READY TO INSPECT — FIELD CHECKLIST

Thermal energy storage tank annual maintenance checklist

The annual thermal energy storage tank 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 IMC (mechanical code), manufacturer's published instructions. Confirm the edition your authority having jurisdiction has adopted.

Who runs it: The HVAC service lead on the annual plant service. When: Once a year during a plant shoulder period, when the tank can be taken through a full cycle without risking comfort.

Insulation and vapor seal

- [ ] Insulation and vapor seal inspected and repaired
  Jacket opened where suspect, insulation dry to the core, vapor seal continuous and repaired at any breach, no hidden corrosion under the insulation.
  2 photos required

Access and entry

- [ ] Confined-space permit and attendant in place before any entry
  Where the tank is entered, the site's permit-required confined-space program is followed: atmosphere tested, attendant posted and rescue ready before anyone goes in.
  No photo required
- [ ] Tank pumps and valves locked out before any entry or draining
  Every pump and valve that can move water into the tank locked and tagged. Entrant out, hatches shut and locks removed by whoever hung them before the cycle test.
  No photo required
- [ ] Access hatches, gaskets and fixed ladders inspected
  Hatch hinges, latches and gaskets sound and sealing, fixed ladders and platforms secure and free of corrosion, beyond the quarterly check that hatches are shut.
  1 photo required

Water quality

- [ ] Storage water sampled and treatment confirmed
  Water sampled and checked against the manufacturer's guidance, treatment confirmed, no scale, sediment or biological growth in the sample, results logged.
  1 photo required
- [ ] Internal diffusers and connections inspected where accessible
  Diffusers or distribution headers clear of debris, no blockage that would short-circuit the thermocline, internal connections sound where they can be reached.
  No photo required
- [ ] Glycol loop sampled for lab analysis
  On ice systems, a loop sample sent for concentration, inhibitor level and pH, going beyond the quarterly refractometer reading, with results logged.
  No photo required
- [ ] Tank water tested for glycol from a coil leak
  On ice-on-coil tanks with glycol in the coils, the tank water is checked for glycol, since any trace points to a leaking coil or header.
  No photo required

Sensors and alarms

- [ ] Tank sensors compared with a calibrated reference at each height
  Each tank sensor compared with a calibrated reference at the same point, offsets recorded, and any sensor outside the manufacturer's tolerance adjusted or tagged.
  1 photo required

- [ ] Level or ice inventory sensor checked against a manual measurement
  Tank level measured by hand or sight tube and compared with the transmitter or inventory sensor reading, error recorded against last year's check.
  1 photo required

- [ ] High and low level alarms tested through to the BAS
  Where the tank has level alarms, each is simulated and seen arriving at the BAS with the right point name, then cleared and returned to normal.
  No photo required

Cycle verification

- [ ] Charge and discharge set points compared with the design sequence
  Schedule, end-of-charge limit and discharge set points at the BAS match the design sequence and commissioning record, with any change since explained.
  1 photo required

- [ ] Full charge and discharge cycle run and capacity confirmed
  Tank driven through a complete charge and discharge, temperatures and level tracking as expected, usable capacity confirmed against the design and logged.
  2 photos required

- [ ] Tank returned to automatic charge and discharge control
  Valves and pumps back in automatic, hatches closed and locked, jacket repairs closed up, and the tank left on its normal schedule for the next charge.
  No photo required

- [ ] Capacity result and findings reported to the owner
  Usable capacity against design, water and glycol results, sensor offsets and repairs made or still needed reported to the owner as next year's baseline.
  No photo required