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Test dynamic façade response to wind alarm and safe-position

Test dynamic façade response to wind alarm and safe-position logic with an interactive checklist that is commentable and can export as PDF/Excel for verifiable commissioning.

Project:	
Date:	
Filled by:	

Pre-Test Verification	
1	Issue permit-to-work and apply LOTO to affected panels/controllers; brief team on wind hazards and rescue plan; acceptance: signed permits and toolbox attendance uploaded; evidence: photos of LOTO tags and briefing sheet.
2	Inspect representative façade units for obstructions, loose fixings, or debris using visual check and 0.5 mm feeler gauge at moving gaps; acceptance: clearances ≥ 5 mm and no fouling; evidence: photos per elevation/zone.
3	Confirm anemometer calibration against handheld reference at 8–12 m/s using calibrated test fan or wind tunnel; acceptance: within ±0.5 m/s; evidence: calibration certificate, side-by-side readings, timestamped.
4	Verify documented safe-position definitions per zone (angle, louvre closure, blind retraction) per approved project specifications and authority requirements; acceptance: signed matrix with elevations and unit IDs; evidence: uploaded markups.

Sensor and Threshold Validation	
5	Trend roof and façade-mounted anemometer points in BMS; simulate wind using signal injector or fan; acceptance: BMS value tracks sensor within ±0.5 m/s, update interval ≤ 2 s; evidence: trend export.
6	Confirm wind alarm setpoint and clear setpoint per approved specifications (e.g., alarm ≥ X m/s, clear ≤ Y m/s); acceptance: matches documented values; evidence: screenshots of BMS point properties.
7	Validate hysteresis/debounce: apply fluctuating wind profile; acceptance: no alarm chatter, minimum hold time per specification (recorded); evidence: annotated trend showing stable transitions.
8	Verify zone mapping from each sensor to façade control groups via point-to-point testing; acceptance: only intended zones respond to simulated wind source; evidence: mapping table and BMS screenshots.
9	Test sensor redundancy: isolate primary sensor and observe switchover; acceptance: secondary assumes control within ≤ 3 s, fault alarm raised; evidence: event log with timestamps.

Control Logic and BMS Integration	
10	Review latest approved PLC/BMS logic diagrams and version tags; acceptance: documents match deployed controller versions and date; evidence: stamped PDFs uploaded.
11	Force wind alarm via BMS/PLC test flag; acceptance: global/zone wind alarm generated with timestamp, priority per specification; evidence: alarm list screenshot and CSV export.
12	Measure end-to-end response time: alarm asserted to first safe-position command issued using trend logs; acceptance: ≤ 5 s unless otherwise specified; evidence: synchronized trend with markers.
13	Verify mode interlocks (fire, manual override, maintenance): toggle inputs; acceptance: priority order per approved specifications, with clear annunciation; evidence: screenshots and event log.
14	Confirm alarm reset logic: wind must remain below clear setpoint for hold time before auto-enable; acceptance: no premature reset; evidence: trend demonstrating hold time compliance.

Actuator Performance and Safe Position	
15	Select sample for motion testing: ≥ 10% of units per zone, min 10 units or all if fewer; acceptance: documented sample list covering edges/corners; evidence: test roster uploaded.
16	Command selected units to safe position under wind alarm; measure travel time with stopwatch or controller timestamps; acceptance: reach defined safe position within specified time; evidence: photos before/after and time log.
17	Verify position feedback (limit switch/encoder/angle): compare commanded vs actual; acceptance: within ±2° for louvres or ±10 mm for blinds; evidence: feedback trend and photo of indicators.
18	Measure motor current or torque during final approach using clamp meter or controller values; acceptance: within nameplate limits and no prolonged stall; evidence: current log with unit IDs.
19	Check for collisions/vibration: observe motion and measure vibration with handheld vibrometer; acceptance: no collisions, vibration < 5 mm/s RMS; evidence: video/photo and readings.

Fail-Safe and Power Scenarios	
20	Simulate mains power loss during wind alarm using controlled breaker open; acceptance: local controller applies defined fail-safe (move-to-safe or hold) per specifications; evidence: video and event records.
21	Test UPS/backup autonomy for control system; acceptance: continuous control and logging for specified duration (record minutes); evidence: UPS runtime report and BMS trend continuity.
22	Simulate network loss to façade controller (disconnect switch); acceptance: local logic enforces safe state, alarm raised centrally; evidence: controller LEDs photo and BMS communication alarm.
23	Verify safe recovery on power/network restoration; acceptance: no unexpected motion, system resumes supervised control after interlocks satisfied; evidence: trend log showing orderly recovery.

Documentation and Handover	
24	Compile calibrated readings, screenshots, photos, and trend exports; acceptance: all artifacts tagged by zone/unit and timestamped; evidence: uploaded file index.
25	Record final setpoints (alarm, clear, debounce, priorities) and any exceptions; acceptance: approved by client/consultant; evidence: signed exception list and CSV export.
26	Conduct operator training on wind alarm procedure and resets; acceptance: attendance sheet signed, training materials uploaded; evidence: photos and agenda.
27	Apply QR code label linking this checklist to each tested panel/zone; acceptance: code scans successfully; evidence: photo of label in situ.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
Test dynamic façade response to wind alarm and safe-position logic is the focus of this practical, field-ready checklist. We guide teams through dynamic facade testing, wind alarm response verification, and safe-mode logic validation, including BMS/PLC integration and actuator behavior. The scope covers wind sensing, threshold and hysteresis configuration, command propagation across façade zones, motion to defined safe positions, and fail-safe scenarios like power loss or communications drop. It excludes broader weather strategies (rain/sun), structural load design, or permanent monitoring configuration. By executing these steps, you reduce risks of panel loss, motor damage, glazing impact, water ingress, and unsafe site conditions. Outcomes include documented setpoints, reproducible test evidence, and a verified response time envelope from alarm to safe position per approved project specifications and authority requirements. Start in interactive mode to tick steps, leave comments, attach photos/trends, and export PDF/Excel with a secure QR link for audits.	1. Preparation: Confirm permits, access, and weather window. Assemble tools—handheld anemometer, signal injector, clamp meter, vibrometer, stopwatch, camera, laptop with BMS access, PPE. Verify calibration certificates and ensure rescue plan and LOTO are in place. 2. Using the Interactive Checklist: Open the checklist, select project, elevation, and zones. Start interactive mode, tick steps as completed, add comments, and attach photos, screenshots, and trend exports directly from field devices. 3. Using the Interactive Checklist: Capture synchronized timestamps by aligning device clocks and BMS/PLC logs. Use the built-in evidence tags to link readings and media to specific unit IDs and locations. 4. Using the Interactive Checklist: At milestones (sensor validation, logic tests, motion results), generate interim PDF/Excel exports for stakeholder reviews. Use the QR link to share live status on-site without email attachments. 5. Sign-Off: Review exceptions, assign actions, and retest closures. Capture digital signatures from contractor, commissioning agent, and client. Finalize the record set and archive with QR-authenticated export for O&M; handover.