

SCHAEFFLER

Case study: Schaeffler
Automated buffer connected to production

Country: Spain

Schaeffler Iberia modernizes its plant in Spain's Basque Country and optimizes space with a miniload system for boxes and the Easy WMS warehouse management system.



THE CHALLENGE

- » Optimize space with an automated storage system.
- » Connect the warehouse with the production lines.
- » Implement a management system to control all operations.

THE SOLUTIONS

- » Automated storage and retrieval system (AS/RS) for boxes installed on a mezzanine.
- » Automatic conveyors and lifts to connect the warehouse with the production lines.
- » Easy WMS software from Mecalux.

THE BENEFITS

- » Optimized space: storage of 5,184 boxes in approximately 2,476 ft².
- » Continuous flows: automatic movement of 1,080 boxes a day from the production lines.

Schaeffler is a leading global supplier in the industrial and automotive sectors. Known internationally for providing high quality solutions, the company is constantly transforming and growing.

It arrived in the Iberian Peninsula in 1960, proposing innovative solutions adapted to its customers. Schaeffler Iberia consists of three divisions: Automotive (Guipúzcoa), Industry (Barcelona), and Automotive Aftermarket (Madrid).

- » No. of facilities: **200**, between manufacturing and R&D centers, warehouses, and sales offices
- » International presence: over **50** countries
- » Current sales: **\$15.5** billion in 2020

In the town of Elgóibar (Basque Country), Schaeffler has a production plant with a surface area of 223,631 ft² (counting the first and second floors). There, it manu-

factures components for motors, specifically, needle roller bearings. This center is extremely modern, not only for achieving zero carbon emissions — underlining Schaeffler’s commitment to the environment — but also because it incorporates the latest technologies in all its processes.

The pace of work in the production plant is extremely intense; it operates 24 hours a day to supply other Schaeffler Group plants around the world, in addition to hundreds of workshops and automotive businesses in Spain and Portugal. Every day, the company distributes 130 million LuK, INA, and FAG brand spare parts. To do this, all processes must be coordinated and integrated with each other, including logistics.

The company has expanded its production center to cope with the increase in sales seen in recent years. With this project, Schaeffler set out to automate all possible processes with two clearly defined goals: Its Logistics Manager explains: “Our objective was to ramp up our efficiency and minimize potential errors. We also wanted to make the most of the available surface area, gaining space to add more production lines at any given time.”

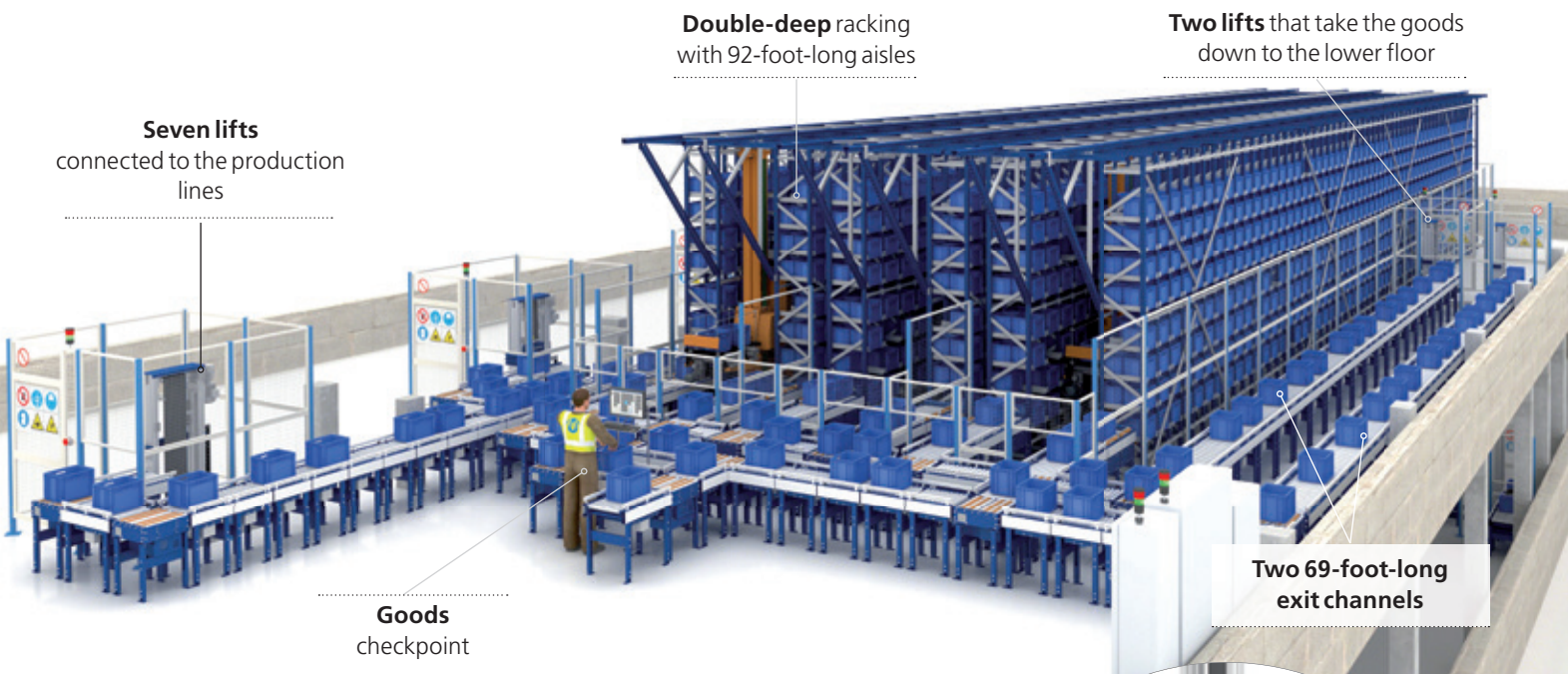
Mecalux has installed an AS/RS for boxes for Schaeffler to manage its needle roller bearings. The miniloader system, connected to the production lines and to the dispatch area to facilitate the automatic flow of goods, acts as a temporary storage buffer. Every day, the warehouse receives 1,080 boxes containing finished products directly from the production lines. The boxes are then shipped when the time is right.

To achieve perfect synchronization between production and the storage and distribution area, Mecalux deployed its Easy WMS warehouse management system, integrating it with Schaeffler Iberia’s SAP ERP (enterprise resource planning) system. The WMS from Mecalux is SAP-certified, meaning that the two systems are coordinated and communicate seamlessly to transfer data and information, thus, managing the warehouse more effectively.

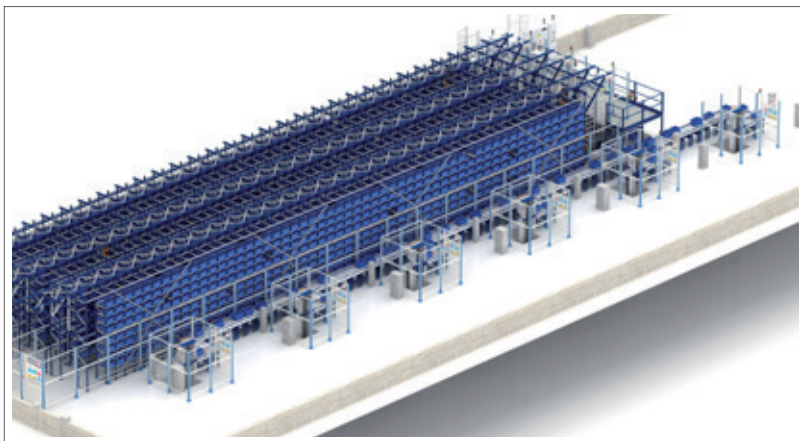
Personalized AS/RS

To leverage the production center’s height, Schaeffler Iberia built a mezzanine, allocating the upper level to the AS/RS (automated storage and retrieval system) for boxes and the lower to production line outputs and the dispatch area.





UPPER LEVEL (+14.7')



LOWER LEVEL (+0.0')

The AS/RS has storage capacity for 5,184 boxes containing 31,104 canisters of needle roller bearings in total

Both floors are well connected by means of lifts and conveyors for boxes.

“Mecalux’s technical team built the mini-load system for boxes on the top level taking into account a slab deformation analysis. The result is a completely safe AS/RS adapted to the particular characteristics of our warehouse,” says the Logistics Manager.

The AS/RS comprises three aisles with double-deep racking on each side. In this small space (the racks stand 13.1’ high by 92’ long), Schaeffler can store up to 490 different SKUs in 5,184 boxes measuring 15.6” x 11.7” with a maximum unit weight of 143.3 lb.

The entire structure of the warehouse — including the racks, the conveyors, and the stacker cranes — was specifically adapted to handle KLT boxes (Euro containers). This type of unit load is very common in automotive companies and is standard in all Schaeffler Group manufacturing plants. These boxes are more robust and have blocks on the bottom to ensure the stability of the load during movement.

A box can contain up to six canisters containing needle roller bearings of the same SKU. Each canister, suitable for easily grouping and handling the bearings, is identified by means of a barcode. In each aisle, a stacker crane automatically inserts and removes the boxes from their loca-

tions. The stacker cranes incorporate two double-deep extraction systems (capable of reaching the boxes in the first or second position of the racking).

Therefore, they can transport up to two boxes per movement. This meets one of the company’s goals: to prioritize throughput over capacity.

Automated and connected operations

Mecalux has installed seven lifts, one for each production line, to ensure the constant flow of goods to the warehouse. In addition to cutting costs, automation brings greater agility to goods movements and guarantees nonstop operations 24/7.



A total of nine lifts have been installed to link the center's two floors, separated by 14.7' in height. Seven of them connect the production lines to the AS/RS, while the other two bring the goods down to the lower floor, which houses the load preparation and dispatch areas.

Schaeffler Iberia sought to minimize errors and keep everything under control. To do so, Mecalux has installed an RFID reader portal on the main entry line to the AS/RS that checks the goods as they arrive from production. Once the boxes are on the upper level, they go through this reader portal, equipped with a double scanner that reads the barcodes of each of the canisters inside the boxes.

This working method makes for a highly accurate solution; that is, the WMS enters each product in the system after verifying that it corresponds to the commands previously sent by the ERP system for each box (SKU and quantity of canisters). Once the boxes have successfully gone through this process, they can be stored on the racks.

A checkpoint has also been set up so that operators can examine any potential issues (e.g., a label that has become detached and cannot be read well or a box containing canisters of different SKUs). Since Schaeffler manages such a wide and varied product portfolio, everything has been designed to ensure full traceability of all the goods.

On one side of the AS/RS, two 69' outgoing conveyors have been set up, serving as preload channels. Additionally, two lifts were installed to lower the goods to the two workstations on the bottom floor (load preparation and dispatch area). At one workstation, boxes are grouped on a pallet, while order picking is done at the other. The operators put the canisters that make up an order together on a pallet. Leftover canisters are once again stored in the miniload system. Every day, around 1,080 boxes are shipped.



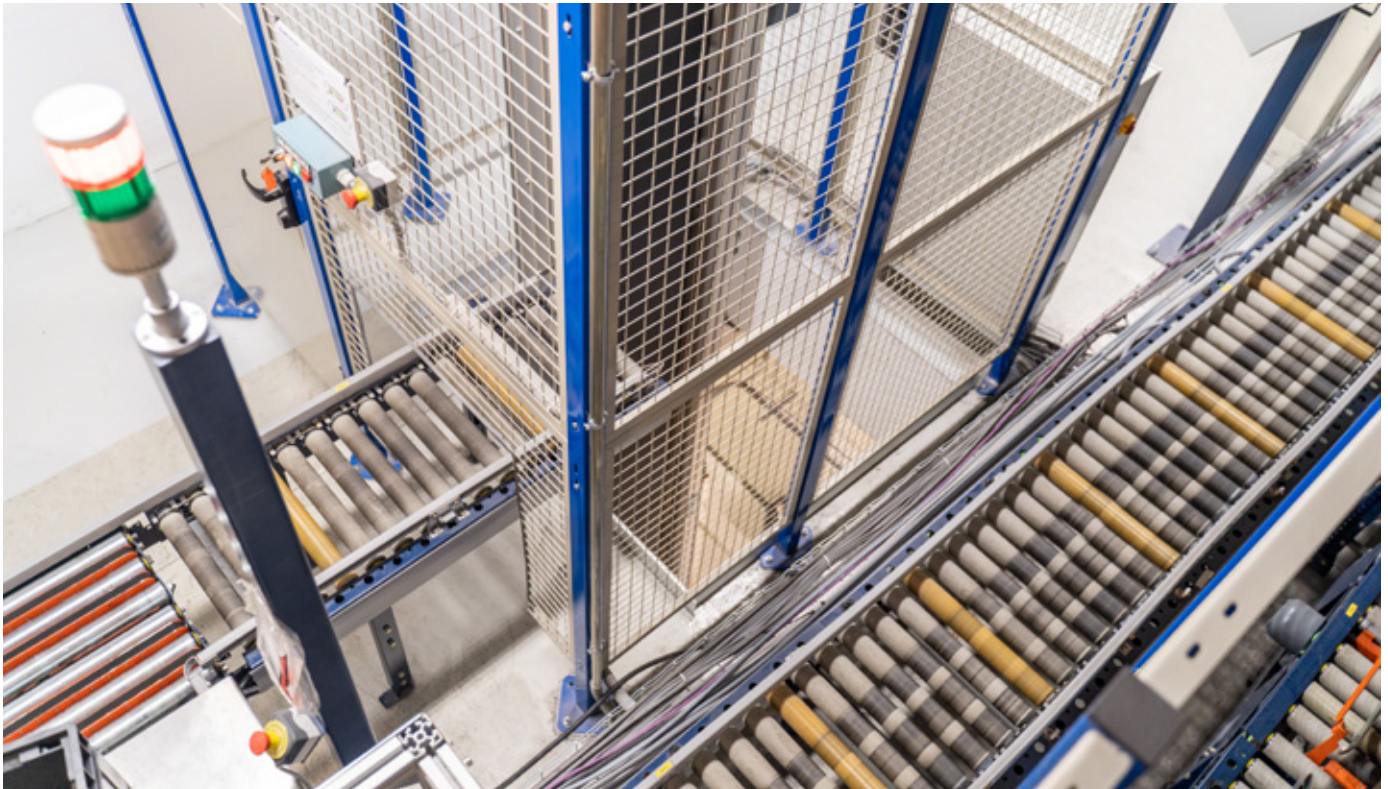
Logistics Manager at Schaeffler Iberia

"The AS/RS for boxes has met all our needs: it takes advantage of the available space and is perfectly connected to the production lines via the lifts and conveyors for boxes. Plus, we're really happy with the Easy WMS software because it monitors the movement of the goods in real time."

Advanced warehouse management

Easy WMS from Mecalux is the software charged with making sure stock movements are smoother and more controlled. It not only verifies entries, but also organizes and efficiently distributes boxes throughout the premises.

The warehouse management system (WMS) applies rules and algorithms to



assign a location to each product based on its SKU and demand level. The goods are distributed along each of the aisles in a balanced way to ensure the maximum throughput of the three stacker cranes simultaneously.

The software also manages dispatches, ordering the boxes to be sent to the corresponding outgoing channels based on the sequencing assigned by the SAP ERP system.

Easy WMS from Mecalux is integrated with Schaeffler Iberia's SAP ERP system so that the two can continuously exchange data on how to most effectively perform the different operations. "Easy WMS was started up in two phases without interrupting warehouse operations. Mecalux adapted to our needs completely, taking into account that we were implement-

ing a new ERP system" says the Logistics Manager.

In the first phase, Easy WMS organized all warehouse operations, but without coordinating with an ERP system. Operators had to enter all the items that came off the production lines into the WMS manually.

During this period, the Mecalux technical team worked to tailor the system to the particular features of SAP in the shortest possible time. The second phase consisted of integrating the WMS with SAP the moment this ERP system was installed, a process which took place without delays or interference in operations.

Logistics made to measure

Integration and communication are two of the characteristics that best describe Schaeffler Iberia's automated AS/RS in El-

góibar. The miniload system, located directly above the production lines, is a buffer that houses product temporarily until its subsequent dispatch.

Automation has provided extremely accurate control of the more than 490 SKUs managed. Racks, stacker cranes, and conveyors were adapted to the characteristics, size, and weight of Schaeffler Iberia's boxes. All aspects were carefully designed to provide the company with a competitive AS/RS to effectively serve the production lines.

Likewise, Easy WMS from Mecalux optimizes the movements of the boxes, verifying that the correct products are received and sequencing dispatches. As a result, this company's logistics operations are tightly controlled, with all processes optimized to enhance competitiveness.

Technical data

Storage capacity	5,184 boxes
Box sizes	15.6" x 11.7" x 11"
Max. box weight	143.3 lb
Rack height	13.1'
Rack length	92'

