



INTRODUCTION

Regular site visits are an essential part of a successful solar resource assessment or monitoring campaign. This document outlines the tools, materials, and steps to take when visiting your site. Note that your specific needs may vary from these checklists somewhat.

As always, we are available for help by emailing support@nrgsystems.com.

TOOLS AND RESOURCES

- Laptop computer with the most recent version of SymphoniePRO Desktop Application and/or Symphonie Data Retriever software and the latest logger and iPack firmware files
- USB A to USB B cable, 15ft length recommended
- Adjustable wrench
- Socket set with SAE sockets
- Hex keys – 5/32", 3/16" (for Soiling Station and PVH accessories)
- 5/16" nut driver
- 1/4" nut driver
- Small flat head and Phillips head (+) screw drivers
- Magnetic angle finder
- 32 oz. spray bottle with distilled water for cleaning pyranometers and PV modules
- Pre-moistened lens wipes for cleaning pyranometers
- Microfiber cloth for cleaning pyranometers and PV modules
- 6 ft stepladder
- Electrical tape
- Plumber's putty
- Spare D-cell batteries, iPack batteries, SD cards, new desiccant packs
- Spare logger and iPack (if troubleshooting these components)
- Spare P-SCM card(s) and appropriate sensor wires, if troubleshooting sensors
- Maintenance forms, camera, etc., to document any observations and changes made

MANUALS

- SRA System Manual
- [SymphoniePRO Data Logger Manual](#)
- SRA Soiling Station Instructions (If applicable)
- SRA All-Weather PVH Instructions (If applicable)



TOWER MAINTENANCE

- Observe the tower from a distance and see if it looks straight.
- Check how plumb the tower is. Using a level and sighting up the tower, determine whether the tower needs to be plumbed and straightened again.
 - Guy wires can stretch over time and anchors can move slightly if the ground freezes and thaws, causing the tower to lean in different directions. It is important to straighten the tower and re-tension the guy wires.
- Check on the tower base. Does everything look normal? A significant change in the baseplate can also cause the guy wire tensions to change.
- Check the tension of all guy wires. Equal and proper guy wire tensions are critical to a safe tower.
- Check wire rope clips.
 - Are they all tight?
 - Are they rusty? It might be time to change some of them.
- Check anchors.
 - Do the anchors look the same as when originally set? If they have moved the soil or have risen out of the ground, it may be time to move or fix the anchor location.
- If your tower is many years old, how do the guy wires look at the anchor points?
 - Have they started to fray?
 - Are there any signs of corrosion beyond superficial rust? If the guy wires are showing extreme wear in the form of fatigue or corrosion, it may be time to (carefully!) lower the tower and change out the guy wires.
- Check that the shelter box is still securely fastened to the tower. Does weather or wildlife seem to be making its way into the enclosure? If so, take steps to prevent this.
- Are the ground wires still properly attached to the base plate, ground rod and logger?



SENSOR AND ACCESSORY MAINTENANCE

- Clean pyranometers as follows¹:
 - **Step 1:** Use a spray bottle filled with **distilled** water and vigorously spray the dome to wash away any particles from the dome surface.
 - **Step 2:** If there is any hardened particulate stuck to the dome surface (e.g., bird droppings), spray with distilled water and then cover with a moist/damp paper towel for five minutes to loosen the hardened particulate, then spray vigorously again with distilled water to wash away the contaminants.
 - **Step 3:** Use a clean lens wipe (e.g., Zeiss Pre-Moistened Lens Cleaning Wipe) to remove any remaining contaminants on the dome surface. Note: Discard the lens wipe after each use. Do not use to clean another dome (one lens wipe per dome).
 - **Step 4 (optional):** If you have a clean microfiber cloth, you can do a final polish of the dome after it has been cleaned with the lens wipe in Step 3.
- Visually inspect all of the booms and sensors to make sure the alignment is correct and nothing appears to be broken. **Especially important with solar campaigns is the regular inspection and leveling of the pyranometers.**
- Clean Soiling Station “Clean” panel (if applicable) and “Logger Power” panel (if necessary) using spray bottle and microfiber cloth or sponge
- Check the Soiling Station (if applicable).
 - Is the angle correct?
 - Have the mounting brackets remained secure?
- Clean PVH panels (if applicable and if necessary)
- Check PVH system (if applicable).
 - Are the PV panels and frame secure?
 - Are the batteries connected and charging? Battery voltage should have been monitored on a channel of the logger.
 - Are the battery boxes located in an appropriate spot and adequately sheltered? Inspect all other sensors for proper function
- Are all sensor cables that lead into the shelter box organized and secure?
- Check pyranometer desiccant pack and replace if needed (if applicable)
 - See pyranometer manual for specifics on when to replace desiccants and how to do it.

¹ *Cleaning recommendations courtesy of Robert Dolce, Managing Director, HuksefluxUSA Inc.



SYMPHONIEPRO DATA LOGGER

The Symphonie Pro Desktop Application software can also be used to complete these tasks.

- Press the [Home] button on the logger and make sure it wakes up. Press [Home → 2. Functions → 1. Logger Functions → 2. Diagnostics] to check on the logger battery status.
 - 12V Batt voltage should be above 11v DC, and ideally above 12v DC. If below 11v DC the iPack battery should be replaced.
 - 2V Batt voltage should be between 1.5 and 2.0v. If otherwise, change the D-Cell batteries.
 - The logger 1.5v DC batteries should be proactively changed at least every 9 months in colder climates.
 - Write the date on the new D-cell batteries with a permanent marker. This will make it easy to determine when they should be replaced later on.
- Press [Home → 2. Functions → 1. Logger Functions → 1. Logger Status] to check on the FW version and memory card capacity.
 - Check the NRG Website to see if there are new [logger](#) and [iPack](#) firmware versions available, and upgrade if there is.
 - Take note of how much memory is being used on the SD card. If it's getting close to the memory card's capacity pull the files off it and erase the card.
- Press [Home → 1. Measurements] to view all of the logger channels in real time.
 - Scroll down to view each channel to confirm that the sensors are working correctly.
 - Press the right arrow while on a sensor channel to see additional programmed information.
- Check the iPack Status by pressing [Home → 2. Functions → 2. iPack Functions → 2. Connection Status].
 - The iPack should be registered Home or Roaming.
 - Press the right arrow while on the iPack Status window to see additional information like the IP address and data transfer details.
- Press [Home → 2. Functions → 2. iPack Functions → 1. Connection Test → 5. Email No File] to force the iPack to make a call.
 - Watch the screen as the iPack calls. Look up any errors in the SymphoniePRO Manual or contact [Technical Support](#) (802) 482-2255 ext. 3.
- If the logger's SD card has not been changed for a while, it is good practice to replace it. Remember to save all data before reformatting the card.
 - Wait and watch as the memory card is initialized. If it fails, do not use that memory card. Double check the memory card status after inserting a new card (as mentioned above).
- Save a copy of the logger's *.LGR file to have a record of the settings in the logger and iPack.
- Replace the desiccant bag inside the logger to keep the system moisture free.
- Close everything back up making sure it is weathertight.