



Northern Power 100

FACTORY TRAINING AND CERTIFICATION PROGRAM

INSTALLATION TRAINING COURSE

OPERATIONS AND MAINTENANCE:
LEVEL 1 TECHNICIAN
LEVEL 2 ADVANCED TECHNICIAN

COURSE LISTING

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INSTALLATION TRAINING COURSE OUTLINE

Target Participant

The objective of the Northern Power 100 Installation Training Course is to prepare construction / project managers, lead installers and site superintendents to effectively manage the installation of a NPS 100 on time and on budget. This course is required for any partner or team leader prior to an initial NPS 100 install.

Our field service technicians frequently report that there is a measurable difference with installations that are lead by Installation Training Course graduates. The course content and design has been developed for those who are skilled at leading construction projects and doing the hands-on work.

Earning Installer Certification

- Successful completion of the course is only the first step towards Installer Certification. At the completion of the course the participant will be issued a certificate documenting they are factory trained.
- After two successful installations, participants may earn their Installer Certification.

Course Objectives

- Walk participants through the critical installation activities of the NPS 100 wind turbine
- To learn all the preparation and installation steps so participants can successfully manage and execute the NPS 100 project from the permitting process to installing the turbine to the utility interconnect

Participant Prerequisite Skills include but are not limited to

- Construction – Project Management
- Managing the installation of wind turbines or similar machines
- Demonstrated ability to climb towers and perform manual tasks, such as bolt torques
- Demonstrated knowledge of AC electricity generation and distribution, specifically relative to 480 Volt systems

Course Prerequisites

- None, however, participants will be asked to sign a confidentiality and liability waiver with Northern Power Systems, Inc. as a requirement of participation.

Course Duration and Location

- Three days and takes place at Northern's headquarters in Barre, VT

At the end of the course the project leader will:

- Be able to plan an installation project schedule, including equipment and labor resources
- Identify the elements of an effective foundation design
- Know how to appropriately execute the installation from foundation to tower stacking through internet connectivity
- Know best practices for each phase of the installation process and the specific steps to be taken to implement each recommendation
- Know the factors that comprise and impact an installation budget
- Be able to identify and mitigate potential problems that could surface during a real installation



OPERATIONS AND MAINTENANCE LEVEL 1 TECHNICIAN COURSE OUTLINE

Target Participant

The local operator who will perform routine maintenance and complete the Northern Power 100 annual maintenance plan. The local operator will also serve as the on-the-ground first responder should there be a need to inspect the turbine before a fault reset.

Participant Prerequisite Skills

Prior to attending the Level 1 class, it is expected that the Technician will have these demonstrated skills and abilities

- Demonstrated knowledge of AC electricity generation and distribution specifically relative to 480 Volt systems
- Demonstrated ability to climb tower, perform bolt inspections, and re-torque bolts to meet specifications
- Change grease cartridges, receptacles, air filters, etc
- Perform limited troubleshooting and diagnosis
- Trained in industrial climbing and safety procedures

Course Prerequisites

- Successful completion of one of the Installation Training Courses, NPS 100 Installations or equivalent

Course Duration and Location

- One day and takes place at Northern's headquarters in Barre, VT.
- An open-book exam will be given at the conclusion. The areas that will be covered will include basic operations, safety, yearly maintenance, and basic troubleshooting

Course Objectives

Upon completion of this training the technician will be able to:

- Follow all safety procedures required for tower climbing and lock out tag out procedures
- Operate the Base Junction Box Interface and the Up-Tower Controls Cabinet Interface
- Utilize E-Stop – at the appropriate times
- Perform routine maintenance functions
- Complete all tasks as required by the Northern Annual Maintenance Checklist
- Perform electrical systems inspections
- Perform annual Bolt Torque Check
- Perform basic troubleshooting
- Utilize a basic operational understanding of faults and alarms
- Perform visual inspections
- Serve as the eyes and ears for the NPS 100 Technical Support Team
- Submit all required Northern paperwork for warranty compliance

OPERATIONS AND MAINTENANCE: LEVEL 2 ADVANCED TECHNICIAN COURSE OUTLINE

Target Participant:

The Operations and Maintenance Level 2 Advanced Technician will serve as the regional support resource for Northern Power 100(s). This individual is capable of performing simple to complex service and maintenance functions.

In addition, the Advanced Technician will obtain the training to assist with deeper troubleshooting and diagnosis of the NPS 100.

The technician will also serve as the on the ground first responder should there be the need to inspect the turbine, perform fault resets, perform component replacement, or complete technical service bulletins.

Skills Include:

Prior to attending the Level2 class, it is expected that the Advanced Technician will have these demonstrated skills and abilities:

- Demonstrated ability to configure and utilize remote monitoring software.
- Ability to perform detailed wind turbine troubleshooting and diagnosis
- Ability to perform simple to complex wind turbine service
- Ability to perform simple to complex wind turbine component replacement

Course Prerequisites:

- ✓ Certified O&M Level1 Technician
- ✓ Competently perform all tasks provided by the Operations and Maintenance Level1 Technician.
- ✓ Demonstrated knowledge of AC electricity generation and distribution specifically relative to 480 Volt systems.
- ✓ Familiar with electrical static discharge procedures
- ✓ Trained in industrial climbing and safety procedures

Course Duration and Location

- Two days and takes place at Northern's headquarters in Barre, VT

Course Objectives:

At the end of the course the Advanced Technician will be able to:

- Utilize Smartview to:
 - Diagnose faults and alarms
 - Perform basic trend analysis

- Follow all safety procedures required for tower climbing and lock out tag out procedures.
- Operate the Base Junction Box Interface the Uptower Controls Cabinet Interface to:
 - Put the NPS 100 into and out of Service State
 - Utilize manual controls to operate the NPS 100

- Complete simple to complex NPS 100 component replacement
- Complete simple to complex NPS 100 technical service bulletins

An open-book exam will be given at the end of class

COURSE REGISTRATION STEPS

Please review the course schedule located on the Northern Power web site at:

<http://www.northernpower.com/wind-power-products/factory-training.php>

Then complete the registration form.

To ensure the greatest amount of participation and hands-on value, class size is limited. Prompt registration and payment is highly recommended.

Factory Training and Certification Courses	Cost
Installation Training Course	\$3500
Operations and Maintenance: Technician Level 1	\$500
Operations and Maintenance: Advanced Technician Level 2	\$1050

Class Cancellation Policy:

If low enrollment should occur, Northern Power Systems may cancel classes up to 10 calendar days from their start date. We suggest that you hold on purchasing any airline tickets until the class is confirmed to run. The participant is responsible for any and all costs associated with travel and lodging.

Climbing Safety Policy:

Since we have a NPS 100 within a short 10 minute drive from our Barre site, we can take participants for a climb up to the nacelle - weather permitting.

Safety is paramount so in order to climb you will have to meet the following criteria:

- You have been trained in industrial climbing and are "authorized" to work at heights.
- When you enroll, provide a copy of your certification card from an industrial climbing organization or if training was done in house - a letter from your employer.
- You will have to provide your own full body harness, with lanyards, and climbing helmet.

We cannot hold slots or confirm registration until payment has been received. Please remit payment directly to the contact person listed in the registration form. Once payment has been received we will send confirmation of registration.

FACTORY TRAINING AND CERTIFICATION PROGRAM REGISTRATION FORM

To register, please follow the steps below.

STEP 1: Registration Information (please fill out one form for each participant).

Company:	
Name:	
Title	
E-mail:	(Office phone)
	(Mobile phone)
Address:	
City:	State:
Zip Code:	Country:

STEP 2: Review the class schedule, check off selected class and enter your first and second choice of dates.

Class schedule located on the Northern Power web site at:

<http://www.northernpower.com/wind-power-products/factory-training.php>

Factory Training and Certification Course	Cost	Dates Choice One	Dates Choice Two
<input type="checkbox"/> Installation Training Course	\$3500		
<input type="checkbox"/> Operations and Maintenance: Technician Level 1	\$500		
<input type="checkbox"/> Operations and Maintenance: Advanced Technician Level 2	\$1050		

STEP 3: Payment

Return one registration form per participant in one of three ways:

- fax: 802-461-2996
- e-mail (pdf): slotto@northernpower.com
- mail – with payment – to the address below

Send a check for the total amount made out to “Northern Power Systems INC”

Attn: Bill McCormick
Accounts Receivable
Northern Power Systems
29 Pitman Road, Barre, VT 05641

Please Note:

- Course fees are per participant.
- Your registration will be confirmed via e-mail.
- Registration cannot be confirmed until we have received your registration form and payment in full.
- It is recommended that *you do not make travel arrangements* until the class is confirmed to run.
- Space is limited to 10 participants for Installation Training Courses and 8 participants for the O&M Courses.
- We reserve the right to add or cancel training sessions based on enrollment.
- Lunch and a continental breakfast are provided each day.
- The course fee does not include travel to and from Barre, VT, hotel, dinner or any other travel-related incidentals.

If you have any questions, please contact us at:

Toll free (US/Can): 1-877-90-NORTH

Direct: 1-802-461-2955

e-mail: slotto@northernpower.com