

# Building the tower of Basel

**Marco Ceresa**, Buhler AG, Uzwil, Switzerland

At the site where, up to now, Ultra-Brag AG unloaded ships and warehoused goods in the Rhine port of Basel, Novartis plans to realize its campus idea. As a replacement for its existing installations, Ultra-Brag has therefore moved to the port of Kleinhüningen, where it has constructed an 83 meter tall bulk storage elevator, and to the Muttenzer Auhafen port, where it has built a huge flat store.

Buhler supplied the equipment inside these new facilities. “The construction of these two new installations was an enormous challenge for us,” admits Beat Heydrich, the CEO of Ultra-Brag AG. “But the construction and relocation project also generated new inputs for us and provided us with numerous new, state-of-the-art, and efficient facilities. This gave us the opportunity to improve our processes and to enhance our efficiency.”



The new bulk storage elevator of Ultra-Brag.

## An 83 meter tall tower

The new bulk storage terminal that Ultra-Brag AG operates in the Rhine port of Kleinhüningen is an impressive structure. With its overall height of 83 meters, it clearly dominates the Basel port skyline. Its height required a number of special measures. The structure has to be earthquake-proof, it must be resilient enough to absorb wind loads, and its relatively small footprint of 27 by 40 meters must reliably support its immense weight.

The concrete structure, which was built by the slip-forming method in three stages, stands on a large number of piles with a thickness of up to 1.2 meters, and a length of 28 meters. The bulk storage section of the new Ultra-Brag landmark has a height of about 70 meters. It houses 32 round storage bins plus 15 interstice bins, which hold more than 40,000 cubic meters of material.

Most of the Buhler-supplied equipment is installed in the head house of the elevator building, which is attached on the waterside to the block of bins and rises by another four building levels above the bins. The core systems of the entire installation, however, are the two 87-meter-tall belt-and-bucket elevator legs, which elevate the material from the ship or rail receiving sections to the top of the terminal.

## A special project

“With its height of 83 meters and its very small footprint of merely about 1,000 square meters, the new storage elevator tower of Ultra-Brag AG is a very special case,” explains Marco Ceresa, the Buhler man in charge of coordinating the project.

“In addition, some of the storage bins are vertically split in order to increase the total number of bins. An active explosion protection system and explosion pressure relief through the bin ceilings are part of an overall ATEX explosion control concept.”

The bulk storage technology is state-of-the-art. Numerous chain conveyors and elevator legs move the bulk commodities from the ship unloading point to the storage bins. Special receiving and cleaning systems ensure proper cleaning of the grain, prior to storage. The bulk material bins are exhausted through centralized as well as decentralized dust collection filters.

Buhler also installed the equipment required for loading road and rail vehicles for onward transportation. The fully automated material-handling systems are capable of handling as much as 600 cubic meters of material per hour. This is five times the capacity of the old location.

## Twin-level flat store

The second new building structure built at the port of MuttENZ, Auhafen, differs in many respects from the tall bulk storage terminal. This twin-level flat storage facility, with a footprint of 42 by 120 meters, holds a total of 27,000 cubic meters of bulk animal feeds and 6,600 cubic meters of fertilizer. The modified design supplied by Buhler – with chain conveyors installed above the flat store roof for introducing the material into the feed



Special container dumping platform with integrated receiving pit in the new flat store operated by Ultra-Brag AG in the Auhafen port.

storage section instead of belt conveyors inside the building – increased the customer’s total storage capacity by more than 60 per cent with given building dimensions.

The top level of the flat store is reserved for animal feeds. Its 25 compartments are filled by separate rooftop conveying systems. Fertilizer is stored on the ground floor. The 16 compartments there – which are completely separated from the feed handling installations – are fed directly from the ship berthing point. As the new flat store is not located on the waterside, a high-capacity, dust-free conveying system had to be constructed from the grab crane to the new shed across the railroad tracks and the road.

According to Ultra-Brag, the proportion of animal feeds and derivatives supplied in containers has continuously increased over the past few years. A niche market has emerged for container transportation of bulk materials on selected shipping routes and for special products.

In the flat store of the Auhafen port, Buhler installed a container-tipping platform with an integrated intake pit. This allows automatic discharge of containers, using a programmable logic control system. The container crane installed at the customer’s site deposits the containers directly on the dumping platform. Discharge can start as soon as the container doors have been opened.

## Not only for storing

The material handling systems in the feed storage section and in the weighing tower were designed and installed by Buhler grain handling specialists, as well as the feed intake equipment and installations for loading road and rail vehicles. Buhler also configured and built the complex control system of the plant. Construction of the new building structures for Ultra-Brag AG lasted from the start of construction in the spring of 2008, to commissioning in the autumn of 2009 – a little less than one year and a half.

### ABOUT THE AUTHOR



**Marco Ceresa** is a long time Buhler employee working as Project Manager for the Grain Handling Business Unit. During his years of service for the company he successfully completed a variety of silo and storage projects for our international clients all around the world.

### ABOUT THE COMPANY

**Buhler** is the global technology partner for gentle and efficient handling and storage of valuable agricultural raw materials such as grains or derivatives. Professional grain management is our core competence. The Grain Handling business unit specializes in the design and construction of facilities for unloading and loading ships, trains and trucks as well as handling and storing grain, derivatives, and oilseeds.

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