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AUTOMATIC WAREHOUSES



WAREHOUSES AUTOMATIC

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Automatic Warehouses

Tailored Solutions for Logistics Efficiency

MPS Engineering offers comprehensive services for the development of “turnkey” automated warehouses, which are designed and customized based on the specific needs of clients. Our solutions adapt to available spaces and the characteristics of the materials to be stored, ensuring an efficient and optimized organization.

Our proposals include advanced material handling systems, such as stacking towers with fixed or shuttle elevators and automatic shuttles or conveyors for the transportation of load units (UDCs). The stacking towers are constructed with electro-welded and bolted steel profiles, ensuring robustness and long-term durability. Hot-dip galvanizing provides protection against wear and corrosion for the structure.

Inside the warehouse, the UDCs are accommodated on the sliding guides welded to the columns, ensuring safe and precise movement. Externally, the warehouse is enclosed by sandwich panels that provide thermal insulation and protection from external elements.

Access to the warehouse is provided through alarmed pedestrian entrances equipped with safety electrolocks to ensure material protection. We also offer the possibility to create a controlled environment in terms of temperature and humidity, allowing proper preservation of items.

Advanced solutions to optimize material management and flow

The distinctive features of our automatic warehouses:

CUSTOMIZED SOLUTIONS

Our automatic warehouses are custom-designed, taking into account the available space and the characteristics of the products to be stored, ensuring space optimization and efficient management.

INTELLIGENT HANDLING

The warehouses feature multi-tower stacking systems, served by fixed or mobile elevators, and automatic shuttles or conveyors for the transport of UDCs, ensuring a smooth and precise material handling.

ROBUST AND PROTECTED STRUCTURE

The stacking towers are made of welded and bolted electro-welded steel profiles, protected by a hot-dip galvanizing process. The warehouse is externally enclosed by sandwich panels for added strength and security.

SAFETY AND ENVIRONMENTAL CONTROL

Access to the warehouse is through alarmed pedestrian entrances, secured with electro-locking systems. Moreover, our warehouses offer the capability to control temperature and humidity to ensure product integrity.

EFFICIENT CONNECTION

The connection with the building is made through a tunnel where the UDC transport shuttle moves, ensuring a continuous and safe flow of materials between the two environments.



Design Principles

Development

The warehouse will be designed, developed, and implemented from the planning phase to full production.

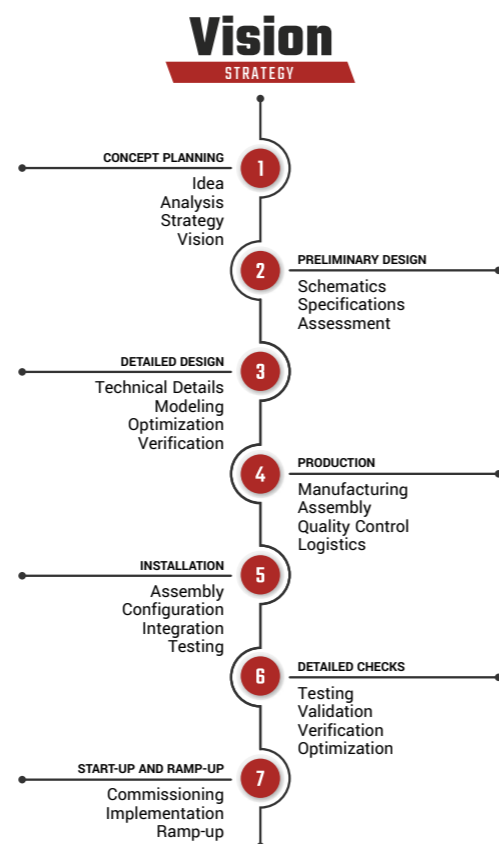
Management

Complete control of the warehouse: the software that revolutionizes logistics management

Efficiency and automation are the keywords in the warehouse fully managed by an integrated system. Thanks to the process computer connected to the control units, the management system monitors and controls every aspect of warehouse automation.

The functionalities are numerous: from product identification upon entry using barcodes or manual digitization, to the optimized management of load unit storage, to automatic product retrieval. Additionally, the system provides timely information to the user about the plant's status, ensuring complete supervision.

The storage software is specifically designed to store the positions of load units and allocate them strategically within the shelving. This allows for a detailed and intuitive visualization of the virtual warehouse map and each individual load unit, ensuring accurate traceability and optimal resource management.



Codified Traceability

Customization and Efficiency in Automation

All components used on the machine, including customized ones, are coded as required by the Machine Ledger. The code assigned to customized components is uniquely linked to their respective design, ensuring precise traceability.

In our Lean Approach-oriented approach, we use Immersive Technologies such as Augmented Reality to reduce intervention times. Our technicians have implemented these technologies in various automation applications. The adoption of these technologies can be evaluated later, based on the Client's interest.

The combination of accurate coding and the use of Immersive Technologies allows us to offer personalized, efficient, and effective automation.

Optimize Management with Augmented Reality

Through digital image capture devices (tablets, cell phones, optical viewers, etc.), a QR code or barcode is scanned, providing detailed information about the item.

The operator will receive a comprehensive overview (item information, function, quantity, allocation, history) of the status of the goods inside the automated warehouse.

SELF-SUPPORTING VERTICAL 2-TOWER

End-to-End Logistic Management Solution

Our self-supporting vertical warehouses come equipped with advanced handling systems, featuring two stacking towers served by **fixed elevators, transfer elevators, and automatic shuttles on the floor.**

The towers are constructed with robust electro-welded and bolted steel profiles, ensuring a solid structure that is protected by a hot-dip galvanizing process. Inside the warehouse, the load units (UDCs) are securely housed on guide rails welded to the columns. Externally, the warehouse is clad with sandwich panels to ensure proper thermal insulation. We offer a controlled environment in terms of temperature and humidity to preserve products in optimal conditions. The connection to the main building is ensured through a dedicated tunnel, facilitating an efficient and secure flow of goods.

STORED UNITS

Stored Product		Carboresina Forming Tools
Stored Quantity	N°	30
Maximum Dimensions	mm	8.500 x 2.500 x h = 600
Maximum Load Capacity	kg	5.000

AUTOMATIC WAREHOUSE

External dimensions and footprint	mm	12.000x10.000x16.000 (H)
Total usable storage volume	mc	230
Storage temperature	°C	18 ÷ 28

HANDLING SYSTEM

Number of elevators	N°	1
Maximum elevator capacity	kg	7.000
Maximum longitudinal speed (X)	m/min	N.A.
Transversal handling speed of UDC (Y)	m/min	15
Maximum vertical axis speed (Z)	m/min	20
Maximum Shuttle Speed	m/min	20



MAXIMUM STORAGE CAPACITY to optimize space and enhance management

Our self-supporting vertical tower warehouses are designed to provide a highly efficient storage solution. With the use of multiple stacking towers and advanced technologies, we optimize the available space and ensure quick access to goods. The configuration of these warehouses allows for flexible and scalable material management, enabling companies to optimize internal logistics and maximize space utilization.

SELF-SUPPORTING VERTICAL 6-TOWER

Complete logistics management solution

Our self-supporting vertical warehouses are equipped with advanced handling systems, including six stacking towers served by **fixed elevators, transverse elevators, and automatic shuttles on rails.**

The towers are constructed with robust electro-welded and bolted steel profiles, protected through a hot-dip galvanization process. Cargo units (UDCs) are securely housed on guide rails welded to the warehouse columns. Externally, the warehouse is clad with sandwich panels to ensure proper thermal insulation. We provide a controlled environment in terms of temperature and humidity to preserve products under optimal conditions. Connection to the main building is achieved through a dedicated tunnel, facilitating an efficient and secure flow of goods between the warehouse and the production area.

STORED UNITS

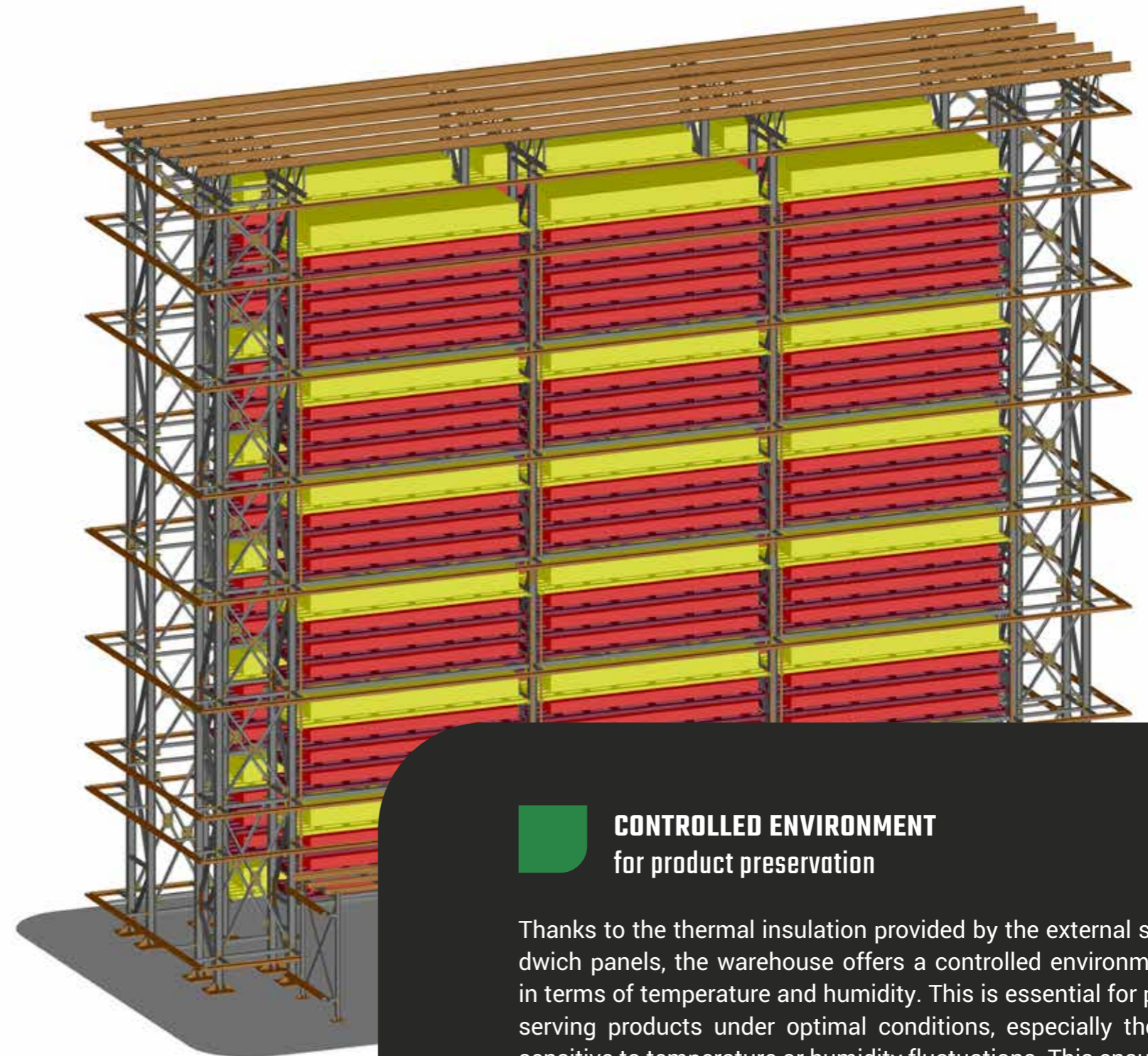
Stored Product	Attrezzi di formatura	
Stored Quantity	N°	160
Maximum Dimensions	mm	5.000 x 1.500 x h = 500
Maximum Load Capacity	kg	1.200

AUTOMATIC WAREHOUSE

External dimensions and footprint	mm	22.000x7.000x20.000 (H)
Total usable storage volume	mc	378
Storage temperature	°C	18 ÷ 28

HANDLING SYSTEM

Number of elevators	N°	1
Maximum elevator capacity	kg	2.000
Maximum longitudinal speed (X)	m/min	24
Transversal handling speed of UDC (Y)	m/min	15
Maximum vertical axis speed (Z)	m/min	32
Maximum Shuttle Speed	m/min	24



CONTROLLED ENVIRONMENT for product preservation

Thanks to the thermal insulation provided by the external sandwich panels, the warehouse offers a controlled environment in terms of temperature and humidity. This is essential for preserving products under optimal conditions, especially those sensitive to temperature or humidity fluctuations. This ensures the quality and integrity of the products during their stay in the warehouse, guaranteeing the highest customer satisfaction.

FOR FOOD SECTOR PALLET STORAGE (COLD ROOM)

Efficiency for Standard UDC Management

MPS Engineering's solution for standard UDC (EuroPallet, in particular) management includes the use of stacker cranes equipped with bi-directional telescopic forks at single, double, and triple depths, ensuring space optimization and increased storage capacity.

Our warehouses are designed with standard racking systems, ensuring maximum robustness and safety for storing your products. These racks are ideal for accommodating loads on EuroPallets and enabling easy operator access during handling operations.

Our stacker cranes feature bi-directional telescopic forks that provide flexibility in handling pallets positioned at various depths, maximizing space utilization. This means you can optimize storage capacity without compromising operational efficiency.



STORED UNITS

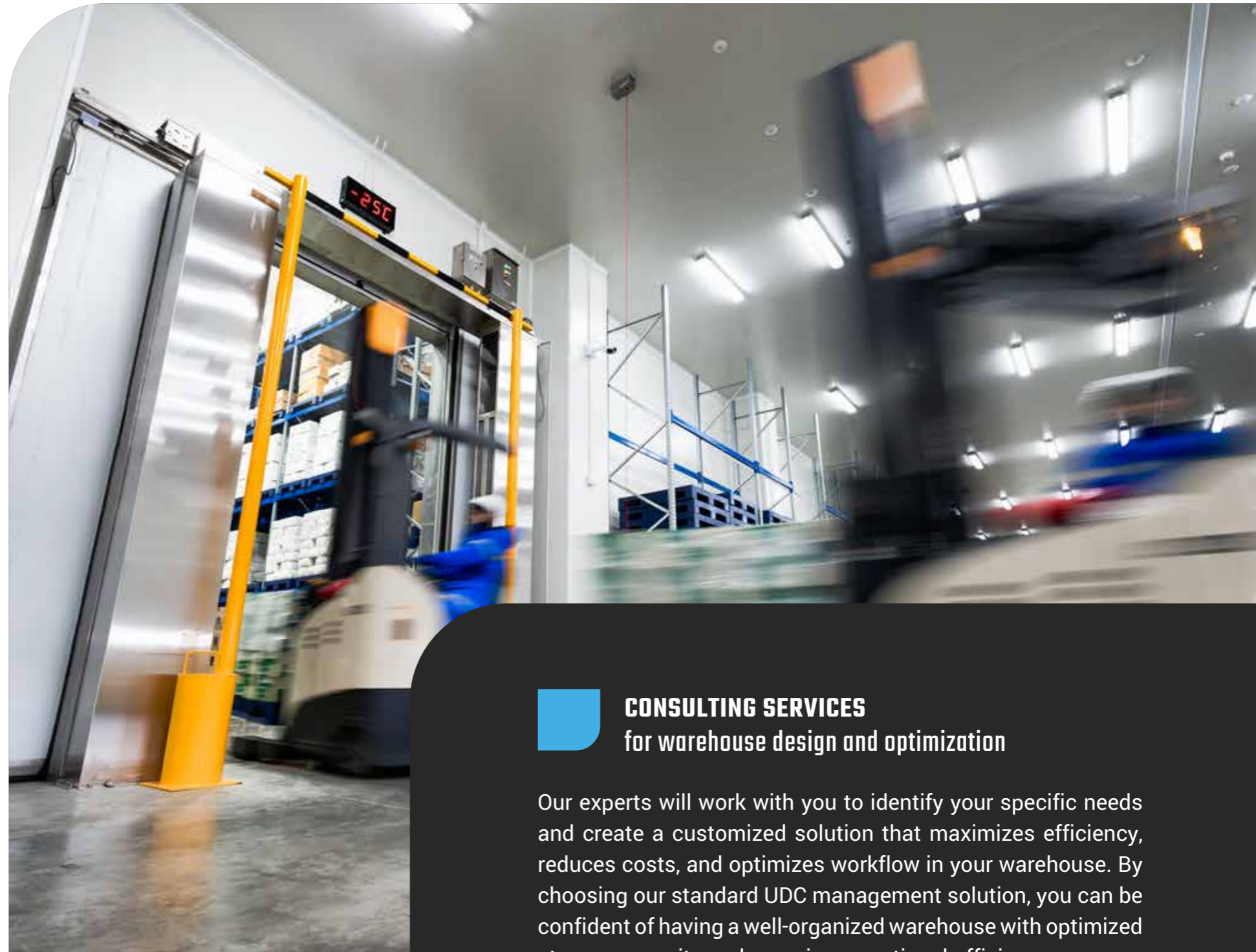
Stored Product		Pallet Prodotti Alimentari
Stored Quantity	N°	280
Maximum Dimensions	mm	1.200 x 800 x h = 1.800
Maximum Load Capacity	kg	1.000

AUTOMATIC WAREHOUSE

External dimensions and footprint	mm	40.000x10.000x5.000 (H)
Total usable storage volume	mc	485
Storage temperature	°C	-25

HANDLING SYSTEM

Number of elevators	N°	2
Maximum elevator capacity	kg	1.200
Maximum longitudinal speed (X)	m/min	24
Transversal handling speed of UDC (Y)	m/min	15
Maximum vertical axis speed (Z)	m/min	20
Maximum Shuttle Speed	m/min	24



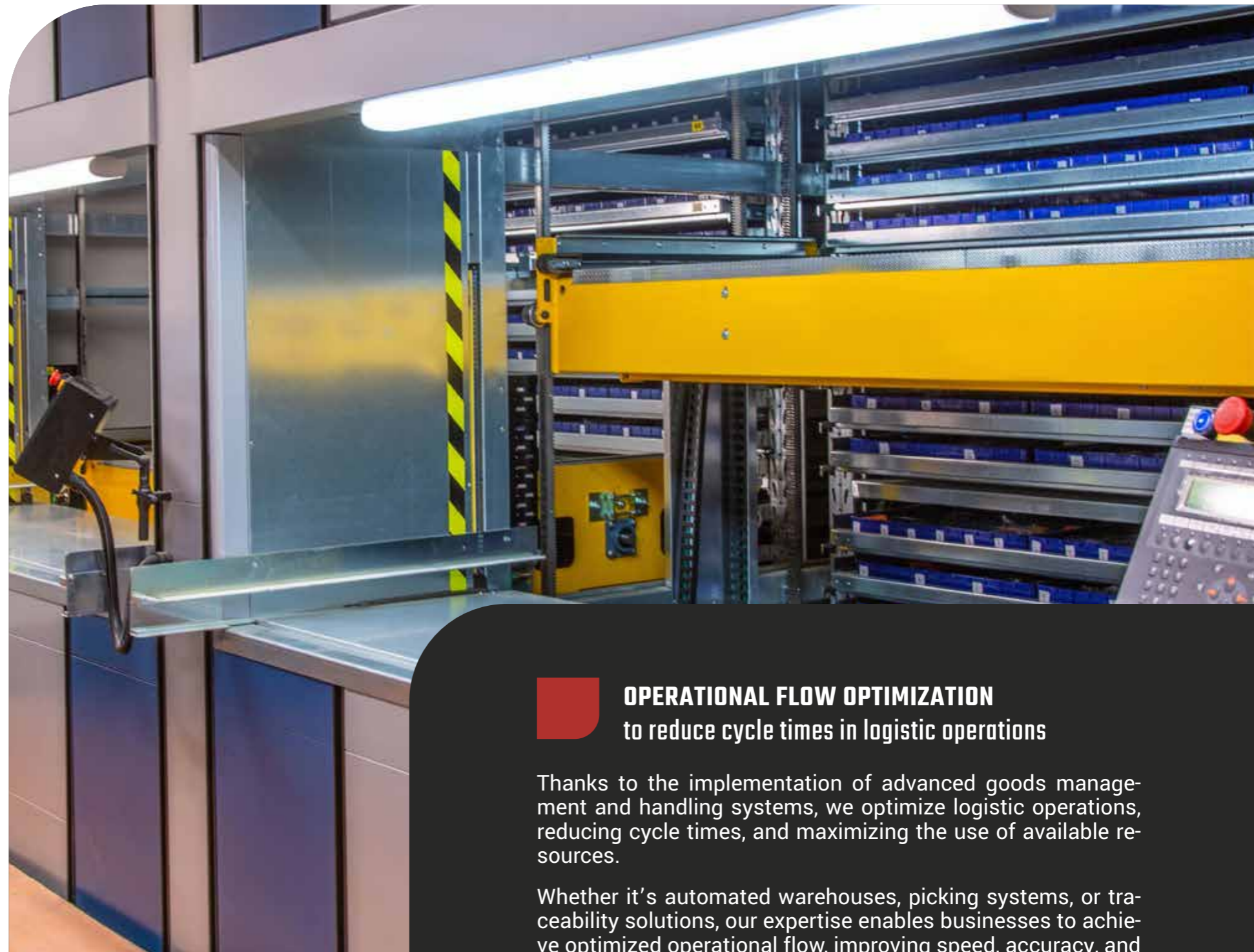
CONSULTING SERVICES for warehouse design and optimization

Our experts will work with you to identify your specific needs and create a customized solution that maximizes efficiency, reduces costs, and optimizes workflow in your warehouse. By choosing our standard UDC management solution, you can be confident of having a well-organized warehouse with optimized storage capacity and superior operational efficiency.

Advanced Solution for Small Parts and Components Storage

Indoor Vertical Warehouses represent an advanced and innovative solution to replace traditional storage shelving used for small parts and components. These warehouses allow you to optimize space by focusing primarily on height, and to streamline processes, making material search and retrieval faster and more accurate.

One of the main advantages of these warehouses is the direct delivery of materials to the loading/unloading bay. This enables quick identification of the necessary items, even when multiple items are on the same shelf, thanks to the use of a laser pointer. This helps reduce errors and ensures accurate inventory management by establishing a direct connection with the company's ERP system. By leveraging indoor vertical warehouses, businesses can optimize their operational flow, improve production efficiency, and reduce material search and retrieval times. This solution maximizes available space, reduces the footprint of traditional shelving, and enhances overall warehouse management.



OPERATIONAL FLOW OPTIMIZATION to reduce cycle times in logistic operations

Thanks to the implementation of advanced goods management and handling systems, we optimize logistic operations, reducing cycle times, and maximizing the use of available resources.

Whether it's automated warehouses, picking systems, or traceability solutions, our expertise enables businesses to achieve optimized operational flow, improving speed, accuracy, and overall efficiency in their activities.

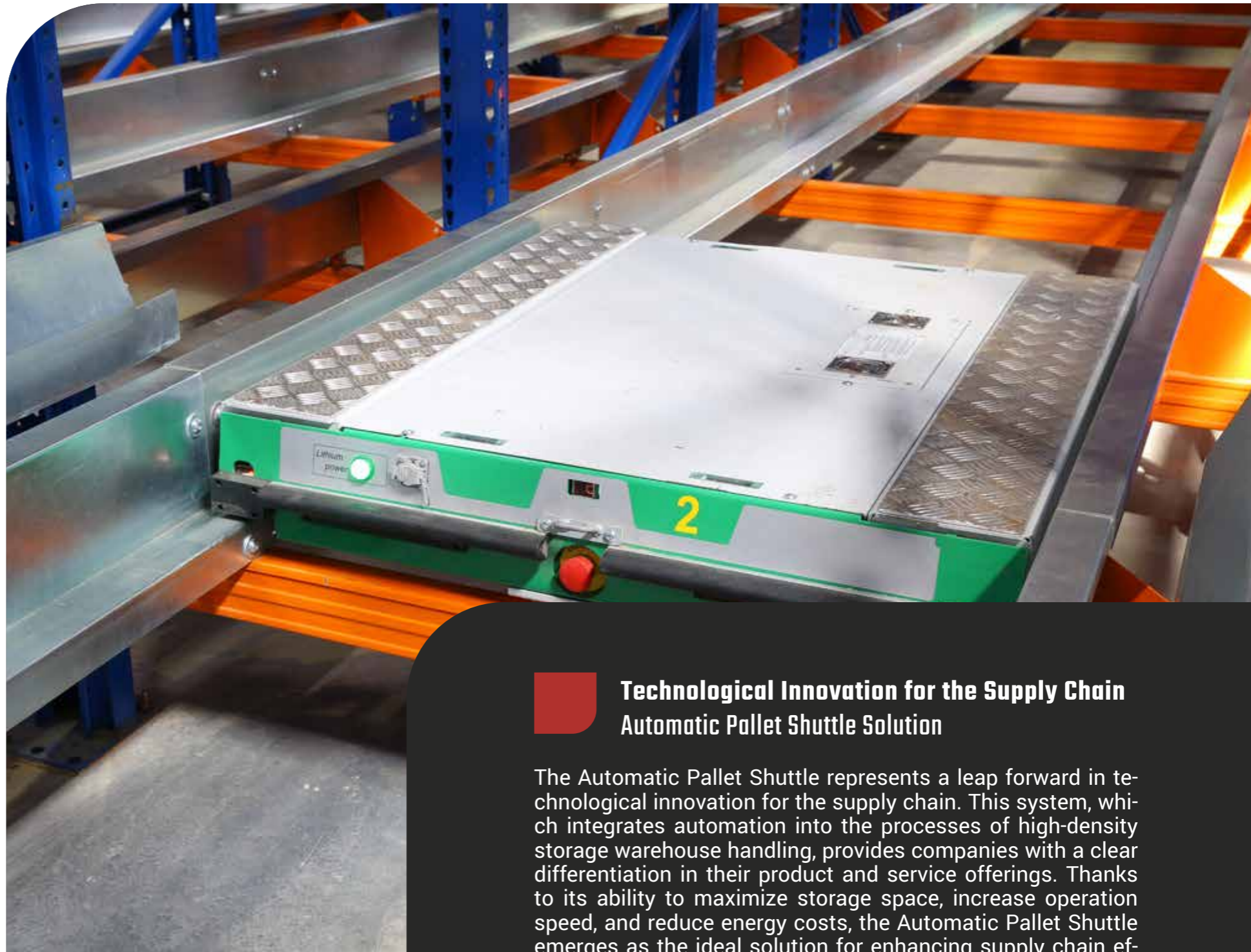
The automatic Pallet Shuttle system represents an effective integration of automated systems into high-density storage warehouse processes.

This solution offers companies the opportunity to differentiate their product and service offerings by reducing costs and optimizing supply chain performance. In this solution, traditional forklifts are replaced by stacker cranes or shuttles that transport the Pallet Shuttle and the load on a pallet. The Pallet Shuttle is then inserted into the storage channels and placed in the deepest bay, following the instructions of the warehouse management software.

The automatic Pallet Shuttle combines the efficiency of high-density storage systems with automation, allowing for optimal space utilization and reduced operating times.

ADVANTAGES

- Space optimization in high-density storage systems, with channels up to 40 meters deep and shelving over 40 meters high.
- Fast movement of the Pallet Shuttle to reduce goods entry and dispatch times.
- High number of cycles per hour compared to other storage systems.
- “Goods-to-man” concept that automatically moves the load to the picking station.
- Pallet Shuttle supercapacitors recharge automatically during transport, ensuring continuous readiness.
- Reduction in handling, warehouse, personnel, and energy costs.
- Adaptability to various plant configurations based on specific needs.
- High safety standards for operators, loads, and installations.



Technological Innovation for the Supply Chain Automatic Pallet Shuttle Solution

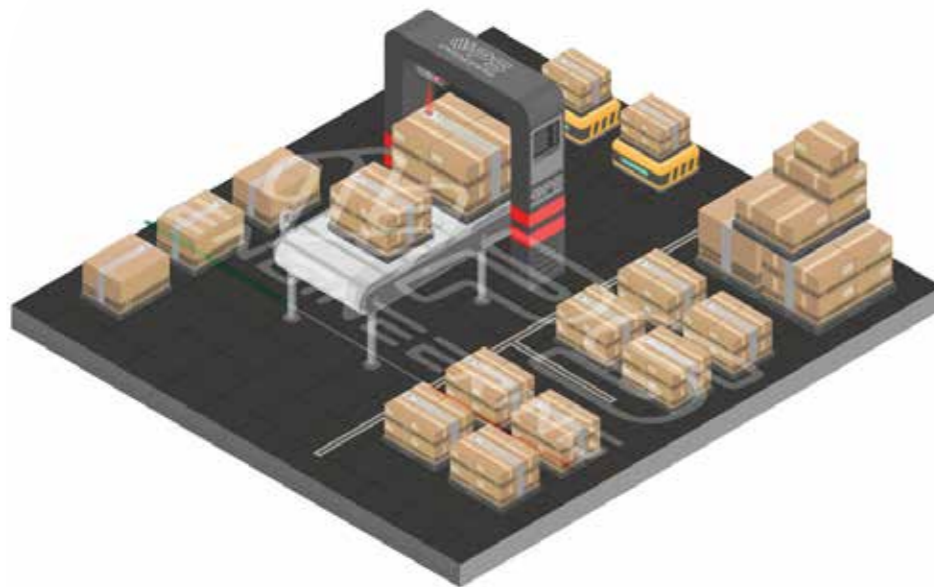
The Automatic Pallet Shuttle represents a leap forward in technological innovation for the supply chain. This system, which integrates automation into the processes of high-density storage warehouse handling, provides companies with a clear differentiation in their product and service offerings. Thanks to its ability to maximize storage space, increase operation speed, and reduce energy costs, the Automatic Pallet Shuttle emerges as the ideal solution for enhancing supply chain efficiency.

Customized UDC |

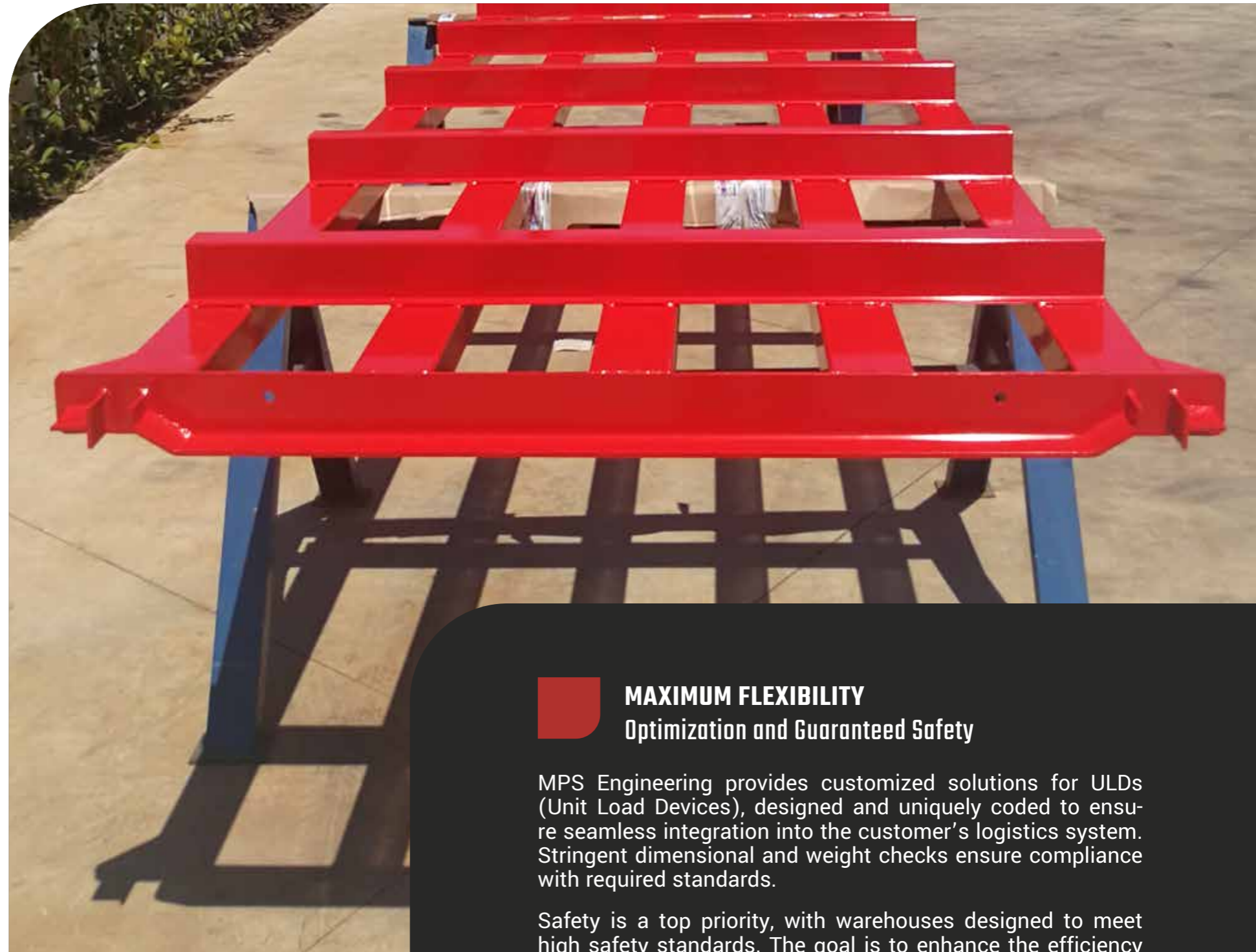
BESPOKE LOGISTICS CUSTOMIZED SOLUTIONS FOR OPERATIONAL EFFICIENCY

MPS Engineering, using the most advanced software, develops not only standard components but also offers customized UDC (Unit of Load) solutions to meet specific customer needs. Each customized UDC is uniquely designed and coded, ensuring immediate identification and seamless integration with the customer's logistics system. Before loading into the warehouse, rigorous dimensional and weight checks are carried out on the customized items, ensuring compliance with the specified requirements. Additionally, automatic or manual barcode reading systems can be integrated for precise verification of customized items.

Safety is a top priority even in the customized UDCs provided by MPS Engineering. Warehouses are designed to meet the highest safety standards, ensuring a safe working environment for operators and the protection of stored customized items. Thanks to MPS Engineering's expertise and experience in designing and manufacturing customized UDCs, customers can rely on solutions tailored to their specific logistical needs. The main goal is to provide high-quality components that enhance the efficiency and reliability of handling and storage operations in the customer's warehouse.



RECOGNITION OF ITEMS ON UDC



MAXIMUM FLEXIBILITY Optimization and Guaranteed Safety

MPS Engineering provides customized solutions for ULDs (Unit Load Devices), designed and uniquely coded to ensure seamless integration into the customer's logistics system. Stringent dimensional and weight checks ensure compliance with required standards.

Safety is a top priority, with warehouses designed to meet high safety standards. The goal is to enhance the efficiency and reliability of handling and storage operations.



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