****It does not always have to be shuttles:  
A three-storey carton warehouse by TGW for Witt****

**For more than hundred years, the name Witt from the Upper Palatine town of Weiden is famous for mail-order business of women's apparel, linen and home textiles. The specialist for customers of the target group 50+ has an assortment of about 41,500 items leaving the site located in the industrial estate "Brandweiher" in Weiden in more than 100,000 shipments per day to twelve European sales regions. In order to centralise the reserve warehouses distributed to several sites around Weiden, Witt built the new Distribution Centre III. With its extraordinary three-storey carton warehouse solution by TGW, it supplies the picking area.**

Founded as general store in 1907, Witt started its mail-order business already in 1924 for the whole of Germany and is now delivering eight brands to twelve countries throughout Europe. The about 15.1 million customers know "WITT WEIDEN" as reliable supplier of women's apparel, linen and home textiles: Ordering comfortably from the mail-order catalogue, in the online shop or active shopping in one of the 115 Witt Weiden stores in Southern Germany. Approximately 100,000 consignments leave the logistics centre in the industrial estate "Brandweiher" in Weiden day by day.

In the business year 2014/2015, the Witt Group generated a turnover of roughly 726 million Euros with 2,800 employees. Focussing on the future market 50+, about 70 per cent of the orders get in by phone. But also the enterprise's 18 online shops recorded a strong growth with 34.8 million visits in 2015: online orders meanwhile account for 20 per cent of the turnover. And the rest? Is actually still ordered by postcard or fax.

As multi-channel enterprise – catalogues, stores, web shops – the Witt Group has been investing round 100 million Euros in the new logistics centre for the past seven years. Thus, Witt wants to come up to the requirements of the different sales channels and create a future-proof foundation for the growing internationalisation. In the meantime, the logistics centre consists of the Distribution Centre I built in 2008, the Distribution Centre II that went live in 2012, and the Distribution Centre III that has been supplying the picking processes as reserve warehouse with pre-sorted cartons since October 2014.

Centralised warehousing and reduced distances

The originally nine reserve warehouses in and around Weiden involved high replenishment efforts for the Witt Group. Lorries transported the goods required for picking to the logistics centre. This consumed time and fuel. Therefore, these distributed warehouses should be centralised at one site – also to reduce CO2 emissions. This consolidation would in addition optimise the replenishment and delivery performance. The rising number of sales regions and an expanded production range were further reasons for a new building.

Therefore, the mail-order company started to plan the Distribution Centre III (DC III) in 2012 to supplement the existing logistics centre. "During the planning phase, it turned out that a shuttle solution would have included large reserve capacities that we do not need for reserve warehousing. Moreover, a considerably higher investment would have been required," Roland Dietz, Head of Logistics at Witt, explains the decision in favour of an extraordinary solution by TGW: a three-storey high bay warehouse (HBW) for cartons. As systems integrator with a high own value-added share, TGW from Wels in Austria was responsible for the steelwork, conveyor and warehousing technology, material flow and control system, as well as for the interfaces to the adjacent equipment. "The cooperation between customer, planner and TGW was good right from the start," emphasises TGW Project Manager Otmar Weiss.

Apart from the HBW for reserve warehousing, the DC III also covers the new goods receiving as well as workstations for reworking, quality management, picking of C-class items and manual palletising. In the P&D area of the HBW, there are a loop and a buffer for the pre-sorted cartons. Another highlight: In order to transport the pre-sorted cartons from the HBW to the picking area in the DC II, a bridge made of glass with a length of 70 metres has been constructed to connect the two buildings. It not only serves for transport: The employees need not cross the yard to get from one building to the next. Witt invested 41 million Euros in this largest building project of their company's history.

Storage on three levels

On average, about 10,000 cartons with textiles from Europe and Asia arrive at Witt by lorry every day. After their arrival, the cartons are loaded manually from the lorry onto telescopic boom conveyors and transported on them to one of the four goods receiving stations. The cartons will be labelled automatically and the barcode on the label will be registered by scanning. Then, the cartons will proceed to the first floor on the conveyor system. Here, volume and weight will be identified automatically as well. Furthermore, the so-called "pre-label" on the carton is read optically via camera: This label includes information such as supplier number, item number, item size and number of items. The pre-label will be allocated to the carton ID on the barcode label. Then the system decides where the carton will be transported to. If, for example, a carton is too large to be stored in the HBW, it will be rerouted at one of the three rework stations. From there, it will be returned to manual palletising, if necessary.

The storable cartons will be stored in the three-storey high bay warehouse with its 450,000 storage locations – the heart of the installation. The HBW with a footprint of 6,300 square metres is 28 metres high, 48 metres wide and 132 metres long. A total of thirty TGW storage and retrieval machines (SRM) of the Mustang Evolution type with an overall performance of about 3,500 double cycles per hour supply the three levels with ten aisles each. "The three-storey high bay warehouse is the chief attraction of the installation. We also have the option to increase performance by installing another P&D area at the opposite side. But at this time, the performance is absolutely sufficient. Normally, about 420,000 storage locations are occupied so that there is still some air to breathe," explains Roland Dietz.

In the area in front of the HBW, there is a conveyor system loop as well as twelve buffer lanes on two levels. This is where the cartons are retrieved to, pre-sorted in the sequence in which they will be required for picking onto roll containers in the DC II.

Special solution for picking onto roll containers

The batch-wise picking is a particularity at Witt: The pre-sorted cartons are held available on the buffer lanes in the P&D area of the DC III. They will then be transported on two conveyor system lines to the DC II via the bridge. Having arrived there, the picker puts the cartons onto roll containers. The workstation for this was particularly designed by Witt, their company doctor and by TGW, taking into consideration ergonomic aspects. The empty roll container which can hold up to 16 cartons is provided at the workstation. Likewise the cartons that the picker pushes onto the roll container. To do so, the picker can lift the roll container layer by layer to push off the cartons on the same level. This way, top pickers reach a performance of up to 980 cartons per hour. On the roll container, the cartons will then be transported to the picking warehouse and stored manually there. Cartons that are no longer required for picking will be transported from the DC II back to the HBW via the bridge on a third conveyor system line. At total of about 5.3 kilometres of conveyor equipment has been implemented.

Different functions under one roof

The six workstations next to the goods receiving area in the basement of the DC III serve for manual palletising. These are for example cartons that cannot be stored in the HBW due to their width. Likewise, cartons from the HBW that will be relocated, as well as returns to suppliers. In the DC III, the pallets are prepared for being transported to an external warehouse.

Cartons that cannot be read at goods receiving and for which it is therefore not possible to identify a destination will be handled at a special workstation. This workstation can also be used for special tasks. There is a total of seven workstations on the second floor to draw samples for quality management. They also serve for picking single pieces of rarely required items.

Merchandise management is carried out by a system programmed by Witt's own IT department. The ERP is also "made by Witt". The material flow across the three storeys and via the bridge is managed by a Material Flow Controller (MFC) by TGW. And the Commander controls supplied by the systems integrator move the conveyor equipment and storage and retrieval machines into the desired direction.

Adherence to delivery dates during realisation

While customers of Witt expect punctual and careful delivery from their sender, Witt expected the same from the suppliers of this project: As planned, the DC III could go live after 17 months exactly on the scheduled day.

After ground-breaking at the beginning of 2013 and installation of the rack system, the tests started in March 2014. "While the technology was already being installed in the high bay warehouse, there was still construction work going on in the functional building with goods receiving," Roland Dietz summarises the tight schedule. In October 2014, the DC III finally went productive. "It was a sporty time for all suppliers: Right from the start, we adhered to all dates. In my opinion, this was the best and greatest accomplishment," Roland Dietz compliments all parties involved. This is also confirmed by TGW Project Manager Otmar Weiss: "All important milestones were reached. The project was carried out absolutely on schedule."

Fit for the future

With the new building of the DC III, Witt achieved the desired objectives: The innovative solution by TGW for reserve warehousing effected the reduction of previously seven to three external warehouses where for example hanging garments or pallets are stored. The centralisation of several external warehouses at one site saves distances, time and costs. The goods from the reserve warehouse are now faster available for picking. This also reduces the delivery time to the customer.

Moreover, the high bay warehouse has already been designed for future expansions, should a higher performance be required: A second P&D area can be added at the other end of the HBW, the aisles can be equipped with two storage and retrieval machines each. Also the goods receiving area and the workstations can be expanded.

Roland Dietz sees Witt well prepared for the present tasks and is looking ahead: "For the future, I wish that the installation will run as failsafe as possible and that TGW will continue their excellent support. Both parties have come closely together during the project. It was good work, and a very interesting project with a successful result. I can only point this out."

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**About TGW Logistics Group:**

TGW Logistics Group is a global leading systems provider of highly dynamic, automated and turn-key logistics solutions. Since 1969 the company has been implementing different internal logistics solutions, from small material handling applications to complex logistics centres.

With about 2,500 employees worldwide by now, the Group implements logistics solutions for leading companies in various industries. In the business year 2014/15, the TGW Logistics Group generated sales revenues of 475 million Euros.

**Pictures:**

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The DC III is connected to the DC II via a bridge with a length of 70 metres.

FEI\_Witt\_5.jpg

Roland Dietz, Head of Logistics at Witt: "The three-storey high bay warehouse is the chief attraction of the installation."

FEI\_Witt\_7.jpg

View of the area in front of the high bay warehouse: There's the conveyor system loop in the foreground, in the background the twelve buffer lanes on two levels.

FEI\_Witt\_16.jpg

Extraordinary solution: Three storeys with ten aisles each on top of each other.

FEI\_Witt\_45.jpg

The fully automatic goods receiving area.

FEI\_Witt\_50.jpg

The pre-sorted cartons are transported from the high bay warehouse to the DC II via the 70 metre bridge.

FEI\_WITT\_52.jpg

Picking onto roll containers is a particularity at Witt: A picker pushes the pre-sorted cartons off to the roll container.

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