READY TO INSPECT — FIELD CHECKLIST

Battery energy storage system (BESS) annual maintenance checklist

The annual battery energy storage system 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 NFPA 855, manufacturer's published instructions. Confirm the edition your authority having jurisdiction has adopted.

Who runs it: The ESS service technician on the annual visit, with the qualified fire party present for the detection and suppression testing, which they perform and the tech records. When: Once a year, scheduled with the fire party so the annual commissioning-verification and suppression tests they run can be witnessed and documented in one visit.

Connections and heat

- [ ] Owner and monitoring company told before shutdown and fire tests
  Before shutdown and any fire test, owner told the reserve is unavailable, monitoring company told, and the owner's impairment procedure followed with fire watch where it calls for one.
  No photo required
- [ ] Every source isolated, locked and tagged before cabinet work
  AC, rack DC, auxiliary and cooling power locked; modules stay live, so insulated tools. Restart with cabinet closed, locks off by whoever hung them; survey via IR windows or per energized-work rules.
  1 photo required
- [ ] Power and battery terminations inspected and retorqued
  With the system safely shut down, DC and AC terminations torque-verified to the marked value or resistance-measured, re-torqued only where found loose, no discoloration or corrosion at the lugs.
  2 photos required
- [ ] Racks, module mounting and internal cabling inspected
  Racks anchored and plumb, modules seated and fastened, cable insulation not chafed at rack edges, no debris or pests inside the enclosure.
  1 photo required
- [ ] Cooling system serviced to the manufacturer's schedule
  Air-cooled: filters changed and coil cleaned. Liquid-cooled: coolant condition checked against the manufacturer's range, hoses, pump and fittings sound and dry.
  1 photo required
- [ ] Thermal survey of connections and modules under load
  Terminations, disconnects and module surfaces surveyed while the system is operating, hot spots noted against the rest of the cabinet.
  2 photos required

Battery health

- [ ] Full BMS log and cell-balance review
  Per-cell voltage spread, temperature history and capacity or state-of-health figures read from the BMS and compared against the last service, recorded not rated.
  2 photos required
- [ ] Disconnects, signage and labeling verified
  DC and AC disconnects operate and are labeled, hazard and shutdown signage present and legible at the enclosure and the fire-service point.
  1 photo required
- [ ] BMS voltage and temperature sensing checked against a meter
  Manufacturer's or integrator's tech compares BMS readings with a calibrated meter at the points the manufacturer names, under the energized-work procedure, differences recorded.
  1 photo required
- [ ] Firmware and protection settings compared with the record
  BMS and controller firmware level and the voltage, current and temperature trip settings read and matched to the integrator's configuration record, changes noted.
  1 photo required

Life-safety testing (witnessed and recorded)

- [ ] Fire detection, gas detection and suppression tested by the qualified party
  The fire party's detection, gas-detection and suppression tests witnessed and their results documented. The tech records the outcome and does not certify it.
  2 photos required

- [ ] System safe-shutdown interface observed to respond
  On the qualified party's test signal, the system's shutdown and isolation response observed and recorded, unit returned to normal by that party afterward.
  1 photo required

- [ ] Explosion control response observed on the gas-detection test
  On the qualified party's gas-detection signal, the exhaust or other explosion-control response the design uses observed and recorded; vent-only designs noted as such.
  No photo required

Return to service

- [ ] Fire systems restored and monitoring company told
  Detection, gas detection and suppression back to normal on their panels, the impairment closed, and the monitoring company and owner told the systems are back in service.
  No photo required

- [ ] BESS back in its normal operating mode
  BMS showing no active alarm, cooling running, the system in the owner's operating mode and charging toward its reserve, annual readings filed against the unit.
  1 photo required