READY TO INSPECT — FIELD CHECKLIST

Solar PV inverter annual maintenance checklist

The annual PV inverter service is the deep pass: the measurements, cleanings and tests a quarterly round doesn't reach. This checklist keeps the full service on record with the photos that make it defensible later. Work is commonly verified against NEC (NFPA 70), manufacturer's published instructions. Confirm the edition your authority having jurisdiction has adopted.

Who runs it: The PV service tech on the annual service, with an electrician for the de-energized work. When: Once a year, part energized for the thermal scan and part shut down for the connection and disconnect work.

Planning and isolation

- [ ] Service window agreed with the owner and utility where required
  Owner told of the lost production, and where the interconnection agreement requires it the utility is coordinated before its disconnect is opened or locked.
  No photo required

- [ ] Loaded scan taken under the energized-work procedure
  Scan taken in daylight while producing, before isolation, through IR windows or with covers off only as the site's energized-work procedure allows, PPE from its arc-flash risk assessment.
  No photo required

- [ ] Both sides isolated after the loaded scan, discharge wait kept
  AC, DC and auxiliary locked, tagged, discharge wait kept, tested dead; array stays live. Live tests: covers on, locks off by whoever hung them except the DC isolation for string tests, then re-locked.
  1 photo required

Connections and heat

- [ ] DC and AC terminations scanned then torqued
  Terminations imaged under load, then powered down and torqued to the manufacturer's published values, string and combiner lugs included.
  2 photos required

- [ ] Heat sink and fans cleaned with the inverter isolated
  Heat sink fins and fan housings brushed or vacuumed clear, fans turned by hand for bearing drag, and filters where fitted replaced per the maker's maintenance schedule.
  1 photo required

Safety systems

- [ ] Rapid-shutdown initiated and confirmed
  Shutdown triggered and the array measured dropping to a safe voltage, module-level devices responding where fitted.
  No photo required

- [ ] AC and DC disconnects operated
  Each disconnect opened and closed through its full travel, labeling correct, contacts sound with no arcing signs.
  1 photo required

Grounding and enclosure

- [ ] String tests set up with the DC side isolated
  DC disconnect held open and locked and surge devices lifted, tests run at the array-side terminals under the energized-work procedure, and arrays with module-level electronics tested per the maker.
  No photo required

- [ ] Array string insulation resistance and open-circuit voltage measured
  Each string measured with a PV-rated tester, insulation resistance compared across strings and Voc against the temperature-corrected commissioning baseline.
  1 photo required

- [ ] Equipment grounding and bonding verified
  Ground and bonding connections tight and continuous from the inverter through combiners to the array frames.
  1 photo required

- [ ] Enclosure sealing and moisture control checked
  Gaskets, vents and drains intact, any desiccant renewed where fitted, no water staining inside the enclosure.
  1 photo required

Restart and settings

- [ ] Covers fastened and inverter restarted in the maker's sequence
  Tools out and covers fastened, each lock removed by whoever hung it, disconnects closed in the maker's start sequence, and the unit syncing to the grid and producing.
  1 photo required

- [ ] Arc-fault and ground-fault self-tests run where the maker provides
  Self-test started from the inverter menu with the passing result shown and logged, a failed result reported to the owner the same day.
  No photo required

- [ ] Grid settings and firmware read against the approved profile
  Grid profile and trip settings matched to what the utility approved, firmware level noted against the maker's release, changes made only with the utility's agreement.
  1 photo required

- [ ] Annual results sent to the owner as the new baseline
  Scan images, torque, insulation readings and settings compared with last year, open deficiencies listed, and the report sent to the owner to accept.
  No photo required