



DEGEM
SYSTEMS

Tech-Prep

Solar energy training system

Wind energy training system

Solar water heating energy
training system

Polar robot & robotics principles
training system

Conveyors & sorting machines
training system

Cartesian robot & computerized
storage training system

CNC lathe machine training
system

CNC milling machine training
system

Process control training system

Basic electronics training system

Basic communications systems

Basic pneumatics training system

Basic hydraulics training system

Basic mechanics training system

Pressure forming & inflation
training system

Bending & vacuum forming
training system

TP-3702

Wind Energy Training System

Objectives

This course introduces the student to the green energy source - the wind. It exposes the student to wind energy, its concepts, practical applications and uses, and the ecological benefits of utilizing wind energy. The student is introduced to issues relating to energy derivation, conversion and storage, with emphasis on wind generated energy. The student is also made aware of the limitations and advantages of wind as an energy source and the dependence of energy yield on wind velocity and direction.

The system courseware and experiments will enhance the students' interest and curiosity. They also establish an awareness of the technologies involved in the subject discussed, and the interaction between scientific phenomena, these technologies and common applications relating to wind energy.

Description

The system includes a fan which simulates the natural power of wind, and a wind driven power generator which is used to convert the wind energy to electric energy. This electric energy is then actually used to operate different "consumers" - a lamp, an audio source and a mechanical lift.

The fan is located on a mechanical arm, which can be rotated. The dependence of output electrical energy on the angle between the fan (wind source) and the power generator is illustrated by varying the angle between them. A digital voltmeter and ammeter is used to show the level of energy output from the generator.



Specifications

LEARNING PROGRAM

- Tech Prep pedagogical guidelines
 - Concept of work, power, energy and efficiency
 - Different forms of energy
 - Energy conservation
 - Green energy
 - Introduction to wind energy
 - Using the TP-3702 training system
 - Wind power and generator output
 - Effect of wind speed on generator output
 - Effect of wind angle on generator output
 - Conversion of wind energy to:
 - Light
 - Sound
 - Mechanical energy
 - Energy storage and operation of various loads
 - Efficiency
- The courseware or e-book contains the essential theory and detailed procedures for each hands-on activity.

TECHNICAL CHARACTERISTICS

- Wind motor
- Wind motor rotation (0-60°)
- Generator motor
- Electric generator
- Battery voltage
- Light load (LED)
- Mechanical load motor
- Buzzer sound load
- Voltmeter and ammeter with common digital display
- Operating voltage (110 - 230V (external switching supply))
- General dimensions (610(w) x 420(l) x 480(h) mm)
- Emergency stop button
- Main power switch

SUPPLIED ACCESSORIES

The learning unit is supplied with the following accessories:

- Set of banana wires
- Weight for the mechanical load
- Electronic book (soft copy) for MS Windows PC

OPTIONAL ACCESSORY

Personal computer with MS Windows (not included)

SAFETY FEATURES

The training system has the following safety features:

- 'Emergency Stop' pushbutton that cuts off all electricity to the unit when pressed.
- The fan is located in an enclosure to prevent injury from the rotating blades.