

Hybrid Renewable Energy System

ECE 499 Group 16
James Barbour
Adam Roy
Eric Fletcher
Evan Moradel
Trent Nelson

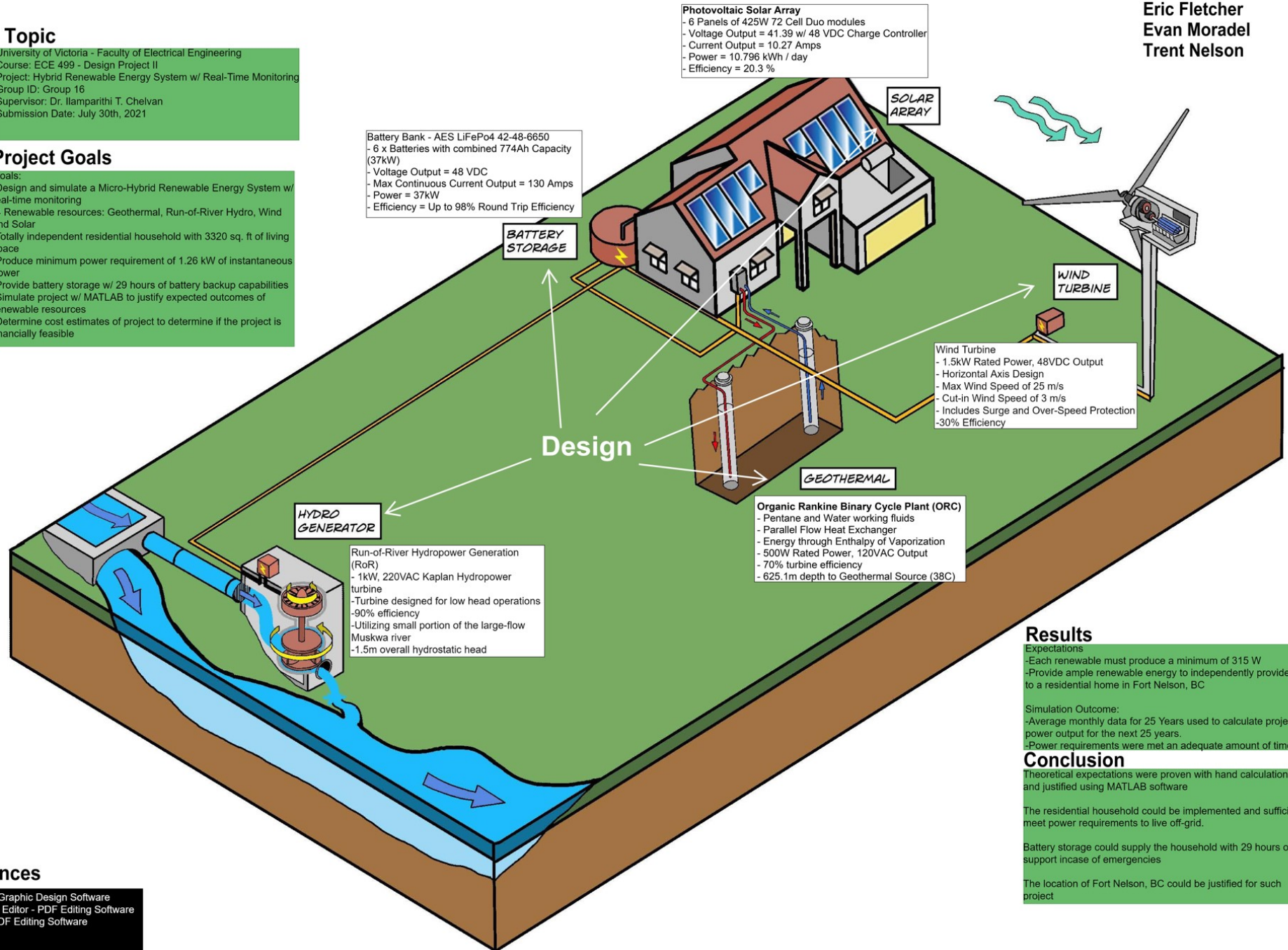
Topic

University of Victoria - Faculty of Electrical Engineering
Course: ECE 499 - Design Project II
Project: Hybrid Renewable Energy System w/ Real-Time Monitoring
Group ID: Group 16
Supervisor: Dr. Ilamparithi T. Chelvan
Submission Date: July 30th, 2021

Project Goals

Goals:

- Design and simulate a Micro-Hybrid Renewable Energy System w/ real-time monitoring
- 4 Renewable resources: Geothermal, Run-of-River Hydro, Wind and Solar
- Totally independent residential household with 3320 sq. ft of living space
- Produce minimum power requirement of 1.26 kW of instantaneous power
- Provide battery storage w/ 29 hours of battery backup capabilities
- Simulate project w/ MATLAB to justify expected outcomes of renewable resources
- Determine cost estimates of project to determine if the project is financially feasible



Results

Expectations

- Each renewable must produce a minimum of 315 W
- Provide ample renewable energy to independently provide power to a residential home in Fort Nelson, BC

Simulation Outcome:

- Average monthly data for 25 Years used to calculate projected power output for the next 25 years.
- Power requirements were met an adequate amount of time

Conclusion

Theoretical expectations were proven with hand calculations and justified using MATLAB software

The residential household could be implemented and sufficiently meet power requirements to live off-grid.

Battery storage could supply the household with 29 hours of support incase of emergencies

The location of Fort Nelson, BC could be justified for such project

References

Comic Draw - Graphic Design Software
PDF-XChange Editor - PDF Editing Software
Small PDF - PDF Editing Software