

INDUSTRIAL CASE STUDY

ANALYSIS

Advanced Vertical Lifting Technology for High-Rise Warehousing

Project Profile

This case study focuses on the implementation of a 14-meter travel hydraulic freight lift designed for a 3-station facility. The core objective was to achieve high-speed vertical logistics while maintaining structural stability and minimizing the foundation impact through a shallow pit design.

Technical Specifications

Model Configuration	SJD1.0-14.0 (3:1 Ratio)
Rated Load Capacity	1,000 kg
Total Lifting Height	14,000 mm (14 meters)
Stations / Floors	3 Stops / 3 Stations
Platform Dimensions	2000 x 2700 mm
Pit Depth Required	500 mm
Main Structure	2-Cylinder / 4-Column H-Steel
Drive Power	3.0 kW

Core Technology: The 3:1 Speed Ratio Principle

Mechanism: The system utilizes a compound pulley transmission system where the hydraulic cylinder rod acts on a movable pulley block.

Ratio Advantage: With a 3:1 multiplication, every 1 meter of cylinder extension results in 3 meters of platform travel.

Efficiency: This allows a 14-meter travel to be achieved with a significantly shorter cylinder (~4.7m), reducing the need for deep pits or excessive overhead space while doubling the operational efficiency compared to standard direct-lift systems.

Engineering Highlights

1. Structural Rigidity

Using 100H national standard steel for the 4-column guide system ensures that the platform remains perfectly level even under uneven loading conditions during high-speed travel.

2. Safety & Control

- **PLC Interlocking:** High-speed roll-up doors and platform sensors are integrated into a central PLC to prevent accidental operation.
- **Redundant Safety:** Dual 12# safety ropes complement the primary lifting chains to provide a fail-safe backup.
- **Enclosure:** 2-meter high fencing with diamond mesh provides a secure vertical shaft for material transport.

Installation Detail

The device is finished in **Dark Grey** industrial coating. The shallow pit of 500mm makes it suitable for existing buildings where deep excavation is restricted. The installation method utilizes floor-opening mounting for seamless integration into multi-level workflows.

