Solar lab
PV systems simulation



PV System installation

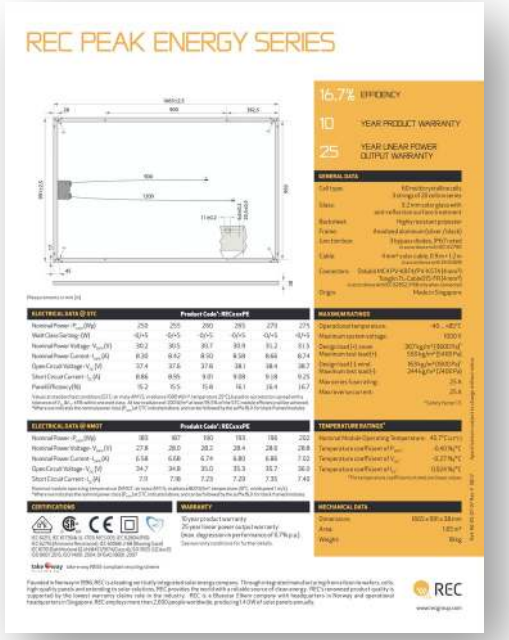
Monocrystalline

- **Type** : ASM6610M 285 – Astroenergy
- **Quantity** : 6
- **Maximum electrical power** : 285 Watts



Polycrystalline

- **Type** : REC Solar 275
- **Quantity** : 6
- **Maximum electrical power** : 275 Watts



PV Sol Software simulation

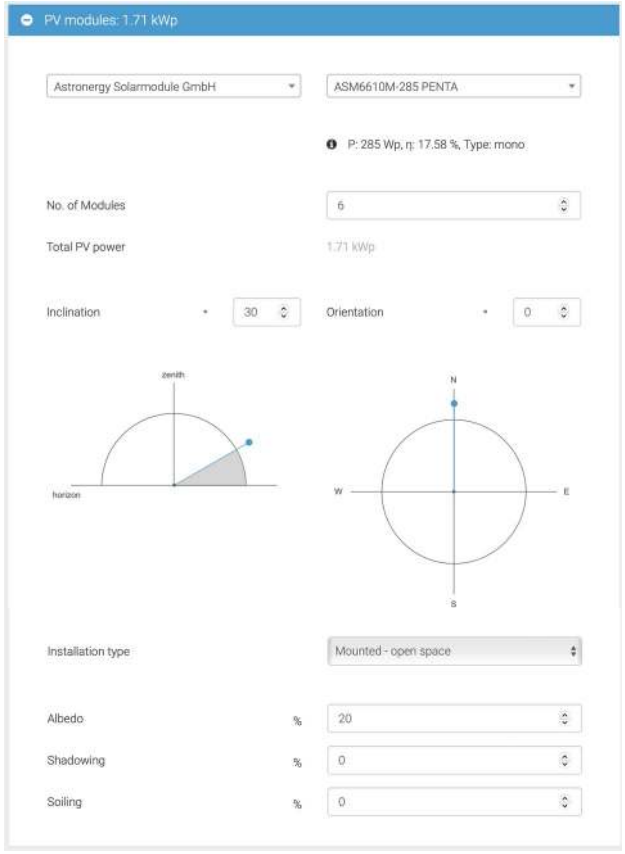


Software

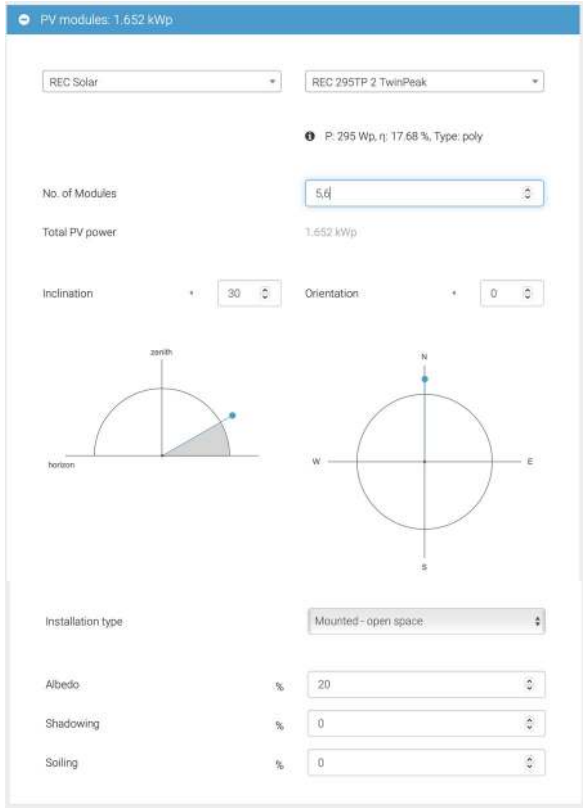
- PV SOL Software
- https://pvsol-online.valentin-software.com/#

Simulation input datas

Monocrystalline PVs



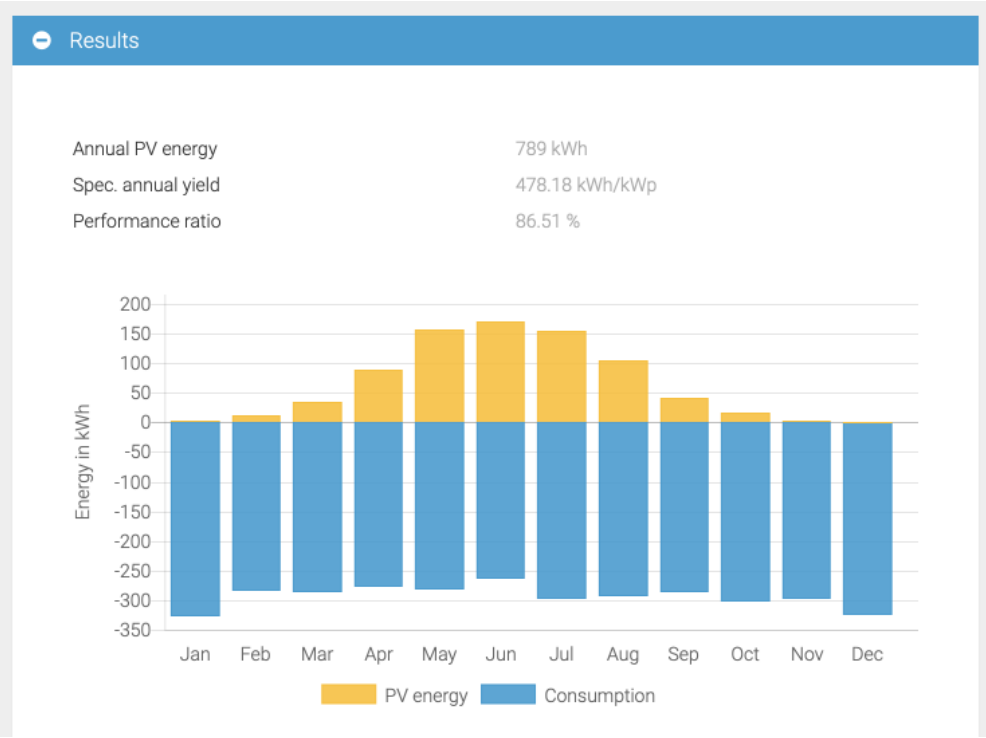
Polycrystalline PVs



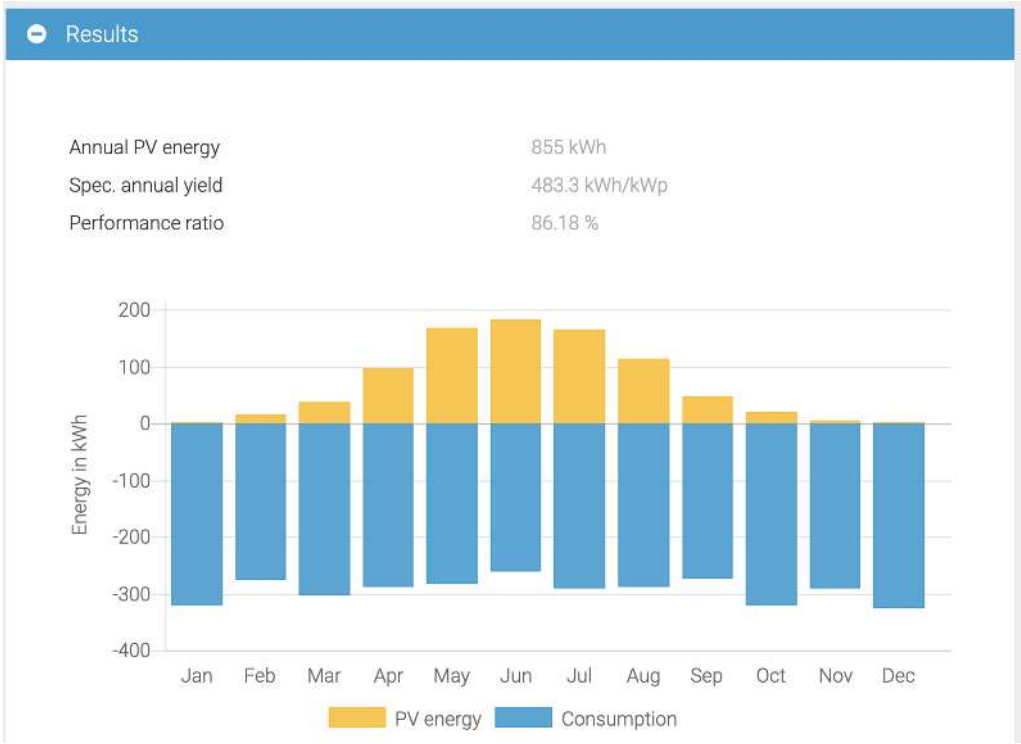
NB : Simulation done with 28 Watts Power PVs instead of 275 Watts (not available)

Simulation results

Monocrystalline PVs



Polycrystalline PVs



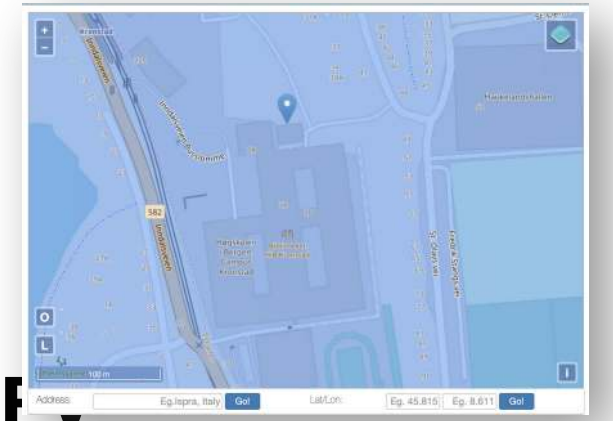
PVGIS Software simulation



Software

- PVGIS Software
- https://re.jrc.ec.europa.eu/pvg_tools/en/tools.html#PVP

Simulation input datas



Monocrystalline PV

- **Installed peak PV Power (Wp)** : 285
- **Battery capacity (Wh)** : 20 000
- **Discharge cutoff limit (%)** : 73
  - Maximum charge voltage : 57,2 V
  - Discharge cutoff voltage : 40V
- **Consumption per day (Wh)** : 300 → *Default value*
- **Slope (°)** : 35 → To be confirmed



Polycrystalline PV

- **Installed peak PV Power (Wp)** : 275
- **Battery capacity (Wh)** : 20 000
- **Discharge cutoff limit (%)** : 73
  - Maximum charge voltage : 57,2 V
  - Discharge cutoff voltage : 40V
- **Consumption per day (Wh)** : 300 → *Default value*
- **Slope (°)** : 35 → To be confirmed

Results analysis

January 2022

- **PVGIS simulation results** : 73Wh*6 + 71Wh*6 = 0,864 kWh
- **PV SOL simulation results** : 3kWh + 3kWh = 3kWh
- **Theorical calculation with radiation datas from UiB** : 15,3 kWh
- **Real production from Tigo** : 3 kWh

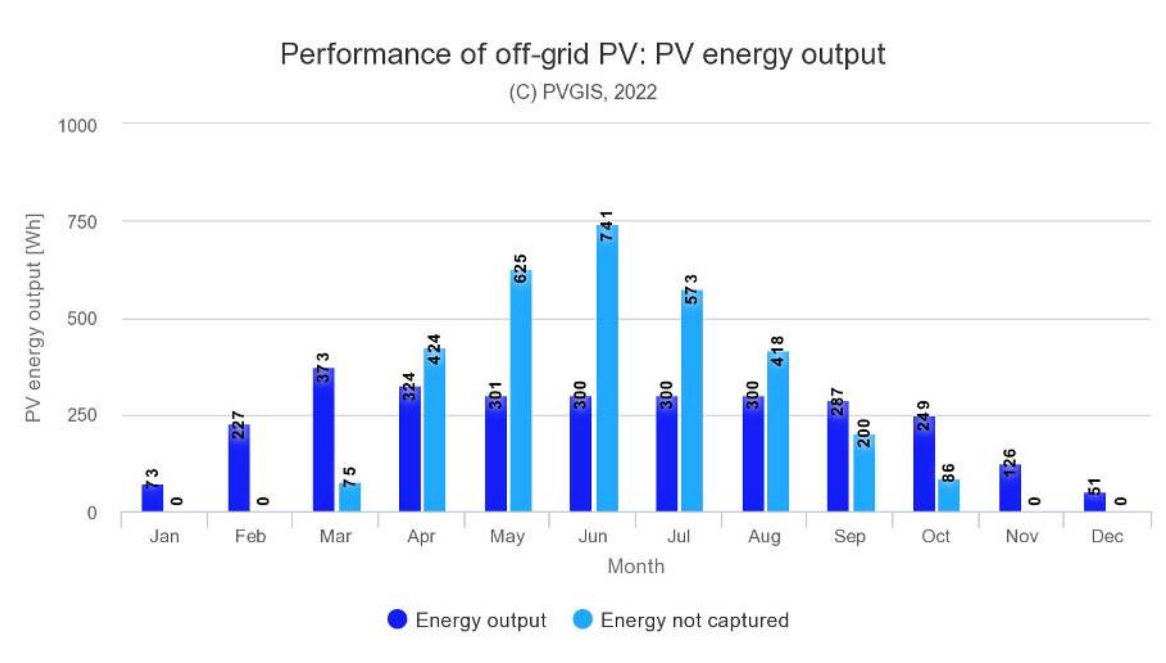
February 2022

- **PVGIS simulation results** : 73Wh*6 + 71Wh*6 = 2,68 kWh
- **PV SOL simulation results** : 3kWh + 3kWh = 28 kWh
- **Theorical calculation with radiation datas from UiB** : 49,9 kWh
- **Real production from Tigo** : 27,7 kWh

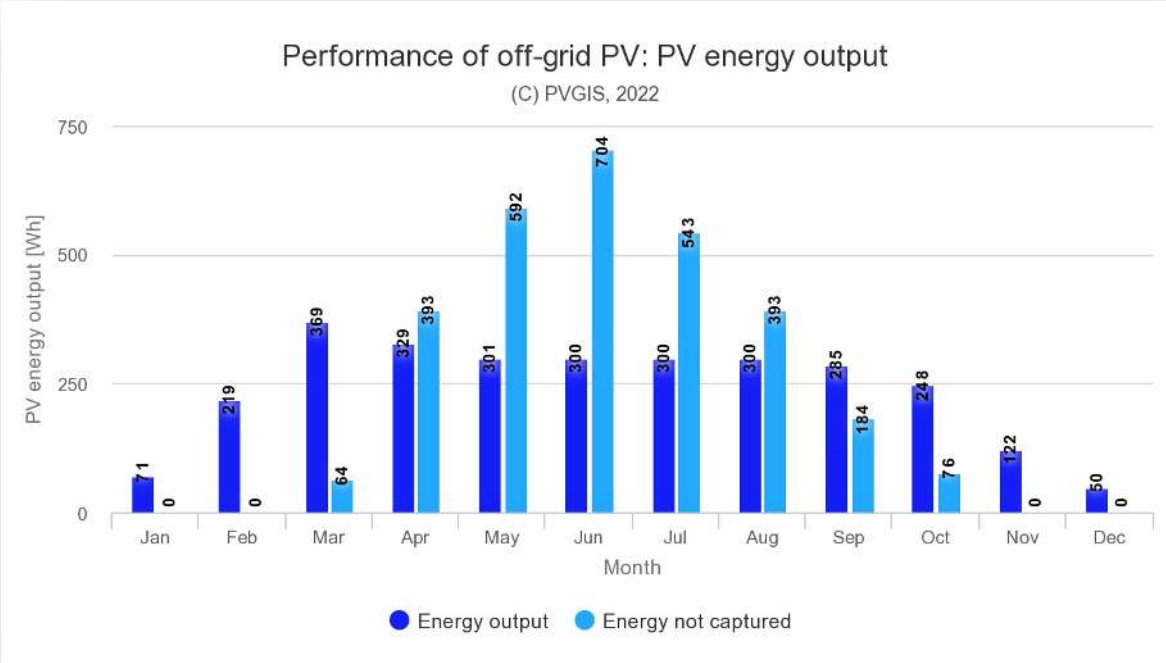
Simulation results

NB : Simulation result is for 1 PV
(6 mono and 6 polycrystalline PVs in our system)

Monocrystalline PV



Polycrystalline PV



Polycrystalline PV performance is lower : consistent with theoretical data we have on solar panels