Mechanical, Electrical, and Controls Tasks Aligned to FAT/SAT for Danfoss Systems

Factory Acceptance Test (FAT)

1. Mechanical

- ☐ Verify correct frame size and model per Danfoss specifications.
- ☐ Confirm proper heatsink orientation, airflow requirements, and enclosure clearances.
- ☐ Check mounting hardware, torque values, vibration isolation, and cooling provisions.

2. Electrical

- ☐ Validate voltage, current, and motor data against nameplate and drive selection.
- ☐ Perform point-to-point continuity on power and grounding conductors.
- ☐ Confirm proper fuse or circuit breaker type and coordination.
- ☐ Inspect cable shielding, grounding scheme, and control power sources.
- ☐ Verify terminal labeling accuracy and wiring against schematics.

3. Controls

- ☐ Validate I/O mapping and parameter assignments.
- ☐ Confirm start/stop logic, permissives, interlocks, and STO implementation.
- ☐ Test feedback signals (analog, digital, encoder).
- ☐ Confirm all communication settings (IP addresses, baud rates, node IDs).
- ☐ Perform dry-run logic tests, safety chain verification, and parameter set review.

4. Functional

- ☐ Execute no-load motor test where possible.
- ☐ Verify ramp rates, autotune results, and motor nameplate settings.
- ☐ Test key fault conditions and confirm proper fault response and reset behavior.

Site Acceptance Test (SAT)

1. Mechanical

- ☐ Verify motor alignment, mounting, and final installation conditions.
- ☐ Confirm enclosure ventilation, environmental conditions, and cooling paths.

2. Electrical

- ☐ Conduct insulation resistance tests for motor and cables.
- ☐ Verify phase rotation, voltage balance, grounding integrity, and protective device torque.
- ☐ Energize system and confirm normal inrush/charging behavior.

3. Controls

- ☐ Validate field wiring for switches, interlocks, and safety devices.
- ☐ Confirm analog signal accuracy under real operating conditions.
- ☐ Verify communication stability with PLC/BMS and correct mapping of status/alarm bits.
- ☐ Test STO performance in final installation.

4. Functional

- ☐ Run motor under load across reference points (10%–100%).
- ☐ Verify torque/current limits, thermal models, and PID loops (if used).
- ☐ Observe temperature rise and ventilation performance.
- ☐ Confirm fault initiation, recovery, and alarm handling under load.

Documentation & Handover

- ☐ Export and archive final Danfoss parameter set.
- ☐ Record all test results, commissioning notes, and as-built changes.
- ☐ Update wiring diagrams and I/O maps.
- ☐ Provide operator training on basic operation, fault reset, and mode selection.
- ☐ Complete FAT/SAT signoff and warranty documentation.