

Operator Summary — Commercial Exterior-Cleaning Automation Pilot

Decision supported: Is it economically reasonable to run a limited automation pilot for this type of commercial exterior-cleaning work? (Owner / operations manager · low- and mid-rise commercial properties · manual pressure / soft washing vs supervised drone- or robotics-enabled cleaning)

PILOT SCREENING TOOL ONLY — not a fleet-purchase recommendation and not a vendor recommendation. It does not guarantee savings, performance, quality, or payback.

Current workbook result (live): **DO NOT RELY ON RESULT** Basis: INCOMPLETE / GATE NOT CLEARED | Mode: ALL-INCLUSIVE PILOT PACKAGE

DO NOT RELY ON RESULT	PILOT ECONOMICS UNFAVORABLE	PILOT MAY BE WORTH TESTING
Shown when ANY of these is true: • a required input is missing or invalid • site suitability is not Eligible • quality gate is not Cleared • usable eligible volume is zero Ignore every number until fixed.	Inputs and gates are valid, but: • per-job saving is \$0 or negative, or • Mode B payback exceeds the evaluation horizon, or • Mode A net benefit is \$0 or negative.	Only when inputs are valid, both gates clear, usable volume exists, modeled economics are positive and (Mode B) payback is within the horizon. Meaning: a limited pilot may be worth testing — not a purchase decision or vendor endorsement.

KEY INSIGHT — Volume cannot rescue negative per-job economics. If each automated job costs more than the manual alternative, more volume only scales the loss.

MODE A vs MODE B

MODE A — ALL-INCLUSIVE PILOT PACKAGE

Question: Does the pilot package pay for itself across the jobs included?

Includes: package price + internal prep + contractor-side operator labor, rework, consumables and site support for every included job.

Favorable only if: manual cost × included jobs – total pilot cost > \$0. Monthly volume (beyond > 0) and the horizon do not change this test.

MODE B — FIXED FEE + VARIABLE PER-JOB COST

Question: Do ongoing per-job savings recover the fixed cost within the evaluation horizon?

Includes: fixed pilot fee + internal prep (one-time), plus contractor-side automation costs and the vendor variable cost on every job.

Favorable only if: per-job saving > \$0 and payback ≤ evaluation horizon.

Mode A is stricter: it must recover the package inside the included jobs. In the worked example, a \$12,000 / 6-job package would be unfavorable (net –\$7,800) even though Mode B passes.

HOW THE PER-JOB TEST WORKS

Per-job saving ≈ area × (manual labor \$/sq ft – automation labor \$/sq ft) + (manual per-job extras – automation per-job extras).

Manual extras: setup labor, access equipment, consumables. Automation extras: setup and rework labor, consumables, site support, vendor variable cost (Mode B).

Volume, eligible share, availability and horizon only change how fast fixed costs are recovered.

WORKED EXAMPLE — Illustrative Scenario, Mode B

ILLUSTRATIVE MODEL SCENARIO — NOT A MARKET CLAIM.

Static example: it does not read or change INPUTS.

Cleanable exterior area	20,000 sq ft
Manual access method	Scissor lift
Manual productivity	500 sq ft/person-hr
Loaded manual labor	\$45 / hr
Automation operators	2
Automated cleaning rate	2,500 sq ft/system-hr
Rework	4 person-hrs / job
Variable automation cost	\$450 / job
Jobs/month × eligible × availability	8 × 40% × 75%
Fixed pilot fee + internal prep	\$8,000 + \$3,000
Evaluation horizon	12 months

Mode B outcome

Manual cost / job	\$2,670
Automated cost / job	\$1,920
Per-job difference	+\$750
Eligible automated jobs / month	2.4
Monthly modeled savings	\$1,800
Payback	6.1 months

Status: PILOT MAY BE WORTH TESTING

TOP 5 ECONOMICS DRIVERS

1. Manual labor \$/sq ft — loaded labor rate + manual productivity	MEASURE
2. Automation labor \$/sq ft — operators × operator rate + automated cleaning rate	QUOTE operators · VALIDATE rate
3. Job size — cleanable exterior area	MEASURE
4. Usable volume — jobs/month × eligible share × availability (mainly Mode B)	MEASURE jobs · ASSUME share, availability
5. Vendor pricing — fixed fee, variable cost, package price, jobs included	QUOTE

ILLUSTRATIVE BREAK-EVEN THRESHOLDS

Illustrative break-even thresholds for this scenario only — not industry benchmarks. Mode B decision flips around:

Automated cleaning rate (min.)	≈1,712 sq ft/hr
Variable automation cost (max.)	≈\$818 / job
Rework (max.)	≈11.4 person-hrs
Cleanable area (min.)	≈12,639 sq ft
Comparable jobs / month (min.)	≈4.1
Fixed pilot fee (max.)	≈\$18,600

MEASURE THESE FIRST

Contractor records

1. Actual cleanable area

2. Actual manual person-hours / job

3. Loaded labor rate

4. Access-equipment cost / job

5. Comparable jobs / month

Pilot measurements

6. Achieved automated cleaning rate

7. Actual rework

8. Actual setup / teardown time

9. Eligible-site share

10. Operational availability

Vendor quote

11. Fixed / package fee

12. Variable cost / job

13. Jobs included

14. Operator requirements

15. Exclusions, travel, support

LABEL KEY (used in Top 5 drivers)

MEASURE	Contractor records or pilot observation
QUOTE	Written vendor quote
ASSUME / VALIDATE	Estimate until pilot or pipeline screen confirms