

# LOGISTICS CENTRE OHRDRUF



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“The growth rates and other developments in the distance-selling retail sector consistently call for new solutions that lead towards better warehouse optimisation. By introducing a driverless transport system Hermes Fulfilment has set new standards in the European logistics sector.”

Jörg Reichenbach, head of the logistics centre Ohrdruf



# OUR HISTORY

Following the reunification of Germany the distance-selling retail sector flourishes like never before and the logistics capabilities of the Otto Group no longer suffice. In 1990 the decision is made to build a new logistics centre that specialises in handling larger items such as fridges, washing machines and furniture. At the beginning of 1991 a 238,000-square-metre site is chosen in the small Thuringian town of Ohrdruf. The town is situated 40 kilometres south-west of Erfurt and offers excellent accessibility to the German road network via the A4 motorway Bad Hersfeld–Dresden.

The foundation-stone-laying ceremony takes place on 22 April 1992. Hermes Fulfilment is a member of the Otto Group. The Otto Group invests some €97 million in the logistics centre. It goes into operation on 1 October 1993. The facility has 90,000 square metres of warehouse space and a total storage capacity of some 50,000 cubic metres. The returns operations are allocated an area of 12,000 square metres. It is here that returned goods are inspected to see if they are still in working order. They can also be reworked, if needed.

Initially the facility focuses its efforts on its two-man handling service. This area of the business deals with goods which are so large or heavy that they need to be handled by two workers. In 1996 the product range in Ohrdruf is expanded to include items than can be handled by one warehouse worker, carpets for instance.

As of 2006 the logistics centre in Ohrdruf is operated by Hermes Fulfilment. The returns operations are restructured and state-of-the-art technologies introduced. One year later Hermes Fulfilment starts using a stacker control system that optimises the utilisation of the stacker fleet and reduces the number of empty trips. In 2010 the facility distances itself from its two-man handling service. Its focus is now on handling the logistics processes associated with larger items weighing up to 31.5 kilograms.

At the end of 2011 a driverless transport system goes into operation. This system ensures that the process of picking and dispatching to customers runs even more smoothly. The driverless transport system used in Ohrdruf is the first system in Europe that can also operate in automatic mode with a man aboard.



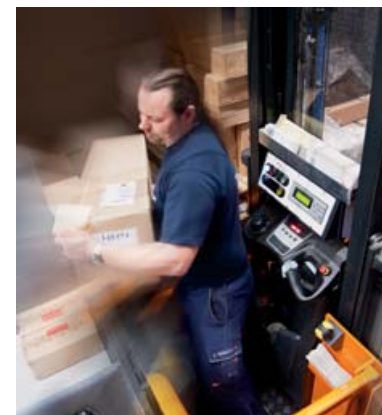
At about the same time, after a six-month construction period, a hub run by Hermes Logistik Gruppe Deutschland (HLGD) is integrated into the logistics centre.

Today around six million items a year are moved through the Ohrdruf logistics centre. Some 4.5 million of these are customer orders and 1.5 million are returns. Hermes Fulfilment employs around 300 people in Ohrdruf, making it one of the largest employers in the local area.



From left to right: Professor Peer Witten, 1984 to 2004 Member of the Executive Board of the Otto Group, responsible for business processes; Dr Dieter Reinholz, 1990 to 2000 administrative officer for the district of Gotha; Dr Bernhard Vogel, 1992 to 2003 Premier of the Free State of Thuringia; Dr Michael Otto, 1981 to October 2007 chairman of the board of directors of the Otto Group; Klaus Scheikel, 1990 to 2006 mayor of Ohrdruf



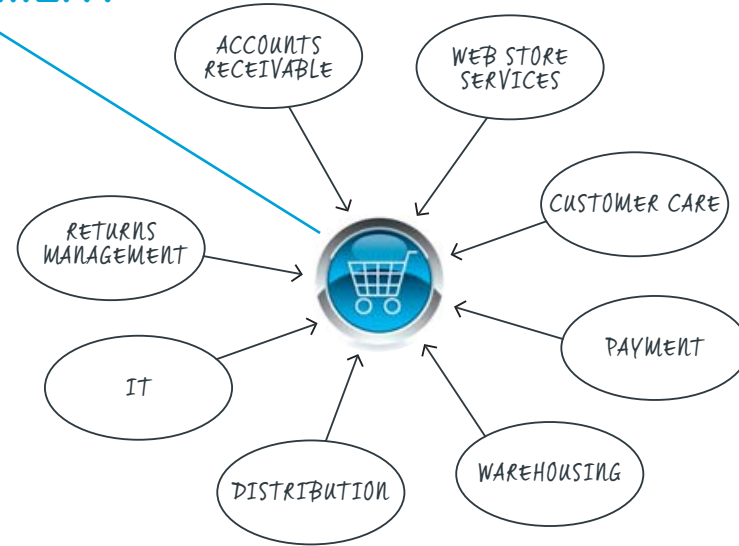


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## FULFILMENT



# HERMES FULFILMENT AN OVERVIEW

Headquartered in Hamburg, Hermes Fulfilment GmbH is a member of the Otto Group and provides a wide range of supply chain services to the distance-selling retail sector from the company's four logistics centres. These services range from the design of a web store to its operation, from accounts receivable, returns management, financial and call centre services to procurement, warehousing and distribution. Hermes Fulfilment provides logis-

tics services for as many as one million different products and handles some 300 million items a year.

The spectrum of goods ranges from smartphones, tablet devices and textiles to jewellery, furniture and washing machines.

The clients of Hermes Fulfilment GmbH primarily operate in the consumer goods industry.









# WAREHOUSE AND RETURNS PROCESS

GOODS-IN AREA



INSPECTION  
REWORKING



WAREHOUSING



PICKING



SORTING  
GOODS-OUT AREA

INCOMING RETURNS



RETURNS PROCESS

VALUE-ADDED  
SERVICE



GOODS RETURNS  
RECYCLING





# GOODS-IN AREA



As many as 20,000 boxes containing goods from all over the world are delivered to the Ohrdruf logistics centre every day. On any one day these goods are typically delivered in 40 to 60 trucks that can pull up at one of the 68 goods-in gates. Stackers, also known as industrial trucks, are used to help unload the delivery trucks. Ideally the goods are delivered by the suppliers on pallets. However, if they arrive in individual boxes or packaging units, i.e. as loose goods, before they are placed in storage they are sorted and put on pallets.

When the pallets have passed through incoming goods inspection they are given a barcode that contains information such as the item number, dimensions, quantity, etc. Before the pallet is placed in storage the barcode is read by a scanner – for the first but not for the last time on its way through the logistics centre. Once this data has been captured by the warehouse management system, all subsequent processes, movements and transactions are controlled or directed by the system.

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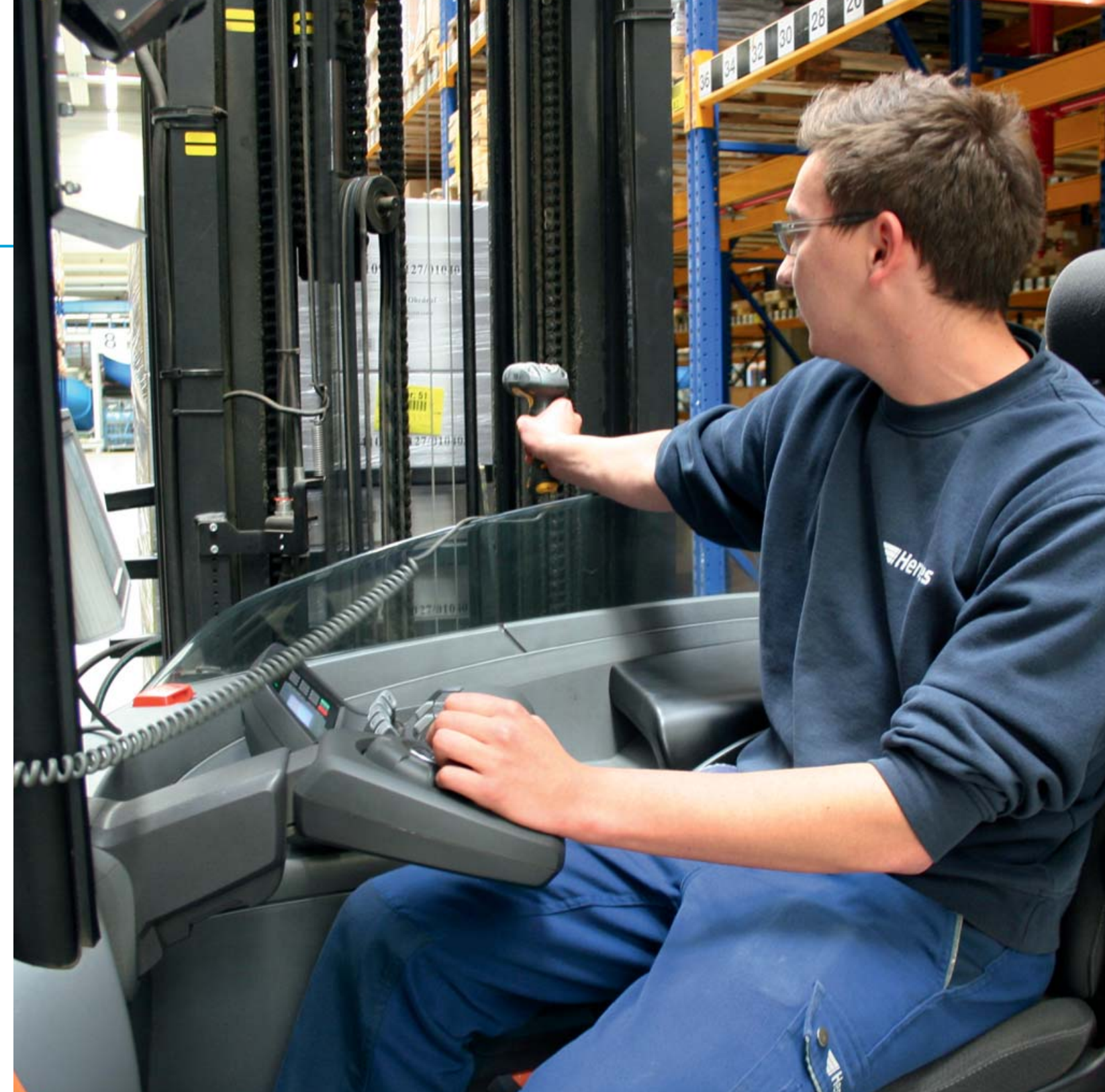
40 to 60 truck deliveries a day

68 goods-in gates

Computer-aided registration of incoming goods

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The stackers then transport the pallets of goods and place them on storage shelves that can be anything up to ten metres in height. An intelligent stacker control system maps out the routes that the stackers take through the logistics centre.







# STACKER CONTROL SYSTEM

Based on the data that has been recorded in the system the warehouse management system decides exactly where in the warehouse the pallet should be stored. A transportation order is given to the stacker control system which then chooses the next available stacker. The driver picks up the pallet and scans the barcode on the pallet. He can see on his monitor where exactly the pallet should be put away. He confirms where he has placed the pallet in storage by scanning the storage location number.

Best possible routes  
mapped out for storage  
and retrieval

System operates with a  
fleet of 20 stackers

Around 1,500 transpor-  
tation orders a day

Communication via  
wireless LAN

The driver receives the next transportation order via the radio data transmission terminal. This may be another order to put a pallet away, an order to retrieve a pallet or a replenishment order. Whenever any goods are stored or

retrieved this is confirmed by scanning the appropriate information into the system.

The stacker control system works largely automatically, constantly receiving orders from the

warehouse management system, collecting and collating them and passing them on to the stacker fleet to carry them out. The stacker control system always knows the exact location of each of the stackers and additional information about it, for instance its lift height. The control system is therefore able to map out the best route through the warehouse for

each stacker. This leads to shorter lead times and reduces the number of empty trips by more than 25 per cent in comparison with the situation before the stacker control system was introduced.



# INSPECTION REWORKING

Before the incoming goods are placed in storage random quality checks are carried out on a certain percentage of the items in accordance with the instructions provided by the retailer. For instance, technical devices are tested to see if they work and flat furniture is assembled. Do the goods comply with the retailer's quality standards? Is the quality of the materials acceptable? Is the furniture easy to assemble? Are any screws missing? Does the carpet have any visible defects? Does the LED television work properly?

Random samples  
taken for  
inspection/quality  
control

Rework activities in  
accordance with  
instructions pro-  
vided by the client

Processing of retail-  
ers' special orders

If everything is OK the goods are released for sale. If any faults or defects are found the retailer decides whether the item can be reworked into a saleable product. For instance missing bags of screws, or fittings, or missing assembly instructions can easily be replaced, parts can be exchanged, items can be repackaged or additional assembly elements can be included. If the fault or defect is too serious to be rectified the entire delivery is returned to the supplier.







# DRIVERLESS TRANSPORT SYSTEM PICKING WAREHOUSE

As if by magic, driverless picking vehicles move through the high bay warehouse. The special feature of the driverless transport system is its control centre, which is able to map out the most convenient route through the warehouse for each of the picking vehicles. The driverless vehicle is directed to the first storage location on its route. At the designated picking location a warehouse employee picks the given quantity of the item, affixes a label to the items and places them on the pallet. As soon as the picker presses the button to confirm that he has picked the goods, the vehicle automatically drives to the next picking location. When the picking orders have been completed or the pallets are full, the vehicle automatically drives to the handover station of the sorting system in the goods-out area.

On its way back from the goods-out area it will take a stack of empty pallets and return them to the robot station. This is where the pallets remain until they are put back onto a picking vehicle by a special robot so that the next order can be picked. These pallets have been specifically developed for the requirements of the driverless transport system. They weigh 72 kilograms and have collapsible side panels.





At any time and from any location in the warehouse pickers can call for a new vehicle with empty pallets via wireless LAN. The driverless transport system uses a total of 52 vehicles.

Forty of these vehicles are used to pick items from the lower shelves. Twelve of them have a lift height of 4.50 metres and are used to pick items from the second and third levels of the warehouse. The vehicles run on a 5-kilometre magnetic track and when operating in fully automatic mode can reach a speed of around 5 kilo-

metres per hour. Whenever its battery gets low the vehicle automatically drives to one of 52 special charging stations. The batteries are recharged via contacts in the warehouse floor. The vehicles

can run for about 14 hours on a fully charged battery. The driverless transport system used in Ohrdruf is the first system in Europe that can also operate in automatic mode with a man aboard – something that is often done when items need to be picked from the second or third levels of the warehouse.

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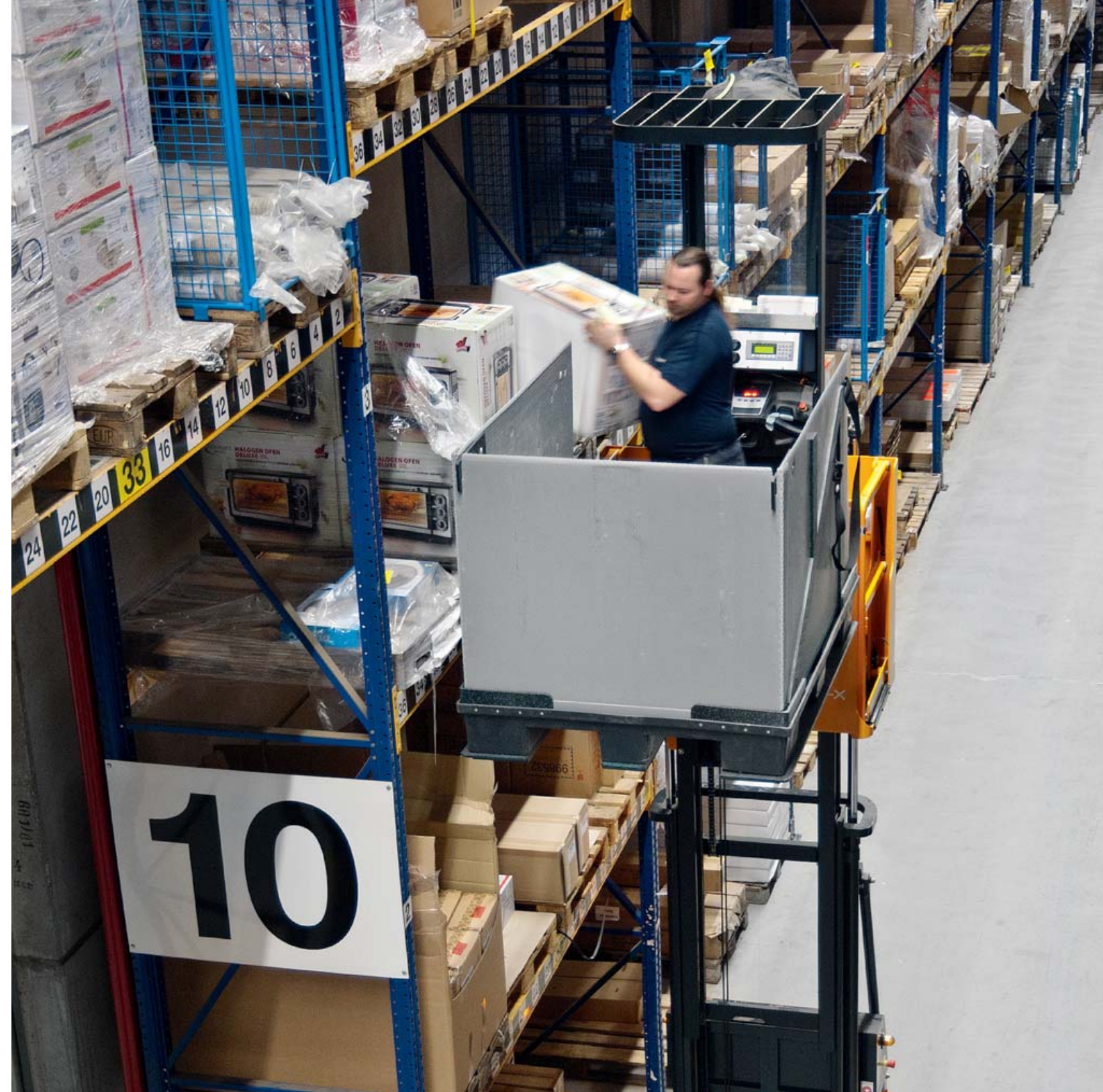
52 driverless vehicles

250 special pallets

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52 battery charging points

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# RETURNS PROCESS

Every day as many as 20 freight containers filled with items that have been returned by customers arrive at the logistics centre in Ohrdruf. As the goods are being unloaded they are pre-sorted according to their goods group. Bulky goods such as bicycles or items of furniture that are too large to be moved by conveyor are handled separately. The majority of items travel along conveyors to the inspection area on the upper floor. As they move along the conveyor they are registered by an overhead scanner and routed to one of 60 inspection stations. Which station they are routed to depends on the item type. At these stations warehouse assistants check to see whether the items are in working order, whether they are complete and whether they can be resold. Has the espresso machine been returned undamaged? Is anything wrong with the home cinema system? Are any cables, accessories or instructions for use missing?

Each goods group, whether it be electronics, items of furniture, blinds or carpets, has its own special assessment criteria,

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Scanners used to register incoming returns

Returns inspected at 60 workstations

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20 certified workshop workstations

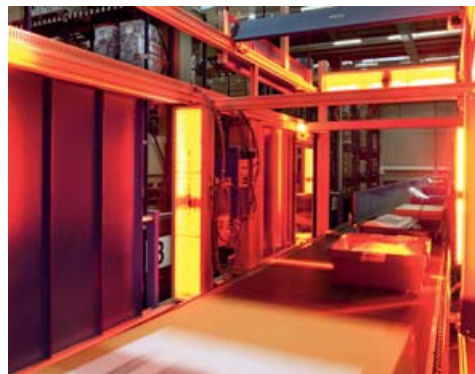
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provided by the retailer. These criteria determine when an item is considered faultless and in a condition to be put back on the shelf for resale. If this is the case it is repackaged and the customer will receive a refund. Returns that cannot immediately be put back on the shelf for resale are routed to the reworking area. This workshop area has been certified by leading brands and has 20 workstations.

This is where items and devices are examined to see if they work, appliances are cleaned, faulty components are replaced and software updated. If a return cannot be put back on the shelf for resale, the retailer decides whether the item should be sent back to the manufacturer, resold at a reduced price or disposed of. The certified workshop area also provides technical support services. It stocks spare parts and repairs faulty devices in compliance with the laws under which consumers are granted statutory warranty rights.







# GOODS-OUT AREA

Lifts are used to deliver the full pallets to the sorting facility of the hub that is run by Hermes Logistik Gruppe Deutschland (HLGD), which is also part of the Otto Group. Every hour this facility can sort around 5,500 consignments of big and bulky goods according to their shipping destination. It was specifically developed for use in the Ohrdruf logistics centre and can cope with as many as 70 different shipping destinations. The goods are transported along the conveyors at a speed of 2.2 metres a second.

Pallets delivered to sorting facility via three lifts

5,500 consignments of big and bulky goods can be sorted every hour

Shipment to 59 delivery points throughout Germany

Every second a barcode is read. Based on this information each consignment is then automatically sorted according to its shipping destination and routed via a telescopic conveyor to a truck waiting at one of the 96 goods-out gates. The only items that are sorted by hand are items that are more than two metres long. The Ohrdruf logistics centre can handle as many as 15 million consignments a year. Deliveries are made throughout the whole of Europe.



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