

Integrating Nuclear and Renewable Energy Sources

Demand for electricity has been steadily increasing through the years but the supply is provided by outdated energy production methods that introduce green house gases into the environment or decrease the electrical grid reliability. In order to combat these issues, our capstone team researched and modeled a novel energy production system that can provide the grid with clean, reliable, and affordable energy. This model is known as the Nuclear-Renewable Hybrid Energy System and is an essential aspect in developing technology that is capable of meeting current and future energy demands.



Nuclear Energy provides a constant amount of clean energy which increases grid reliability. However, this increased reliability comes at the cost of financial losses as nuclear power provides a fixed energy output while the demand for electricity fluctuates.

Renewables provides clean energy to the grid but cannot sustain the grid because their energy output is not controllable. This in turn reduces grid reliability.

Nuclear Energy



Together, these components make the NR-HES. Our capstone team focused on creating a Simulink model of the interconnection between nuclear energy and hydrogen production. This code which determines the electricity and hydrogen output of the interconnection which is then used evaluate the economic feasibility of the energy generating system.

Hydrogen Production reduces financial losses incurred by nuclear power plants. The excess energy pris used to produce hydrogen which can be sold for a profit.



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