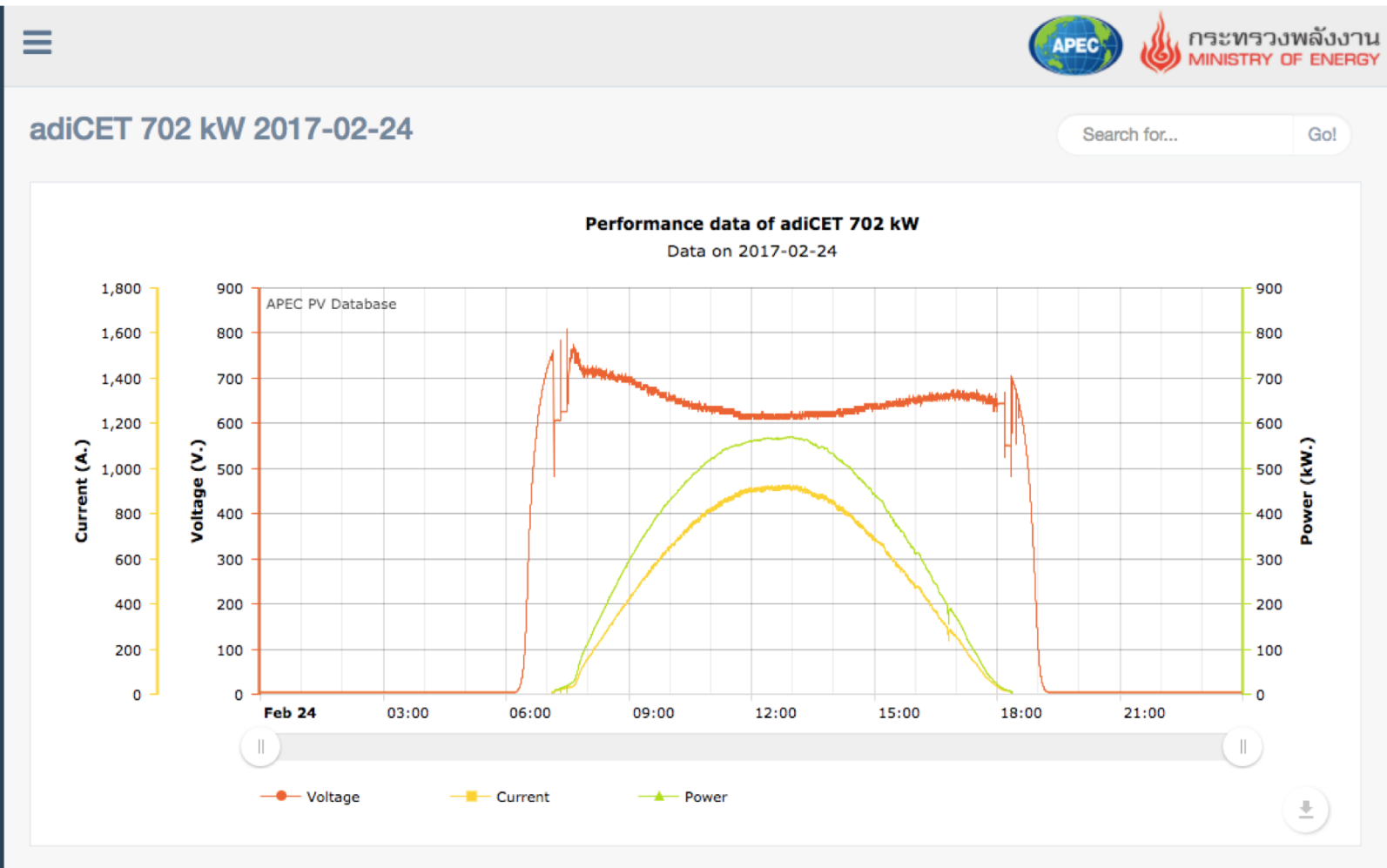
 PV Data Display

 Data management

 Edit Profile

 Logout

 Manual



The screenshot shows a web browser at the URL `apecpv.cmru.ac.th/realtime.php`. The interface has a dark blue sidebar on the left with a user profile (Welcome, Worajit) and a menu with options: GENERAL, Home, PV Data Display (selected), PV Database, Display Realtime, Data management, Edit Profile, Manual, and Logout. The main content area is titled "Realtime Monitoring" and features a card for "adiCET 702 kW". This card includes details: Economy/Country: Thailand, City: Chiang Mai, and Grid-Connected status, along with a circular image of solar panels. It has buttons for "Realtime monitor" and "More information". At the bottom of the card are links for "Monthly PV Data" and "Daily PV Data".

← → ↻ 🏠 ⓘ apecpv.cmru.ac.th/realtime.php

Welcome, Worajit

GENERAL

🏠 Home

🖥️ PV Data Display ▾

● PV Database

● Display Realtime

📝 Data management ▾


👤 Edit Profile

📄 Manual

➡ Logout

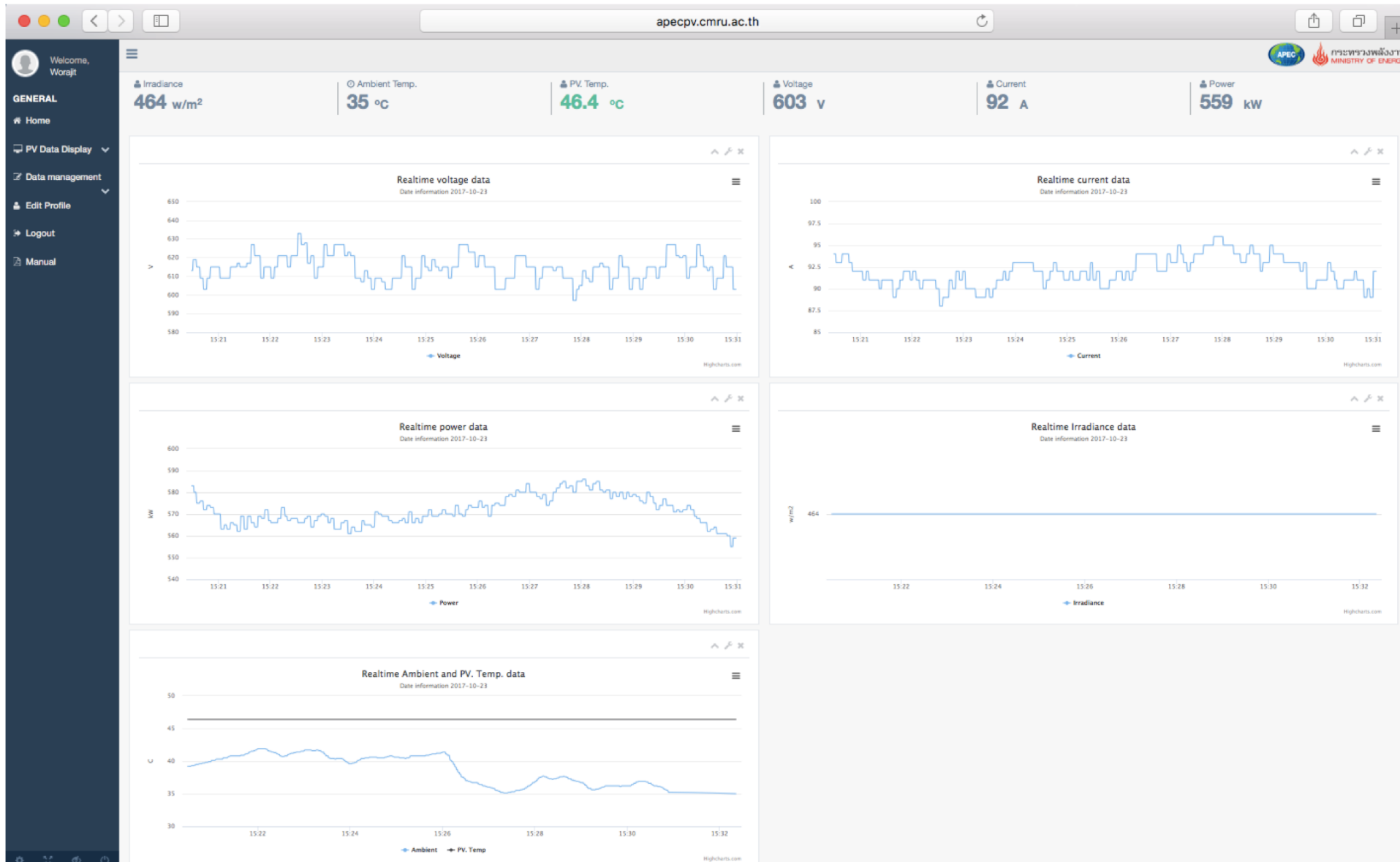
Realtime Monitoring

adiCET 702 kW
Economy/Country: Thailand
📍 City: Chiang Mai
🔌 Grid-Connected



[👁 Realtime monitor](#)
[👤 More information](#)

[📊 Monthly PV Data](#) [📊 Daily PV Data](#)

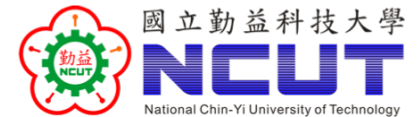


- Tier 1: General data – all sites provided data
 - Technology of PV, PV Size, Inverter Capacity, Location, Date of Commissioned
 - Some provide source of funding, some peak sun hour, most do not have battery and generator
- Tier 2: Monthly Data
 - Difficult for data input due to manual input – should make automatic average/sum from the Tier 3 data
- Tier 3: Detailed Performance Data
 - Data was provided from grid-connected sites with real time monitoring
 - Off grid do not have data for this tier
- Data were provided from academic/research institutions & affiliations
 - University of Teknologi Mara, Malaysia
 - University of Indonesia, Indonesia
 - Chiang Mai Rajabhat University, Thailand
 - University of Phayao, Thailand
 - NECTEC, NSTDA, Thailand
 - NHEI, University of Hawaii, United States
 - Ho Chi Minh City University of Technology, Viet Nam
- Difficult to share data from private or government entity

- Data Updating → Progress & Barriers
 - Need good data; should have some quality control protocol to determine good quality data
 - Standardize units, range of data
 - Time format: date, time zone
 - Easier data input, data sorting, monthly input split to daily
 - Size of file limitation
- Data → Useful for Stakeholders
 - Focused on Performance data (more detail)
 - Performance ratio, Energy Storage, Power Factor, kWh
 - Location Site Mapping/ Geographical View
 - PV structure
 - CO₂ Emission Computations
 - Energy consumption data
 - Algorithm for Forecasting
- Way forward
 - Use IEC 61724 and build upon IEA PVPS Task Force
 - Datasharing agreement
 - Data sharing should start with Universities with their own monitoring system

- Using Existing Network – for data collection
 - Categorize 3 types of data:
 - General
 - National Monitoring System (Monthly/Yearly)
 - Detailed Monitoring System (1-15 min)
 - Grouping/Analyze data based on similar sites
 - Connect with other Related Association
 - Indonesia Green Building Association
 - Malaysia National Monitoring System
- Build upon the network with EGNRET Network, IEA database, APERC, CSR, Industry Associations, Government Monitoring
- Continuation of the project
 - Phase 1: Data Collection 5 Economies
 - Phase 2: Capacity Building – Discuss with APEC Sec with HNEI Support
 - Phase 3: Continue Data Collection for other Economies; Grouping; Analysis for 3 group of stakeholders → Data Utilization

- Ministry of Energy, Thailand
- APEC Secretariat
- Chiang Mai Rajabhat University
- University of Teknologi Mara
- University of Phayao
- Ho Chi Minh City University of Technology
- University of Indonesia
- National Chin-Yi University of Technology
- NECTEC, NSTDA
- NHEI, University of Hawaii
- Office of Naval Research, USA
- National Research Council of Thailand





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