Curriculum
The Small Wind and Solar PV installation training system curriculum includes the following activities:

Activities
1. Renewable Energy Basics
2. Personal Safety
3. Site Safety
4. Electrical Safety
5. Lockout / Tagout
6. Abbreviations, Connections & Symbols
7. Wire and Sizing Wire
8. Introduction to Ohms Law
9. Electrical Instrumentation
10. Series and Parallel Circuits
11. Alternating Current
12. Grounding and Current Protection
13. Solar Codes and Standards
14. Wind Codes and Standards
15. Plans and Blue prints
16. Introduction to Solar Photovoltaic
17. Solar Pathfinder
18. Pyranometers and Pyrheliometer
19. Photovoltaic Sizing
20. Photovoltaic Installation
22. Solar Panel Pole Mount
23. Photovoltaic System Wiring
24. Charge Controllers
25. Solar Array Configurations
26. Wind Power Theory
27. Wind Meters
28. Wind Site Evaluation
29. Wind Tower Installation
30. Wind Turbine Installation
31. Wind System Wiring
32. Storage Systems
33. Inverters
34. Integration and Balance of System Components
36. System Performance and Monitoring
37. Energy Conservation
38. PV Maintenance and Troubleshooting
39. Small Wind Maintenance
40. Practical Project

Progressive Educational System's Renewable Energy training systems use real world technology to demonstrate how wind turbines and solar cells are beginning to transform the way the world is powered.

GreenEd™
Progressive Educational Systems GreenEd line provides renewable energy training systems in the following areas for both high school and college level programs: wind, solar, hybrid Systems, Bio diesel, hydrogen, troubleshooting, installation skills, system design, certification programs

Web-Lab™
The unique GreenEd Computer monitoring system provides the following advantages: Site License, On-Line Monitoring, School Branded URL, Cost savings analysis, Carbon Footprint, Payback periods

Fossil fuels and nuclear power are at the center of today's most divisive political and environmental issues. What are the alternatives to these polluting, nonrenewable fuel sources?

Mankind’s traditional uses of wind and solar power are widespread in developed and developing countries. However, the mass production of electricity using renewable energy sources has become more common place only recently. This reflects the major threats of climate change due to pollution, exhaustion of fossil fuels, and the environmental, social and political risks of fossil fuels and nuclear power. Many countries and organizations promote renewable energies through taxes and subsidies.

Progressive Educational Systems has developed a line of renewable energy training systems to address these environmental concerns.

GreenEd™
Small Wind and Solar PV Installation Training Systems

Think Green
Act Green
Be Green!
Progressive at work for you!

Flexible solutions to meet your specific educational needs

The Small Wind and Solar PV Installation trainers consist of the following components:

**Wind Generator with in-class/outside mount**
400W wind turbine is mounted on an in-class assembly or outside on a lift up pole. (pole not included)

(2) 40W Solar Panel with in-class mounts
Delivers 40W of power in peak sunlight. Mounts on a portable side of pole and roof assemblies.

**Wiring Skills Panel**
Enforces electrical wiring skills like pulling wire through conduit and making electrical connections.

**Trainer Configurations**

- **07-3324 Small Wind and Solar PV Installation** - Includes both solar and wind components.
- **07-3244 Small Wind Installation** - Includes wind specific and common components.
- **07-3254 Solar PV Installation** - Includes solar specific and common components.

**Certification**
The curriculum for these training systems has been written to meet the objectives of the Electronics Technician Association (ETA) outcomes for the Small Wind installation program as well as the Solar PV installation program. By competing the Progressive Educational Systems small wind or solar PV course and writing the ETA exam, students will be certified to install in the respective area. ETA is recognized in North America and around the world.

**Connecting your school to the renewable energy technology resources you need**

- **Switch/Outlet Panel**
  Duplex receptacle and light switch for use in basic electricity activities.

- **DC Light/Load Panel**
  DC incandescent lights for use in basic electricity activities and as a load for system.

- **Solar Charge Controller Panel**
  Prevents overcharging and discharging of batteries. Required for solar power systems. Handles up to 50A current or 450W of solar power.

- **Main Breaker**
  Used as disconnect switch as well as lockout tag out activity.

- **Ammeter Panel**
  Analog ammeters for measuring DC current flow.

- **Stop Switch Panel**
  For breaking the wind turbine during installation or maintenance.

- **Disconnect/Breaker**
  Used as a disconnect switch for the solar, wind and main as well as breaker protection.

- **Power Distribution Panel**
  Distributes power from the Solar panels, wind turbine and battery.

- **Green-ED Monitor**
  Provides data acquisition of wind, solar and battery voltages and currents. Computer software helps display this data graphically over periods of time. Additional temperature, wind speed and solar radiation. Optional item.

- **Power Inverter Panel**
  Converts 12V DC battery power to 120V AC solid state control circuits provide a maximum 1,000W of power.

- **Instrumentation**
  Digital clamp multimeter, Solar Path finder, pyranometer, anemometer.

- **12V Renewable Energy Deep Cycle Battery**
  Renewable energy deep cycle battery. 12V sealed deep cycle lead acid battery. 100 ah at 100 hour rate.

- **Stackable lead package**
  Red, black and green stackable leads of varying lengths.

- **Accessories**
  Lock out lock and tags, 120Vdc incandescent light bulbs, 60W 120V incandescent light.

- **Load Device**
  AC load and conservation activities.

- **Stand Options**
  Desktop
  Mobile with shelf
  Mobile - Double sided
  Mobile with overhead solar panel and variable light

**Custom Solutions**
Choose from a variety of options including:
- mounting options
- number of solar panels
- wind turbines and other configurations

**Web Solutions**
Ask about our media options - networked, online monitoring, print or multimedia curriculum.

**Training and Support**
All systems and solutions are professionally installed along with component orientation to your satisfaction.

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