

# Sugar factories in Belarus won over by the BMA tower extraction principle



The developments in the sugar industry in Belarus can serve as a key example that demonstrates how above-average growth potentials can be used and implemented.

In the former USSR, the four sugar factories in Belarus played a minor role, especially when compared to the powerful sugar suppliers in the Ukraine and in Central Russia. After the Soviet Union collapsed and Belarus became an autonomous republic, the country's four sugar factories had to develop a long-term strategy of survival, like many other companies.

At an average capacity of approx. 4,000 t of beet per day, the Belarusian sugar factories were comparatively small operations at the beginning of the 1990s. Both domestic demand and the favourable conditions for sugar exports were, however, important factors that led to a doubling of the capacities within the following 15 to 20 years. During this time, investments primarily went into beet processing and sugar-end production. The Belarusian sugar factories were, for instance, the first factories on the territory of the former Soviet Union to purchase new-generation BMA centrifugals and replace all machines in their centrifugal stations with BMA machines within a period of eight years.

In view of these rapid changes, the extraction plants more and more often turned out to be bottlenecks in these factories. They normally included two extraction troughs, and, at rated capacities of 2,000 and 3,000 t/d, these had to go to their absolute physical limits, and even beyond these limits during the past years. Although plans to renew the extraction plants had come up for discussion several times during the past ten years, they never became priority investment items, which was primarily due to the very high capital expenditure required for this kind of equipment. However, at the end of 2011/beginning of 2012, the Sluzk and Gorodeya factories finally decided that there would be no further growth without new extraction plants.

The starting point for the projects were international tenders, each for one complete tower extraction plant, with a capacity of 10,000 t of sugar beet per day. Special attention had to be given to the fact that the plants should effectively operate within a range of approx. 7,500 and



*Loading oversize pieces of  
equipment in Braunschweig*

*Automation plant –  
visualisation*

11,000 t/d to account for actual conditions. The nominal capacity of 10,000 t/d will probably only be required in two to three years' time.

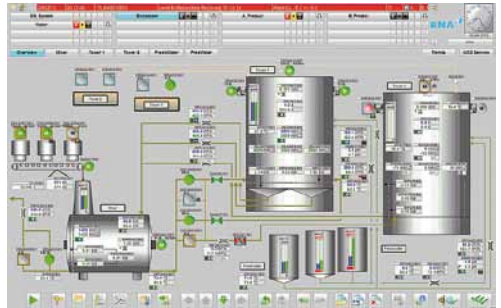
BMA's bid won over the customer both on technical and commercial grounds, and so contracts were rapidly signed in February 2012 for Sluzk and in March 2012 for Gorodeya. Except for specific installation requirements, the plants for the two factories are identical in terms of the installed equipment. Core items of the extraction plants are the BMA cossette mixer and the BMA extraction tower, with diameters of 6.7 x 8.5 m and 9.6 x 22.73 m, respectively. The size of this equipment was selected with a view to the desired processing rate.

Additional equipment and services to be delivered and provided by BMA consist of the complete technological planning work; the delivery of peripheral equipment, such as conveyors, pumps and heat exchangers; the design and delivery of the complete electrical and control systems by BMA Automation; and the supervision of equipment assembly and installation, and assistance with plant commissioning.

Computer-assisted methods are used both for the design of plant components and the technological planning work. The most up-to-date technological and safety standards in extraction technology are taken into account for implementing the plant concept. The materials used in manufacturing the equipment will ensure a long service life and therefore an excellent return on investment.

Since both the countercurrent cossette mixer and the extraction tower are completely manufactured in BMA's own workshop, the projects also present a logistical challenge for the BMA departments concerned as well as the shipping agent. Unit weights of up to 20 tons and pieces of equipment that are up to 6.0 m wide have to be transported as special consignments to their place of destination.

Another difficulty lies in the fact that the Sluzk and Gorodeya factories rely on different control systems and therefore differ in their basic configuration. This had to be accounted for with the control concept for the extraction plants. While the Sluzk automation concept is based on Allen-Bradley components, Gorodeya has automated its



factory with ABB components. For a high level of standardisation, and to utilise the experience of our customers, it was decided that both sides should collaborate very closely on integrating the automation system into the overall factory concept, preparing the software and, in particular, the visual elements.

Since October 2012, there has been an almost continuous flow of goods to Belarus. The first parts to be shipped were the large-size extraction tower and cossette mixer elements. The permit that could be obtained for temporary bonded storage on the premises of the sugar factories proved to be a great advantage, because this allowed all lorries to be directly unloaded on arrival, and customs clearance could proceed without any logistical obstacles to the projects. Agreements signed at an early date and uninterrupted equipment manufacture have created the necessary conditions for an early start of assembly work in the spring of 2013.

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