READY TO INSPECT — FIELD CHECKLIST

Variable frequency drive (VFD) annual maintenance checklist

The annual variable frequency drive 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 electrical service tech on the annual shutdown, with the drive locked out and the DC bus confirmed discharged.
When: Once a year during a scheduled outage, when the driven load can be down long enough to open the power section safely.

Before the shutdown

- [ ] Owner told when the driven load will be down
  Owner and operators given the outage window for the fan, pump or process the drive serves, and the time the drive goes offline noted in the record.
  No photo required

- [ ] As-found readings and full fault history taken before isolation
  Output current and heatsink temperature read while running, and the year's fault history downloaded with the service tool so repeat trips are traced.
  1 photo required

Safe shutdown

- [ ] Drive locked out and DC bus verified discharged
  Upstream disconnect locked out, keypad dark, DC bus measured down to a safe level before the power section is opened.
  2 photos required

- [ ] Control power, bypass and auxiliary feeds also locked out
  Beyond the main disconnect: any separate control power, bypass or auxiliary feed locked and proven dead, and the label's full discharge wait kept, meter proven on a known source.
  No photo required

Connections and cleaning

- [ ] Power and control terminals re-torqued to spec
  Line, load and control terminations torque-verified or resistance-measured, re-torqued to the drive's published values only where found loose, no heat discoloration on lugs.
  2 photos required

- [ ] Heatsink and power section cleaned
  Heatsink fins and boards cleaned of dust, cooling fan replaced if worn, no debris bridging the power terminals.
  1 photo required

- [ ] Cooling fans turned by hand and checked against service life
  Beyond the quarterly running check: each fan spun dead for bearing drag and cracked blades, hours set against the manufacturer's fan life.
  1 photo required

- [ ] Control boards and ribbon connectors inspected
  Board plugs, ribbon cables and fiber links seated, with no burnt parts, corrosion or swollen components on the control and gate-drive boards.
  1 photo required

- [ ] Motor cable insulation tested with the drive terminals lifted
  Motor leads disconnected from the drive output before the insulation tester is used, so test voltage never reaches the drive, reading trended against last year.
  1 photo required

Configuration and life

- [ ] Parameter set backed up off the drive
  Active parameters uploaded to a keypad, tool or file kept off the unit, revision noted so a replacement can be reloaded.
  1 photo required

- [ ] DC bus capacitor age and condition noted
  Service age checked against the manufacturer's capacitor life guidance, any bulging or venting on older units flagged for planned replacement.
  1 photo required

Return to service

- [ ] Cabinet closed up and each lock removed by the person who hung it
  Power section covers and barriers back on, tools and debris cleared from the cabinet, and every lock and tag taken off by whoever applied it.
  No photo required

- [ ] Drive restarted and run through its speed range
  Unit brought up and run across its operating speed range under load, no unusual noise, no fault, output currents balanced.
  1 photo required

- [ ] Drive back in auto and the annual record filed
  Drive left in auto on its normal speed reference, owner told the load is back, and readings, the backup file and capacitor planning filed.
  No photo required