Renewable energy solution to deliver energy for a bus stop

The idea was to create an authonomic PV system to produce electricity for LED screen and LED light in a bus stop. It was significant to lower the energy consumption. The goal was to choose possibly low components of energy system. The next step after finding the components was to calculate the PV panel and battery range which would cover the system's energy use (graph 1). A theoretical system was calculated and a practical model was composed (scheme 1).

Giving information how:

* the bus stop will be used

* should the system be designed

Theoretical calculations

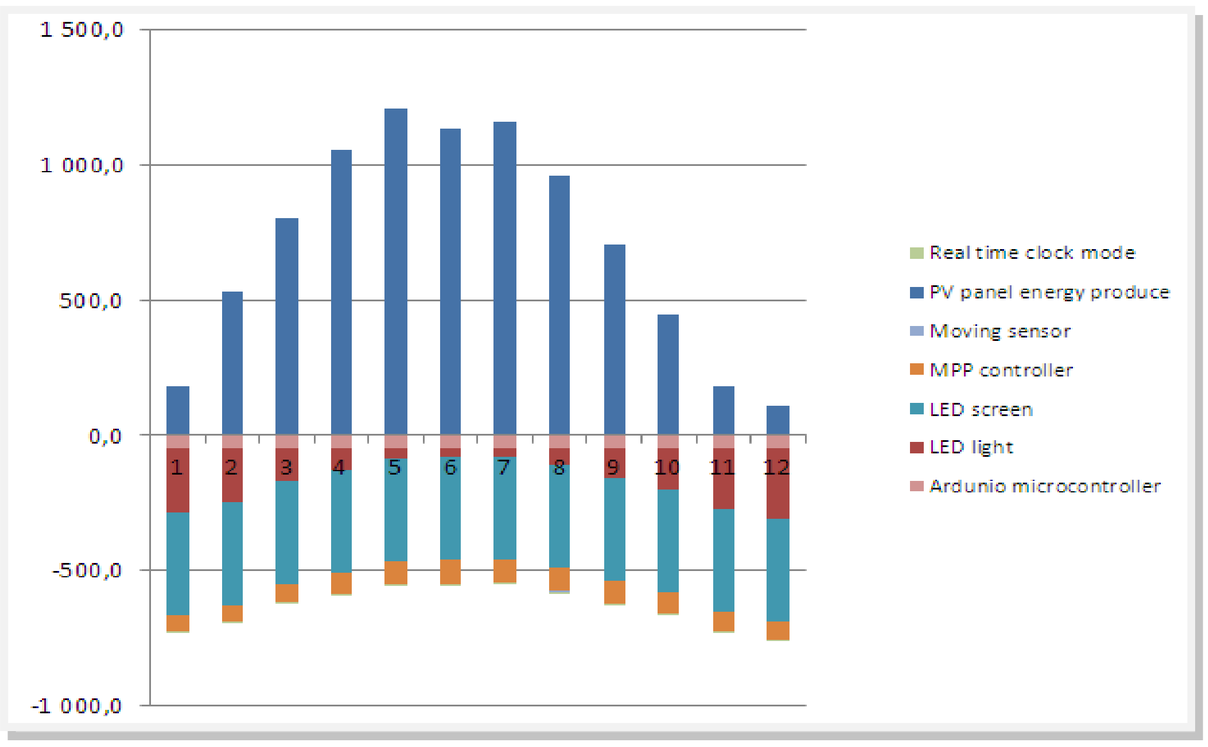
Practical model

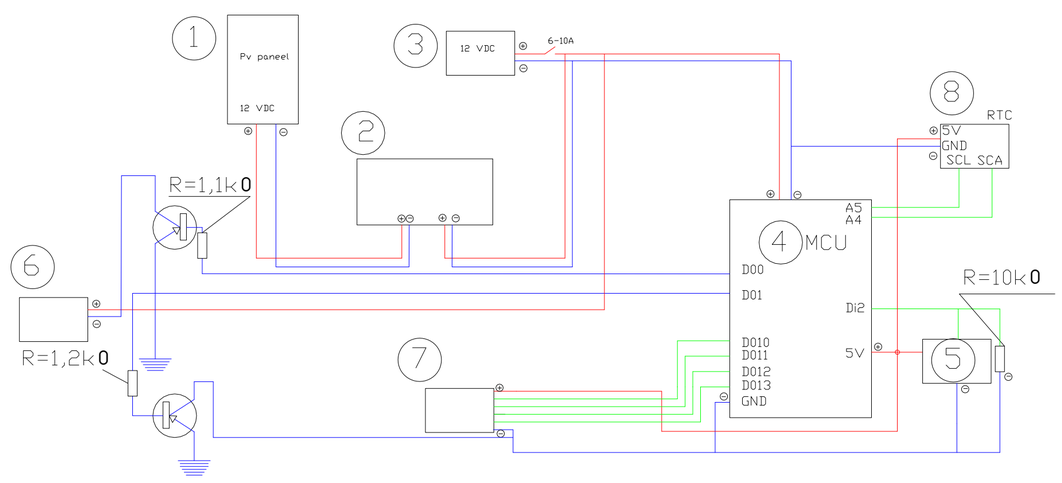
Giving feedback if

* the consumption should be changed

* a part in system should be changed

Graph 1 shows the estimated monthly energy Wh production of the PV panel and amount of energy needed





Scheme 2 shows how the system is designed and how the components are connected

1. PV panel, 2. MPP controller,

3. Battery, 4. Arduino microcontroller, 5. Moving sensor, 6. LED lamp , 7. LED Screen

Conclusion:

Through theoretical and practical design we got an overview of balance of energy production and use as well as the connection of components, which provides minimal loss of energy. When the size criterium of a PV panel is fixed, the capacity of a battery could be chosen. The criterium can also be the price and capacity of a battery, in that case the size of PV panel could be chosen. As every bus stop is used differently and there are several renewable energy systems, this model facilitates modelling these systems in a much easier way.

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PEA Public Energy Alternatives

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