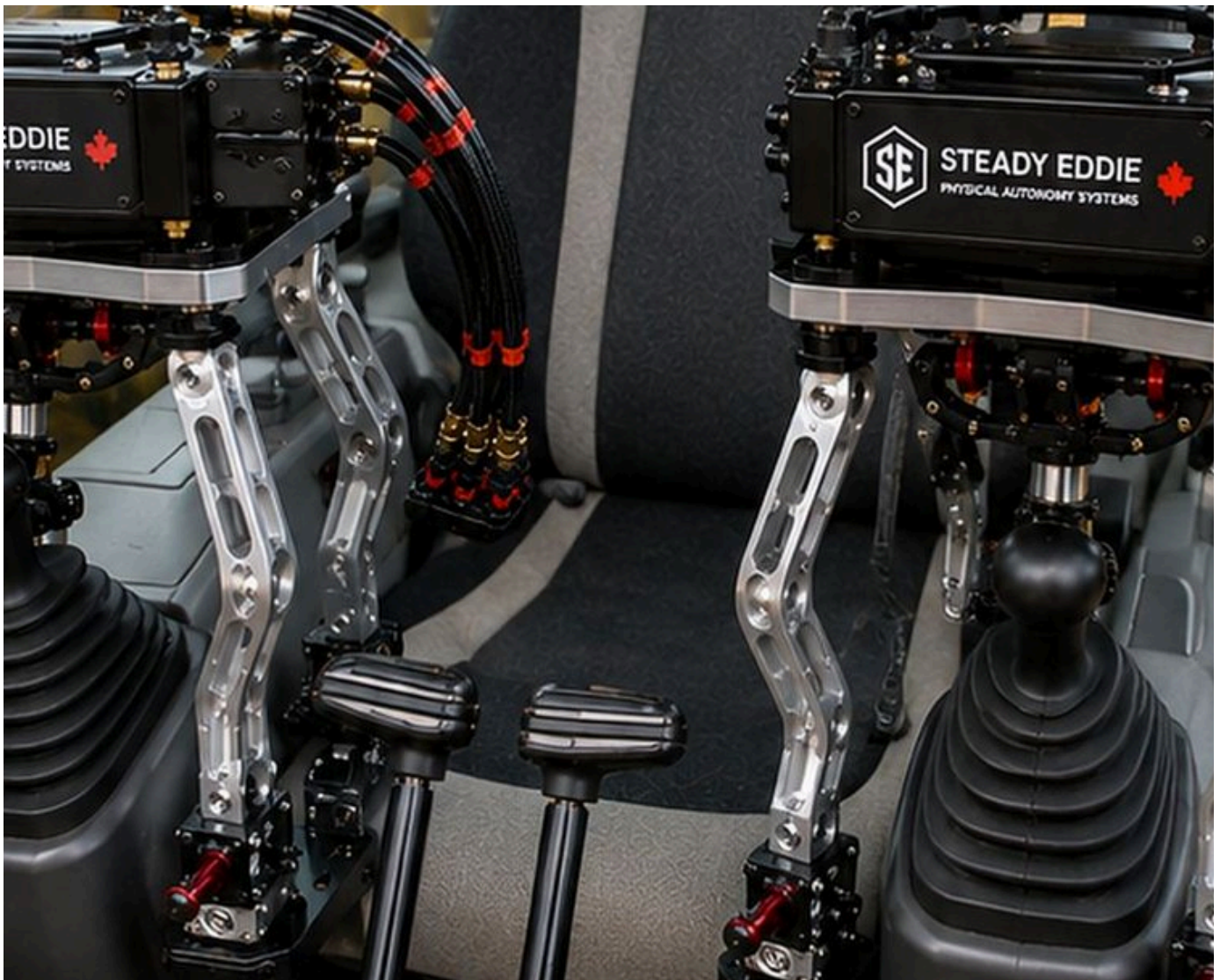


STE INTEGRATE · HYBRID DRIVE · THE SYSTEM WE BUILD TODAY

ELECTRIC WHERE IT TURNS. PNEUMATIC WHERE IT PUSHES.

STE Integrate is the system we build today: one removable unit and one dock, set up for whatever controls your cab has, built on twelve machines across ten families at our own Test Facility in Alberta.



STE INTEGRATE IN AN EXCAVATOR CAB, ON THE MACHINE'S OWN JOYSTICKS

AI PLANS.

RULES GOVERN.

HUMANS AUTHORIZE.

SAFETY HAS VETO.

STEADY EDDIE · A DIVISION OF
SUSTAINABLE INFRASTRUCTURE GROUP LTD. (SIG)
ENQUIRIES@STEADYEDDIE.CA

A REMOVABLE OPERATOR FOR THE MACHINES YOU ALREADY OWN
EVERY STATEMENT IN THIS DOCUMENT IS PUBLISHED ON STEADYEDDIE.CA
FIGURES FOR A PARTICULAR MACHINE ARE GIVEN ON ENQUIRY

ONE UNIT, ONE DOCK, YOUR CONTROLS.

THE SYSTEM

A cab is made of two kinds of motion. Some controls turn about a centre and some push along a line. STE Integrate drives each kind the way it wants to be driven, so one unit sits in an excavator on Monday and a wheel loader on Wednesday.

You buy a dock for each machine and one unit that moves between them. What you get is a seat you can fill on a night shift, on a hazardous station, or in a seeding window you cannot hire into.

WHAT IT DRIVES

- Joysticks and control levers
- Travel controls, pedals and the machine's own pilot lockout lever
- Dials, steering wheels and directional selectors
- Implement and harvest controls on agricultural machines



A DOZER'S OPERATOR STATION. THE DOCK IS FITTED ONCE, MECHANICALLY. EVERY CAB IS DIFFERENT; THE UNIT IS THE SAME

WHAT IT CHANGES ON YOUR MACHINE. NOTHING.

THE MACHINE STAYS STOCK

Not the electronics.

Never onto the machine's CAN bus, never into its ECU, never its firmware. Nothing is cut, no harness tapped, no controller flashed. The only wire is a fused power feed.

Not the controls themselves.

Eddie runs the machine through the same joysticks, levers, pedals, dials and switches your operators use. The machine gets the inputs it was built to get, and behaves the way its manufacturer built it to behave.

Not the day you sell it.

The unit lifts out and the dock comes off. The machine is standard. Its fault codes stay its own, and no diagnostic path runs through us.

Your machine does not have to be modern.

Autonomy that talks to a machine's electronics needs a machine with electronics to talk to. Eddie works the controls, not the wiring, so a machine with no CAN bus, no ECU and no firmware is handled the same way as new iron. A mixed yard is one system, not one programme per make.

HOW A FIT GOES.

FIT ONCE · CALIBRATE DAILY

01

Fit.

You fit it, following our instructions, into points the manufacturer already provided. The control units pin on, and come off again.

02

Tell it the machine.

You select the machine type in the software. Eddie never puts more force on a control than that kind of machine should see.

03

Calibrate.

Eddie learns where neutral sits, where the limits are, how much travel there is before the machine answers.

04

Every day.

Worn, sloppy controls are the normal condition, and no two are alike. Eddie calibrates every day it works, not once at commissioning.

THE FOUR QUESTIONS BUYERS ASK FIRST.

STRAIGHT ANSWERS

What does it do to my machine?

Nothing. Nothing is cut, no harness is tapped, no controller is flashed and no OEM software is touched. The only wire is a fused power feed.

How long is my machine down?

The first fit takes days and happens once. After that the unit goes in and out of the dock.

Who diagnoses it at six in the morning?

Your machine's systems are untouched. Its fault codes stay its own, and no diagnostic path for the machine runs through us.

What happens when I sell the machine?

The unit lifts out and the dock comes off. The machine is standard.

ON WARRANTY, CONFORMITY AND LIABILITY: THAT NOTHING IS CUT, TAPPED OR FLASHED IS AN ENGINEERING PROPERTY WE CAN SHOW YOU ON THE MACHINE. IT IS NOT A LEGAL OPINION; THE REST IS A QUESTION FOR YOUR COUNSEL.

THE THREE MODELS, SIDE BY SIDE.

LEAD WITH THE HYBRID

Every Steady Eddie does the same job: it sits in the seat, works the machine's own controls, and lifts out when the work is done. What differs is what moves the controls. You do not choose a compromise. You choose the fit.

MODEL	WHAT MOVES THE CONTROLS	BUILT FOR	WHAT YOUR MACHINE SUPPLIES	WHERE IT STANDS
STE Integrate	Electric where it turns, air where it pushes	Mixed fleets, mixed cabs, the everyday choice	A fused power feed	The system we build today, on twelve machines of our own
STE Precision	Electric drives throughout	Fine controls, quiet work, sites with no air	A fused power feed	The first line, offered where a cab or a site calls for electric throughout
STE Air	Compressed air throughout, carried on the unit	Heavy controls, hard weather, crews that run air	A fused power feed	Its own line, offered where a cab or a site calls for air throughout

SAME DOCK. SAME SEAT. SAME RED RELEASE ON EVERY ACTUATOR. SAME RULES. THE MODEL IS THE LAST DECISION, AND THE EASIEST ONE, BECAUSE WHICHEVER YOU CHOOSE, YOUR MACHINE STAYS YOUR MACHINE.

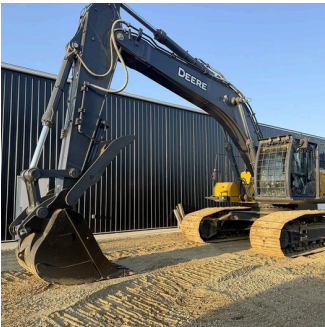
TWELVE MACHINES, TEN FAMILIES, OUR OWN FLEET.

THE REFERENCE IRON

STE Integrate is built on twelve machines the group owns and runs, at its own Test Facility in Alberta.

MACHINE	FAMILY	WHAT EDDIE WORKS
John Deere 290G LC	Tracked excavator	Two joysticks, two travel controls, the throttle dial, the pilot lockout lever
John Deere 470G LC	Tracked excavator	The same controls in a heavier machine
Caterpillar D6T LGP	Dozer	Steering, forward-neutral-reverse, gear selection, parking brake, blade, ripper
Caterpillar 236	Skid steer	Two joysticks, the auxiliary functions
John Deere 7720	Agricultural tractor	Steering, pedals, implement controls, power take-off
John Deere 9400	Four-wheel-drive tractor	Steering, pedals, implement controls
John Deere S670	Combine	Propulsion, steering, header height, harvest controls
John Deere 310	Backhoe	Driving controls at the front, hoe controls at the rear
JCB 510	Telehandler	Steering, travel, boom, attachment controls
Caterpillar CS54B	Compactor	Steering, propulsion, implement control
Volvo A40D	Articulated rock truck	Steering, pedals, the gear selector, the dump control
Caterpillar 930	Wheel loader	Wheel steering, pedals, implement joystick

Ten families at once is deliberate. One system reaching an excavator, a dozer, a tractor, a combine, a backhoe, a skid steer, a telehandler, a compactor, a rock truck and a loader without ten development programmes behind it is the claim this product rests on, and we test it rather than assert it.



JOHN DEERE 470G LC



CATERPILLAR D6T LGP



VOLVO A40D ROCK TRUCK

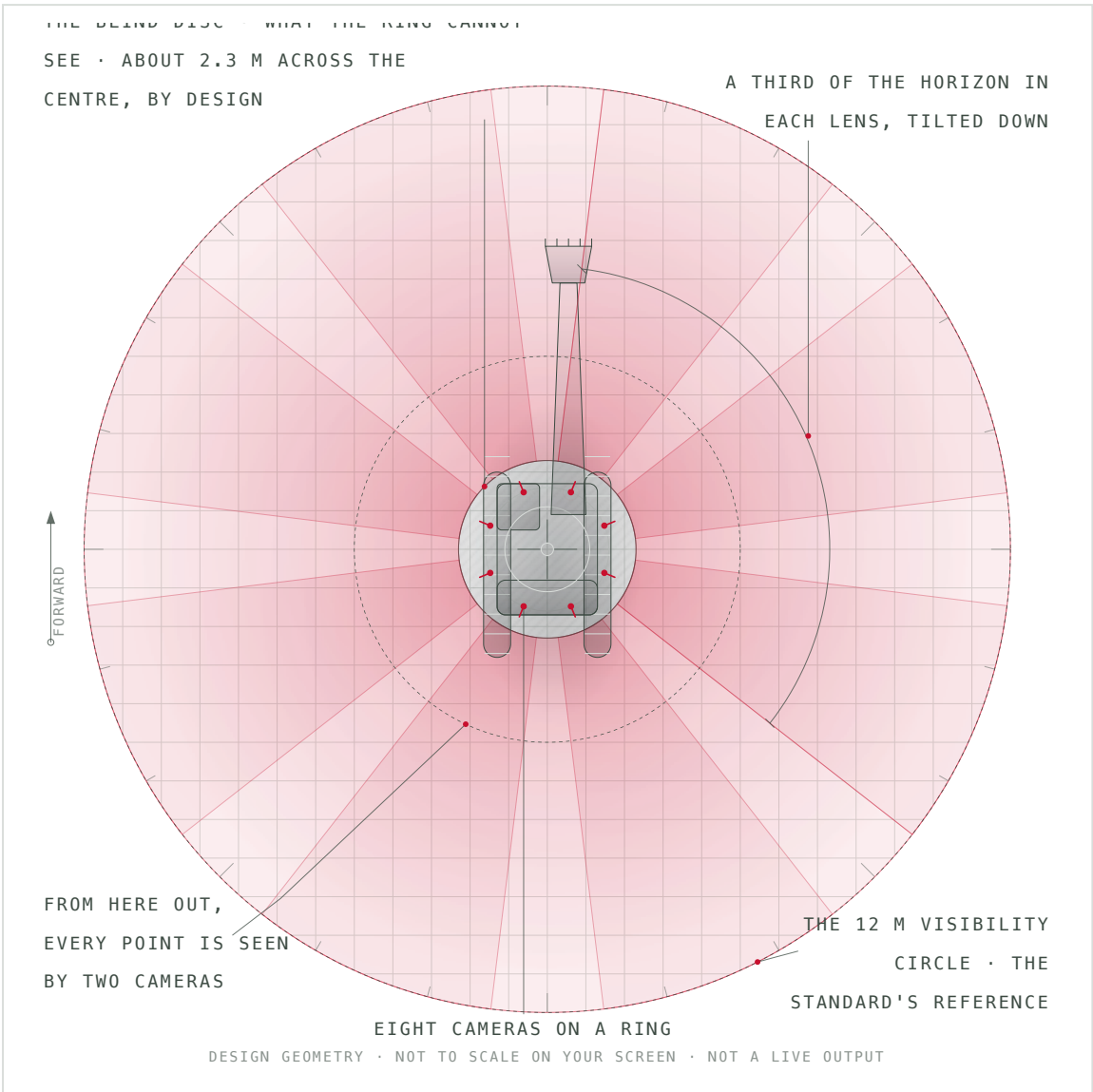


CATERPILLAR 236 SKID STEER

EDDIE BRINGS ITS OWN EYES.

THE SENSING SET

Eddie senses with its own cameras and proximity sensing, carried on the unit. It never uses the machine's sensors or its bus, and it reads the gauges and warning lights by looking at them. Seven cameras leave ground that only one lens sees; eight leave almost none, and a target seen by two cameras has a distance, not just a bearing.



THE AWARENESS RING IN PLAN. EIGHT LENSES, THE BLIND DISC BY DESIGN, TWO-CAMERA COVER FROM FIVE METRES OUT, THE VISIBILITY CIRCLE THE STANDARD DRAWS

WHAT EDDIE CARRIES.

OBJECTS · GROUND · THE NEAR BAND · THE FAR BAND

AWARENESS RING

Eight cameras around the machine.

Wide lenses, evenly spaced, tilted down, sized so there is no blind ground out to the circle.

WORK VIEW

One camera on the tool and the cut.

What the operator's eyes do: the bucket, the face, the load, the edge.

IN THE CAB

One camera reads the dash.

Temperature, fuel, the warning lamps. It can stop Eddie, never start the machine.

LIDAR

A spinning lidar on the cab roof.

Structure, extent and the shape of the ground. Weakest in fog, so never the only one.

RADAR

An option for rain and dust.

Strongest in dust and snow, blind to a target that is not moving, so never the only one either. Added where a site's weather calls for it.

ATTITUDE

It knows which way is up.

Inertial units on the cab and the chassis, and an encoder on the swing.

POSITION

Every axis knows where it is.

Position and force sensing on each control, a length sensor on each cylinder, satellite positioning.

ITS LIMITS, STATED

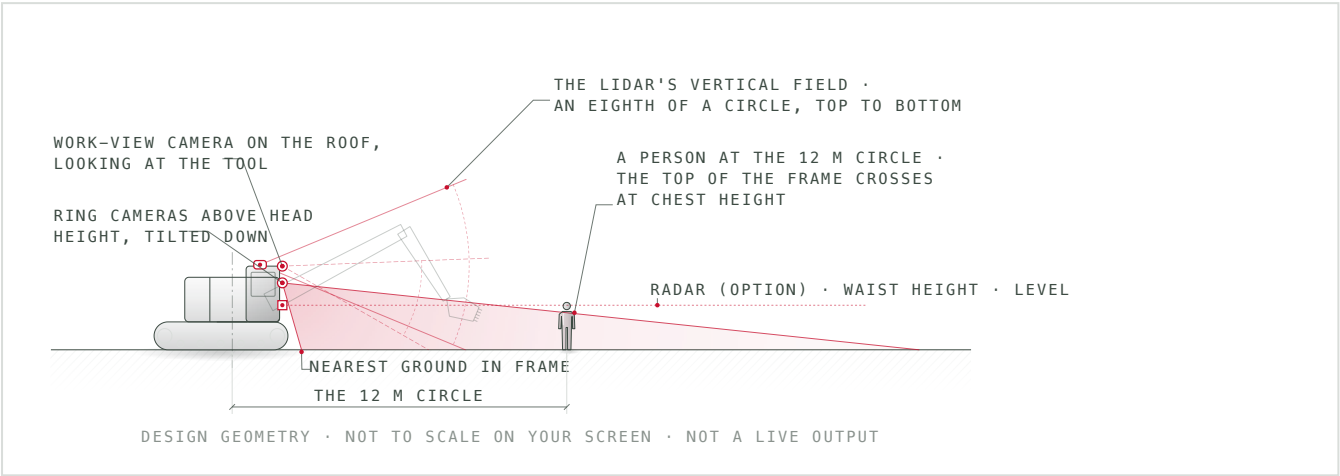
When unsure, it removes authority.

Doubt is allowed to do one thing: take authority away.

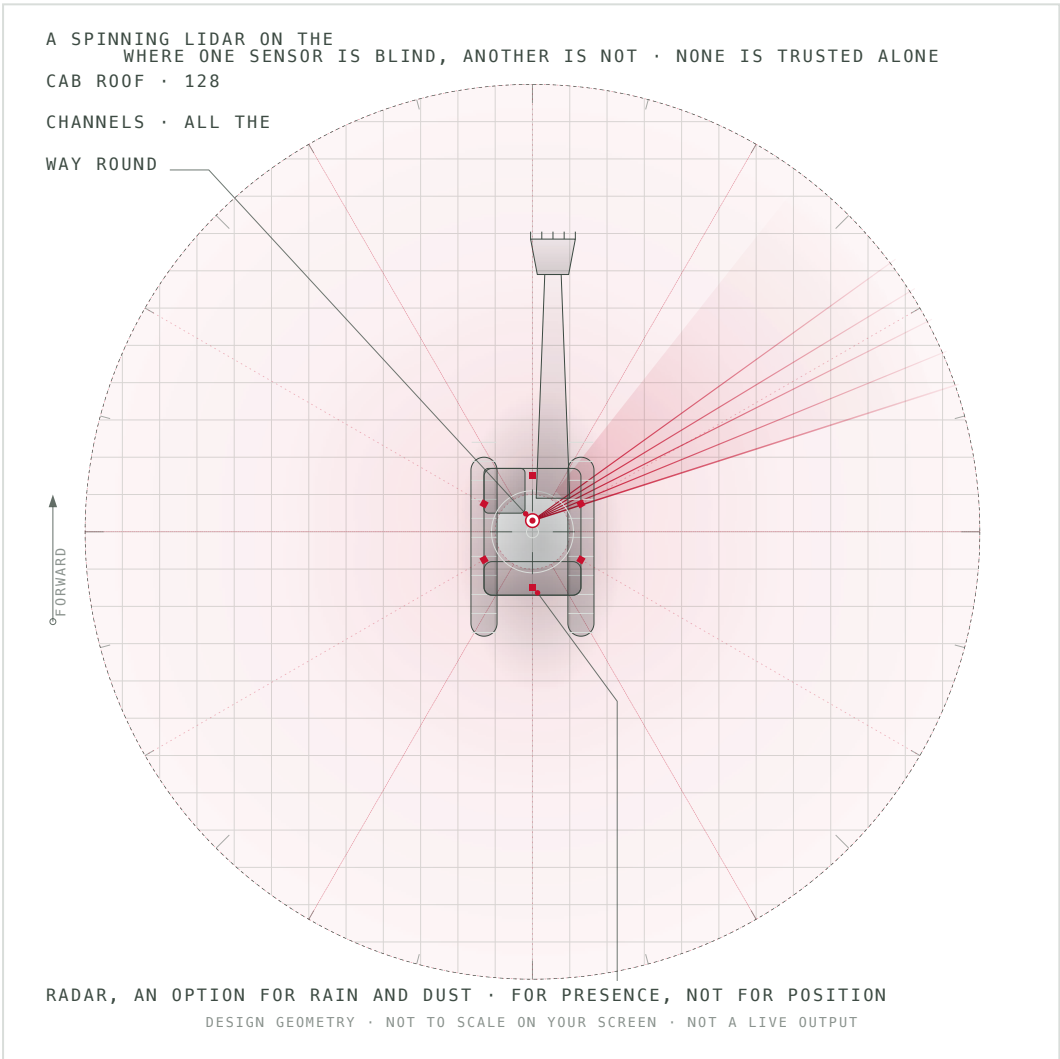
WHERE IT LOOKS, AND WHAT IT CAN LOSE.

ELEVATION AND RANGING

Cameras give the picture. The lidar gives structure and a direct range to everything it hits. Radar, fitted as an option where rain, dust and snow are the normal condition, gives presence when they blind everything else, and none of the three is trusted alone: lidar is weakest in fog, a person standing still is invisible to radar, and snow buries a forward sensor.



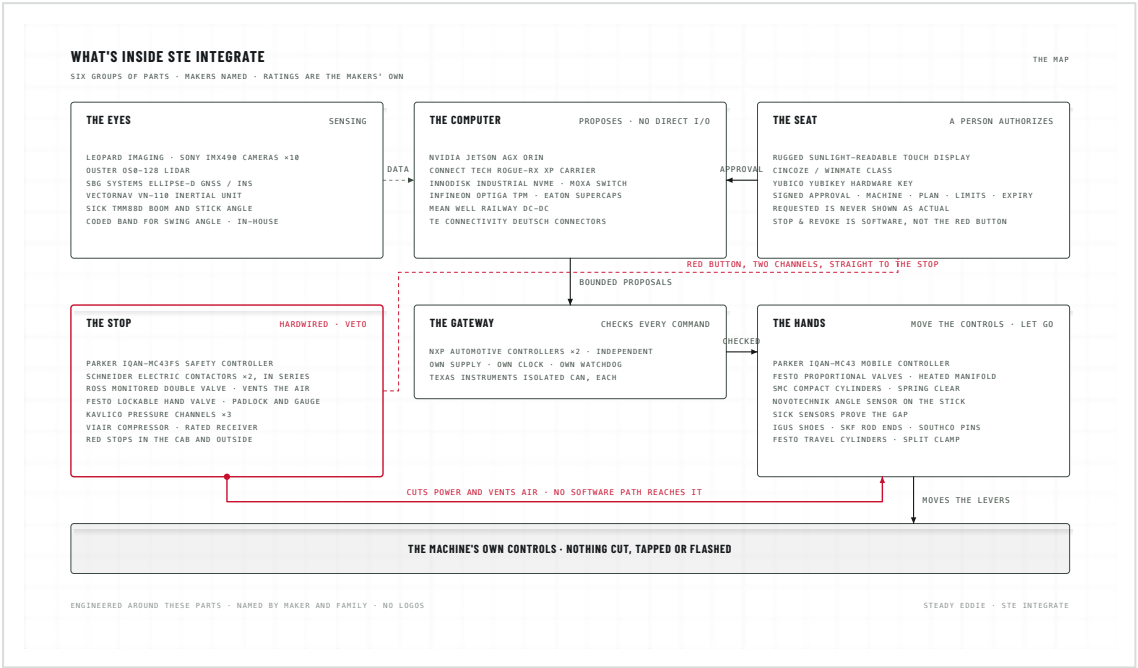
THE RING IN ELEVATION: WHERE THE NEAREST GROUND EACH CAMERA SEES BEGINS, AND WHERE THE TOP OF THE FRAME CROSSES A PERSON STANDING AT THE EDGE OF THE CIRCLE



THE LIDAR SWEEPS ALL THE WAY ROUND FROM THE CAB ROOF. RADAR, AN OPTION FOR RAIN AND DUST, FOR PRESENCE, NOT POSITION

NO PERFORMANCE LEVEL IS CLAIMED FOR THE SENSING SET. DESIGNED AGAINST ISO 13849 ARCHITECTURE, TOWARD ISO 17757. NO CERTIFICATION IS CLAIMED.

STE Integrate is engineered around parts that already run mines, plants and vehicles. Each is named by maker and model, and every figure beside it is the maker's own published rating for its own part. Nothing exotic, nothing that cannot be bought again in ten years, and every part chosen for a reason we can show you.



THE COMPUTER.

COMPUTE · NETWORK · POWER · SECURITY · SHARED BY THE THREE SYSTEMS

POSITION	MAKER AND MODEL	THE MAKER'S OWN FIGURES
Compute module	NVIDIA Jetson AGX Orin 32 GB	200 TOPS (INT8) · 32 GB 256-bit LPDDR5, 204.8 GB/s · 64 GB eMMC 5.1 · 15 to 40 W · the automotive and robotics AI module, runs perception and planning on board
Rugged carrier	Connect Tech Rogue-RX XP (AGX207)	−40 to +85 °C · +10 to +36 V DC in · 2 × 10GBASE-T · 2 × NVMe M.2 2280 · 16-lane MIPI CSI-2 · 2 × CAN FD · locking connectors · 125 × 108.7 mm
Storage	Innodisk M.2 (P80) 4TE2, 2 TB	PCIe Gen 4 x4 · up to 3,550 / 3,300 MB/s · 20 G vibration · 1,500 G shock · MTBF above 3 million hours · industrial grade −40 to +85 °C
Network	Moxa EDS-G4012 managed switch	8 × PoE gigabit + 4 × SFP · IEEE 1588v2 hardware time-stamping · −40 to +75 °C (T model)
Motion gateway	NXP S32K3 automotive controllers × 2	Two independent channels, each with its own supply, clock and watchdog · automotive family, −40 to +125 °C
CAN isolation	Texas Instruments ISO1042-Q1 × 2	5,000 V RMS isolation (UL 1577) · ±70 V bus-fault tolerance · CAN FD to 5 Mbps · AEC-Q100 Grade 1
Security	Infineon OPTIGA TPM SLB 9672	TPM 2.0 hardware root of trust · Common Criteria EAL4+ and FIPS 140-2 listings · signed boot, keys never leave the chip
Power	MEAN WELL RSD-500B-24 railway DC-DC	24 V out · 420 W rated · 16.8 to 33.6 V DC in · 92 % typical efficiency · −40 to +80 °C
Hold-up energy	Eaton XVM supercapacitor modules × 2	65 F · 16.2 V · 22 mΩ · 3.0 Wh stored · −40 to +65 °C · UL 810A recognized · closes files cleanly on a power loss
Connections	TE Connectivity DEUTSCH DTP / DTM	DTP size-12 contacts, 25 A · DTM size-20 contacts, 7.5 A · sealed · genuine, authorised channel only
Enclosure	Two-chamber aluminium, sealed	620 × 520 × 300 mm · 4 mm 5052-H32 shell · the computer and the safety hardware in separate rooms on separate power

THE EYES.

SENSING · SHARED BY THE THREE SYSTEMS

POSITION	MAKER AND MODEL	THE MAKER'S OWN FIGURES
Cameras × 10	Leopard Imaging LI-IMX490-GMSL2 on Sony IMX490	2,897 × 1,877 · HDR · LED-flicker mitigation · 30 / 65 / 90 / 120° lens widths · IP67 / IP69K · -40 to +85 °C · 30 fps · GMSL2
Lidar	Ouster OS0-128 Rev8	128 channels · 360° × 90° field · up to 4,096 horizontal resolution · IP68 / IP69K · -40 to +85 °C · 10 Grms vibration · 100 g shock · PTP time sync
Position and heading	SBG Systems Ellipse-D	Dual-antenna GNSS / INS · RTK 0.01 m + 1 ppm · heading 0.2° · 200 Hz outputs · IP68 · -40 to +85 °C
Motion of the house	VectorNav VN-110	1 kHz IMU · 400 Hz attitude · ±15 g · IP68 · -40 to +85 °C
Boom and stick angle	SICK TMM88D-MCI090A × 2	Two-axis ±90° · 0.01° resolution · 200 Hz · CANopen · 8 to 36 V DC · -40 to +80 °C
Swing angle	Steady Eddie coded band + downward camera	Passive reflective band on the carbody, read optically · no connection to the machine's swing electronics
Radar	Option: smartmicro UMRR-11	Added where rain and dust call for it · not part of the base set

THE STOP.

SAFETY AND ENERGY · NO SOFTWARE PATH REACHES IT

POSITION	MAKER AND MODEL	THE MAKER'S OWN FIGURES
Safety controller	Parker IQAN-MC43FS	50 inputs, 36 outputs · certified by the maker to IEC 61508 SIL 2, PL d capable · diagnostic test interval under 100 ms · 9 to 32 V DC · -40 to +85 °C · IP65 / IP6K9K · no path from the computer or the AI to it
Power cut	Schneider Electric TeSys D LC1D09BD × 2, in series	9 A AC-3 · 24 V DC coil · mirror contact to IEC 60947-4-1 · B10d 1,369,863 cycles · 16 to 24 ms opening · rail voltage checked independently
Air vent	ROSS Controls DM2C monitored double valve	24 V DC · G1/2 · Cv 3.01 supply, Cv 6.51 exhaust · internally monitored, fault latch
Lock-out	Festo MS6-EM1-1/2-S hand valve	Manual 3/2 rotary · 8,700 l/min nominal flow · 0 to 18 bar · padlockable in the closed position · -10 to +60 °C
Proof of pressure	Kavlico P1A transducers × 3	0 to 10 bar · accuracy ≤ 1 % of span · response ≤ 5 ms · IP65 / IP67 · three independent channels
Air supply	VIAIR 450C-IG compressor · rated receiver	24 V industrial grade · 100 % duty at 100 psi · 2.20 CFM free air · outside the safety function
Red stops × 2	Schneider Electric XB4 class · Banner Engineering class	Cab and exterior · two channels each · either drops the contactors and the valve and latches · reset only at the machine

THE HANDS.

DRIVES AND CONTROLS · AIR WHERE IT PUSHES

POSITION	MAKER AND MODEL	THE MAKER'S OWN FIGURES
Motion controller	Parker IQAN-MC43	−40 to +85 °C · 9 to 32 V DC · 1 ms minimum cycle · 5 CAN buses · 10 closed-loop current outputs, 100 to 2,500 mA · IP65 / IP6K9K
Metering the air	Festo MPYE proportional valves	5/3 proportional, position-controlled spool · 100 to 2,000 l/min by port size · 0.4 % max hysteresis · IP65 · in a heated manifold
The pushers	SMC CQ2 compact cylinders, −XB7 cold build	Single-acting, spring return · four per stick, one direction each · −40 to +70 °C · spring clear when the air is cut
Where the stick is	Novotechnik RFD-4000	Non-contact angle sensor on the machine's own joystick · up to 360° · IP67 / IP68 / IP69 · −40 to +125 °C
Proof of release	SICK IMG / IMB inductive sensors	Rugged families with −40 °C variants · IP68 / IP69K · prove a physical gap, never a command
Travel levers	Festo DSNU cylinders, ISO 6432	Double-acting · through a split clamp with a compliant insert · no drilling, no adhesive
Bearings and pins	igus igubal · SKF rod ends · Southco LOCKWELL	igubal self-aligning shoes, −40 to +90 °C · SKF spherical rod ends · Southco quick-release pins, tool-free

THE SOFTWARE.

PLATFORM

POSITION	MAKER AND MODEL	THE MAKER'S OWN FIGURES
Platform	NVIDIA JetPack · TensorRT	The board's own platform and inference runtime · Jetson Linux secure boot · disk encryption · signed A/B updates
Update trust	Uptane · TUF	The vehicle-industry framework against forged or stale updates · offline controlled import
Middleware	ROS 2 · Eclipse Cyclone DDS	Every service identified · denied by default · security profile on the bus
Build discipline	CycloneDX · NIST SP 800-218 · NIST AI RMF	A machine-readable bill of materials with every build · secure development framework · AI risk framework
A voice in the cab	Qwen language model, local	Answers from the controlled manuals on the machine · advisory only · no authority over anything

THE SEAT.

OPERATOR INTERFACE

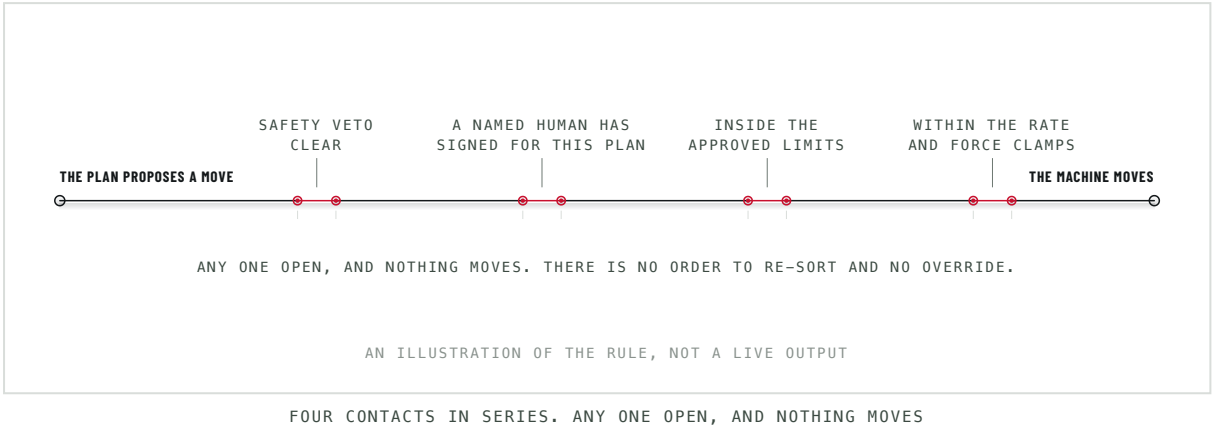
POSITION	MAKER AND MODEL	THE MAKER'S OWN FIGURES
Display	Cincoze CS-112H/M1101(front-runner) · Winmate R12L100 class	12.1 in · 1,500 nit sunlight-readable · 1,024 × 768 · projected-capacitive touch, glove and wet · IP65 front · 9 to 48 V DC · −20 to +70 °C
The key	Yubico YubiKey 5 NFC	FIDO2 / WebAuthn · PIV · secure element · IP68 · signs a 24-field approval bound to the machine, the plan, the limits and an expiry
Screens and alarms	Steady Eddie operator interface	32 screens · 42 alarms, each cleared only by its owning system · requested never shown as actual · stop and revoke is software, the red button is not

ENGINEERED AROUND: THE SPECIFICATION STE INTEGRATE IS BUILT TO. FIGURES ARE THE MAKERS' OWN PUBLISHED RATINGS FOR THEIR OWN PARTS, READ ON 2026-09-05; THEY ARE NOT MEASUREMENTS OF THE ASSEMBLED UNIT. MAKERS ARE NAMED IN TEXT; NO MAKER ENDORSES STEADY EDDIE. SAFETY PARTS ARE BOUGHT ONLY THROUGH THE MAKER'S AUTHORISED CHANNEL IN THE EXACT CERTIFIED VARIANT; COMPUTE, NETWORK AND SENSING WITH COUNTRY OF ORIGIN AND FIRMWARE REVIEWED; HARNESS AND ASSEMBLY BUILT IN CANADA.

HOW A MOVE IS ADMITTED.

ONE MOVE NEEDS FOUR YESES

A move happens only when the safety system is clear, a named person has signed for this plan, the move is inside the limits that person approved, and the rate and force clamps are satisfied. All four, every time, or the machine does not move.



THREE WAYS TO TAKE CONTROL AWAY.

EACH ONE WORKS WITHOUT THE OTHER TWO

Pull the pilot lockout lever.

The machine's own, fitted by the manufacturer. Eddie raises and lowers it exactly as an operator does.

Pull the red manual release.

On any actuator: one hand, no tool, no air and no power. It separates that actuator from the control it drives.

Vent the air.

Every drive lets go at once. No single failure takes out more than one of the three.



A RED RELEASE ON EVERY ACTUATOR

A PERSON STARTS THE MACHINE EVERY SESSION AND CLEARS IT FOR OPERATION BEFORE EDDIE ENGAGES THE CONTROLS. SAFETY FUNCTIONS ARE DESIGNED AGAINST THE ARCHITECTURE OF ISO 13849 AND BUILT TOWARD ISO 17757, FOR AUTONOMOUS EARTH-MOVING MACHINERY. WE CLAIM NO CERTIFICATION AND NO PERFORMANCE LEVEL; THE RELEASES ARE YOURS TO TRY AT OUR OWN TEST FACILITY IN ALBERTA.

WHAT TO SEND US

- Make, model and year, and the cab trim if you know it
- Photographs of the operator station: the seat, both consoles, the floor, the pedals and each control close up
- What the machine does all day, and where: the task, the site, the shift
- Whether that machine is holding up the job, or waiting on something else
- Whether the public ever comes within reach of it

You get back which family your machine belongs to, the first step, and what we still need to learn. From a person, within one working day. No deposit, no payment, no price.

THE PROGRAMS THAT CAN HELP PAY

Governments fund what a buyer does when they put automation on a machine they already own. They lend against it, they let you write it off faster, they pay for the training, and in a few places they share the cost. Our buyer's guide, [Setting up the Alberta programs for a Steady Eddie purchase](#), maps every door an Alberta buyer can knock on and the order to knock, with each program's own terms quoted from its page and the day we read it. Ask us which door is yours before a quotation is signed.

AI PLANS.	RULES GOVERN.	HUMANS AUTHORIZE.	SAFETY HAS VETO.
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NAME YOUR MACHINE AND WE WILL TELL YOU WHERE IT STANDS.

ENQUIRIES@STEADYEDDIE.CA · STEADYEDDIE.CA

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