

2009-10 Senior Project and Masters Students

Cal Poly Sustainable Power for Electrical Resources (SuPER) Project

Brief Summary of Project Development:

The Cal Poly SuPER project begins its fifth year of development of a low-cost, sustainable source of electrical power for the 2 billion people who do not have access. The overall goal of the Cal Poly SuPER system is to develop technology for sustainable electrical power that will support a family unit over a 20 year life cycle for a total cost of \$500. Three graduate students have completed their master's thesis, 18 undergraduate students have completed their senior projects, and three independent study students have participated on the Cal Poly SuPER project.

Opportunities for Research:

Students will gain experience working on a multidisciplinary team (EE, CPE, CSC, IME, ME) where their own senior project will greatly add to the final product. There will be team meetings as well as weekly meetings with the senior project advisors. Funds are available to purchase components and materials.



Students perform specific engineering projects for the SuPER system:

- 160V microgrid system and DC-DC converter design (Masters)
- High efficiency white LEDs
- Modularized PCB design
- Model battery performance in an environmental chamber
- Design DC power network for NEC code compliance

- Embedded system control software
- Embedded system peripheral interfacing
- Graphical User Interface for the system

- Develop solar photovoltaic module emulator
- Enclosures and packaging for the SuPER cart and electronics
- Integration and control of a wind turbine

For more details, review the Cal Poly SuPER website at:

http://courseware.ee.calpoly.edu/~jharris/research/super_project/super_table_of_contents.htm

To get involved, please contact:

Drs. James G. Harris, Ali Shaban, or Dale Dolan for more information