



Classroom Material/Equipment Requirements

Small Wind – Level 1

ETA® International

Some of these tools are time savers, but not required. (Oscillating tool instead of sandpaper for example – you must have one or the other as a minimum). Appropriate tools for your geographic location may be substituted in your course approval listing rather than the described North American SUGGESTED listing.

Classroom suggested items:

1. Support and resource materials (videos, catalogs, spec sheets, additional books)
2. Slide or video presentation(s)
3. Calculators
4. Internet access
5. Copy of the NEC® Handbook (recommended)
6. White board/poster board with markers

Consumables

- 1 AWG wire and stranded wire (e.g. #10 bare, black, white) as needed
- 2 Wire connectors and grounding connectors (including screws, nuts/bolts, crimpers)
- 3 12-volt switch(es)
- 4 12-volt fuse(s)
- 5 12-volt disconnect(s) (DC)
- 6 Half (½”) inch PVC conduit and connectors
- 7 Clear all-weather sealant
- 8 Concrete, rebar, masonry mortar as needed for tower type
- 9 Anchors, bolts, nuts, washers, base plate as needed for tower type
- 10 Fittings, bolts, nuts, washers, turnbuckles, clamps, guy wires as needed for tower type

Equipment

- 1 Personal Protection Equipment (Hard Hat, Safety Gloves, Safety Goggles, Harness, Laynard)
- 2 Small DC Wind Turbine
- 3 Table-top mast for wind-turbine
- 4 30 foot tilt—up tower with guy wires and anchors
- 5 Tower sections with guy wires, rigging and anchors as needed (if not using tilt-up)
- 6 Mounting clamps
- 7 PVC conduit pipe
- 8 12-volt deep cycle batteries (minimum of 4)
- 9 Combiner box (with breakers) or NEMA 3R rated junction box
- 10 Stop-Run Switch
- 11 Diverted Load
- 12 Load Diversion Charge Controller
- 13 AC disconnect
- 14 DC disconnect
- 15 Service panel box
- 16 Inverter
- 17 Two copper grounding electrodes
- 18 Micro-inverters (optional)
- 19 Power Optimizer (optional)
- 20 Charge Controller (optional)
- 21 Shovels and rakes

Tools

- 1 Volt-Ohm meter(s) / multimeter
- 2 Kill-A-Watt meter (optional)
- 3 Wind Meter and/or Anemometer
- 4 Load element (e.g. light bulb, LED, small motor—visually verify system connections)
- 5 Wire strippers, crimpers (tool & connectors), cutters
- 6 Screw drivers: Philips and flat-head, different lengths
- 7 Variable speed drill(s) with various drill bits and driver bits
- 8 Socket set(s)
- 9 Pliers: standard, needle-nose, locking, pipe
- 10 Assorted open end wrenches and pipe wrench
- 11 Hammers: claw or framing, ball peen, rubber mallet
- 12 Cutting tools: hack-saw or reciprocating saw,
- 13 Sanding tools: oscillating or sander tools, sandpaper, files
- 14 Fiberglass ladder (appropriately rated for weight; Extension and/or Step as needed)
- 15 Compass (or smart phone with compass app)
- 16 Fish tape (optional)
- 17 Stud finder with electrical wiring/cable and pipe alerts (optional)
- 18 Permanent marking pens
- 19 Measuring tape or Surveyors tape (30-100 feet/meters)
- 20 Metal ruler (foot, yard or meter)
- 21 Small level or laser level
- 22 Rope (length as needed)