MADANAPALLE INSTITUTE OF TECHNOLOGY SCIENCE
(AUTONOMOUS)

M. Tech I Year - II SEMESTER (SPS)

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SOLAR SIMULATION LAB
(14SPS12P02)

Course Objectives:-

1. To obtain the basic simulation concepts related to solar photovoltaic cell, batteries and fuel cells.
2. To become familiar with the simulation model of fault analysis, DC-DC converter and DC-A inverter
3. To understand the operating characteristics of batteries, fuel cells, solar PV modules, micro-grid systems and BIPV system
4. To model the control and understand the operation of solar system

Course Outcomes:-

After Completion of this course students will be able to

1. Perform modeling of Solar cell performance to compute power, efficiency and fill factor, fault analysis for Solar power plant, DC-DC converter, DC-AC inverter, Lithium Ion battery, Fuel Cell and thin film monolithic integrated Solar PV modules
2. Layout optimization for utility scale Solar power plant
3. Identify Intelligent control system for Solar power grid system

List of Experiments:

1. Modeling of Solar cell performance to compute power, efficiency and fill factor
2. Modeling of energy loss analysis from Solar cell to module conversion
3. Layout optimization for utility scale Solar power plant
4. Intelligent control system for Solar power grid system
5. Modeling of fault analysis for Solar power plant
6. Modeling of DC-DC converter
7. Modeling of DC-AC inverter
8. Modeling of Lithium Ion battery
9. Modeling of Fuel Cell
10. Modeling of thin film monolithic integrated Solar PV modules
11. Modeling and verification of leakage currents in Solar PV modules
12. Modeling of DC micro-grid system
13. Modeling of building integrated Solar PV power system