

System's approach to sustainability through Design

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Market demands

Less Space:

- Shrink our warehouse (over 4,300 sq.ft. in less than 130 sq.ft./ 400 sqm in 12 sqm)
- Increase our storage capacity, thus reducing heating/service/electricity

Less Manpower:

- Increase productivity in terms of lines of picking per operator
- Reduce walking and searching time

Less operating costs:

- Optimize inventory reorder levels with *ad hoc* software
- Real time inventory Control
- Higher Picking Accuracy
- Higher Throughput
- Improve Ergonomics/Safety
- Improve Security and Product Protection

Our approach: design for functions

Design per Application:

- Consideration of the goods (weight, sizes, picking speed and frequency, etc.)
- Consideration of the constraints (floor space, ceilings, lay-outs)

Design for Performance:

- Optimization of volumes: areas, heat/electricity consumptions, manpower
- Optimization of picking: speed, ergonomics, safety, security

Design for Packaging:

- Optimize use and reuse of packaging
- Consider Life Cycle Analysis in operation

Horizontal Carousel



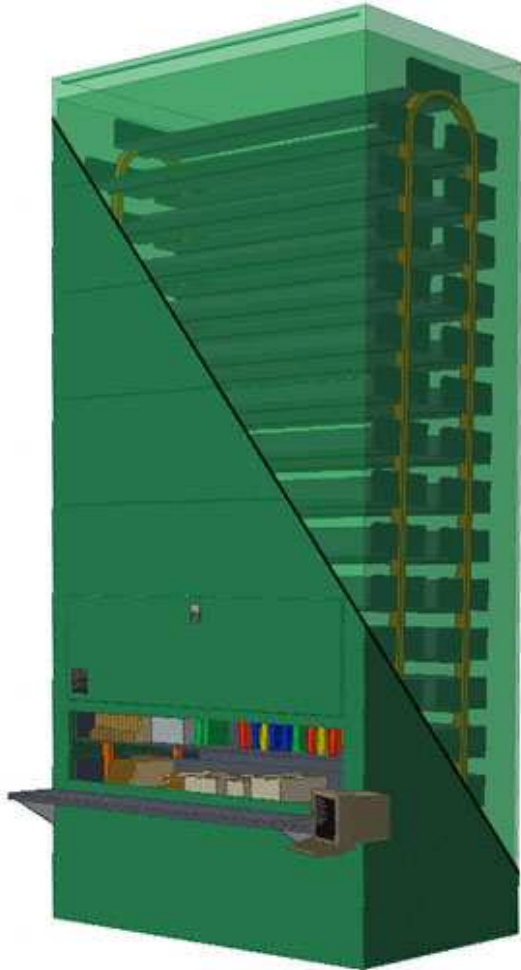
Applications

- High Throughput, usually distribution environments, where pick rates are 250 picks, or more, per hour / per employee.
- Low ceiling facilities or applications where saving space and building cube utilization is not the most important benefit.

Limitations

- Ergonomics of shelf storage / bending, reaching and lifting.
- High ceiling applications / Cube Utilization.
- Footprint, if space is an issue.
- Product protection / open to the environment.
- Maintenance, moving parts.
- Safety.

Vertical Carousel



Applications

- Office Environments
- Lower ceiling applications
- Consistent product size and weights
- Relatively light loads

Limitations

- Maximum Height
- Unbalanced Loads
- Load weight limits / machine and carrier
- Maintenance / moving parts
- Machine cube not maximized
- Flexibility
 - If Product stored changes
 - Machine relocation and reconfiguration

Vertical Lift Module (VLM)

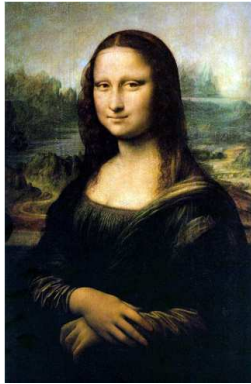
Applications

- High ceiling applications up to 45'
- Faster cycle times vs. carousel 15' and above
- Modular machine design
- Single or double exit
- Internal or External bay
- Drawer live load capacities from 550 lbs to 1,650 lbs
- Automatic tray overload protection
- Overall machine live load capacities up to 132,000 lbs
- No load balancing issues with limited moving parts
- Flexible height management system
- Environmental protection
- Secure environment



Modula VLM

Advanced Look & Functions



- Modern Design
- Reduce noise with belt drive system
- Reduce energy consumption with gravity rec. engine
- Metal skin
 - Easily removable
 - Shaped for higher rigidity and cosmetic appearance
- External double exit bay
- Sliding console
- Transparent Sides

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Storage (save up to 60%)

- Modular design. Expansion up to 46 feet
- Total capacity load 132,000 lbs
- Trays 86" / 122" / 161" wide
- Trays 24" and 32" depth.
- Tray height at 3" and 5"
- Tray load capacities 550 / 1,100 / 1,650 lbs.
- Any combination of drawer widths, depths and capacities
- Up to 218 trays per tower
- Tray surface up to 35.86 sq. ft.
- The flexible height management system optimizes cube space



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Picking

- Max. vertical speed 7.22 ft/s
- Double exit
- Tray height is adjustable automatically in real time
- Unlimited combinations of adjustable partition and dividers
- Pick by light
- One operator can manage up to 4 units
- **Wireless PC for handheld operations (COPILOT www.pcwireless.it) with/out rfid**

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Ergonomics



- External picking bay
- Sliding console for external picking bay
- Eliminate bending, reaching and manage heavier loads.
- Eliminate climbing ladders and mezzanine stairs.
- Enables use of assisted lifting device for heavy loads using external pick bay.
- Less overall walking: part to picker instead of picker to part.



Safety

- Automatic sliding doors open only when trays pass from tower to picking bay
- Anti intrusion barrier
- Safety barrier for flexible height checking
- Internal weight detector to prevent tray overload
- Vertical transmission by means of steel core belt
- Automatic telescopic extractor.

Security

- Password protected
- Unit or tray password protected
- Wireless-based systems for tracking
- Remote control – on line

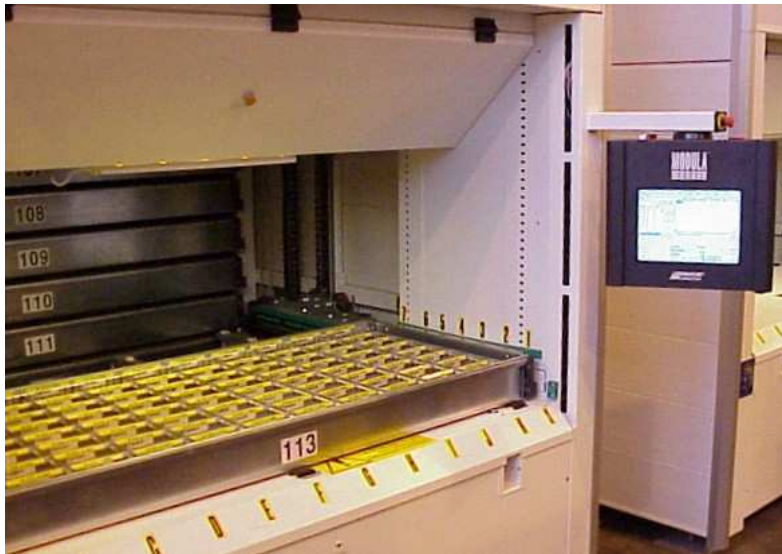
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Small Parts Storage: less packaging



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Heavy Parts: less packaging



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