REnSIM
USER GUIDE

Name: REnSIM, Renewable Energy Simulation Module

Owner: CyRIC, Cyprus Research & Innovation Center Ltd

Website: www.cyric.eu

REnSIM is a flexible energy simulation software applicable for Renewable Energy Systems. REnSIM relies on advanced energy modelling algorithms for the design, optimal sizing and real time calculation of energy output and performance of Photovoltaic Systems and Solar Water Heating Systems.

The REnSIM advantages concern the ease of use and simplicity, quick setup and fast simulation process, increased accuracy of algorithms due to the dynamic simulation of system performance parameters, performance assessment and detection of production losses.

Required data for simulation and performance assessment

Data for PV plant and meter. Required data for system configuration.

- Rated capacity of the PV array [kW]
- PV derating factor [%]
- Incident radiation at standard test conditions [kW/m^2]
- Temperature coefficient of power [%/°C]
- PV cell temperature under standard test conditions [°C]
- Number of PV Panels
- Latitude [°]
- Longitude [°]
- Ambient temperature at which the NOCT is defined [°C]
- Solar radiation at which the NOCT is defined [kW/m^2]
- Nominal operating cell temperature [°C]
- Timezone in Hours East of GMT
- Ground reflectance-albedo [%]
- Surface area of the PV module [m^2]
- Slope of the surface [°]
- Azimuth of the surface [°]
- PV derating factor [%]
- Temperature coefficient of power [%/°C]

Weather data per hour. Required data for simulation.

Day	Time	Temperature [°C]	Horizontal Solar Radiation [kWh/m^2]
28/07/2019	06:00	18.8	0.061
28/07/2019	07:00	19.4	0.161
28/07/2019	08:00	20.9	0.250
28/07/2019	09:00	20.9	0.202
28/07/2019	10:00	22.1	0.511

PV plant power production per hour. Required data for performance assessment.

Day	Time	PV power production [kWh]
28/07/2019	06:00	35
28/07/2019	07:00	88
28/07/2019	08:00	68
28/07/2019	09:00	148
28/07/2019	10:00	219