

New extraction plant for the Moorhead sugar factory, USA



Only a few sugar factories in North America still use the outdated slope diffuser technology for sugar beet extraction. One of these factories, the Moorhead plant of American Crystal Sugar Company in Minnesota, has now decided to modernise its extraction plant with a BMA extraction tower that is to replace an old slope diffuser. Commissioning of the system is scheduled for the 2011/2012 campaign.

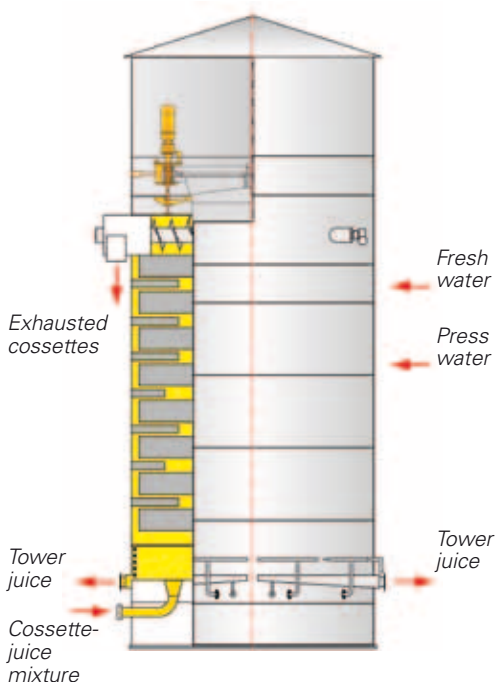
Before this decision was taken, BMA had been commissioned to analyse the technical feasibility of several options and to prepare the basis for an investment cost analysis. The required engineering services included preparing mass and energy balances, process flow diagrams (PFDs), foundation load plans and equipment lists with dimension sheets.

The extraction plant is designed for a beet slice rate of 6,500 sht/d (or approx. 5,900 mt/d). This capacity can be increased at a later stage by extending the height of the tower. Raw juice draught will be 110 % on beet; losses will be a maximum of 0.25 %.

Beet sugar factories in this part of the USA have to cope with very special climatic and therefore also practical conditions. Since winters can be long and extremely cold, with temperatures as low as -40°C , the harvested beet is deep frozen in the fields in a very natural way and can thus be stored right until the month of April. This means that the extraction plant must be thermally able to handle both fresh and frozen beet. An effect of the long beet storage period is that the campaign, together with subsequent juice campaigns, can last 270 days or more. This is where BMA's "Tower 2000" extraction concept can show its strengths. Since the tower has no bottom screens, the effects of wear and tear that are often observed at this point during very long campaigns can be eliminated.

Part of the equipment will be manufactured in BMA's workshop in Germany, but a major portion will be supplied by our Colorado-based subsidiary Brewer Steel, a great opportunity for BMA to use the local manufacturing facilities to the benefit of American Crystal Sugar. Under these conditions, the assembly of the plant will have to be very carefully planned. For the installation of the extraction tower itself, no campaign operations have to be accounted for, because it will be placed outside the building. The only limitations would be due to extreme winter weather. The countercurrent cossette mixer is to be installed in the same place where the slope diffuser is now, so that after the campaign, the diffuser will have to be dismantled and removed, before the cossette mixer can be assembled. Since only very little time is left between campaigns, all these measures will have to be extremely well coordinated. But we are confident that with the usual excellent cooperation between ACSC and BMA, this project, too, will be brought to a very successful conclusion.

Hans Schmidt



Benefits

- Perfect concept for the Moorhead sugar factory
- Proven technology also for an extreme climate
- Parts locally manufactured by BMA
- Short assembly periods