Undergraduate Thesis Microgrid Simulation

How can Homer be used to simulate a microgrid system?
It can be used to simulate and analyse both standalone and grid-connected microgrid systems . It also has the capability to assess the performance, reliability and costs of the microgrid model. Various renewable energy sources can be modelled in the HOMER software package.

What are the technical aspects of microgrids?
Currently a lot of research and studies have been carried out on the technical aspects of microgrids . These studies can be grouped into the categories of system planning/design,operation and control. To a large extent microgrid studies and development efforts carried out so far have focused on campus,military and remote microgrids.

How does microgrid design affect the cost of electricity generated?
Some aspects of the microgrid design and set parameters of the microgrid components affect the cost of the system which in turn affects the cost of electricity generated. It is desired that the microgrid solution delivers power at the lowest possible cost without compromising on reliability.

How can a microgrid improve energy utilization?
In order to improve the energy utilization,the microgrid needs to have anchor customers. These consist of hospitals,schools and Small and Medium Enterprises (SMEs) such as maize milling,welding loads that consume energy throughout the day.

What are the areas of study in microgrids?
The areas of study in microgrids have included distributed generation, microgrids benefits, applications of power electronics, economic issues, microgrid operation and control, microgrid clusters as well as protection and communications. A study on microgrid village design and its economic feasibility is presented in .

Is there an efficient optimisation algorithm for sizing off-grid PV microgrid systems?
Basing on the need for improvement in the area of PV system sizing,an efficient optimisation algorithm for sizing of off-grid PV microgrid systems using a Mixed Integer Linear Programming (MILP) approach has been proposed.

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