Final Year Project Plan

Microgrid research

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# Scope

// Look more specific into each component: maybe have a lifecycle for each component

// Designing, analysing and maintenance (operational and maintenance cost)

// decommissioning of component

Python dashboard

* Main objective: to compare (financially) 2 charging strategies given a set of parameters
* Sub objective: Be able to adjust the parameters

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| --- | --- | --- |
| Scope: solar power generation | | |
| Sub scope | status | comments |
| Hourly solar generation | Completed |  |

|  |  |  |
| --- | --- | --- |
| Scope: Charging and demand | | |
| Sub scope | status | comments |
| Parameters | Completed |  |

|  |  |  |
| --- | --- | --- |
| Scope: Technical | | |
| Sub scope | status | comments |
| Battery Storage parameters | Completed |  |
| Charging and demand parameters | Completed |  |
| 5 years analysis | Not completed | Completed for 1 year, just need to duplicate 5 times, and bind the relevant parameters to the year |

|  |  |  |
| --- | --- | --- |
| Scope: Financial | | |
| Sub scope | status | comments |
| Capital expenditure | Completed |  |
| Operating expenditure | Completed |  |
| Revenue | Completed |  |
| 5 years analysis | Not completed | Have not started |

|  |  |  |
| --- | --- | --- |
| Scope: Scenario Summary | | |
| Sub scope | status | comments |
| Show the results cells | Incompleted |  |
| Revenue comparison | Incompleted |  |

Proposal for the microgrid study:

1. Remove the microgrid controller
2. Do V2G techno economy study
3. Incorporate V2G economy study into the current model and python dashboard

Plans for the next 4 weeks

|  |  |
| --- | --- |
| Week | comments |
| 1 | Complete python dashboard up till the solar power generation + research on V2G |
| 2 | 1. Python dashboard solar power generation (completed)  2. Research on V2G  3. plan out Report |
| 3 | 1. Research on V2G  2. Presentation  3. Report |
| 4 | 1. Research on V2G  2. Presentation  3. Report |

V2G Research Scopes

|  |
| --- |
| Technical overview |
| Economy of V2G |
| Strategies of V2G |

Content of Fyp interim report

* Introduction and scope
* Technical of microgrids
* Technical of V2G
* Economy model of EV charging (j.j yeoh)
* Integration of V2G economy model
* Conclusion

Interim Scope status

|  |  |
| --- | --- |
| Scopes | status |
| Microgrid technical | Done |
| V2G | Not done |
| Python dashboard | Almost done |
| Economy of microgrid | Done |

Old (see my above proposals instead)

1. Python dashboard for the technoeconomic assessment of microgrids
2. Microgrid General Study

* Components

-> inverters

-> controllers

-> Point of common coupling

* Pain points

-> stability

-> power quality

-> communication

-> robustness

1. Microgrid controller research

* Look into different controller strategies in use today

-> Identify pros and cons

* Propose a more efficient controller

-> Find current implementations and a metric to gauge effectiveness

-> Simulate

1. V2G research

* Find out the limitations of V2G today
* Possibly integrate the microgrid controller strategy with V2G

# Timeline (old)

2nd September

1. Restructure/clean python code base (ongoing)
2. Research on general problems of microgrids
3. CBAv5 Scenario Summary
4. Research on current microgrid controllers (find current methods and their pros and cons)

16th September

1. Start on the GUI format
2. CBAv5 Scenario Summary
3. Research on current microgrid controllers (find real case studies)

30th September

1. Continue working on GUI code
2. Find a simulation software
3. model the controllers
4. Test performance of controllers

14th October

1. model and test performance current controllers
2. Start on converting LOCS worksheet to python

28th October

1. Continue with LOCS excel to python conversion
2. Research on ways to improve current controllers

4th November

1. Continue with LOCS excel to python conversion
2. Make changes that can possibly improve the simulated controller model

18th November

1. Continue with LOCS excel to python conversion
2. Do a preliminary testing of the improved model
3. Analyse the performance of new controller

2nd December

1. Adding LOCS python GUI to the main dashboard
2. Make adjustment to the controller model

16th December

1. Final Testing of controller model
2. Continue with LOCS GUI

30th December

1. Continue with GUI and finalise the dashboard
2. Finalise results
3. Interim report and self-assessment rubric on 3rd January
4. Interim Presentation on 9th January

13th January

1. Research and read up on V2G

27th January

1. Find real case studies of V2G
2. Identify pros and cons of real implementations of V2G

10th February

1. Research on how to integrate V2G to the controller model

24th February

1. Continue to research on V2G integration
2. Attempt to integrate V2G to the controller

10th March

1. Preliminary testing
2. Make improvements

24th March

1. Final testings
2. Final thesis and self-assessment rubric submission on 31st March

7th April

1. Final Presentation on 14th April