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Test dynamic façade power-failure recovery and safe state

Test dynamic façade power-failure recovery and default safe state using an interactive checklist that is commentable and can export as PDF/Excel for robust, auditable commissioning.

Project:

Date:

Filled by:

Pre-Test Safety and Documentation

1	Confirm permit-to-work and LOTO boundaries are approved; verify isolations on drawings.
2	Conduct toolbox talk covering power-cut risks, rescue plan, and exclusion zones; collect 100% sign-in with timestamps and photo evidence.
3	Inspect MEWP/scaffold and anchor points using visual check and torque wrench; acceptance: valid inspection tag and anchor torque within manufacturer limits; photo evidence.
4	Map façade asset IDs to locations and BMS points via QR scan; acceptance: 100% mapping verified; export register and obtain supervisor signature.
5	Verify weather limits with anemometer at façade elevation; acceptance: sustained wind ≤ 10 m/s, no precipitation; capture reading photo and time.

Power-Failure Simulation Setup

6	Review switching plan with electrical lead and mark isolation points; acceptance: signed plan referencing feeder IDs; upload signed copy.
7	Install power-quality recorder (CTs and voltage leads) on test feeder; acceptance: sampling ≥ 1 kHz and NTP time sync; photograph setup and device clock.
8	Configure BMS trends at 1 s intervals for position, status, alarms; acceptance: trend window ≥ 30 min; screenshot configuration.
9	Position high-visibility cameras on test bays and time-sync to BMS; acceptance: timestamp drift ≤ 1 s; capture sync check screenshot.
10	Verify test instruments are in calibration; acceptance: calibration sticker valid and probes rated ≥ 1 kV; photograph certificates.

Default Safe State Verification	
11	Confirm safe-state positions per approved project specifications and authority requirements; acceptance: signed safe-state matrix available; attach document.
12	Simulate mains failure by opening designated breaker under supervision; record event timestamp; photograph breaker position and log entry.
13	Measure time-to-safe-state with stopwatch and video; acceptance: ≤ 30 s or per specification; upload video with visible timer.
14	Verify final louver/blind angles using digital inclinometer; acceptance: within $\pm 2^\circ$ of safe angle; attach angle readings and photos.
15	Check braking/restraint behavior via gentle push test (≤ 50 N) or wind gust observation; acceptance: rebound $\leq 5^\circ$; provide video and force-gauge reading.
16	Test manual override when de-energized using hand crank; acceptance: reach safe state ≤ 60 s with effort ≤ 150 N; record video and reading.

Recovery and Resynchronization	
17	Restore power by closing breaker per plan; acceptance: no uncommanded motion for first 10 s; provide PQ trace and video.
18	Confirm controller boot and homing via BMS logs and limit switch indicators; acceptance: homing complete ≤ 120 s; upload screenshots.
19	Verify commanded versus actual positions post-recovery with inclinometer sampling; acceptance: $\pm 2^\circ$ tolerance; attach readings.
20	Apply staggered restart (5–10 s delays between groups) and measure inrush with clamp meter; acceptance: peak $\leq 80\%$ protective device rating; upload capture.

Controls and BMS Logging	
21	Validate fail-safe priority by issuing user open command during outage; acceptance: safe-state overrides user command; provide trend plot.
22	Verify alarms latch until acknowledgment and notifications dispatch within 60 s; attach BMS alarm screenshot and email/SMS proof.
23	Correlate BMS and PQ recorder clocks; acceptance: event-time drift ≤ 2 s; upload annotated timeline comparison.
24	Archive evidence package: photos, videos, trends, PQ data, and sign-offs; acceptance: filenames include asset ID and UTC timestamp; share folder link.

Sign-off and Handover	
25	Update O&M; manual with tested safe-state settings and recovery steps; acceptance: revised document issued; attach revision log.
26	Apply durable QR labels linking each asset to its test record; acceptance: scannable at 1 m; upload label photos.
27	Capture digital signatures from client, contractor, and engineer; acceptance: three e-signatures recorded; attach signed certificate.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Test dynamic façade power-failure recovery and default safe state is a focused commissioning and verification procedure for operable louvers, blinds, and movable façade panels. This checklist targets fail-safe behavior, power-loss recovery, and controls integration, ensuring the building envelope reverts to its defined safe position and restarts cleanly. It addresses façade fail-safe tests, power-loss recovery verification, and BMS alarm and trend capture. By simulating mains outages and UPS depletion in a controlled manner, you confirm safe positions, braking, manual overrides, position accuracy, and staggered restart to avoid inrush trips. The scope excludes structural integrity testing, routine cleaning, and permanent electrical design changes; it concentrates only on operational testing and evidence capture per approved project specifications and authority requirements. When executed correctly, risks such as falling elements, wind-driven damage, occupant entrapment, and uncontrolled motion are significantly reduced, while handover documentation quality improves. Use this interactive checklist now: tick items, add comments, and export PDF/Excel with a secure QR link.	1. Preparation: assemble tools (power-quality recorder, clamp meter, digital inclinometer, calibrated multimeter), PPE (helmet, eye protection, cut-resistant gloves, fall arrest), cameras with NTP sync, and access equipment. Confirm signed switching plan, exclusion zones, and weather limits. Verify all instruments are in calibration and batteries charged. 2. Using the Interactive Checklist: start interactive mode, tick each item as completed, attach photos/videos and meter screenshots, and add comments for deviations or defects. Cross-reference asset IDs via QR labels. When finished, export to PDF/Excel for distribution and archive the live, commentable record. 3. Sign-Off: obtain digital signatures from the contractor, client representative, and commissioning engineer. Confirm that evidence files are linked and QR labels point to the final record. Distribute the signed package and store it in the project's controlled document repository.