



INDUSTRIAL · CS-550

HOLD THE STANDOFF. APPLY THE COAT.

An umbilical-fed applicator platform. The pressure stays on the ground; the machine flies the last few hundred millimetres.

GROUND · UMBILICAL · STANDOFF · TRIGGER · FILM

PATENT PENDING

RADIO AND GNSS PERMITTED — CIVIL WORK MACHINE

~0.2 KG

FLUID MASS ALOFT — HEAD,
SHORT WHIP, TRIGGER VALVE

150–300 MM

WORKING STANDOFF, HELD
MECHANICALLY BY COMPLIANT
FEELERS

150 BAR

PRESSURE CLASS — GENERATED
AND HELD AT THE GROUND
STATION

0

LITRES OF BULK COATING
CARRIED ALOFT — THE TANK
STAYS ON THE GROUND

OVERVIEW

AN EXCELLENT POSITIONER. NOT A TANK.

Part of the **3-system Industrial line** — shares its envelope and doctrine with Washer, Sprayer.

~0.2 KG FLUID MASS ALOFT — HEAD, SHORT WHIP, TRIGGER VALVE	150–300 MM WORKING STANDOFF, HELD MECHANICALLY BY COMPLIANT FEELERS	150 BAR PRESSURE CLASS — GENERATED AND HELD AT THE GROUND STATION	0 LITRES OF BULK COATING CARRIED ALOFT — THE TANK STAYS ON THE GROUND
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The Coater CS-550 is an umbilical-fed multirotor built to apply protective coating and sealant to infrastructure surfaces — steel towers, storage tanks, bridge structures, façades and marine structures — from a hover a few hundred millimetres off the work. A shrouded applicator head, a short fluid whip and a trigger valve are the only fluid mass it carries; everything else — the bulk fluid, the proportioner, the pump, the pressure — stays on the ground.

The design logic starts from arithmetic, not preference: a hovering platform is an excellent positioner and a hopeless tank. A single maintenance coat moves roughly 0.58 kg of wet material per square metre; an onboard reservoir sized to a sensible airframe buys minutes of gun time, not a shift. So the Coater does not carry the coating — it carries the aim. Ground pump, ground proportioner, ground metering; the platform's job is to hold a repeatable few hundred millimetres of standoff against a real surface in real wind, and let the umbilical do the rest.

It sits in the Industrial line beside the Seeder CS-510, the Sprayer CS-560 and its closest sibling, the Washer CS-540 — a caged, umbilical-fed platform that shares its airframe, feelers and ground pump architecture so closely that the two are, by design, roughly the same machine wearing a different wetted path.

THE FINDING

EVERY OUNCE OF PRESSURE STAYS ON THE GROUND.
ONLY THE AIM LEAVES IT.

An onboard-reservoir, free-flying architecture buys minutes of gun time before it needs to land and refill — arithmetic that survives every plausible revision of the inputs. It survives on this machine only as a touch-up mode, where a small area is the whole job and rigging an umbilical is not worth it. Production work rides the umbilical.

HOW IT WORKS

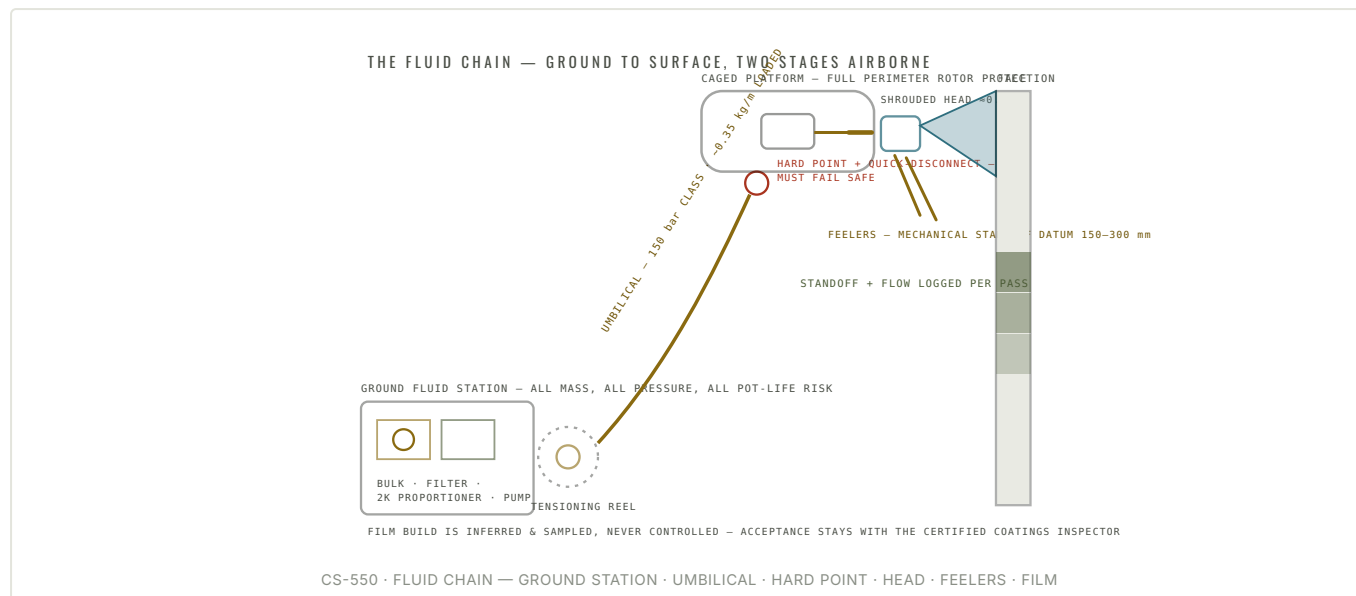
MECHANISM

GROUND TO SURFACE — ONLY TWO STAGES FLY

Bulk coating, filter, proportioner, pump and flow meter sit on a skid at the base of the work — all the mass, all the pressure energy and all the pot-life risk, racked into a truck or skid, never carried aloft. A pressure-rated umbilical — hose, power and comms in a managed jacket on a tensioning reel — pays that pressure up to the aircraft.

At the platform, the umbilical loads directly into the lift core at a hard point: the single most safety-critical structural detail on the machine, because the platform-side quick-disconnect has to leave a 150-bar-class line safe if it ever separates. From there the fluid runs a short whip to a shrouded applicator head, firing below the rotor wash. Two to four compliant standoff feelers ride or lightly touch the surface ahead of the head — a mechanical datum, not an optical one, because a ± 50 mm standoff error swings film build by roughly -15% / $+20\%$, which is most of the industry tolerance band before wind, overlap or traverse-speed error are even counted.

The trigger only opens inside an interlocked envelope — valid standoff, on-surface, inside the environmental window — and the machine works bottom-to-top, so its own downwash sweeps the uncoated surface ahead of it rather than the wet film behind it. Command and control rides conventional radio C2 and GNSS position hold, permitted on this civil line; the umbilical adds a hard-line comms path for the fluid work itself, removing RF dropout as a close-work failure mode.



SPECIFICATIONS

CAPABILITIES & SPECIFICATIONS

COATER CS-550

DIMENSIONS & MASS

All-up mass, reference	~25 kg class
Airborne fluid mass	~0.2 kg — head, short whip and trigger valve only
Umbilical loading	~0.35 kg/m loaded → ~10 kg at 30 m, ≈40% of the reference all-up mass
Configuration	Caged, umbilical-fed multirotor — short-standoff spray

DELIVERY PERFORMANCE

Working pressure	150 bar class — generated and held at the ground station
Delivered flow	~1.1 L/min at the tip
Static lift line loss	~0.098 bar/m
Jet reaction	~3.8 N — ≈1.5% of the reference all-up mass, a trim load, not a structural one
Pass strategy, baseline	4 passes · 0.61 m/s traverse · ~52 µm wet film per pass
Coverage, baseline	~63 m ² /h at the baseline pass strategy — moves with the governing variables below

CONTROL & STANDOFF

Flight control	Commercial RF C2 + GNSS position hold — permitted on this civil line
Hard-line comms	Down the umbilical — removes RF dropout as a close-work failure mode
Working standoff	150–300 mm, held mechanically by 2–4 compliant feelers
Working height band	5–40 m AGL — umbilical weight, not flow, limits height
Working direction	Bottom-to-top — downwash sweeps the uncoated surface, never the wet film

APPLICATOR & RECORD

Applicator head	Shrouded spray head — ~0.43 mm swappable tip family · 0.30 m fan width
Film build	125 µm dry · 208 µm wet, at 60% volume solids — the asset owner's specification governs
Transfer efficiency	50% working figure at the surface
Touch-up mode	Small onboard reservoir for small-area work — production work rides the umbilical
Mission record	Per-square-metre applied-volume map — position, standoff, flow, traverse speed, ambient and surface conditions, batch/lot ID

MATERIALS & CONSTRUCTION

Load path	GF-nylon
Cage & fairings	rPET / rPET-GF sacrificial panels — coated, solvent-washed and eventually replaced; cheap mouldings by design
Wetted path	Solvent-rated engineered assembly — bought, not moulded; no recycled-PET part ever touches the coating or its solvent (Rule FH-1)
Shared module	Fluid-handling module common with Sprayer CS-560 and Washer CS-540 · ~80% commonality with the Washer

SAFETY & INTERLOCKS

Trigger interlocks	No flow off-surface, outside the environmental window, or without valid standoff
Rotor protection	Full perimeter cage
Umbilical hard point	Platform-side quick-disconnect leaves a 150-bar-class line safe if it separates
Pot-life protection	Automatic line flush on pause — an interlock, not a procedure; waste solvent handled as a regulated stream

COMPLIANCE

Patent status	Patent pending
Classification	Civil work machine — Industrial line; commercial radio, telemetry and GNSS permitted on this line
Energetic content	None — carriers and working tools, not munitions; no energetic content in any variant
Scope	Coating application only — no abrasive blasting, washing, stripping or coating removal; product, prep grade and acceptance belong to the asset owner

COVERAGE IS STATED AT THE BASELINE PASS STRATEGY AND MOVES WITH THE COATING CHOSEN, STANDOFF ACCURACY IN WIND, TRANSFER EFFICIENCY AT THE SURFACE, UMBILICAL LENGTH AND WORKING HEIGHT, AND GROUND-STATION RESUPPLY AND FLUSH CADENCE. FILM BUILD IS INFERRED AND SAMPLED, NEVER CONTROLLED — ACCEPTANCE STAYS WITH THE ASSET OWNER'S CERTIFIED COATINGS INSPECTOR.

THE TRADES, STATED

ONE FLUID CANON. THREE WORK MACHINES.

Canadian Shield's thesis is that manufacturing is the decisive capability, built sovereign and priced like a tool. The Coater advances that thesis with a fluid-handling grammar held once, in a shared library, and instanced across every wet-work product on the civil line.

The Coater does not draw its own fluid-handling engineering from scratch. It instances the five-stage process grammar, the wetted-path boundary and the umbilical hard-point rule that the Sprayer and the Washer also draw from — a single canon, amortised across three products instead of reinvented per machine. The Coater and the Washer in particular share the airframe, the cage, the feelers, the umbilical and the ground pump station so closely that the honest read is platform commonality: two members of one civil fluid-work family, differing mainly in the fluid, the pressure class and the wetted-material set.

And the estate's radio boundary runs the way it does across the whole Industrial line: the no-radio rule governs the defence, underground and tethered platforms without exception — but the surface civil line is the exception, and the Coater uses both radio and GNSS openly for flight, with the umbilical adding a hard-line path for the fluid work itself. A tank shell is not a jammed battlefield, and we do not engineer it like one.

THE ACCOUNTABLE COAT

NOT A BETTER FILM THAN A PERSON. AN ACCOUNTABLE ONE.

The machine does not sell a superior finish — it sells a metered, logged, per-square-metre applied-volume record: position, standoff, flow, traverse speed, ambient and surface conditions, batch and lot. Film build stays inferred and sampled, never controlled, and acceptance stays exactly where it belongs — with the client's certified coatings inspector.

DEPLOYMENT

SPECIFICATION IN. APPLIED-VOLUME MAP OUT.

A Coater job is a loop anchored to the ground, not a free flight — illustrative of how the machine is used, not a work record. The asset owner's coating specification sets the target, the machine holds standoff and executes the pass strategy, and what comes home is a record.

01 · ARRIVE

THE GROUND STATION SETS UP

The crew stages the ground fluid station at the base of the tower or tank — bulk coating, filter, proportioner, pump, heater and flush line on a skid — and spools out the umbilical. Before any real coating touches the line, the fan pattern and film-build model are calibrated against an inert medium: pigmented water matched for viscosity and density, never the coating itself. The coating specification is the asset owner's specifier and certified inspector's call — never ours.

02 · WORK

STANDOFF HOLDS, THE FAN OPENS

The Coater lifts on the umbilical and brings its compliant feelers against the face, holding 150–300 mm mechanically as it works bottom-to-top so its own downwash sweeps ahead of the wet film, not through it. The trigger opens only inside the interlocked envelope — valid standoff, on-surface, inside the environmental window — and closes the moment any of the three drops out. The operator flies the plan and owns the exceptions; the machine holds the standoff, meters the flow and logs every pass.

03 · RECOVER

THE LINE FLUSHES, THE RECORD SHIPS

At the end of a run — or the moment a pause threatens pot life on a two-component product — an automatic flush clears the umbilical before the coating can cure inside it; it is an interlock, not a procedure. Captured waste solvent is handled as the regulated stream it is. The client receives the per-square-metre applied-volume map: an auditable record ready for their own inspector's sign-off — never an acceptance call.

THE FAMILY

RELATED SYSTEMS

CS-540 · CLOSEST SIBLING

WASHER

Roughly the same machine wearing a different wetted path — shared airframe, cage, feelers, umbilical and ground pump station.

CS-560 · SAME CANON

SPRAYER

The third member of the fluid-work family, drawing on the same shared fluid-handling module and process grammar.

Coater CS-550 · patent pending · a civil coatings-application work machine on the Industrial Series charter — commercial radio, telemetry and GNSS permitted on this line. Carriers and working tools, not munitions: no warhead, fuzing or energetic content of any kind, in any variant, ever. The Coater does not prepare surfaces — no abrasive blasting, washing, stripping or coating removal. Coating product, prep grade, film-thickness targets and acceptance belong to the asset owner's specifier and certified coatings inspector, and are never implied by this page.



HOLD THE STANDOFF. APPLY THE COAT.

COATER · INDUSTRIAL · CS-550

Not a better film than a person. An accountable one.

01 REQUEST A TECHNICAL EXCHANGE

A working session with engineering, not sales — bring your engagement problem, we bring the mechanism.

02 REQUEST THE INDUSTRIAL FAMILY DATA PACK

Drawings, tolerances and test basis for Coater and its siblings, gated behind export screening.

03 DISCUSS A TRIAL QUANTITY

Tell us end-user, jurisdiction, quantity band and timeline — we respond against your program, not a price list.

SALES

sales@cdnshield.ca

GENERAL

info@cdnshield.ca

WEB

cdnshield.ca

Direct lines, named points of contact and facility details are shared with qualified programs following screening — not withheld, sequenced.

Canadian Shield is a defence and industrial drone company, backed by SIG: four-domain uncrewed systems built for jammed, GPS-denied environments — no-radio by design, manufactured for cost and salvo depth.

Coater CS-550

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