



RENEWABLE ENERGY TOOLKIT

Team A5

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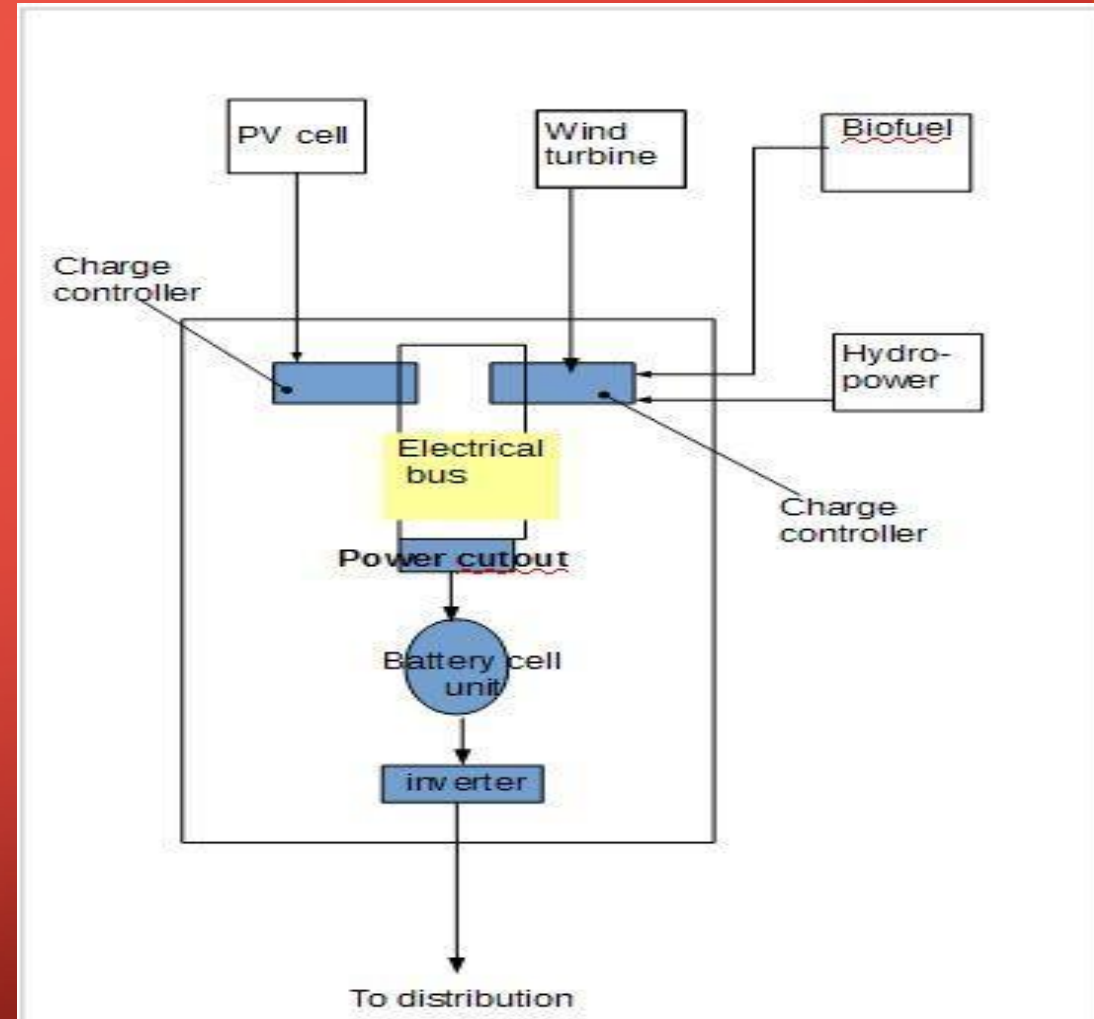
PROJECT DESCRIPTION:

Our Capstone project is a toolkit that requires building different types of power sources in a suitcase. That requires using a phone App to know the amount of power that will flow through the suitcase and there will be a load provided.



PROJECT DESCRIPTION:

- Educational.
- Explain the best power source for each of Companies, Hospitals, Living places, and etc...



BACKGROUND AND BENCHMARKING:

PhotoVoltaic solar cells:

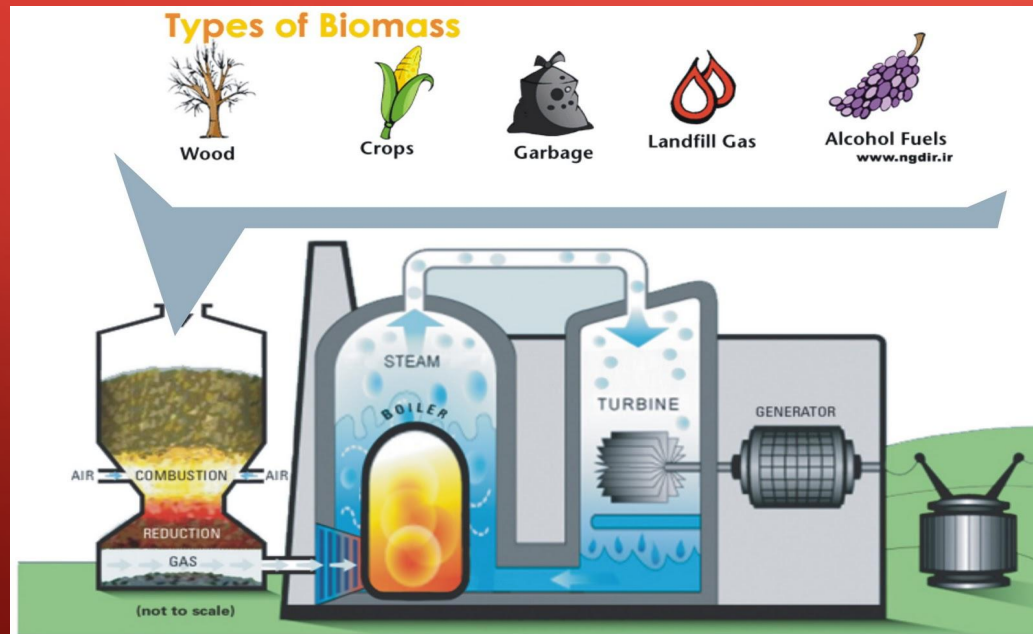
- Convert sunlight into electricity.
- Thirty-six cell pieces.
- 30W Monocrystalline solar panel: nominal output voltage 12V.
- 30W solar panel dimensions: 27" L x 15" W x 3" H.
- Cost \$47.



BACKGROUND AND BENCHMARKING:

Biomass:

- Location: everywhere
- Price & power : \$1500 to \$4000 per kW and \$0.8 to \$0.15 per kWh



BACKGROUND AND BENCHMARKING:

Water Turbine:

- Power: 100 Kw.
- Price: \$1000-3000.
- Size: Small or micro size (0.6 meters)
- Material: cast iron.
- Location: near river or area with water



BACKGROUND AND BENCHMARKING:

Wind Turbine:

- Horizontal axis.
- Vertical axis.
- Input: 12mph output: 2.5-3 MW.
- Price: \$300.
- Size: 1.5 to 3.5 metres.
- Location: Texas and Iowa.



CUSTOMER AND ENGINEERING REQUIREMENTS:

Customer Needs:	Engineering Requirements:
Portable	< 100 liters
Light weight	< 50 kg
Easy to Interpret Output	Digital/Phone App capabilities
Low cost	< \$3000
Hybrid power source	Expensive < \$600
Load (Light Bulb)	<100 Watts output

SCHEDULE:

Task	Who	September																	
				6	8	10	12	14	17	20	22	24	26	27	29	30	1	3	6
Team charter	Team																		
Background research	Team																		
Come up with customer need	Team																		
Get customer needs approved by sponser	Team																		
creat presentation 1	Team																		
Practice for presentation 1	Team																		
Preliminary report	Team																		

Budget:

- Estimate budget: \$3000
- Anticipated expenses:
- P.V solar cell: \$47
- Water turbine: \$1000
- Biomass: \$1500
- Wind turbine: \$300
- Prototypes: \$150

The background is a solid dark red color. In the four corners, there are decorative elements consisting of thin, light red lines that resemble circuit traces or a stylized tree structure. These lines connect to small, hollow circles of the same color. The lines are most prominent in the top-left and bottom-left corners, and less so in the top-right and bottom-right corners.

Questions ?

References

- <https://www.walmart.com/ip/ALEKO-Solar-Panel-Monocrystalline-30W-for-any-DC-12V-Application-gate-opener-portable-charging-system-etc/45733290?wmlspartner=wlpa&adid=2222222227033069627&wl0=&wl1=g&wl2=c&wl3=67309198112&wl4=pla-131211458912&wl5=9030289&wl6=&wl7=&wl8=&wl9=pla&wl10=8175035&wl11=online&wl12=45733290&wl13=&veh=sem>
- https://www.alibaba.com/product-detail/3KW-Micro-Small-Water-Turbine-Hydro_60618876467.html?spm=a2700.7724857.main07.56.62979427EtUybg
- <https://www.wbdg.org/resources/biomass-electricity-generation>
- <http://www.ewea.org/wind-energy-basics/faq/>