

Technical Specification Continuous Vertical Lifter



MUVRO Technologies Pvt. Ltd.

Plot No- 1195, Main Road, National Highway – 34 Merta,
Ghaziabad – 201003, Uttar Pradesh, India

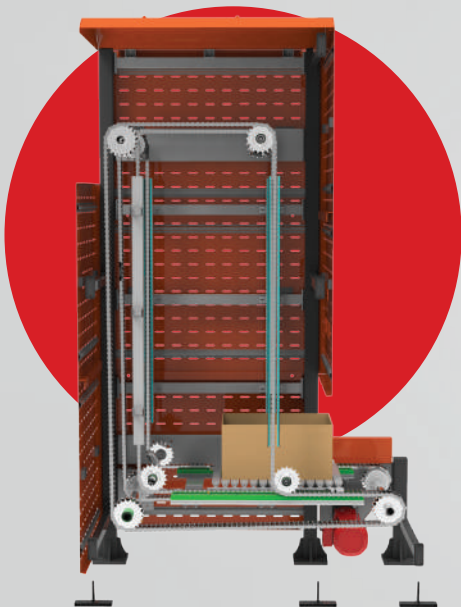
1. General Description:

A Continuous Vertical Lifter (CVL) is a mechanical lifting system that continuously moves totes between different floor levels using a rotating or reciprocating lifting mechanism. Ideal for warehouse automation and material handling, it provides uninterrupted vertical transport.

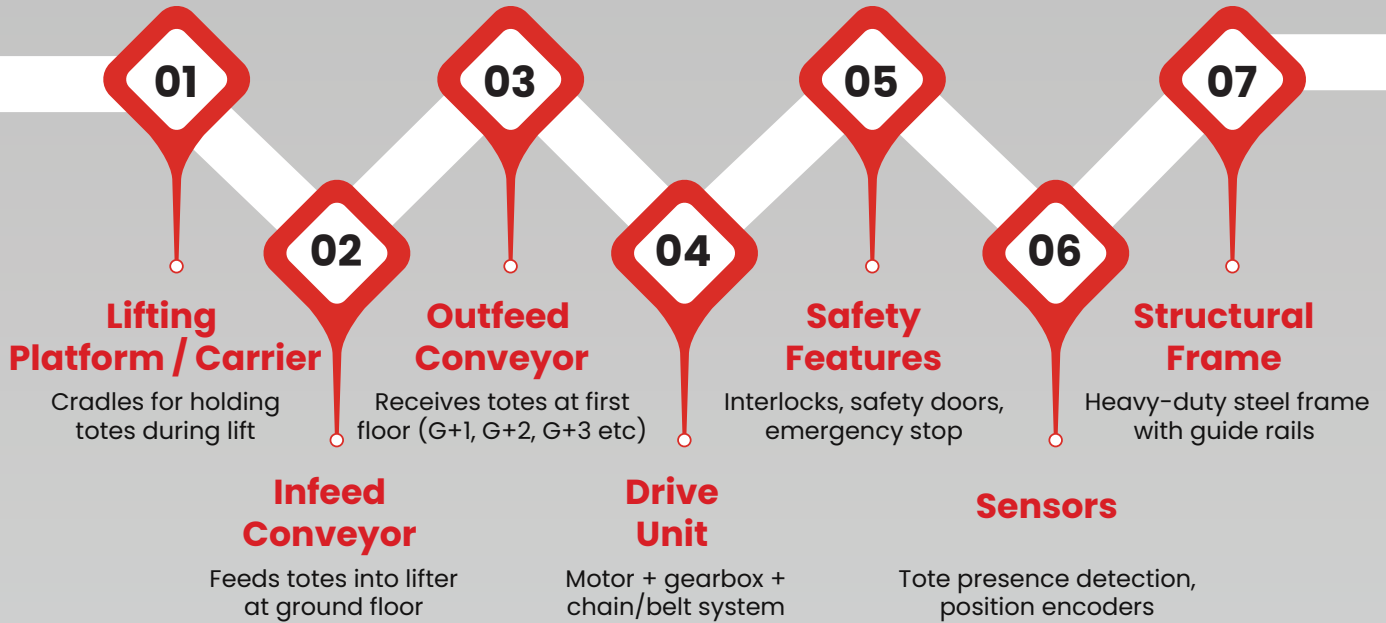
Design Options:

Z-Type Flow → Infeed and outfeed at 90° angle (*popular for tote transfer*)

C-Type Flow → Infeed and outfeed on same side (*when space-constrained*)

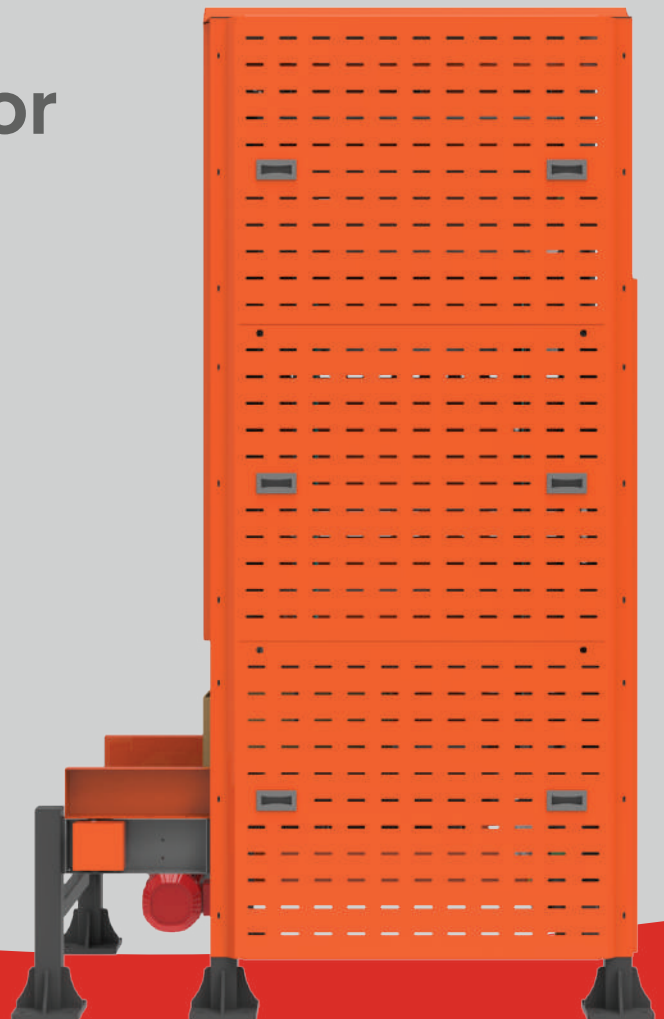


Key Components:



Advantages of CVL for Tote Transfer:

- Compact vertical footprint saves floor space
- Continuous operation → higher throughput
- Integrates with conveyors, AGVs, AS/RS systems
- Low energy consumption vs. traditional lifts



Typical Application:

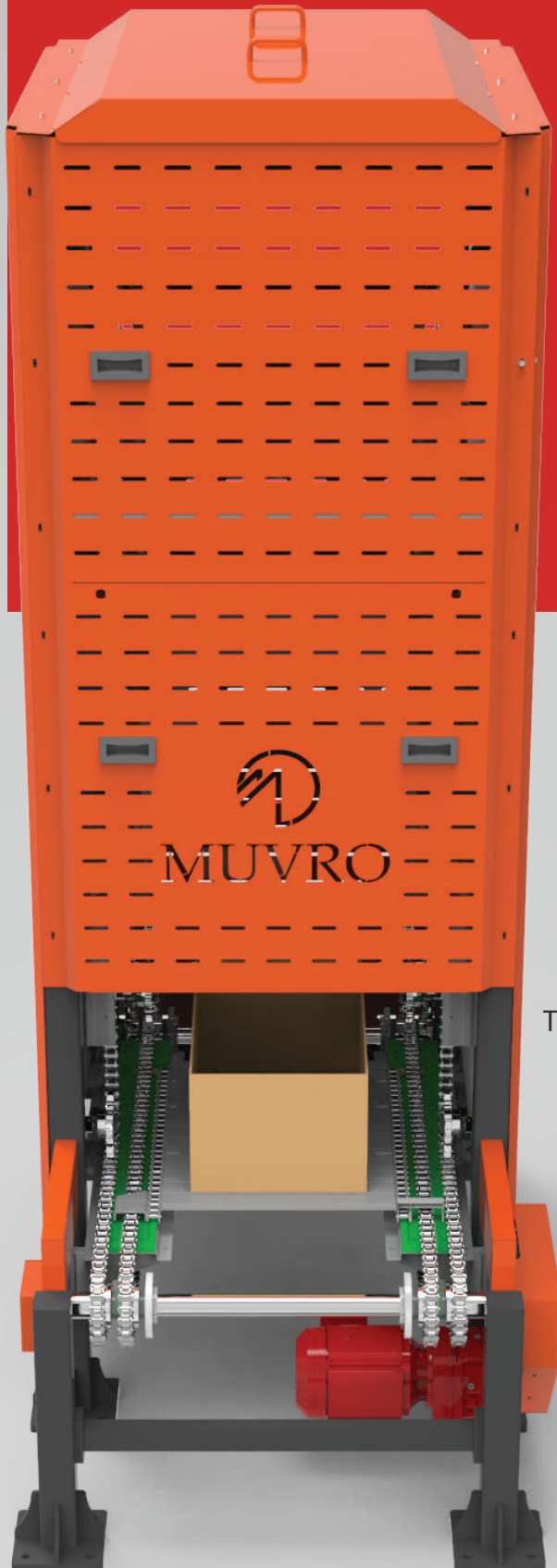
For transferring totes from receiving
(*ground floor*) to put-away
(*mezzanine or G+1,2,3 level*)

Warehouse automation systems

E-commerce fulfilment centers

Parcel and postal sorting facilities

Parts storage and retrieval in
manufacturing



Optional Features:

Tote ID tracking (*RFID/barcode scanner integration*)

Auto-rejection of non-compliant totes

Stainless steel frame for food-grade applications

Buffer conveyors at infeed/outfeed

3. The Continuous Vertical Lifter Typically consist of following Assembly:

A. Structural Frame Assembly:

Heavy-duty vertical steel frame supporting lift mechanism; includes base plate, guide rails, and bracing members.

B. Lift Carrier Assembly:

Rotating/reciprocating cradle or platform designed to hold and lift totes securely between levels.

C. Drive System Assembly:

Motor + gearbox + drive shaft + chain/belt transmission; responsible for moving the lift carriers continuously.

D. Infeed Conveyor Assembly:

Conveyor system feeding totes into the lift at ground level; may include sensors.

E. Outfeed Conveyor Assembly:

Conveyor system receiving totes from lift at G+1 floor; may include accumulation zone or indexing control.



F. Control Panel Assembly:

PLC, HMI, electrical components, power distribution for controlling lift operation and safety devices.

G. Safety System Assembly:

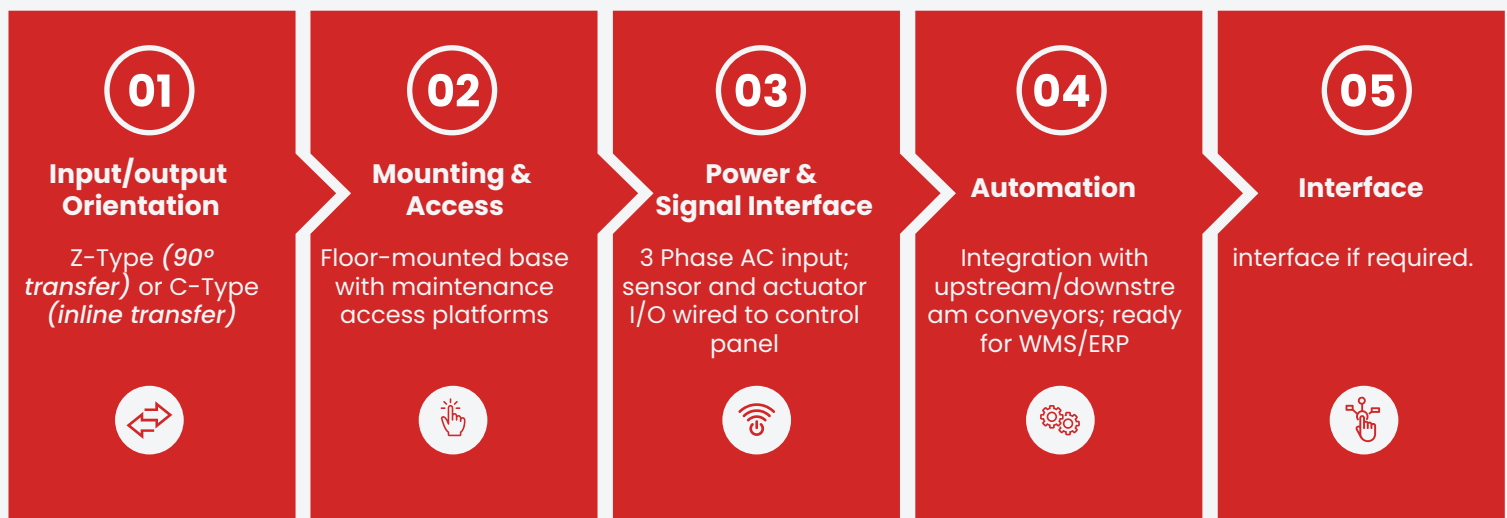
Safety doors, interlocks, mesh guards, emergency stop circuit, overload protection mechanisms.

H. Sensor & Detection Assembly:

Tote presence sensors, position encoders, lift position sensors for automation feedback.

4. Functional Integration Features:

Feature Details



5. Electrical Details:

1. Power Distribution:

Provide and install main electrical power connections for CVL system

Power rating: 3 Phase, 415V AC, 50 Hz

Supply and termination of power cables from main panel to CVL control panel

Installation of motor power cables, control wiring, and earth connections as per standards



2. Control System:

Supply, installation, and commissioning of PLC-based control panel

- PLC controller (Siemens / Allen Bradley / equivalent) ■
- Integrated HMI (touchscreen interface) for operation and diagnostics ■
- Motor starters, VFD (if required), relays, contactors, fuses, and safety circuits ■

All control devices pre-wired to terminal strips inside the panel

Control panel designed with IP54 minimum protection (higher if specified)

3. Motor Drives:

Supply and installation of **motor starters or VFDs** for:

- Lift drive motor (*main vertical lift*)
- Infeed conveyor MDR
- Outfeed conveyor MDR

Motor overload protection integrated

Cable connections from control panel to motors
(with flexible conduits near moving parts)

4. Sensors & Safety Devices:

Emergency Stop: Easily accessible emergency stop buttons.
2 no's will be provided for conveyor length, Max. 30 meter.

Euchner Rope Switch
RPS-M-2131SR300M
with accessories



Emergency Push Button Schneider Make,
part no - **XB5AW72B2N**
will be provided near drive (**Gear Motor**).



Tower Lamp: 3 tier with Buzzer
(Red, Yellow, Green with audio) Leuze make
A7-V1-MP1-BZ2-S-DS-ROG-T-100

Supply and wiring of all sensors including:

- Tote presence sensors (photoelectric or ultrasonic) at infeed and outfeed
- Lift position sensors / encoders for floor alignment
- Limit switches at top and bottom positions

Integration of safety devices:

- Emergency stop buttons (at ground floor, G+1 floor, and panel)
- Door interlock switches (prevent lift operation when doors open)
- Overload relay and fault monitoring circuit



5. Interfaces & Integration:

Provide necessary I/O points and programming for interfacing with upstream and downstream conveyors or warehouse automation system (if applicable)

Option to integrate barcode/RFID scanners (if included in project scope).

6. Cable Management & Routing:

- All control and power cables routed in cable trays, conduits, or flexible cable carriers
- Terminations labeled as per electrical drawings
- All cabling compliant with IS/IEC standards for industrial machinery

7. Documentation & Testing:

Supply of:

- Electrical schematic drawings (*AutoCAD or equivalent*)
- Cable schedules, termination diagrams, I/O lists
- Operating and maintenance manuals for electrical system

Perform pre-commissioning checks, insulation resistance tests, and functional testing



Note

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