Guidelines for Installer Training

Best Practices for Distributed Wind Project Development and Installation
Big wind and small wind: How and why training is similar

Work at height and fall protection
  • OSHA and ANSI standards apply once you’re 6’ off the ground

Electrical competence
  • Measuring DC and AC values, resistance checks
  • NEC rules, electrical safety, arc flash awareness
  • Electrical controls, isolation, and troubleshooting

Mechanical skills
  • Hand and power tools
  • Hydraulic and pneumatic systems
  • Safety and troubleshooting
Big wind and small wind: How and why training is different

Governing and control of the machine

• Lockout/Tagout procedures and equipment
• Rotor and yaw locks... ropes, straps, and slings

Evacuation, rescue, and emergency response

• Controlled descent devices, anchor points, procedures

Manufacturer and customer service

• Small wind = smaller, often now non-existing companies
• Remanufactured machines
• Finding manuals, parts, repair shops, telephone support
Machine Controls and Isolation

SMALL WIND = ROPES, STRAPS AND SLINGS

BIG WIND = LOTO, YAW & ROTOR LOCKS
Evacuation and Rescue Training
Skills needed to complete a small wind turbine installation

- Electrical
- Mechanical
- Working with cranes
- Working with tilt-ups and guy wire tensioning
- Climbing and working at height
- Foundation and concrete work
- Surveying
- Proper bolt torquing tools and techniques
- Math (up to and including trigonometry)
- Troubleshooting
- People skills, paperwork, computer (data) entry and collection
- Equipment inspection
- Attention to detail
- **SAFETY!!!**
How to do it right

• Have the skill sets covered by one or more installers
• Have access to manuals, manufacturer training, and telephone support
• Hire factory or experienced dealer personnel to supervise early installations – specifically for turbine and tower types being installed
• Use commissioning checklists and post-commissioning follow-up checklists
• Keep a good rapport with the client
Types of Training

• Community and technical colleges
• Non-profit renewable energy organizations
  • Minnesota Renewable Energy Society (MRES), Windustry
  • Minnesota Small Wind Training Network (mn.gov)
  • Small Wind Installer Training Curriculum (windustry.org)
• Courses from accredited programs or IREC Certified/Master Trainers
• Manufacturer trainings
MREA Small Wind Installer Training Courses

- W 101: Introduction to Wind Systems
- W 201: Small Wind Site Assessor Training
- W 306: Wind Turbine Design and Construction
- W 307: Introduction to Tower Climbing and Safety
- W 401: Wind System Repair and Maintenance
- W 409: Math and Code for Small Wind
MREA Site Assessment Certificate Programs

MREA Small Wind Site Assessment Certificate

W 101

W 201

Skills Assessment / Two Practice Reports

Exam
Community and Technical Colleges

- OSHA training
- First aid and CPR certification
- Electrical and mechanical courses/degrees
- Programmable Logic Controllers
- Machining, welding, auto shops...
- Wind programs!
  - Minnesota West, Iowa Lakes, LTC (WI), Columbia Gorge (OR), Laramie (WY), Texas State, etc.
Installer Certification

For the most part, it doesn’t exist.

• NABCEP Small Wind Installer Certification no longer offered, but is still recognized for most who earned it
• NABCEP Small Wind Entry Level Exam not yet available
• Most manufacturers/installers have their own training programs, policies, and procedures
• A wind energy degree from a technical or community college may be the best “certification” available
Guidelines for Installer Training: Summary

1. Electrical and mechanical training or background
2. First aid, CPR, emergency response training
3. OSHA 10/30 card
4. Fall protection and rescue training
5. Wind energy “101” and similar courses
6. Wind energy degree: Technical or Community Colleges
7. Manufacturer training and support
8. EXPERIENCE!
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