

## Tailor-made solutions: customized centrifuges for rock candy sugar

The Raffinerie Tirlemontoise, production site of the Candico sugars near Antwerp, Belgium, has a long tradition in manufacturing special sugar products such as raw cane sugar, sugar syrups, and rock candy sugar. Its sugar is mainly sourced from certified organic Fairtrade cane growers in South America and Africa. The production of the amber-colored rock candy sugar previously was done in two centrifuges. For the following reasons these two centrifugal machines have been replaced: First, the centrifuges were installed in a very limited space area and they were manually operated in terms of feeding, start and monitoring of the washing step, as well as discharge. Second, feeding was effected via a common trough with the capacity of only one load per centrifuge. The operator just had one feeding chute which had to be switched between centrifuges during filling. Furthermore, due to the wide particle size range of the rock candy sugar (0.5 up to 35 mm), there was always the chance of unbalances if the centrifuge basket filled improperly. Last but not least, discharge was done by opening a bottom valve only. The discharged rock candy sugar was collected in a big bag underneath the centrifuges. The remaining crystals were discharged manually by the operator. All in all, the washing and centrifuging process was no longer state-of-the-art.

### Highest demands, successful realization

The new solution for handling the rock crystals in a new centrifuge required overall efficiency, product quality and reliability. The situation onsite as well as specific process requirements of Raffinerie Tirlemontoise had to be considered as well. The centrifugation is the final step of the crystallization process that can last from several days to weeks. The main tasks of the centrifuge are centrifuging off the mother liquor, washing the rock candy sugar, followed by dry spinning.

### Planning, manufacturing, installation in record time

In only seven months for the entire project, Heinkel was able to replace the old centrifuges. The newly installed centrifuge is an economical and fully automatic operating bottom discharge centrifuge, type V 1250 BC with full size plough. It fulfills all of the customer's requirements regarding throughput, washing results, and quality of the rock candy sugar. Feeding is achieved by a fully enclosed feed system. The crystal magma is gently fed into the slowly rotating centrifugal basket. Then, the basket is accelerated to a washing speed of approximately 200–300 min<sup>-1</sup>. Then dry spinning is done at approximately

400 min<sup>-1</sup>. After a short dry spinning step, the basket is decelerated to the discharge speed of approximately 20 min<sup>-1</sup>. The full size plough discharges the dry crystals from the centrifugal basket into the collecting big bag.

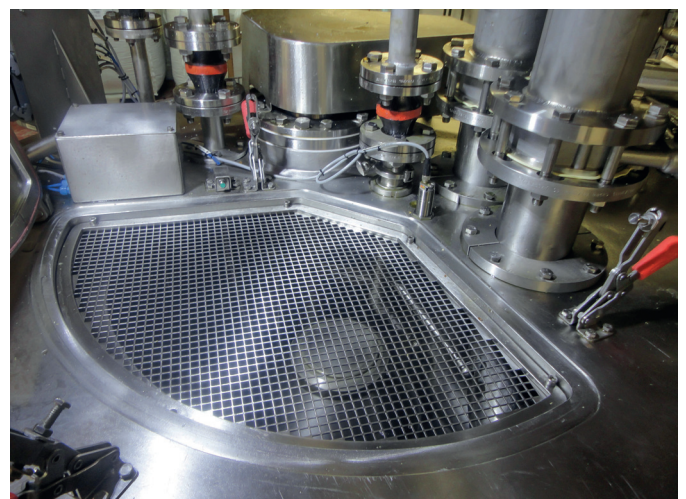
Heinkel also replaced the existing feed system with a new one with proper consideration of the sanitary requirements of the food industry. The limited height in the building forced the engineers to find a special solution for the housing and the overall height. Even at a total height of 2.60 m, maintenance work (removal of basket and bearing unit) can be done.

The PLC of the new centrifugal is fully integrated into the factory's master control system. The automatic operation of the new centrifugal ensures constant process conditions and quality of the product. Also, the adaptation for changing to multiple different styles of products and product characteristics is no longer a problem. A fully automatic CIP system ensures a complete cleaning of the centrifugal housing and basket. The CIP step can be selected after a fixed number of batches.

Author's address: *Thomas Ahrens*, Heinkel Process Technology GmbH, Ferdinand-Porsche-Str. 8, 74354 Besigheim, Germany;  
e-mail: [t.ahrens@heinkel-group.de](mailto:t.ahrens@heinkel-group.de)



Heinkel Centrifuge V 1250 BC, product contacted parts made of stainless steel (1.4571), with SIEMENS PLC and HMI (Photo: Heinkel)



The manhole in the cover is equipped with a safety wire (Photo: Heinkel)