

## Excursion to Südzucker, Sept 17<sup>th</sup> 2009

We arrived at 1 pm at ZAFES Südzucker, Offstein (central research, marked red). Before the trip through the sugar refinery, we heard some introductory presentations in Südzucker business and sugar refinery process (see also attached PDF and link below)



Afterwards we visited some important sites within the sugar refinery, starting with the delivery of beets (dry and wet). It was impressive to see how the delivery of over 16,000 t per day is logistically managed. Most of the beets are delivered wet, which means the beets are transported by stream of water from the trucks to the stockpile (marked green). After settling to separate stones and soil, the water is recycled. Every 1.5 minutes a truck is flushed. Next step is the slicing and washing of the beets. Here the sugar is solved to raw juice and separated from the biomass. The sliced and extracted biomass is pressed, dried and formed to pellets, which are used for feed.

The raw juice is purified with liming and by carbonation with CO<sub>2</sub>. Lime and CO<sub>2</sub> is produced on-site from limestone and coke. The purified thin juice is concentrated by evaporation to thick juice, a stable intermediate, which can be stored until spring when no fresh beets are available.

To get the pure sugar, the thick juice is steam-treated for carefully heating and further concentrating the sugar. After filtration, cooling and providing the sugar concentrate with small seed crystals, the sugar crystallize to white refined sugar. The non crystallized fraction is called molasses and is use as substrate in low cost bioprocesses or as feed component. Because of the low sugar content compared to former times due to better process technology, the use for fermentation is going down.

All water, steam and heat is recycled or used at other process steps with lower requirements. So a sugar refinery is almost autarkic. Only the lime production and some drying steps needs fossil input.

For further information, please contact:

<http://www.suedzucker.de/en/Unternehmen/Standorte/Zuckerfabriken-Deutschland/Werk-Offstein/>