UNITED CAPS | CLOSE TO YOU

Case study: UNITED CAPS
A high-density automated warehouse with Pallet Shuttle
for UNITED CAPS

Location: Luxembourg

The company, specialised in the development and manufacture of caps and closures, has built a four level high automated warehouse at its production plant in Wiltz (Luxembourg). The facility, with a capacity to store over 5,500 pallets, is served by two stacker cranes that each operate a Pallet Shuttle. Also integrated within the new set up is the Easy WMS warehouse management system by Mecalux, in charge of controlling all the centre's operations.

About UNITED CAPS

UNITED CAPS is a leader in the design and production of plastic caps and closures. Based in Luxembourg, this family business offers innovative solutions worldwide and has production facilities in France, Belgium, Germany, Hungary, Ireland, Luxembourg, and Spain.

The company, which achieved a turnover of 122 million euros in 2015 and employs more than 530 workers, has a product portfolio with more than 600 different caps and closures.

The solution: the automatic Pallet Shuttle

Given its relentless growth, UNITED CAPS needed a warehouse that would grant them the highest possible storage capacity without losing accessibility to the different SKUs and, at the same time, would allow a maximum, speedy flow of goods.

To do so, Mecalux designed and installed a high-density warehouse with the automatic Pallet Shuttle system with stacker cranes, as well as the implementation of management software.

Two stacker cranes are responsible for moving the load between the entrances/exits of the warehouse and the channels of the racks, offering agility and strict control of the goods, within this fully automated installation.

A transfer car is set up at the front of the warehouse, which is used to connect the conveyor circuit with the stacker cranes. When the operator deposits a pallet in one of the input stations of the conveyor circuit, the Easy Mecalux WMS reads the SKU it contains and takes on its internal control and management.

Parts of the UNITED CAPS warehouse:

A. A high-density system with an automatic Pallet Shuttle.
B. Stacker cranes.
C. Transfer car.
D. Input conveyors.
E. Output conveyors.
F. Area with full pallet stacker and empty pallet stacker.
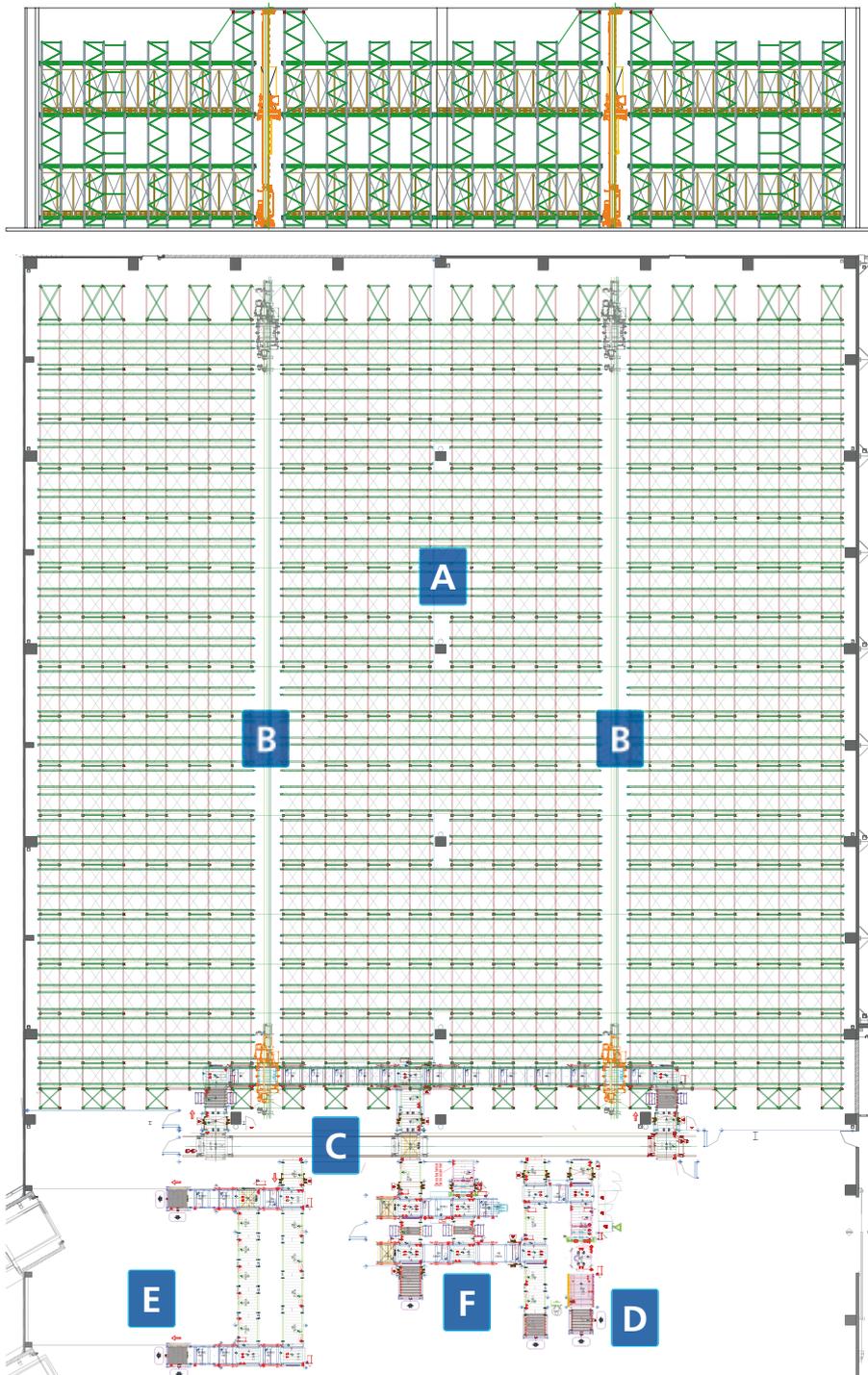
The automatic Pallet Shuttle: how it operates

The Pallet Shuttle is housed in the cradle of the stacker crane in a position slightly below the pallet support level; this level consists of two motorised chains that pick up or leave pallets in the input or output stations.

Once the stacker crane has placed itself in front of the assigned location, the shuttle is raised with the pallet on it and inserted into the channel to transport the pallet to the free position furthest from the aisle and place it on the rails.

Each shuttle has eight wheels that provide the correct weight distribution of the pallet on the profiles and, at the same time, help the stacker crane to transfer items gently into the channels. The rails have centring elements on the side facing the aisle to facilitate the transfer of the shuttle.

Charging of the Pallet Shuttle's battery is done in the very cradle of stacker crane, directly and automatically. Supercapacitors are used for energy storage, and capable of charging in a matter of seconds.

The high-density system optimises the storage capacity of the racks, while the Pallet Shuttle's automation minimises manoeuvres of the operators and reduces possible errors
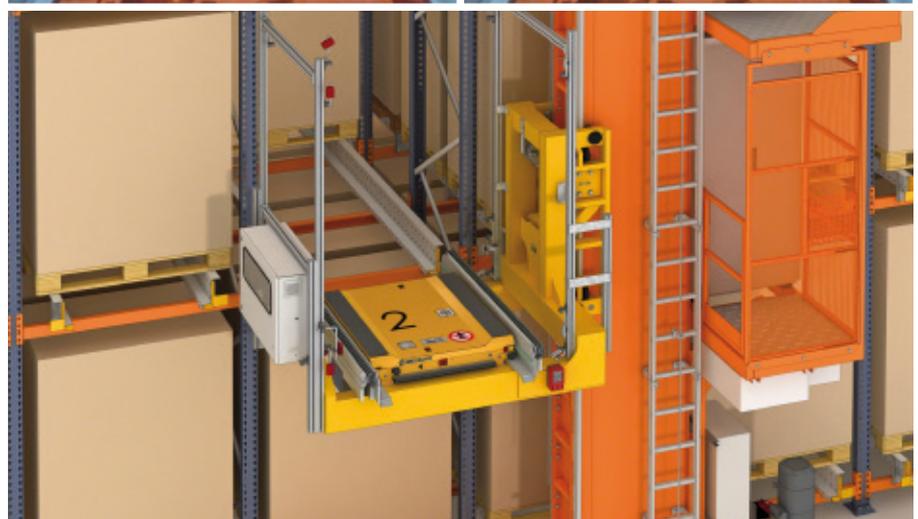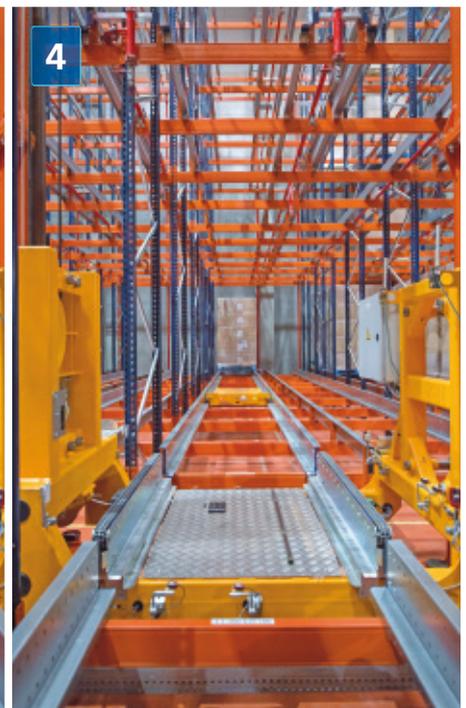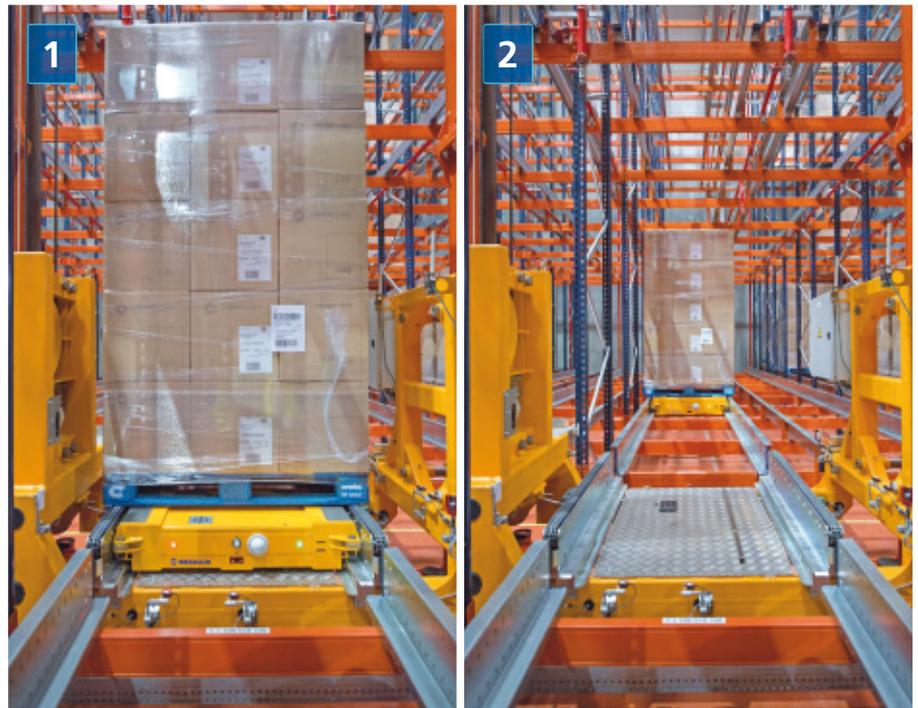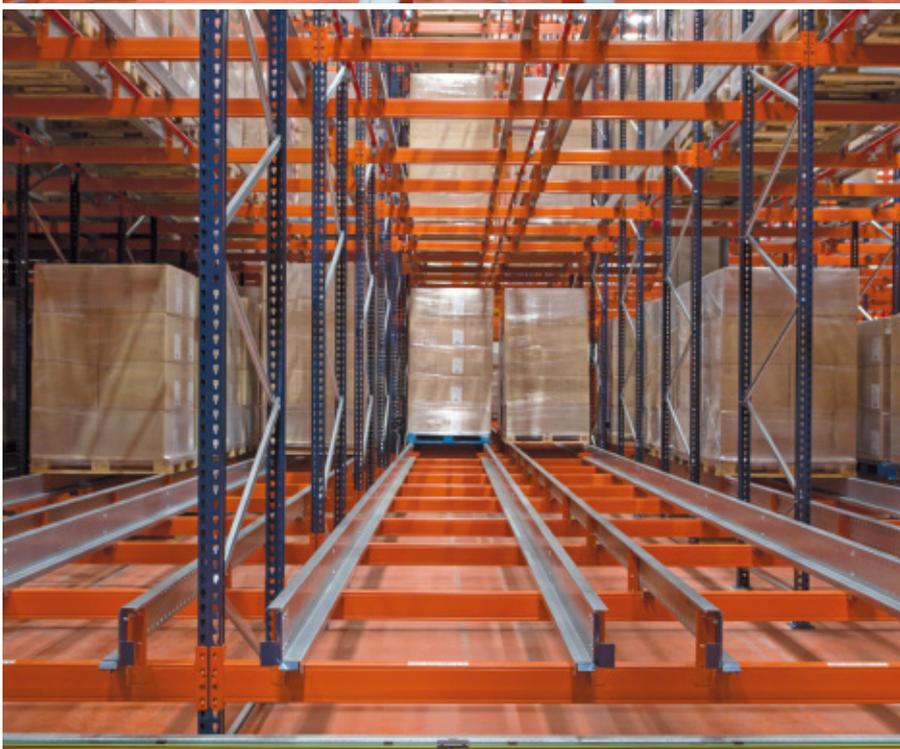
Inside the warehouse: features

The 12.9 m high and 48.9 m wide warehouse consists of only two 48.7 m long storage aisles and 15 racking units to store two types of pallet: 1,000 x 1,200 x 2,550 mm and 800 x 1,200 x 2,550 mm with a maximum weight of 350 kg each.

The racks,
with four load levels
each 3 m high
and 10 to 13 pallets
deep per channel,
offer a total capacity
of over 5,500 pallets

A twin-mast stacker crane circulates in each aisle that carries a Pallet Shuttle in its cradle and is capable of moving at a travel speed of 120 m/min and a lift speed of 38 m/min.
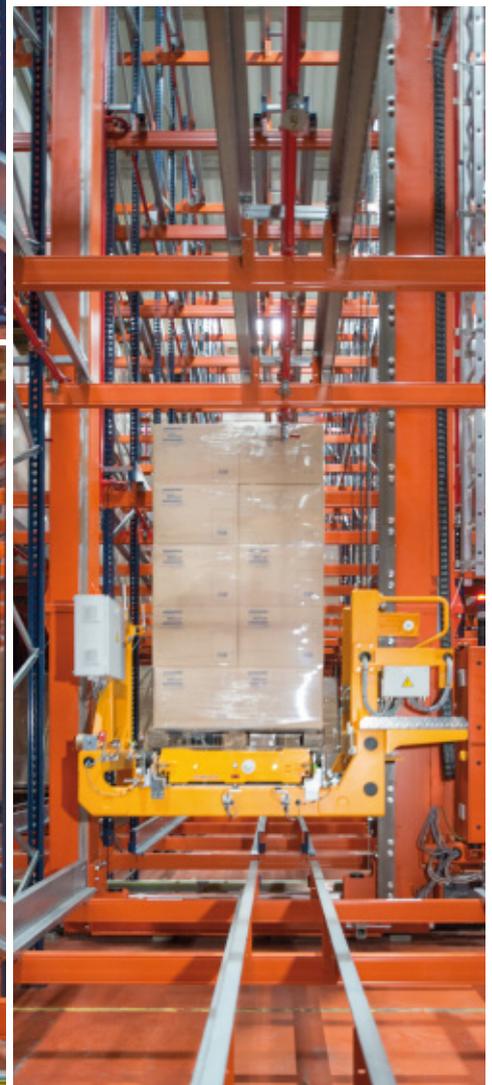
Front of the warehouse: conveyor circuit and transfer car

In this area, the inputs and outputs of palletised goods are produced automatically via a conveyor circuit that directs the pallets from its origin to its destination. Thereby, the load units move swiftly, without any human intervention and reducing any logistics errors.

The operator only must place the palletised goods in the entry of the circuit or remove them at the exit with the help of a counterbalanced forklift.

The goods input area has a checkpoint whose role is to check that the dimensions, weight and status of the pallets meet the specifications of the installation.

The goods that do not pass inspection go to the rejects conveyor, which is placed exactly in parallel, for refurbishment.

A transfer car links the racking area with the conveyors for incoming and outgoing palletised goods

The conveyor circuit also incorporates a full pallet stacker, which can lift the pallets to place them on slave pallets, and a station where empty pallets are stacked and unstacked.

The conveyors for direct outputs, located in the area closest to the loading docks, include a closed sequencing circuit that places outgoing goods according to the required sequence.


Software: Easy WMS and Galileo

The UNITED CAPS warehouse is controlled by the Mecalux Easy WMS warehouse management system, responsible for organising and coordinating the various operations that take place within the facility, from entries into the warehouse until the final dispatches.

Easy WMS controls the input and output processes, locations based on algorithms or parametrisable rules, the stock, the storage processes, the management of batch-es and all operations in the management of the warehouse.

In addition, the Mecalux Easy WMS warehouse management system is connected directly and at all times with Axapta (Microsoft Dynamics AX), the ERP application that the customer uses, exchanging information permanently and bidirectionally. Galileo is the control software of Mecalux. It is responsible for the logical execution of the movements of each machine, to carry goods from one point to another in the warehouse.

Advantages for UNITED CAPS

- **Expanded storage capacity:** the UNITED CAPS warehouse can accommodate 5,507 pallets in a surface area of approximately 2,380 m².

- **Maximum throughput:** the installation is fully automated with a conveyor circuit, a transfer car and the Pallet Shuttle system with stacker cranes.

- **Profitable management:** thanks to the Mecalux Easy WMS warehouse management system, UNITED CAPS can efficiently manage all movements, processes and operations taking place in its warehouse.

Technical data

Storage capacity	5,507 pallet		No. of stacker cranes	2
Max. pallet weight	350 kg		Type of stacker crane	twin-mast
Warehouse height	12.9 m		No. of Pallet Shuttles	2
Racking length	48.7 m			

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