Educational Modules in Support of Sustainable Energy Courses

J.C. Ordonez[1,2,4], S. Yang[1,2,4], M.B. Chagas[1,2,4], K. Ribeiro[1,2], C. Ordonez[1,3,4], T. Solano[1,2,4], J.V.C. Vargas[1,2,4], H.Li[1,2,5]

Department of Mechanical Engineering

[1]Energy and Sustainability Center (ESC)
[2]Center for Advanced Power Systems (CAPS)
[3]Center for Intelligent Systems Control and Robotics
[4]Department of Mechanical Engineering
[5]Department of Electrical Engineering

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Introduction

Produce a series of educational modules on sustainable energy using the Off-Grid Zero Emission Building and the Energy and Sustainability Center to serve as an energy efficient prototypes for developing and testing sustainable energy technologies. The project is divided in two phases. Phase I will develop a module on solar photovoltaic and microalgae cultivation for biodiesel production.

Objectives

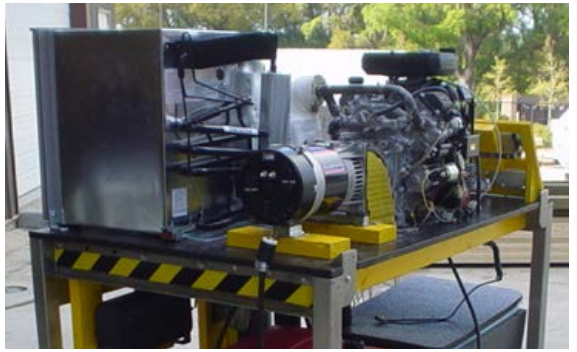
- Produce educational modules on sustainable energy that will be used as support materials in courses at FAMU-FSU College of Engineering and other Florida Universities.
- Relate class material with real life applications and state-of-art in Off-Grid Buildings.
- Motivate student's interest on sustainable energy.

FSU Off-Grid Zero Emission Building (OGZEB)

1 Overview of the Energy Status. Stating the Energy Problem.

3: Solar Thermal

2: Improving Generation Efficiency



4: Thermal Energy Storage (TES)

5: PV and Solar Measurement

Prototype Building for Developing and Testing Alternative Energy Technologies in Residential and Commercial Settings

6.9 kW installed PV power (uses ~1.2kW)

FSU Off-Grid Zero Emission Building (OGZEB)

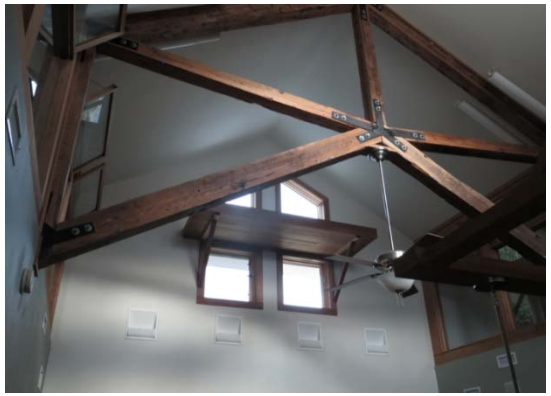
6: Power Management and Conversion

7: Fuel Cell and Batteries

8: Biofuels from Microalgae

9 Reducing usage

10: Smart Home



Phase I

The phase I is just staring May 2015 with the take of photovoltaic system used in OGZEB and the solar measuring systems. We are trying to team up and leverage from other university initiatives for the video production.

Some of the potential courses in the Mechanical Engineering Department that will benefit include:

Course	Typical Audience	Estimated Audience
EML 4450/5451 Energy Conversion Systems for Sustainability	Undergraduate and graduate students	50
EML 4452/5453, Sustainable Power Generation	Undergraduate and graduate students	50
EML 3015/3016 Thermal Fluid I and II	Undergraduate in ME	250