SOLAR & WIND & FUEL CELL POWER GENERATION TRAINER

Overview

This trainer combines features from Solar Power Generation, Wind Power Generation and Hydrogen Fuel Cell.

The Solar Power Generation Trainer mainly consists of solar panel, solar simulator, a battery, a charge controller, an inverter, different types of loads, a solar irradiation sensor, a power supply module and a control and measurement module programmable through LabVIEW.

The Wind Power Generation Trainer mainly consists of the wind turbine-generator set, wind tunnel with a controllable air fan, wind speed meter, a charge controller, battery, an inverter, and different types of loads.

The Fuel Cell Energy Trainer mainly consists of PEM fuel cell stack with controller, hydrogen cylinder, a hydrogen flowmeter, a pressure meter, resistive load, a power supply module and a control and measurement module programmable through LabVIEW.

YouTube Link: https://youtu.be/3BVgMTcu0i4

Topics covered

- Structure and design of a solar photovoltaic power plant
- Study of photovoltaic solar panels
- Operation of the solar power station in battery charging mode
- Autonomous operation of a solar power plant supplying a load
- Structure and characteristics of wind turbines and wind power plants working off-grid
- Structure and characteristics of wind generators used in wind power plants.
- Characteristics of electrical loads of wind power plants.
- Characteristics of wind power plant in battery charging mode.
- Characteristics of off-grid wind power plant supplying the load.
- Structure and design of hydrogen fuel cell
- Structure and design of electrolyser
- Electrochemical processes of electrolysis
- Characteristics of the fuel cell
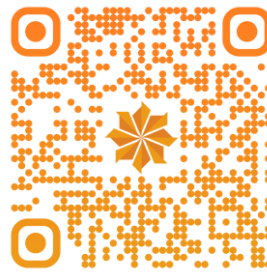
Solar & Wind & Fuel Cell Power Generation Trainer Hardware Pictures
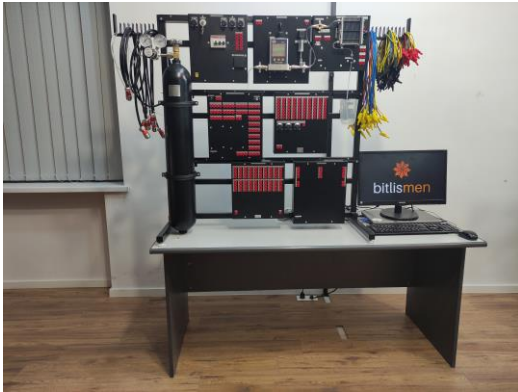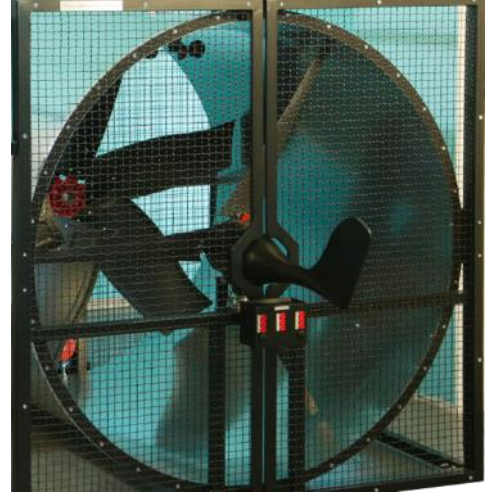
Solar & Wind & Fuel Cell Power Generation Trainer Software Screenshots