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Inspect dynamic façade commissioning — simulated inputs

Inspect dynamic façade commissioning under simulated environmental inputs with an interactive checklist—fully commentable and ready to export as PDF/Excel for traceable sign-off.

Project:
Date:
Filled by:

Pre-Test Preparation

1	Review and approve the façade commissioning test plan against design basis and environmental scenarios; method: drawing/ITP review workshop; acceptance: scope, loads, and safety plan agreed; evidence: signed ITP and marked drawings.
2	Confirm safe access to façade operables; method: MEWP with certified anchor points and PPE; acceptance: anchors tagged within 12 months, permits issued; evidence: photos of tags and permits.
3	Verify electrical supply and network availability; method: multimeter and network tester; acceptance: voltage within $\pm 5\%$ of rating, stable earth, ping < 50 ms; evidence: readings and screenshots.
4	Confirm reference weather station data feed for baseline; method: gateway integration test; acceptance: timestamps synchronized (drift < 1 s), data fields complete; evidence: data sample export (CSV).

Instrumentation & Calibration

5	Install and zero LVDTs on representative actuators; method: magnetic bases and alignment jig; acceptance: zero offset < 0.2 mm, range $\geq 120\%$ of stroke; evidence: calibration sheet and photos.
6	Affix surface thermocouples on interior/exterior skins; method: high-temperature tape; acceptance: adhesion verified, baseline within ± 0.5 °C across redundant sensors; evidence: logger baseline file.
7	Set differential pressure taps at sill, jamb, and head; method: tubing to calibrated manometer; acceptance: zero drift < 1 Pa over 10 min; evidence: initial stabilization log.
8	Position irradiance sensor at façade plane; method: cosine-corrected pyranometer; acceptance: levelled ($\pm 0.5^\circ$), azimuth within $\pm 2^\circ$ of normal; evidence: orientation photo and W/m^2 reading.

Control Logic & BMS Integration	
9	Upload current control sequences; method: version-controlled deployment; acceptance: checksum matches approved file, rollback point created; evidence: deployment log and approval record.
10	Cross-check BMS points list to physical IO; method: point-to-point verification; acceptance: 100% mapped with correct units and tags; evidence: redlined points list and screenshots.
11	Simulate time-of-day and occupancy schedules; method: BMS sandbox; acceptance: mode transitions execute within 5 s, no conflicting commands; evidence: screen recording with timestamps.
12	Test UPS/backup power transfer; method: controlled isolation; acceptance: no actuator position loss or re-homing required; evidence: event logs and LVDT trace.

Simulated Environmental Inputs	
13	Apply wind pressure using calibrated fans/blower door; method: incremental ramps; acceptance: target façade pressure per plan within $\pm 5\%$; evidence: pressure vs. time trend and calibration cert.
14	Conduct controlled water spray on joints; method: spray rack and flow meter; acceptance: no uncontrolled water ingress to occupied side; evidence: high-resolution photos and moisture readings ($\leq 5\%$ MC).
15	Simulate solar gain; method: halogen/LED array delivering set irradiance; acceptance: setpoint within $\pm 10\%$ at façade plane; evidence: irradiance log and thermographic images.
16	Impose internal thermal gradient; method: zonal heaters/chillers; acceptance: programmed thresholds trigger responses without overshoot $> 2\text{ }^{\circ}\text{C}$; evidence: temperature and actuator trend logs.

Functional Response Verification	
17	Cycle operable louvers through 0–100% in 10% steps; method: BMS commands; acceptance: stroke within $\pm 2\text{ mm}$ of setpoint, cycle time per spec; evidence: LVDT plots and timestamps.
18	Verify electrochromic glazing tint steps; method: control panel; acceptance: uniformity $\Delta E \leq 3$ and luminance deviation $\leq 10\%$; evidence: photos and lux data.
19	Measure air leakage under set pressure; method: flow hood/anemometer; acceptance: \leq specified $\text{m}^3/(\text{h}\cdot\text{m}^2)$ at test pressure; evidence: measurement sheet and graph.
20	Assess vibration and noise with fans running; method: vibration meter and sound level meter; acceptance: vibration velocity $\leq 4.5\text{ mm/s}$, noise $\leq 65\text{ dB(A)}$; evidence: meter photos and logs.

Safety, Fail-Safe & Handover	
21	Trigger fire alarm interface; method: supervised loop simulation; acceptance: façade reaches safe position $< 30\text{ s}$; evidence: BMS event log and video.
22	Simulate loss of comms to BMS; method: network isolation; acceptance: local controller maintains last known safe state; evidence: controller log and video.
23	Verify local manual override; method: hand-switch test; acceptance: smooth actuation without binding, status feedback correct; evidence: commissioning sheet and photos.
24	Compile commissioning dossier per approved project specifications and authority requirements; method: consolidate logs, certificates, as-built settings; acceptance: sign-offs from GC, façade engineer, operator; evidence: PDF package with QR.

Comments:

Filled by:

Signature:

Introduction	How to use this checklist
<p>Inspect dynamic façade commissioning under simulated environmental inputs to verify adaptive envelope performance, control logic, and life-safety behavior before occupancy. This checklist supports dynamic facade performance testing, commissioning of adaptive building envelopes, and mock environmental conditioning aligned with design intent. It focuses on operable elements (louvers, vents, electrochromic glazing), their sensors and actuators, and BMS integrations when subjected to simulated wind pressures, water spray, solar irradiance, and thermal gradients. By rehearsing credible scenarios in a controlled setup, teams reduce water ingress risk, binding actuators, software mis-mapping, nuisance alarms, and occupant comfort complaints, while establishing traceable benchmarks for energy, safety, and maintenance. The scope excludes permanent structural testing and field water-penetration certification; use project specifications and authority requirements for any mandatory protocols. Use this interactive checklist to tick completed tasks, add comments, attach photos and logs, and export as PDF/Excel via a secure QR link.</p>	<p>1. Preparation: gather tools and equipment—calibrated fans, spray rack, irradiance lamps, heaters/chillers, LVDTs, thermocouples, manometer, data loggers, sound/vibration meters, PPE, MEWP, permits, and approved test plan. 2. Create a project in the platform, assign roles, import this template, and preload drawings, elevations, equipment lists, and acceptance limits from the approved plan. 3. Start interactive mode on a tablet or laptop; tick items as you proceed, add comments, and attach photos, videos, and data files to each step. 4. Record measurements directly in fields; link BMS trend exports (CSV) and calibration certificates. Use QR to associate instruments and locations to items. 5. Export results as PDF/Excel with embedded photos, plots, and approvals, then share with stakeholders for review and close-out. 6. Sign-Off: capture digital signatures from the commissioning agent, façade engineer, GC, and operator; archive the package with QR authentication for traceability.</p>