

CASE STUDY

Reference Heinemann, Germany:
Full-Service Warehouse for On-Time
Deliveries to European Duty Free Shops

ssi-schaefer.com



Gebr. Heinemann
Gegründet 1879



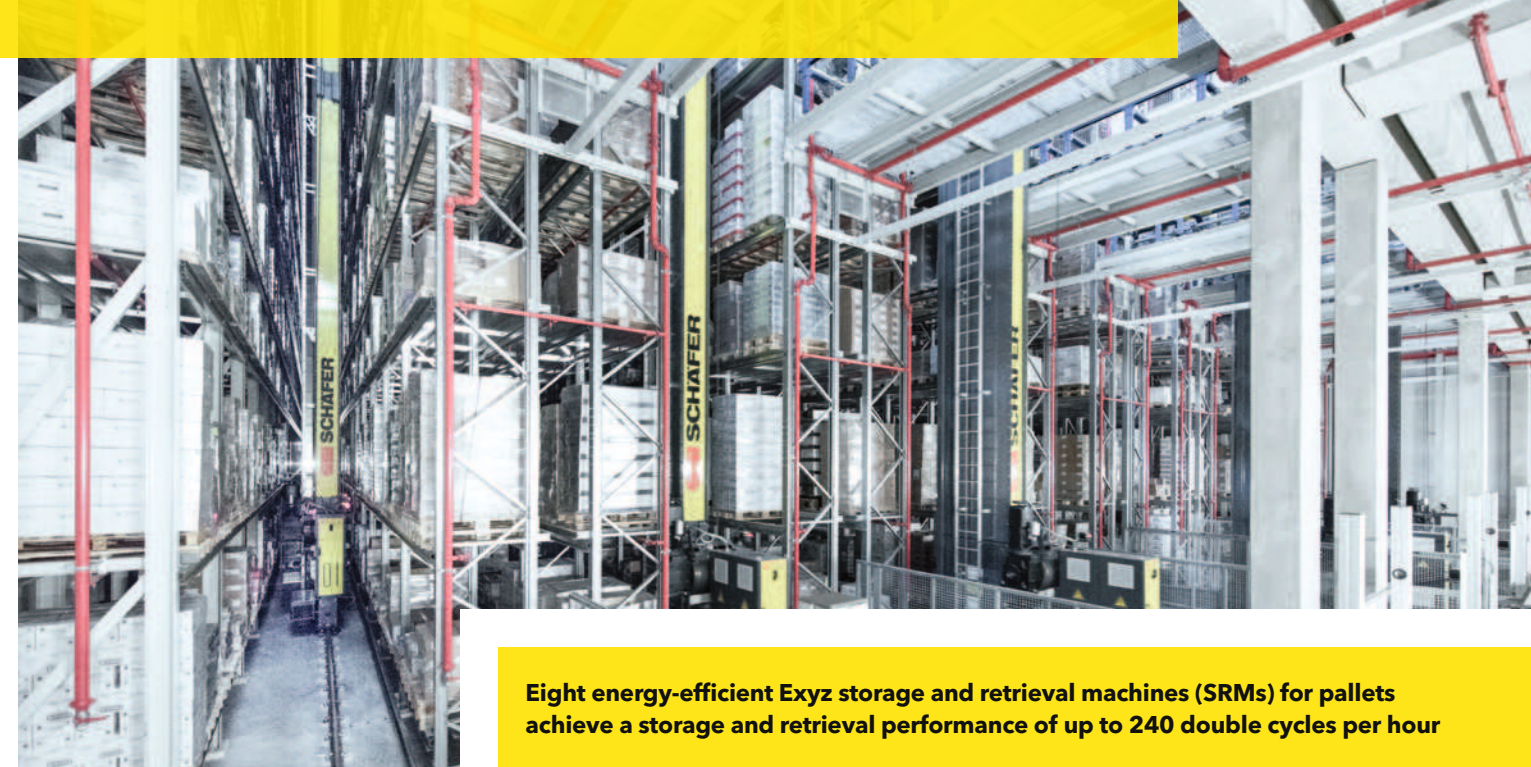
SSI SCHAEFER

A SYSTEM FOR A HIGHER LEVEL OF SERVICE

SSI SCHAEFER has implemented the technical devices of a new logistics center in Erlensee, Germany, for the retail company Gebr. Heinemann, one of the world's most important players in the duty free sector. Roughly 35% of Gebr. Heinemann's total order volume is processed in their new full-service warehouse. This location supplies central and southern Europe.

The Heinemann Logistics Center Erlensee stock contains 35,000 different duty free items. The centerpieces of the 32,000 m² logistics facility are a high-bay warehouse (HBW) for pallets and a state-of-the-art fully automated miniload system that SSI SCHAEFER created for Gebr. Heinemann according to the innovative concept of the 3D-MATRIX Solution®. The HBW was built in a silo design and offers 22,900 pallet storage locations for single-deep storage.

The HBW serves as a reserve area for the miniload system which features numerous technological innovations. It not only serves as a storage facility, but also as a sequencing buffer for shop-specific order completion. 64 multi-level channel vehicles ensure a performance level that was not previously possible in conventional systems.



Eight energy-efficient Exyz storage and retrieval machines (SRMs) for pallets achieve a storage and retrieval performance of up to 240 double cycles per hour

The Hamburg-based retail company Gebr. Heinemann is one of the most important players in the duty free and retail sectors. With over 300 Heinemann Duty Free & Travel Value shops, licensed brand boutiques, and concept stores in a total of 78 airports the company is active in 28 countries. Furthermore, outlets at border crossings and 20 shops on ten cruise ships are operated.

More than 1,000 customers in about 100 countries worldwide exploit their distribution and consultancy expertise when compiling their ranges of branded goods, which are tailored to their market-specific and regional characteristics.

The design of the material flows was achieved with powerful pallet and bin conveying systems. Roughly, 300 m of chain conveyors and roller conveyors were installed for the pallet conveying system alone.

A rail guided vehicle system with 13 vehicles is responsible for the internal transport between points of demand. Additionally, SSI SCHAEFER linked the programmable logic controllers (PLCs) of the system components to the customer's SAP EWM warehouse management system via the material flow system interface.

CHALLENGES

As the general contractor for intralogistics, SSI SCHAEFER created the logistics concept for efficient processes according to the goods-to-person picking principle, in addition to testing the material flows in simulation projects.



“We calculate order completion backwards, so that if possible we can deliver the outbound orders to airports when there is little air traffic, or exactly when ships lie in the roads. For example, for Frankfurt Airport, we calculate a staging time of four to six hours, from the order to delivery to the customer. This is possible thanks to SSI SCHAEFER’s high-performance system.”

Gebr. Heinemann

PROJECT OBJECTIVES

- Rapid access to all items for a high availability and a delivery to the duty free shops on time
- Sequencing for shop-specific order completion
- High efficiency for order completion
- Staging time of four to six hours, from the order to the delivery
- Effortless work according to the ergonomics@work!® principle
- Future-proof investment due to scalable and modular components





Transport between points of demand via a rail guided vehicle system



Manual scanning and repacking from pallets onto trays and into bins



Repacking stations



Picking locations for multi-order-picking

SOLUTION

HIGHLY EFFICIENT ORDER COMPLETION OF 750 PALLETS PER SHIFT

The rapid access to every storage location and sequencing of retrievals within the system ensure high process efficiency.

- After the incoming goods inspection and goods registration, the pallets are transported to an intermediate level by a conveying section with automated contour and weigh station via a vertical conveyor.
- Two loops of the rail guided vehicle system are supplied by the vertical conveyors. It takes the pallets to the storage branches for the HBW or directly to the repacking stations for storage in the miniload.
- For the replenishment of the miniload, the rail guided vehicle system transports the pallets from the HBW to the depalletizing locations. There, the items are scanned manually and the item cartons are repacked onto trays and into bins from the pallets. The load carriers are taken to the lifts in the miniload by a conveying section.
- For order picking, the cartons and bins follow the same transport route: the Navette channel vehicles retrieve the load carriers and deliver them to the lift transfer locations at a rate of up to 3,600 cartons per hour.



Connecting conveying system of the miniload from goods-in to the picking and shipping locations

Store- and customer-specific order picking

The lifts remove the cartons and bins from the transfer locations depending on the order structure and present them in a sequenced order to one of the ten picking stations for multi-order-picking. This is where order picking occurs at Pick to Tote workstations directly into the shipping cartons aided by a Pick by Light system. After order picking has been completed,

the target cartons are transported directly to the packing area by a conveying section. There employees load the outgoing goods pallets with the correct shipping cartons for the recipient, which are prepared for loading according to the store layout. Scissor lift tables ensure effortless work according to the ergonomics@work!® principle.

Optimized shipping process

Finally, a foil is applied to the shipping pallets and they are transferred to the rail guided vehicle system. This takes the pallets to a double lift, which takes the consignments to level 0 via a conveyor branch in front of the twelve gates in the

outgoing goods area. In this way, 750 pallets per shift are prepared for loading in outgoing goods in Erlensee.



In the packing area, employees label the cartons and put them onto the goods-out pallets recipient-friendly and according to store layout

FLEXIBLE, MODULAR, SCALABLE: THE 3D-MATRIX SOLUTION®



3D-MATRIX SOLUTION

With its 3D-MATRIX Solution® concept, the miniload at Heinemann not only serves as a storage facility, but also as a sequencing buffer for shop-specific order completion.

64 multi-level channel vehicles supply the storage locations in the system. Requested storage bins are placed onto and buffered in transfer locations for the installed lift systems. The coordinated access of the lifts to the transfer locations allows sequencing of retrieval and load-dependent storage.

“With its rapid access to all items, our new distribution center guarantees the high availability that we need to deliver to our duty free shops on time and within very small order windows.

For our performance requirements, we had a choice between traditional storage and retrieval machine and channel vehicle solutions. When SSI SCHAEFER introduced the 3D-MATRIX and showed us the benefits in terms of efficiency, we were quickly convinced.

The Navette combines the advantages of SRM and channel vehicle solutions in one system. The concept is also designed for maximum flexibility - we can expand the system and components on all levels as necessary. SSI SCHAEFER's system is a future-proof investment for us.”

Gebr. Heinemann

GH Gebr. Heinemann
Gegründet 1879

The miniload harbours 136,000 storage locations for double-deep storage

Finally, a downstream conveying system presents the bins at the picking and shipping locations for order picking.

The 4,500 m² picking area takes up almost half of the roughly 10,000 m² picking warehouse. The system and bin conveying system are designed for bins and cartons weighing up to 30 kg. Sixty lifts are responsible for storage and retrieval from the storage area.

Guided by travel and support rails, each Navette channel vehicle with its two load handling devices (LHD) arranged one above the other supplies up to eight levels. Each of the two LHDs can transport two bins or cartons - a total four loading units simultaneously in one load cycle.

This minimizes the travel times of the devices and leads to twice the process efficiency compared to conventional channel vehicle and SRM solutions.



The Navette channel vehicles supply up to eight levels - two of them in parallel at each stop

FACTS AND FIGURES

System key figures

| | |
|--------------------------|-----------------------|
| Total area | 32,000 m ² |
| Picking warehouse | 10,000 m ² |
| Picking area | 4,500 m ² |
| Number of items on stock | 55,000 |
| Picking principle | Goods-to-Person |

Scope of supply and services of SSI SCHAEFER

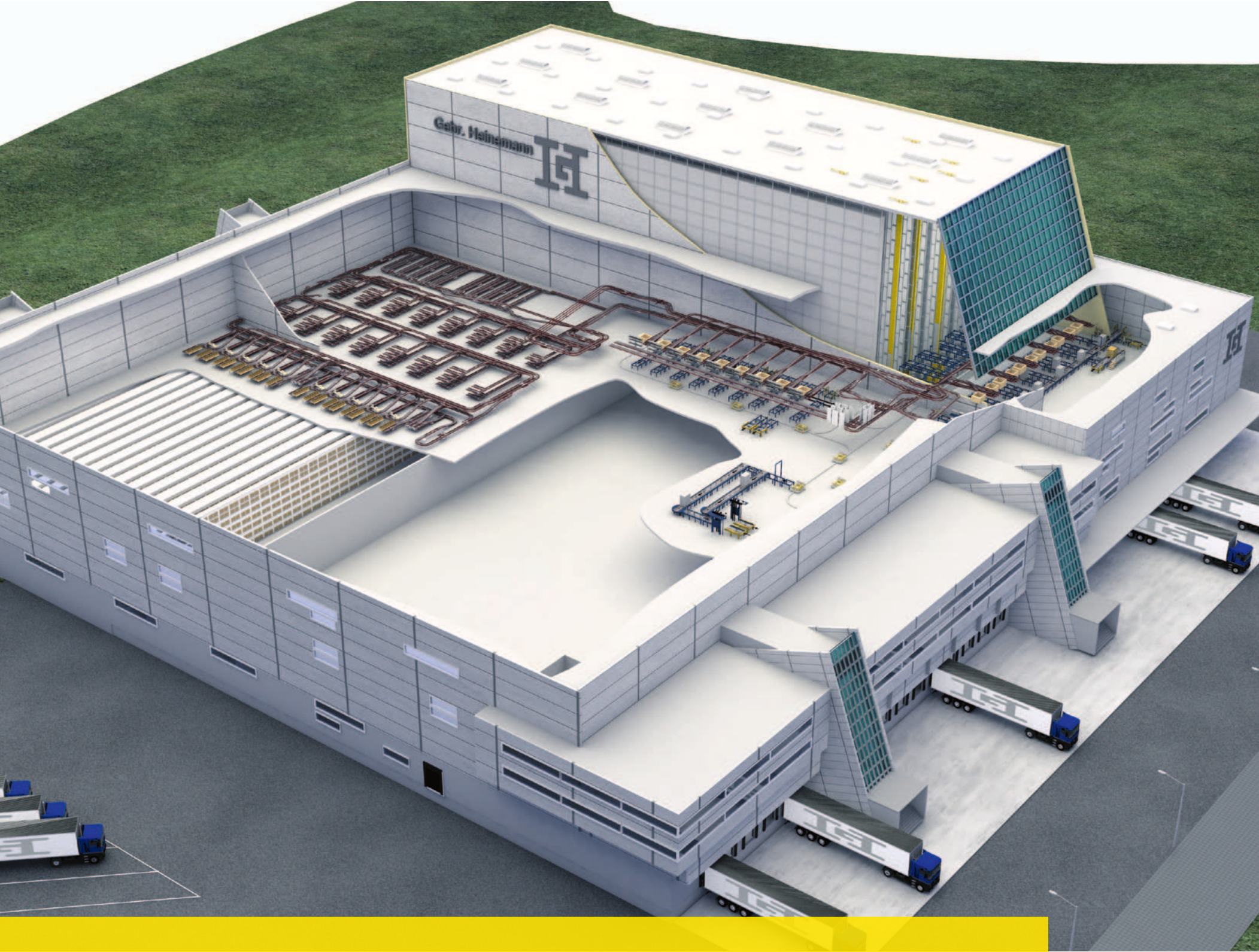
| | |
|--|-----------------------|
| High-bay warehouse (HBW) | |
| Storage locations | 22,900 |
| Type of storage | Single-deep |
| Number of storage and retrieval machines (SRM) | 8 Exyz |
| Load handling devices | Telescopic fork |
| Throughput | 240 double cycles / h |

| | |
|--------------------------|---|
| Shuttle warehouse | |
| Storage locations | 136,000 |
| Type of storage | Double-deep |
| Number of shuttles | 64 Navette multi-level channel vehicles |
| Number of lifts | 60 |
| Throughput | 3,600 cartons / h |

| | |
|-----------------------------------|---|
| Picking and transport bins | |
| Type | LTB 6320 (566 x 366 x 298 mm), LTB 6220 (564 x 366 x 87 mm) |

| | |
|---|-------------------------------------|
| Picking systems | |
| Repacking stations with scissor lift tables | ergonomics@work!® principle |
| 10 Pick to Tote workstations | Aided by a Pick by Light system |
| Multi-order-picking | Order picking into shipping cartons |

| | |
|--|---|
| Conveying system | |
| Powerful pallet and bin conveying system | Chain conveyors, roller conveyors, transfer positions, vertical conveyors |





SIX REASONS FOR CHOOSING SSI SCHAEFER:

- **Stability:**

As a financially independent family business, SSI SCHAEFER is committed to long-term solutions. You can trust that our team of experts will be there for you today, tomorrow and in years to come.

- **Efficiency:**

SSI SCHAEFER solutions are scalable and able to grow with your business. You can always upgrade or retrofit.

- **Quality:**

As a systems specialist and original equipment manufacturer, SSI SCHAEFER provides tailor-made and high-quality solutions from a single source, specifically designed to meet your challenges.

- **Reliability:**

Thanks to our worldwide Customer Service & Support network, SSI SCHAEFER ensures smooth operation of your system, both during and after installation.

- **Know-how:**

SSI SCHAEFER solutions are always up-to-date with the latest technological standards and can be easily integrated into an existing (IT) landscape.

- **Internationality:**

As a global organization, SSI SCHAEFER has local offices worldwide. With over 70 operative subsidiaries, our team of experts speak your language.



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