== '''BAT'''==

The battery will be a Li-Po and will have a voltage of 3.7 V. 2.25 Wh is needed by the CubeSat, and the step of charge of the battery must be between 20% and 90%. Therefore, the battery must deliver 3.21 Wh. There will be an electric heater to maintain the temperature of the battery between 0°C and 5°C. This is to avoid the depth of discharge without consume a lot of energy.

== '''PV''' ==

5 PV Triple junction panels are used to produce the electricity using Sunlight. Since the satellite is a Cube, only one to three panels can be under sunlight at the same time. Their efficiency is usually between 24% and 30%. The energy generated depends on the area of PV under sunlight, the inclination of the CubeSat and the solar intensity. Following Matlab simulations, the best inclination has been computed:

[[File:Angle\_CubeSat.png|centre]]

The maximum value of power is obtained for three sides under sunlight with ϕ = 45° and v = 55°

Solar Cells are connected in series but every section will be in parallel: every solar panels will be connected to each other in parallel.

== '''PCC'''==

A MPPT is used to obtain the better power as possible. The Solar Panels will deliver a voltage until 4V. So, the MPPT have to handle a maximum input voltage of 4V and deliver a voltage of maximum 3.7V. Regulators are used to provide the different parts of CubeSat with 3.3V and 5V.

A microcontroller has to control the energy distribution in the entire CubeSat. So, it needs four digital/analog outputs to the other modules and two to the battery: One connection to provide the microcontroller and an other to send the step of charge.

An UART communication is used between the EPS and the OBC. An SPI communication is used for the other connections.

== '''Sizing EPS Files''' ==

[[File:Batteries.pdf]]

[[File:PCC.pdf]]

[[File:Microcontrollers.pdf]]