



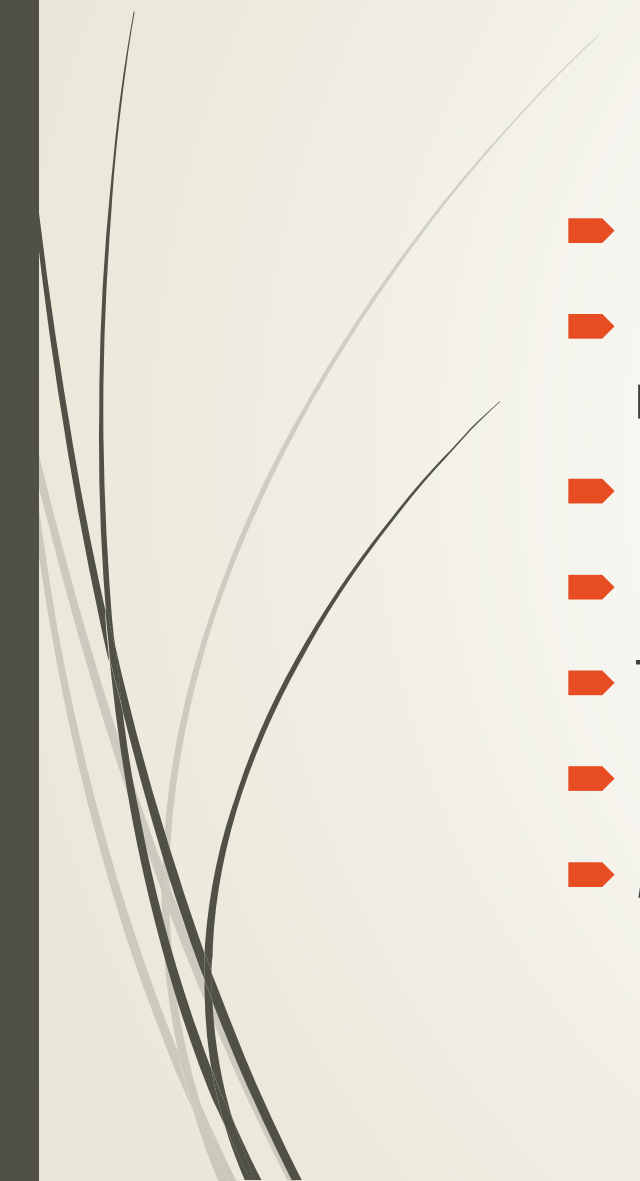
POWER SYSTEM

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What is power system of a satellite?

- Every tech needs power to run.
 - Includes generating storing and managing all the power required for a satellite.
 - Power Control Unit
 - Battery budgeting
 - Types of batteries
 - Power generation
 - Maximum Power Point Tracking(MPPT)
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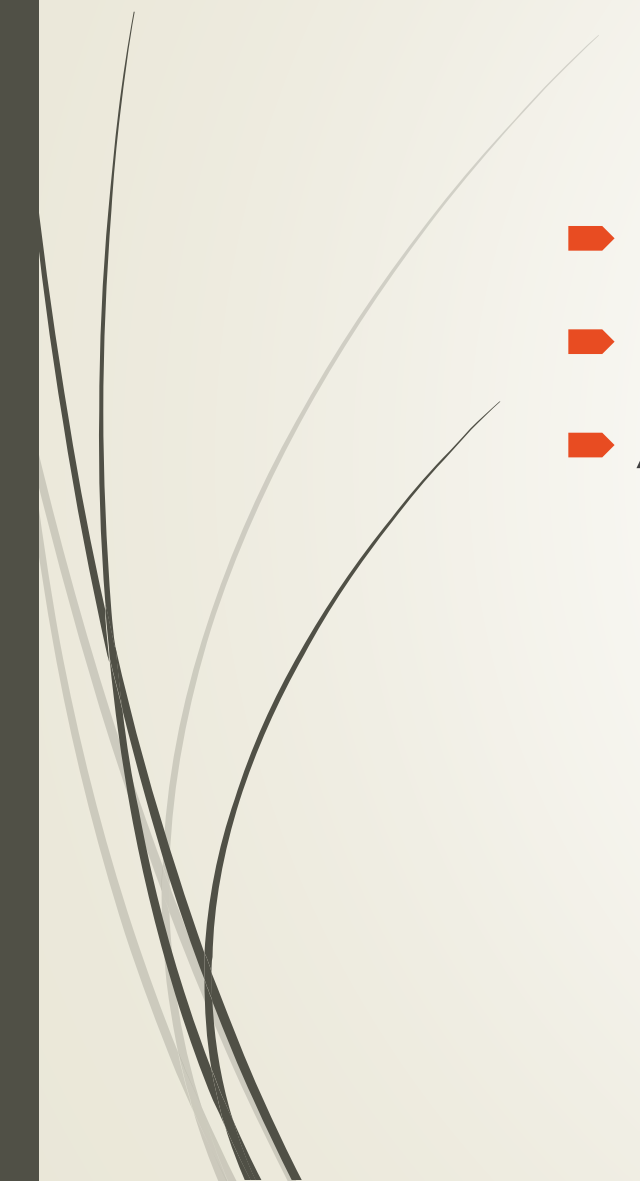


Battery Budgeting

- ▶ Battery budgeting is the efficient usage of energy stored in the battery.
 - ▶ A challenge for small satellites
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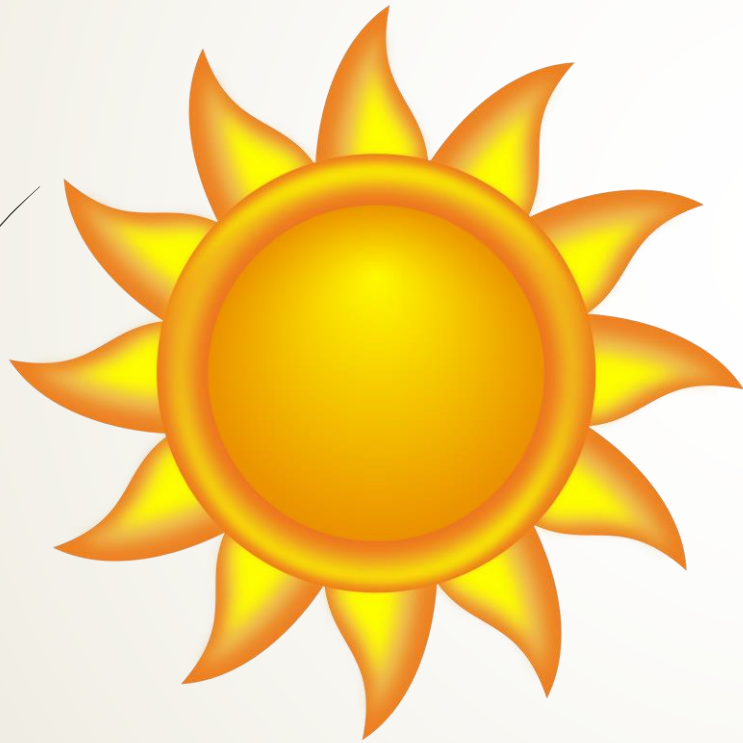
Importance of Battery Budgeting

- ▶ During Eclipse (night) satellite.
 - ▶ reduce the cost of manufacturing.
 - ▶ Avoid accidental Turnoff of the satellite
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Types of batteries in Satellite


Battery type ◆	Formula ◆	Specific energy (W*hr)/kg ◆	Notes ◆
Hydrogen Fuel Cell	H	275	[3]
Lithium–sulfur dioxide	LiSO ₂	200	[3]
Lithium–thionyl chloride	LiSOCl ₂	200	[3]
Lithium-bromine in thionyl chloride	Li-BCX		[2]
Lithum-Iron disulfide	LiFeS ₂		[4]
Nickel–cadmium	NiCd	30	[3]
Nickel–hydrogen	NiH ₂	60	[3]
Sodium-sulfur	Na-S		[2]
Silver-cadmium	Ag-Cd		[2]
Silver–zinc	AgZn	100	[3]
Zinc-mercury oxide	Zn-HgO		[2]

Power generation in Satellites

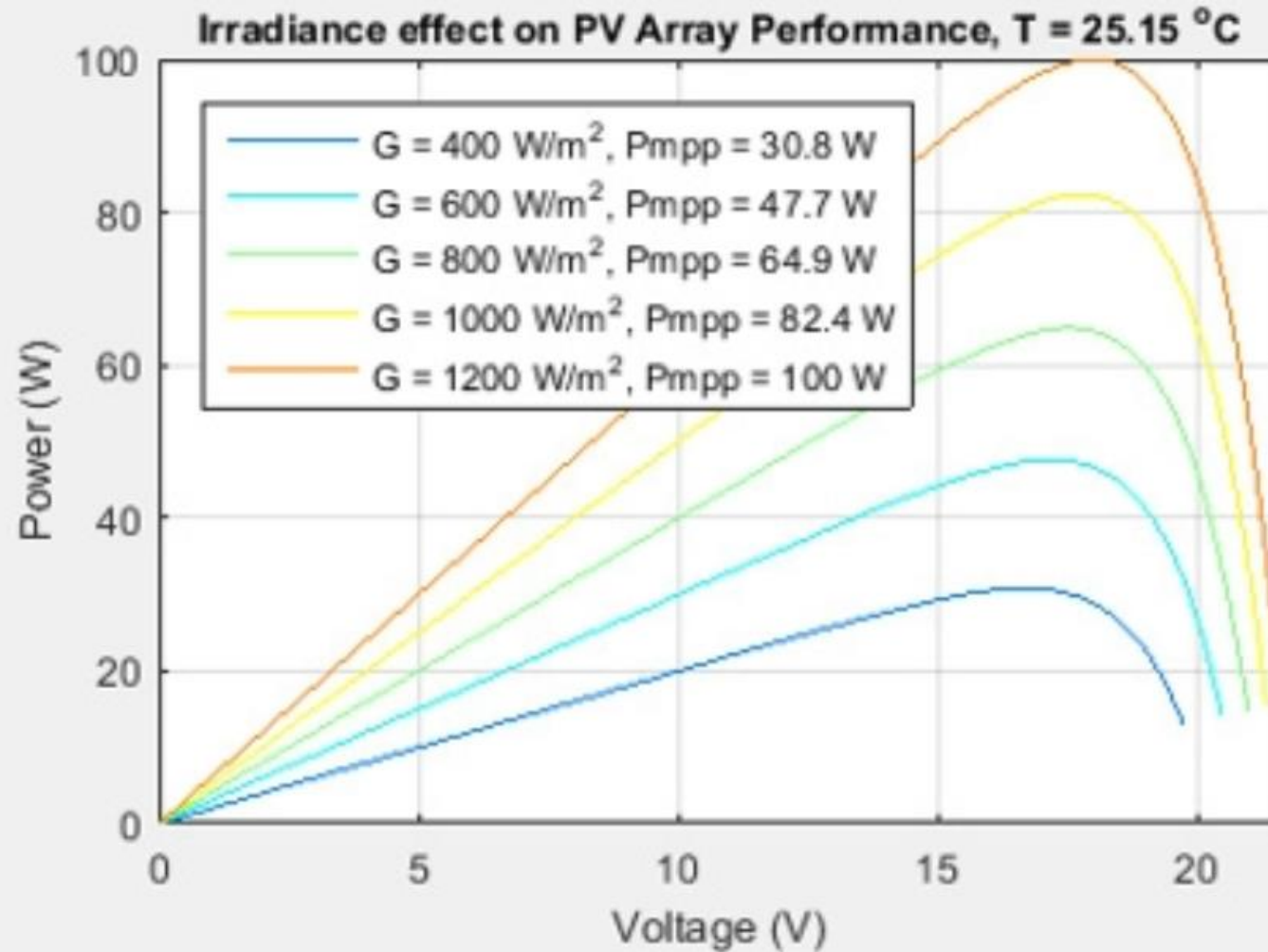




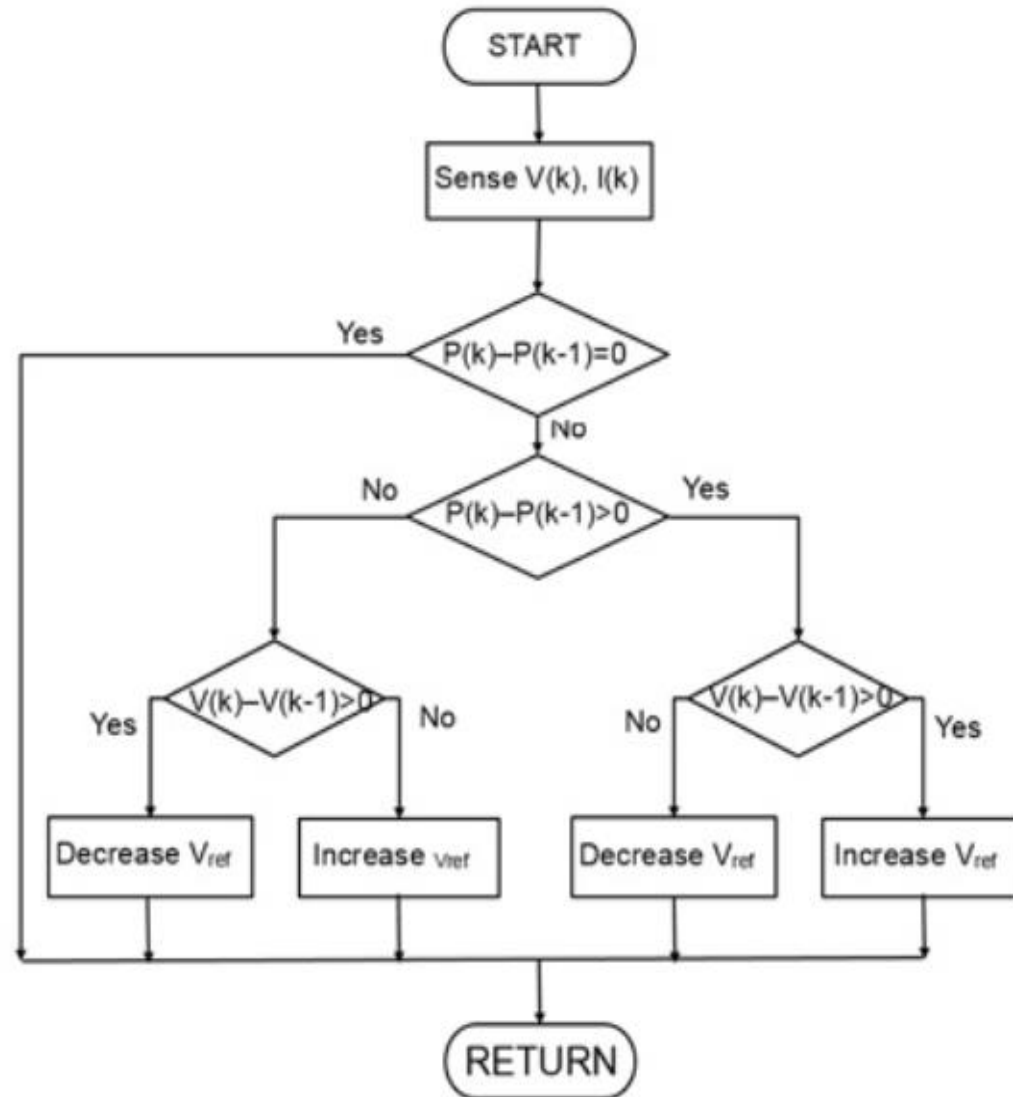
Maximum Power Point Tracking Algorithm

- Method of yielding maximum power from the PV cell
 - Implemented in photovoltaic (PV) inverters
 - The algorithms account for factors such as variable irradiance (sunlight) and temperature
 - Ensures that the PV system generates maximum power at all times
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Voltage Power graph for different intensities of light



Perturbation and observation (P&O) algorithm





THANK YOU