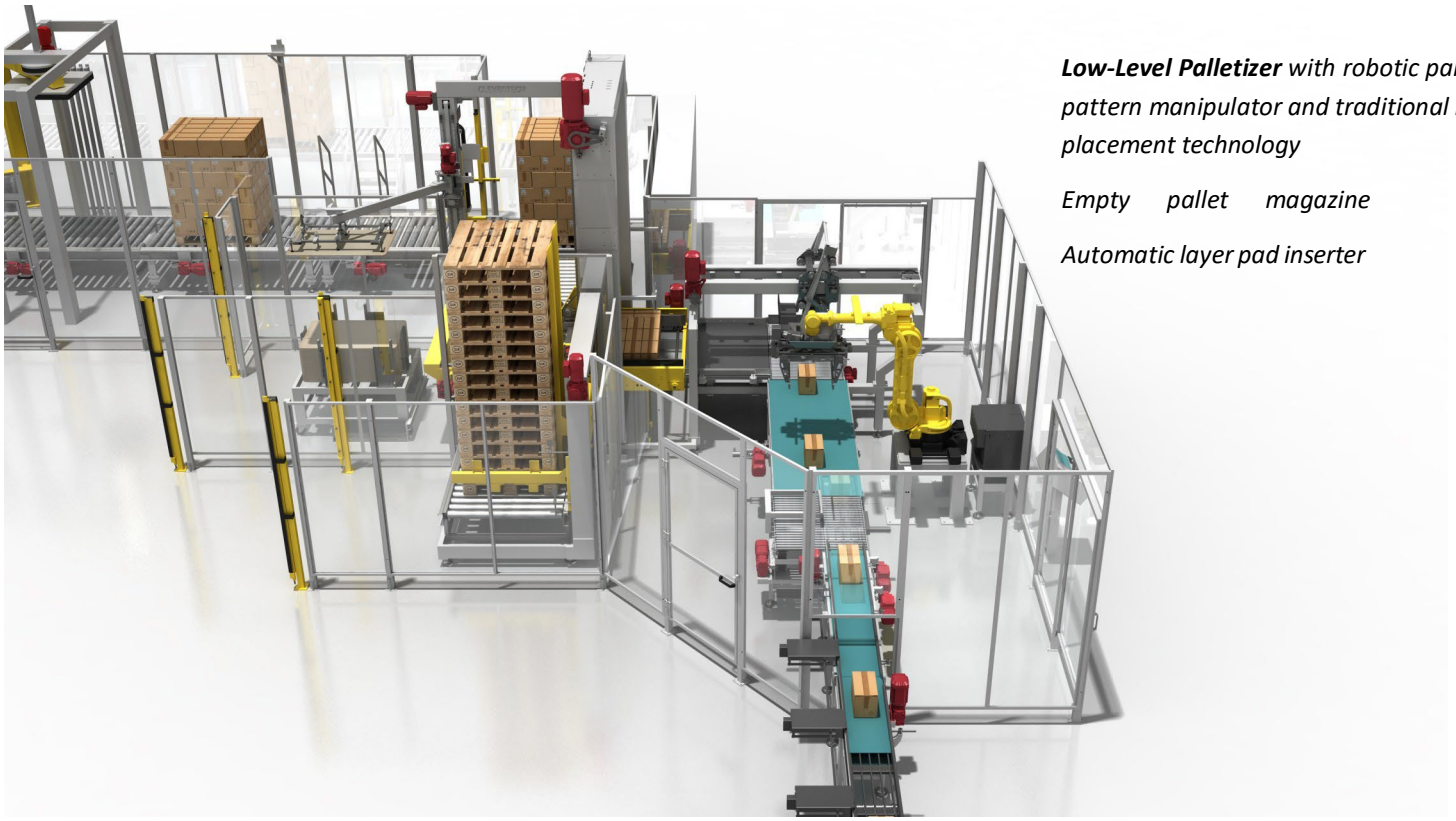
Which Palletizing System is Best for Your Application: Low-Level or High-Level?

One of the details that must be addressed when selecting a palletizer is whether a low-level (ground-level) or high-level (built on an overhead platform) system is best suited for the application.



Low-Level Palletizer *with robotic pallet pattern manipulator and traditional layer placement technology*

Empty pallet magazine

Automatic layer pad inserter

Machine Specifications

Shown below are machine specifications that must be determined when deciding whether a low or high-level palletizer is best for your application :

1). Production Requirements:

Specifying the products that will be palletized on the machine today, while also accommodating what will need to be palletized far in the future, is an important first step in the process. Such things as the range of:

- Product dimensions
- Product weights
- Package designs
- Materials to be handled
- Pallet heights

That the palletizer will be handling, manipulating, forming into layers, and placing onto a pallet (or no pallet for unitized loads) will need to be specified.

2). Speed of Operation:

The range of speeds that the palletizer will need to achieve to meet production requirements will need to be determined. This should take into consideration any surge capacity that the palletizer will need to handle.

3). Floor Space and Height Available:

The floor space that will be available for palletizer installation, as well as the distance from the plant floor to ceiling, or from plant floor to any obstruction (pipes, ventilation shafts, existing overhead conveyors, etc.) that could impact palletizer installation will need to be determined.

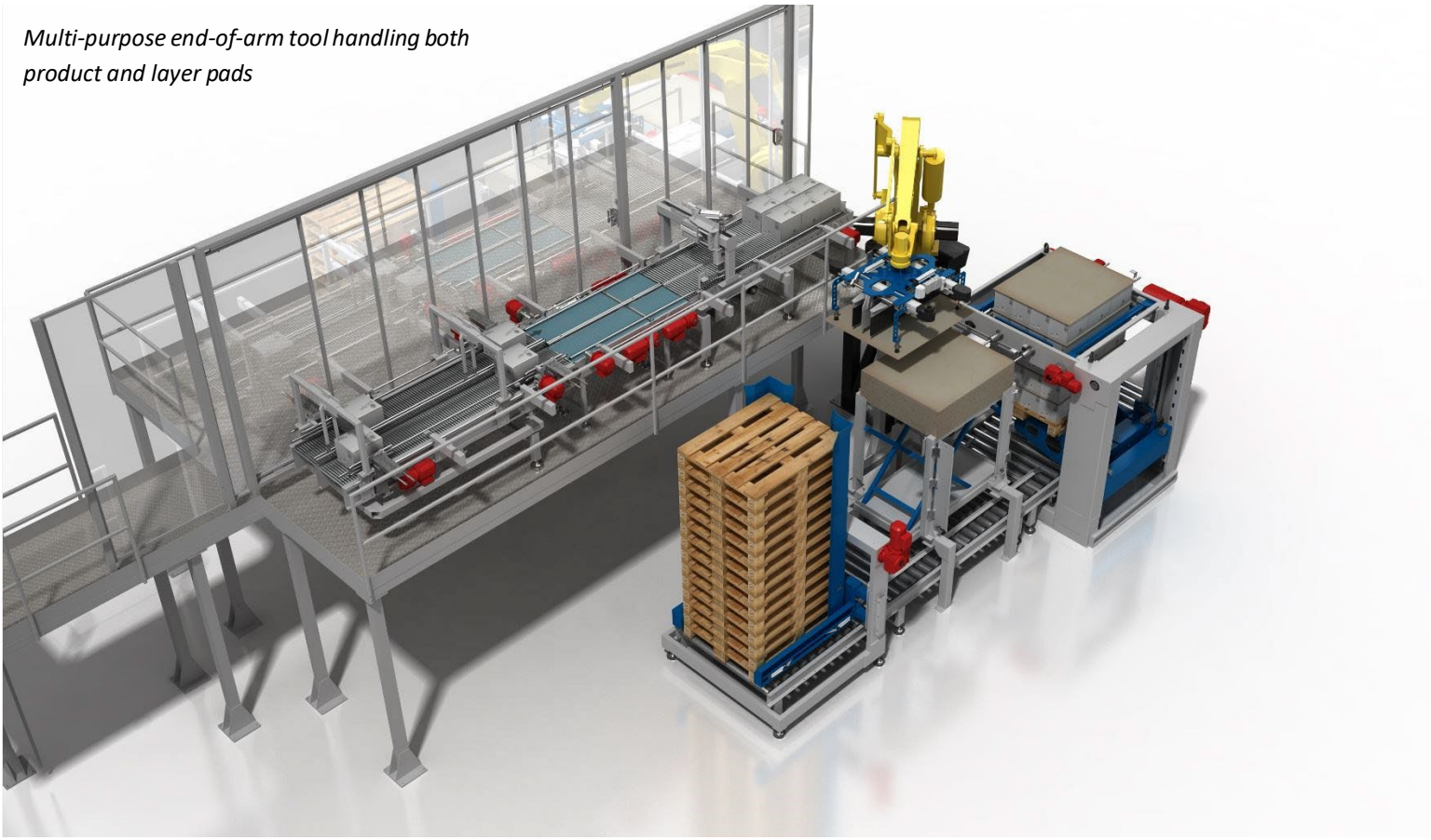
Three main determinants: product specification, speed and floor space

High-Level Robotic Palletizer

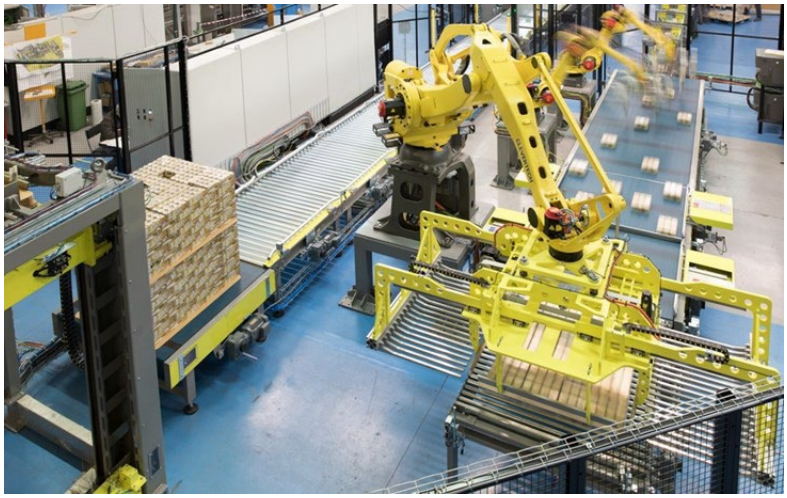
Compact footprint

Empty pallet magazine

Multi-purpose end-of-arm tool handling both product and layer pads



LOW—LEVEL PALLETIZER



Low – level palletizers are ergonomic and economical

- Fed at ground level, with items usually not being lifted until they are placed onto the pallet.
- Require smaller footprint (less plant real estate), especially if handling product from more than one product infeed conveyor.
- Have lower throughput rates, maxing out at about 4 layers per minute, depending on pallet pattern (layer formation).
- Better suited for locations with height limitations.
- More ergonomic since they operate at floor level, making them easier to access, monitor and maintain.
- Easier and quicker to install since there is no need for spiral elevators, overhead conveyors, and platforms.
- Less expensive machine with lower total investment.

HIGH—LEVEL PALLETIZER

- Are fed from above, with items typically raised by an in-feed conveyor and then pushed, swept, or lifted onto the pallet.
- Require stairs to get to machine level.
- Have larger footprint (more plant real estate) than low-level.
- Provides room for storage of consumable materials (pallets, layer pads, top frames) under palletizer platform.
- Easier for forklift, shuttle car, or AGV to maneuver and move consumables since conveyors and palletizer are at high level.
- Can build layers faster and more accurately.
- Capable of forming up to 10 layers per minute, more than double the speed of low-level equipment.
- Future-proof when compared to low-level because of ability to accommodate higher throughput speed requirements that may be required during the life of the machine.
- Better for handling fragile or unstable items.

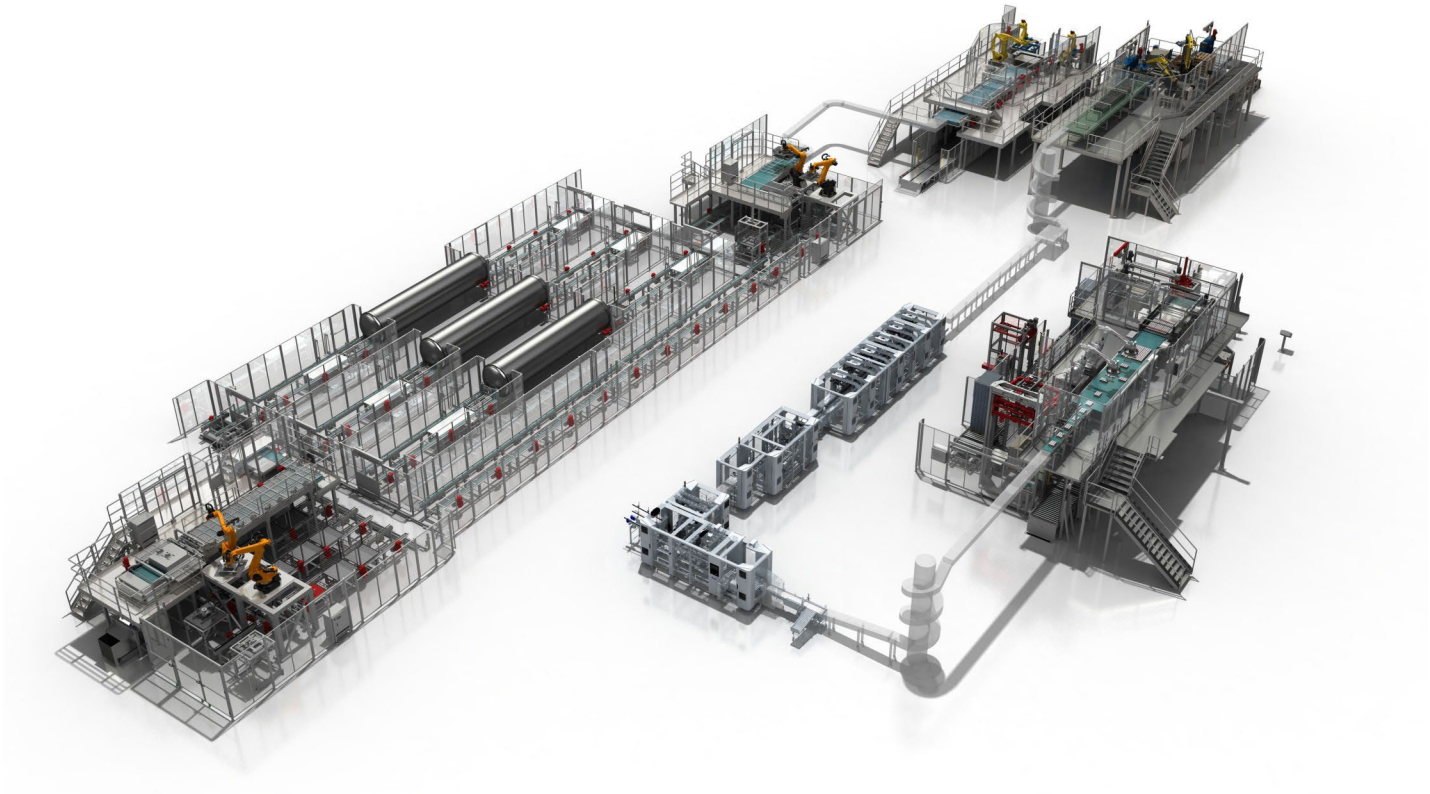
High—level palletizers are future-proof and can form up to 10 layers per minute

Determining the amount of space required for both a low and high-level palletizer requires specifying:

1. Number and location of product in-feed conveyors that will be arriving at the palletizer.
2. Personnel access and traffic flow.
3. AGV and / or forklift traffic flow.
4. Consumable material (pallets, layer pads, and top frames) access and replenishment locations.
5. Locations of walk-overs that will enable personnel passage to different parts of the line.

Determining the amount of space required for a high-level palletizer requires specifying these additional items:

6. Platform location.
7. Number and location of overhead product in-feed conveyors that will be arriving at the palletizer.
8. Number and location of spiral conveyors (if needed) to bring product to the required height.



Each of the items (listed above) required for a palletizer add to the total equipment and installation cost. Since high-level palletizers require more infrastructure (items 6 thru 8 above) this will result in a higher cost than a low-level machine. However, elevating the palletizer, product conveyors, and the layer-forming equipment will make floor space available for other plant requirements. Also, high-level systems can typically be designed for optimal flow for replenishment of consumable materials.

A high-level palletizer's ability to operate at more than twice the speed of a low-level system (10 versus 4 layers per minute) will maximize the system's Return on Investment (ROI) which should offset the initial higher investment in equipment and installation.

Robot or Gantry Machine

Palletizers, both low and high-level, can be designed and built as a gantry style machine, a robotic design, or a hybrid configuration where the layers are formed by robots and placed on the pallet by sweep-off transfer. Gantry palletizers use a rigid mechanical structure (gantry) which enables manipulation of payloads in 2 to 4 axes. A robotic palletizer will utilize an articulated arm capable of manipulating product in up to 6 axes.

Robotic low-level palletizer *with robotic pallet forming manipulator*
Special fork-style end-of-arm tooling for gentle layer placement
Palletless configurations—product layers are placed directly on slip sheets
New recipes are easy to create in HMI

High-level gantry style palletizer*—Multibrand model*

Traditional sweep-off technology

Simultaneously palletizes 4 different SKU's

Speeds up to 4 layers per minute

Common full pallet conveyor to the stretchwrapper

Which palletizer is right for your application, low or high-level?

Either design can be utilized when speeds are 4 layers or less per minute. The deciding factors typically will be floor space availability when compared to the space the palletizer will require, as well as the total cost of equipment and installation. If your application requires production rates higher than 4 layers per minute, then the decision is much easier to make since the best option will be a high-level palletizer.

Clevertech North America—Handling Your Success

Working with a machine builder that will be a trusted partner during the life of the palletizer, that can produce high quality, long-life expectancy equipment, and has the after-market service and support capabilities to ensure the system can be properly maintained, repaired, and if needed, modified are essential requirements for successfully selecting a palletizer supplier.

Clevertech designs and produces a wide range of low and high-level palletizing systems.
We'll be glad to assist you through your decision-making process and help define the palletizer best suited for your application.

Clevertech also designs and manufactures depalletizers, can ends handling systems, basket loaders/unloaders, stretch wrapping machines, strapping systems, pallet labeling systems, case erectors, case packers, case sealers, and other integrated solutions. Clevertech has been assisting customers in the food & beverage, home care, personal care, pet food and can manufacturing markets since 1987. Customers around the world rely on Clevertech equipment to efficiently handle a wide range of package shapes, sizes, and materials, including bags, bottles, cans, cases, cartons, trays and many other package designs. Clevertech North America, a subsidiary of the Clevertech Group headquartered in northern Italy, provides sales and after-sales services and support to the USA, Canadian and Mexican market from its Fort Myers, Florida location.

Clevertech can design and build solutions for all your palletizing needs.

*We're dedicated to **handling your success**.*

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