



Case study: Diager

An efficient automated miniload warehouse for Diager

Location: France



Diager, a company specialising in the manufacture and design of cutting tools, chose Mecalux to automate its warehouse in order to streamline picking functions and expand storage capacity. The solution consists of a combination of different systems, among which a 7,200 box capacity automated miniload warehouse that integrates a conveyor circuit for picking. In the project's provision, the Easy WMS warehouse management system by Mecalux was included, that is responsible for constantly monitoring the processes that are carried out in the warehouse.

**At first glance:
parts of the warehouse**

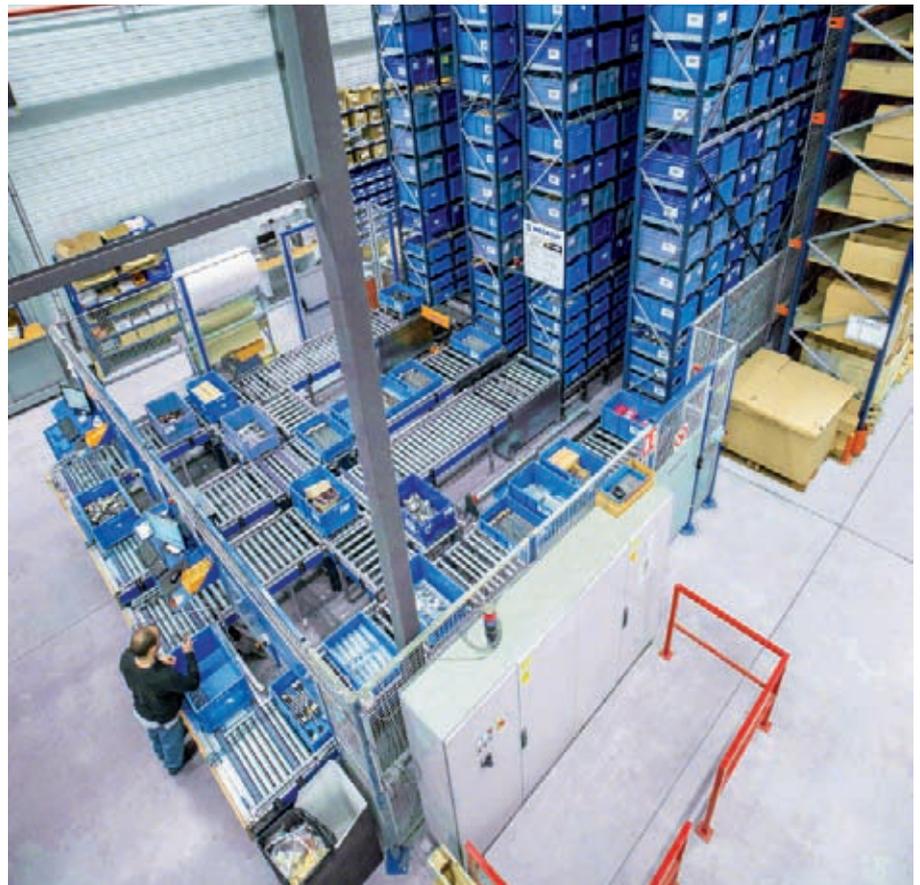
With more than 60 years of experience, Diager has become a pioneer in the manufacture and design of cutting tools. Nowadays, the company exports its products to more than 80 countries, which is an annual production of 20 million tools.

In order to store and export this high volume of merchandise, the company required a warehouse to accommodate many smaller SKUs and that, in turn, would expedite picking operations.

Both Diager and Mecalux knew from the beginning that the efficiency of the new warehouse meant the automation of vital processes.

After analysing Diager's needs in detail, Mecalux decided on a warehouse that brought together different storage solutions. On the layout below it shows:

1. Automated miniload warehouse
2. Pre-assigned dispatches
3. Conventional warehouse with picking on the lower levels
4. Clasimat vertical warehouse
5. Consolidation and packaging area
6. Prepared orders
7. Racks for consumables

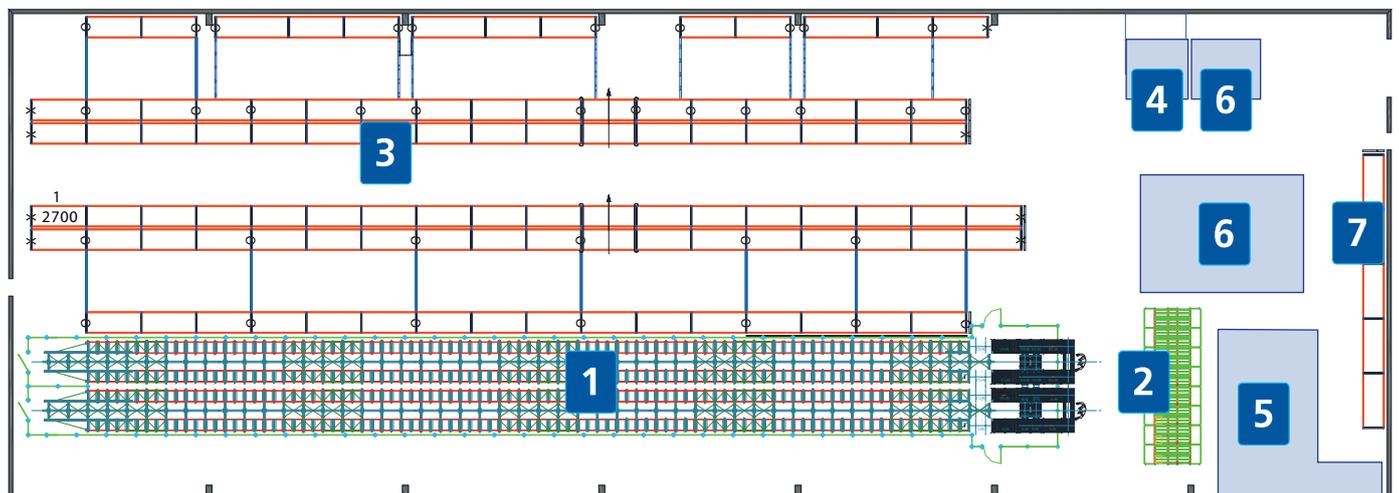


Diager's current central warehouse is the result of a thorough study by Mecalux technicians. These experts knew what the most suitable storage solutions were to meet the company's requirements

The miniload is an automated storage system for boxes that integrates the racks, the stacker crane, conveyors and the warehouse management system rolled into one. The solution that is implemented in the Diager warehouse is ideal for storing and performing picking according to the "product-to-person" principle.

In this case, the miniload warehouse consists of two inner aisles, with the possibility of installing a third aisle in a space reserved for future enlargement.

At one end, a picking area was set up that connects with the racks of the miniload thanks to a conveyor circuit.



The image on the right shows the area devoted to pre-assigned dispatches. These four level live racks serve to deposit the orders once picking has been performed. In order to facilitate the operator's task and for the purposes of knowing at all times where to leave each order, the racking has the put-to-light system (a light device that indicates the position where you must place the product removed from the original box).

In parallel to the miniload, they built a conventional warehouse with 8.5 m high pallet racks and an initial capacity of more than 1,800 pallets. On the lower levels, the racks house bulkier and higher turnover products, so that the operator can perform picking directly from the pallet, or from levels with shelves. Reserve product is stored in upper spaces.



Next to pre-assigned dispatches is the area for consolidation, packaging, labelling and issuing of the documentation required for dispatch.

The Diager logistics centre also has an automated Clasimat vertical warehouse set aside for small and more valuable products.

The Clasimat is a compact storage "product-to-person" system that exploits all the available height in a small space, thereby increasing storage capacity.



Automated miniload warehouse

It consists of two long aisles of over 50 m that have single-depth racks installed on both sides to store 7,200 boxes, on 20 different levels. Fifteen of these levels house 5,400 boxes, which are 400 x 600 x 320 mm in size. The five remaining levels are used to store 1,800 boxes that are 400 x 600 x 170 mm in size.

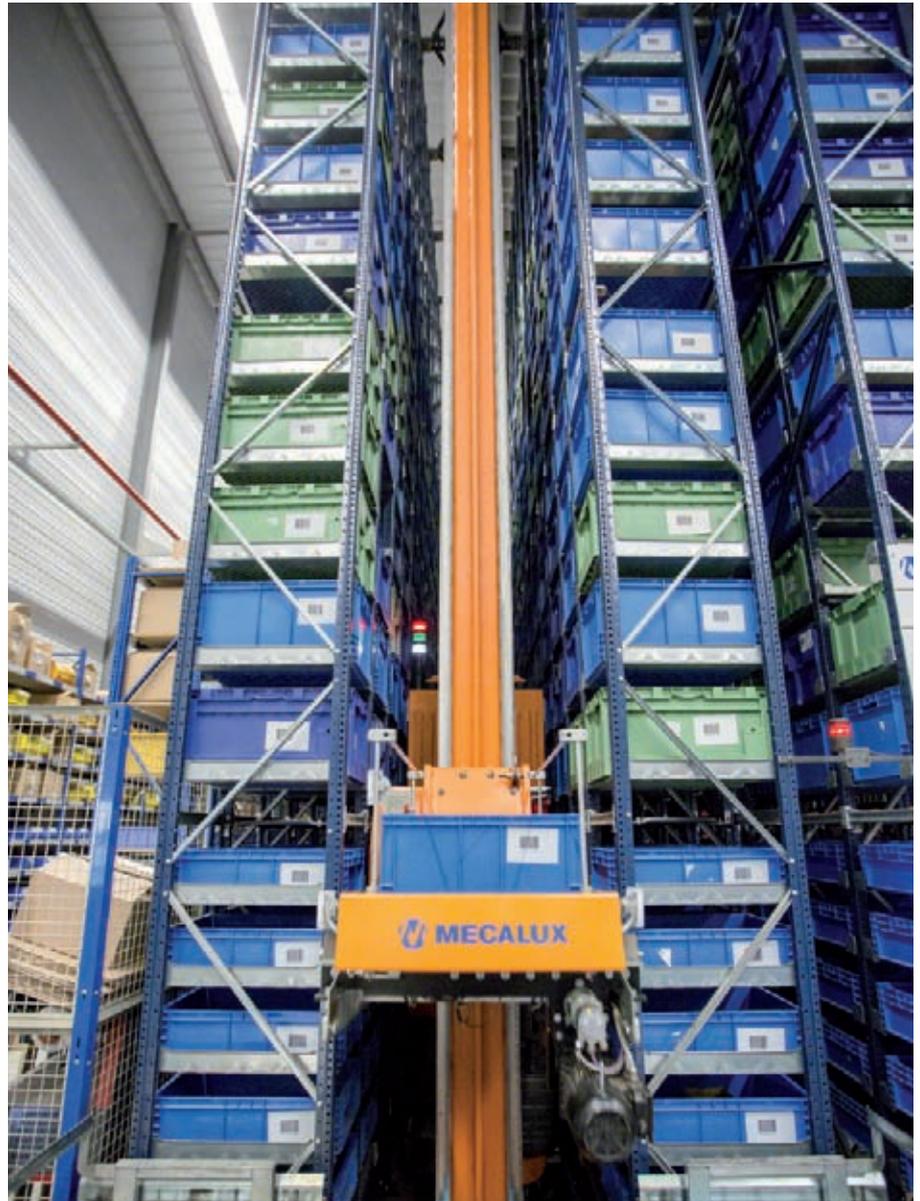
In each aisle, an almost 9 m high miniload stacker crane circulates. It is equipped with a cradle that incorporates two extraction systems with forks, able to handle two 50 kg boxes at a time.

Everything is directed by the Mecalux Easy WMS warehouse management system, which is tasked with making decisions about all operations linked to the warehouse.

Picking processes

The picking area is located at the front of the miniload warehouse racks. It consists of conveyors that streamline warehouse inputs and outputs, while facilitating the connection between the workstations and the stacker cranes.

The conveyors then take the boxes to the picking station where the operator removes the product and deposits it in the pre-assigned dispatche position located



just behind them. Live pallet racks with four load levels form this area.

To facilitate the location of the products, the put-to-light system was incorporated into the area designated for pre-assigned dispatches. This system is ideal for the preparation of orders by waves, because it visually guides the operator to containers where they must leave the items that make up each order.

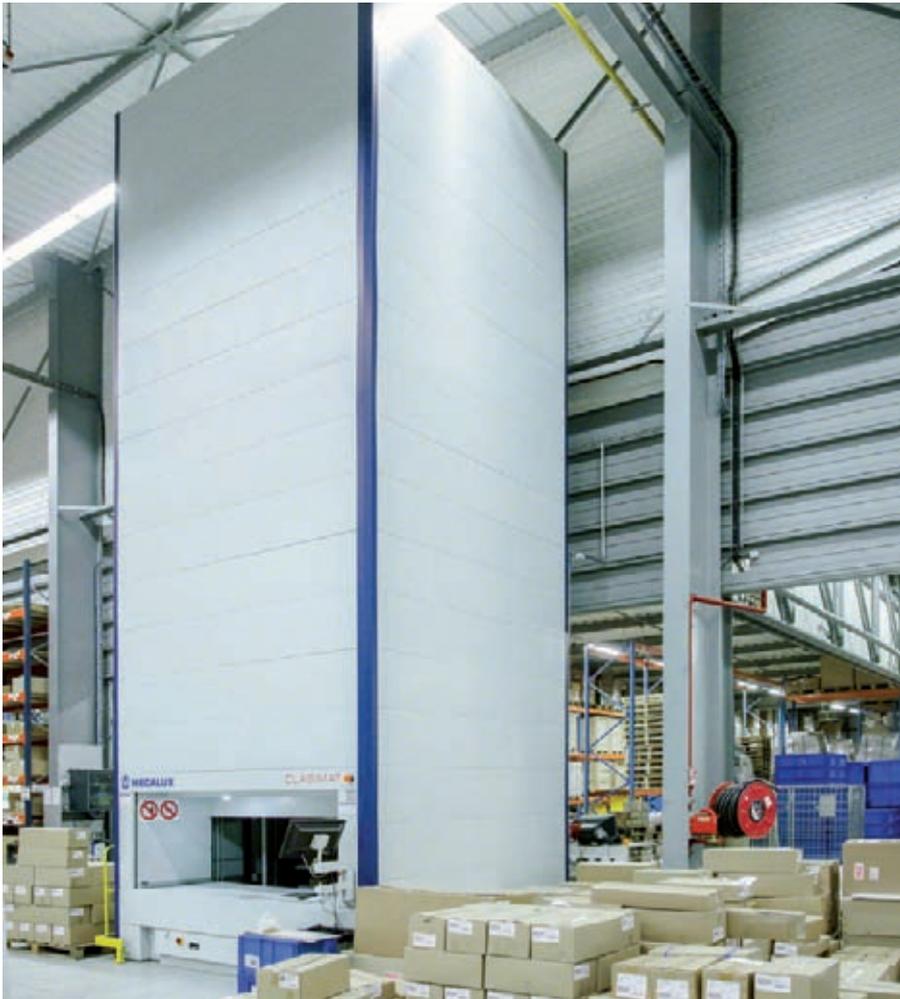


The picking area is readied for two operators to work independently, and in waves of up to 54 orders per operator

Replenishment

Product replenishment is carried out at the same stations that perform picking functions.

To make sure the task of refilling stock does not affect or hamper order preparation, they take advantage of the so-called “off-peak hours”, in other words, the hours where there is normally less prep work done.



Clasimat

A 9 m high Clasimat warehouse stores smaller and more expensive products in its interior. It has a total of forty, 2.4 m long, 80 cm deep trays.

Each tray is able to handle up to 500 kg of weight.

The Clasimat runs in a very simple manner; it can be used by following two different procedures:

- Selecting the desired product on the screen.
- Executing pre-programmed multi-command orders, i.e. all necessary extractions are entered into the system at once in order to minimise the time and work of the operator.

This type of solution is perfect to save space by exploiting the height of the warehouse and by reducing order preparation times





Consolidation and packaging/ prepared orders area

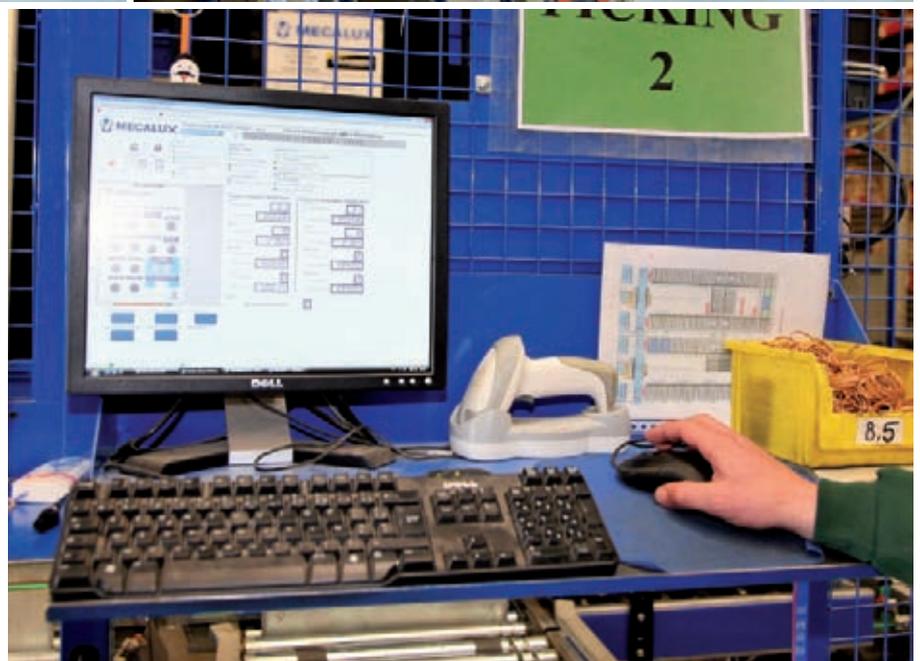
The area enabled for order consolidation is located next to pre-assigned dispatches. That is where the consolidation of orders is finished off and where packaging, labelling and the issuing of documentation required for dispatch is carried out.

The WMS is directly connected at all times with the customer's ERP, from which it receives background information and which reports on outputs

Easy WMS and Galileo

This software solutions package includes two essential tools: the management system (responsible for the operation of the installation) and the control system (responsible for machine governance).

On the one hand, the Mecalux Easy WMS warehouse management system controls



all the operations performed inside the warehouse and intervenes from the moment it receives the goods to when the order has been dispatched.

On the other hand, the main function of the control system (Galileo) is to govern the equipment that run the tasks of transporting and storing the goods.

Galileo follows the instructions received from the management system. At the same time, Easy WMS also acts as a guide within the various intermediate phases (storage, stock control, location management, order preparation, consolidation, issuing labels, and documentation prior to dispatch, etc.), eliminating manual errors.



Advantages for Diager

- **Boosted storage capacity:** the Diager warehouse is capable of storing 7,200 boxes, more than 1,800 pallets and 40 trays of small sized products.
- **Swifter preparation of orders:** the miniload warehouse and the picking circuit allow movements during order preparation to be as effective as possible.
- **Effectual management:** thanks to the Easy WMS by Mecalux and to the Galileo control system, Diager can manage all movements, processes and operations that occur within its warehouse.



Technical data

Miniload warehouse

Storage capacity	7,200 boxes
Maximum weight per box	50 kg
No. of stacker cranes	2
Extraction system	Single-depth double extractor
Warehouse height	9 m
Storage levels	20
Picking stations	2

Conventional warehouse

Storage capacity	1,800 pallets
Maximum pallet weight	800 kg
Warehouse height	8.5 m

Clasimat warehouse

Total capacity	40 trays
Tray length	2.4 m
Maximum weight per tray	500 kg
Warehouse height	9 m