



INDUSTRIAL · CS-620

HEAVY LIFT. NOBODY ON BOARD.

An uncrewed coaxial hybrid rotorcraft for long-line log extraction — turn after turn, hour after hour.

HOOK · LIFT · FLY · LAND IT ON THE DECK

PATENT PENDING

RADIO AND GNSS PERMITTED — CIVIL WORK MACHINE

0

PEOPLE ON BOARD — THE ENTIRE
SAFETY CASE IN ONE NUMBER

2 ×

CONTRA-ROTATING COAXIAL
ROTORS — NO TAIL ROTOR

1

EXTERNAL-LOAD INTERFACE —
LOG TURNS AND BALE TACKLE
ALIKE

3

GNSS RECEIVERS, VOTED 2-OF-3,
BESIDE DUAL RADIO C2

OVERVIEW

HELI-LOGGING'S WORK, WITHOUT HELI-LOGGING'S RISK.

Part of the **3-system Industrial line** — shares its envelope and doctrine with Cargo Mover, Self-Charging Dock.

0 PEOPLE ON BOARD — THE ENTIRE SAFETY CASE IN ONE NUMBER	2 × CONTRA-ROTATING COAXIAL ROTORS — NO TAIL ROTOR	1 EXTERNAL-LOAD INTERFACE — LOG TURNS AND BALE TACKLE ALIKE	3 GNSS RECEIVERS, VOTED 2-OF-3, BESIDE DUAL RADIO C2
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Long-line logging is precision external-load flying at maximum gross weight, low over broken ground, all day. It is among the most dangerous jobs in aviation — and every one of those hours currently has a person in the seat.

The Heavy-Lift Logger takes the person out of it. It is an uncrewed heavy-lift rotorcraft built for one cycle: hover the long line to a choked turn of logs, lift it off the slope, fly it to the landing, set it on the deck, go back. Coaxial contra-rotating rotors put all installed power into lift; a hybrid-electric powertrain gives the machine the endurance and surge power the line demands; and because it flies like a helicopter, it keeps a helicopter's escape — if power fails, it autorotates. That capability is a governing design requirement, not a footnote.

It sits in the Industrial line's Movers block — the machines above the CS-5xx work horses, sized for loads, not sensors. This is the civil side of the house: a work machine, not a weapon, flown with conventional radio command and GNSS navigation, in the open.

THE POINT

TAKE THE PILOT OUT OF THE MOST DANGEROUS SEAT IN AVIATION.

Unlike the defence line — which is no-radio by design — the Industrial civil line carries conventional radio C2 and GNSS, because on a cut block the enemy is gravity and terrain, not jamming. The dangerous part of heli-logging was never the navigation. It was the seat.

HOW IT WORKS

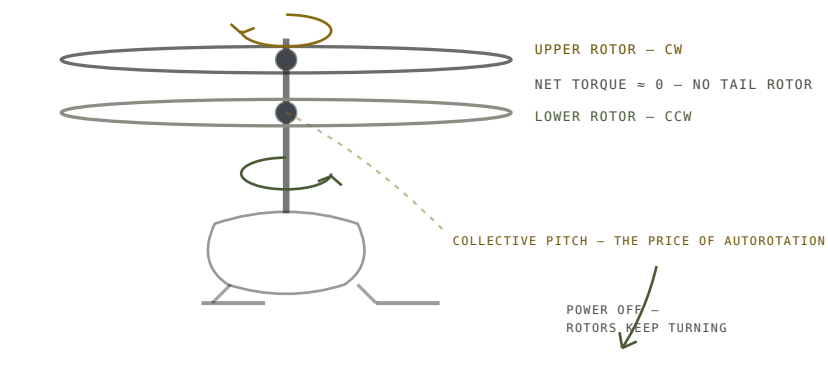
MECHANISM

COAXIAL — ALL POWER INTO LIFT

Two rotors on one mast, turning opposite ways. Their torques cancel, so no tail rotor is needed — and every installed kilowatt goes into holding the load.

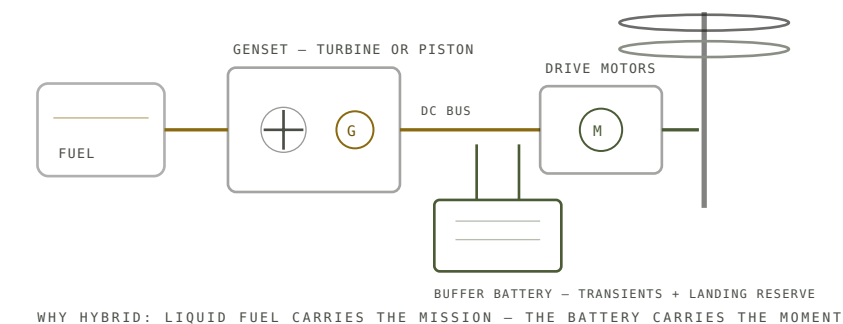
A conventional helicopter spends part of its power budget pushing sideways on its own tail just to fly straight. A coaxial machine spends that power on the hook instead, and packs its lift into a compact footprint that suits confined landings and tight blocks. The configuration was selected on the requirement that rules this design: a rotorcraft this heavy must be able to autorotate — trade rotor drive for a controlled, power-off descent — and its rotors carry the collective pitch control that capability demands. Uncrewed autorotative recovery is stated as a requirement, not a certified capability.

TWO ROTORS · ONE MAST · TORQUE CANCELLED



CS-620 M-01 · COAXIAL STACK — TORQUE CANCELLED, ESCAPE RETAINED

SERIES HYBRID — FUEL → GENSET → ELECTRIC DRIVE



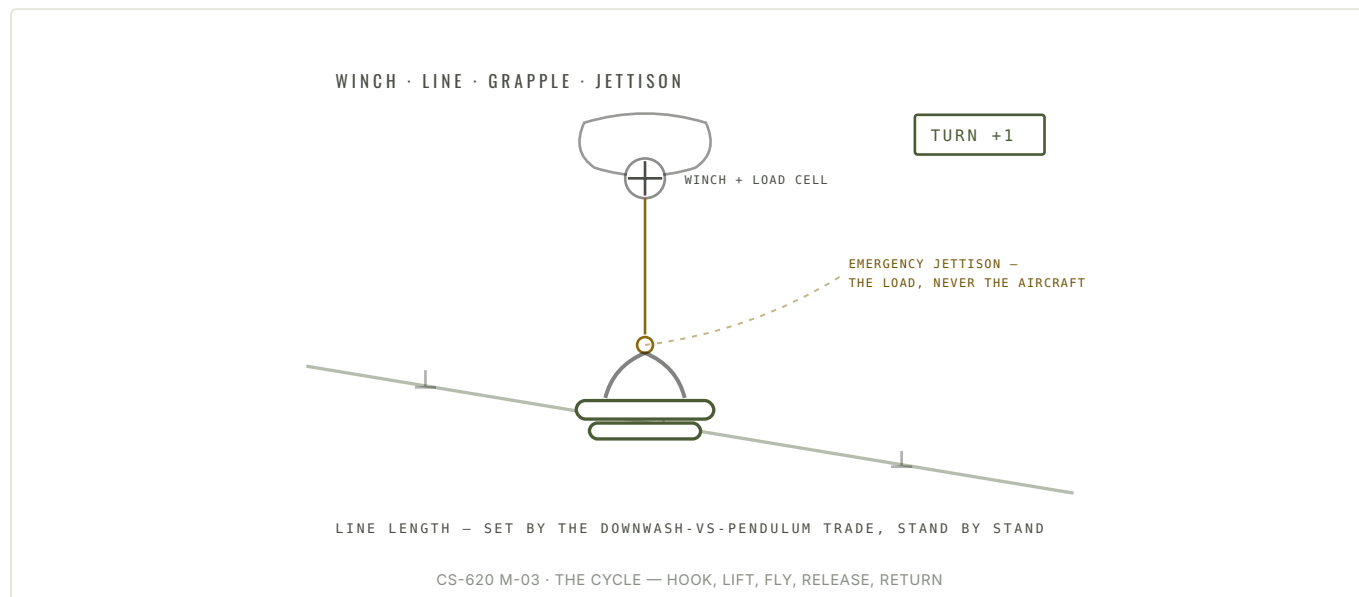
CS-620 M-02 · SERIES HYBRID — REFUEL AT THE DOCK, LIFT ALL DAY

MECHANISM 03 · EXTERNAL LOAD

THE LONG LINE — ONE HOOK, EVERY JOB

Winch, long line, remote-release hook or powered grapple, load cell, emergency jettison. One external-load interface serves choked log turns and bale tackle alike.

The line's length is a real trade, not a number picked off a shelf: fly short and rotor downwash hammers the crew and the load; fly long and the turn becomes a pendulum the flight controls must out-think. The machine measures every lift through its load cell, damps the swing, and — if a load ever endangers the aircraft — releases it. Jettison is a guarantee held by the machine, made without hesitation, because there is no pilot aboard whose judgment it must wait on. Chokers set by a ground crew or a self-loading grapple: both tackle paths are in the design, and both end at the same hook.



SPECIFICATIONS

CAPABILITIES & SPECIFICATIONS

HEAVY LIFT LOGGER CS-620

ROLE & CONFIGURATION

Designation	CS-620 · Industrial line, CS-6xx Movers block — above the CS-5xx work horses
Role	Long-line log extraction (heli-logging replacement) and round-bale / external-load handling
Crew aboard	None — uncrewed by design; the crew runs the block from the ground
Payload class	Above the ~500 kg class of the CS-600 Cargo Mover — sized by the logging turn and the bale

ROTOR SYSTEM

Configuration	Coaxial contra-rotating, single mast — full torque cancellation, no tail rotor
Pitch control	Collective pitch on both rotors — retained for power-off autorotative descent
Footprint	Compact lift footprint for confined landings and tight blocks

POWERTRAIN & ENERGY

Architecture	Series hybrid-electric — fuel genset → electric drive motors
Genset	Turbine or piston — both architectures ride the same DC bus
Buffer battery	Rides the bus for rotor-bandwidth load transients; holds a protected landing reserve
Energy roles	Liquid fuel carries the mission; the battery carries the moment. Battery-only was studied and closed out for this class
Turnaround	Refuelling at the dock — baseline path; battery top-up secondary

FLIGHT SYSTEMS & CONTROL

Flight computers	Dual, with cross-check
Navigation	Triple GNSS, voted 2-of-3
Command link	Dual dissimilar-band radio C2 — carried and permitted, civil-line doctrine
Fibre option	Optional fibre fly-by-wire for critical profiles

EXTERNAL LOAD

Interface	Winch, long line, remote-release hook and/or powered grapple, load cell, emergency jettison — one interface for logging and bale tackle
Long-line length	Mission- and stand-dependent — set by the downwash-vs-pendulum trade
Tackle paths	Chokers set by a ground crew, or a self-loading grapple — both end at the same hook
Load monitoring	Every lift measured through the load cell; swing damped by the flight controls
Jettison	A guarantee held by the machine — the load, never the aircraft

RECOVERY & GROUND INTERFACE

Autorotation	Power-off autorotative descent — the governing design requirement
Safety chain	Whole-airframe ballistic parachute; energy-absorbing structure
Ground station	CS-DOCK automated ground station — refuelling is the baseline turnaround path
Cycle log	Every turn, mass and release logged to the operator's records

COMPLIANCE

Patent status	Patent pending
Classification	Civil work machine — Industrial line; a work machine, not a weapon
Communications	Radio C2 and GNSS carried and permitted — the Industrial line's open civil posture
Regulatory	Uncrewed heavy-lift operations are subject to Transport Canada / applicable aviation-authority approval in each jurisdiction; no certification, airworthiness approval or operating authorisation is claimed or implied

PAYLOAD CLASS IS STATED RELATIVE TO THE CS-600 CARGO MOVER'S ~500 KG CLASS; NO MAXIMUM LIFT FIGURE IS PUBLISHED. LONG-LINE LENGTH IS SET STAND BY STAND, BY THE DOWNWASH-VS-PENDULUM TRADE.

THE TRADES, STATED

THE CIVIL LINE THESIS: TAKE PEOPLE OUT OF DANGEROUS FLYING.

Canadian Shield builds uncrewed machines on one sovereign Canadian manufacturing base — and the Industrial line points that base at civilian work that hurts people.

The Heavy-Lift Logger shares its bones with the rest of the family: the same manufacturing floor, the same dual-redundant avionics doctrine, the same dock-turnaround discipline, the same three decades of mobile heavy-rig heritage behind the structures. What changes on the civil side is the posture — radio and GNSS in the open, Transport Canada as the authority, and a mission whose entire justification is that a person should not have to be there. In the Movers block it flies above the CS-600 Cargo Mover, and it is the bluntest statement of the line's purpose: the seat we most want empty is the one over the long line.

FAMILY CONTEXT

SAME SHIELD. DIFFERENT FIGHT.

The defence fleet fights jamming, so it flies without radio. The Industrial line fights gravity, weather and fatigue — so it uses every civil tool available, radio and GNSS included, and puts the human where humans belong: on the ground, at a safe distance, running the block.

DEPLOYMENT

A WORKING DAY, START TO FINISH.

The machine is designed around the logging turn cycle — arrive, work the block, recover. An illustrative operating pattern, not an operations record.

01 · ARRIVE

SET THE DOCK, WALK THE BLOCK

The CS-DOCK ground station arrives by truck at the landing. The crew fuels the machine, rigs the tackle for the stand — chokers or grapple — and surveys the block. The machine launches from the dock and holds over the first turn; the crew is on the deck, not in the air.

02 · WORK

TURN AFTER TURN, ALL DAY

Hover the line to the choked turn, take the strain through the load cell, lift, fly the corridor to the landing, set the turn on the deck, release, return. The buffer battery soaks the load transients; the tank carries the hours. When fuel runs low, the machine recovers to the dock, refuels, and goes back on the line.

03 · RECOVER

LAND IT, LOG IT, MOVE ON

End of day: the machine lands at the dock, the tackle is stowed, and the cycle log — every turn, every mass, every release — goes to the operator's records. If anything had gone wrong mid-lift, the design answer is layered and blunt: jettison the load, autorotate, or ride the ballistic chute. Nobody was on board to bet on any of it.

THE FAMILY

RELATED SYSTEMS

CS-600 · ~500 KG CLASS

CARGO MOVER

The Movers block's baseline load carrier — the class the Logger flies above.

CS-700 · GROUND INFRASTRUCTURE

SELF-CHARGING DOCK

The CS-DOCK automated ground station — the Logger's baseline turnaround path is refuelling at the pad.

Heavy-Lift Logger CS-620 · patent pending. Industrial civil-line platform — a work machine, not a weapon; radio command and GNSS navigation are carried and permitted on this line. Uncrewed heavy-lift operations are subject to Transport Canada / applicable aviation-authority approval in each jurisdiction of operation; no certification, airworthiness approval or operating authorisation is claimed or implied. All designs, systems and technologies shown are patent pending.



HEAVY LIFT. NOBODY ON BOARD.

HEAVY LIFT LOGGER · INDUSTRIAL · CS-620

Same shield. Different fight.

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 Heavy Lift Logger 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

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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.

Heavy Lift Logger CS-620

Heavy-Lift Logger CS-620 · patent pending. Industrial civil-line platform — a work machine, not a weapon; radio command and GNSS navigation are carried and permitted on this line. Uncrewed heavy-lift operations are subject to Transport Canada / applicable aviation-authority approval in each jurisdiction of operation; no certification, airworthiness approval or operating authorisation is claimed or implied. All designs, systems and technologies shown are patent pending. Product specification R1.0 · 2026-08-15 · © Canadian Shield, a division of SIG (Sustainable Infrastructure Group).