

Huge volumes and maximum flexibility: the automotive made simple by ESMARTSHUTTLE[®]

Case study Dematic – United Kingdom

THE CASE IN SUMMARY

Dematic, a leading provider of intelligent automated systems for warehousing and distribution centers, selected Eurofork's ESMARTSHUTTLE[®] pallet shuttle system to ensure optimization in storage & retrieval and maximum flexibility in load handling within their East Midlands (United Kingdom) distribution centre for an end user involved in the automotive sector.



INTRODUCTION

About four years ago, Dematic received a request from a client – a well-known automotive manufacturer – for an ambitious automation project for implementation within a new logistics operations centre that would soon be established near Birmingham, United Kingdom.

The impressive structure, completed at the end of 2020, **covers an indoor area of nearly 92,000 square meters**, which is equivalent to approximately

13 football pitches! It was built from scratch less than two kilometres from the client's production facility with the goal of **consolidating all materials and components destined for the assembly lines into a single facility**. These items were previously spread across various warehouses in the area. This operation aimed to streamline stocks, simplify transport and distribution operations, enhance efficiency, reduce costs, and improve logistical performance.

REQUIREMENT

Having to manage large volumes of goods on pallets while aiming to increase productivity, automation immediately appeared as a necessary path. However, in defining a project that would be fully effective, one had to contend with the **wide variety of materials and components managed** in the new distribution centre, essential for supplying the nearby production lines. Approximately 5,000 items varying in type

and size were to be stored and retrieved: from the smallest bolt to a windshield or a dashboard. Thus, the solution had to meet **two very specific requirements: manage 25 types of unit loads** (steel pallets, plastic pallets, CHEP pallets, and Euro pallets) with depths of 1,000, 1,400, 1,600, or 1,800 mm and a fixed width of 1,200 mm; **sequence the items picked from the distribution centre** to fulfil production orders.



SOLUTION

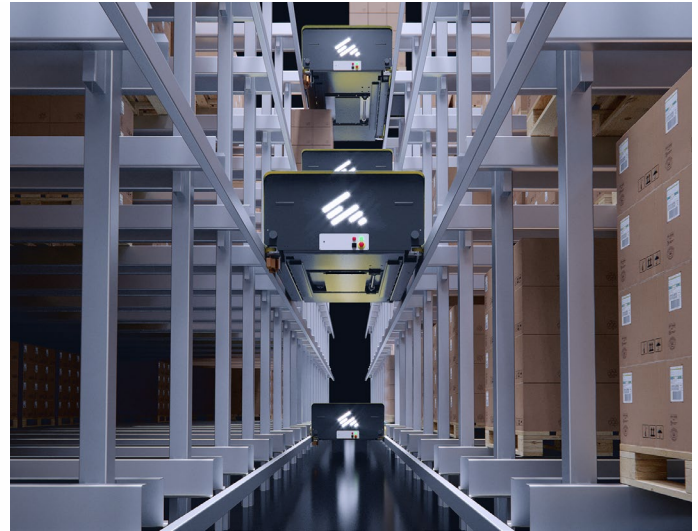
Beginning with some sample data provided by the client, Dematic quantified the flows that the distribution centre would have to manage and in view of increasing productivity.

Based on the analysis, Dematic then designed a **complex system** that includes some of the **most advanced technologies for intralogistics automation** currently available on the market, ensuring **optimal performance with minimal space usage**:

- ➔ pallet and box conveyor belts
- ➔ monorail
- ➔ automated guided vehicles (AGVs)
- ➔ box warehouse
- ➔ picking workstations
- ➔ Eurofork ESMARTSHUTTLE®.

The system has been primarily designed following a **goods-to-person** (GTP) logic, meaning that operators do not retrieve the goods stored on the shelves; instead, **automated equipment picks up the pallets and transports them automatically to the workstations**. However, the new structure has been designed to also include a **person-to-goods** (PTG) component: picking tunnels on the ground floor of the facility allow for manual retrieval of stock keeping units (SKUs) from unit loads located at level zero of the Eurofork system. After retrieving empty pallets for picking, AGVs move

into position. The operator selects the required items from the chosen storage location and places them on the pallet. **The choice between the two picking options, GTP or PTG, depends on the type of SKU in processing.**



The automated system is 15 metres high and approximately 80 metres long. It involves six levels with 14 aisles – eight long ones and six short ones – as well as a two-level monorail, providing a total of 25,500 pallet positions. The eight longer aisles are all six levels high, accommodating a total of **48 ESMARTSHUTTLE®** systems. In the six shorter aisles (two are on three levels and four on two levels), **14 ESMARTSHUTTLE®** are operational.

Pallets retrieved from the automated warehouse through ESMARTSHUTTLE® are released into one of the eight GTP stations or into one of the four PTG tunnels. In the PTG tunnels, operators perform kitting by loading components onto AGVs.

WHY ESMARTSHUTTLE®

Dematic identified ESMARTSHUTTLE® as the ideal pallet shuttle system to integrate into a complex architecture designed for their client. **The system consists of a shuttle and a satellite**. The shuttle moves along the main aisle of each level, while the satellite, detaching from the main shuttle, enters the channels to stock or retrieve the unit loads, transporting them at the picking stations at the exit of the warehouse. The primary advantage of the Eurofork system is its **flexibility**: not only is it easily integrable into

any automated warehouse, but it can also handle load units of various sizes within the same storage channel. With the ability to store in multi-depth, ESMARTSHUTTLE® allows for optimizing storage and maximizing the warehouse's capacity.

Another important advantage is the **possibility of operating two machines in the same aisle**, significantly increasing the overall productivity of the facility.



CONCLUSIONS

The project carried out by Dematic in collaboration with Eurofork has allowed the client to **achieve the set goals of flexibility and increased productivity** outlined at the project's inception. It has bolstered an investment decision aimed at **overall efficiency**

and sustainability in the supply chain of the production facility.

Additionally, the client's investment decision ensures **adaptability to address future increases in supply demand** or a greater need for stock.

DATA – DISTRIBUTION CENTRE

- **Total Area: 91,800 sqm**
- **Automation Area: 42,000 sqm**
- **Flows:**
 - 328 IN/h + 368 OUT/h**
(retrieval via ESMARTSHUTTLE® for full pallets & PTG) +
 - 378 IN/h and 378 OUT/h**
(GTP retrieval)
- **Vertical Warehouse:**
 - Levels: 6
 - Aisles: 8+6
 - Height: 15 m
 - Length: approx. 80 m
 - Pallet Positions: 25,500
 - Load Depth of Multiple Units: from 1 to 1.8 m
 - GTP Stations: 8
 - PTG Tunnels: 4 (432 PTG locations)
 - ESMARTSHUTTLE® : 62

RESULTS

- **Maximum flexibility in handling different loads**
- **High productivity and efficiency**
- **Reduced operating times**

The project is unique because when managing everything that goes into production, we find ourselves moving pallets and loads with significantly different dimensions. The challenge overcome by Eurofork was precisely the ability to position loads with different SKUs and dimensions ranging from a minimum of 1000 mm to a maximum of 1800 mm in depth within the same channel. Thanks to the absolute positioning achieved with our patent, it allows us to position with ±5 mm precision without relying on the position of the load already available in the channel.

The hardware complexity is brilliantly supported by our software management, which not only makes it all a reality, but it does so with high flexibility, which allows us to logically divide a physically unique channel into two, enabling our client to manage the storage logic of the hundreds of SKUs in the warehouse effectively.

Luca Longoni

Key Account Manager at Eurofork