

## Wastewater treatment for sugar industry

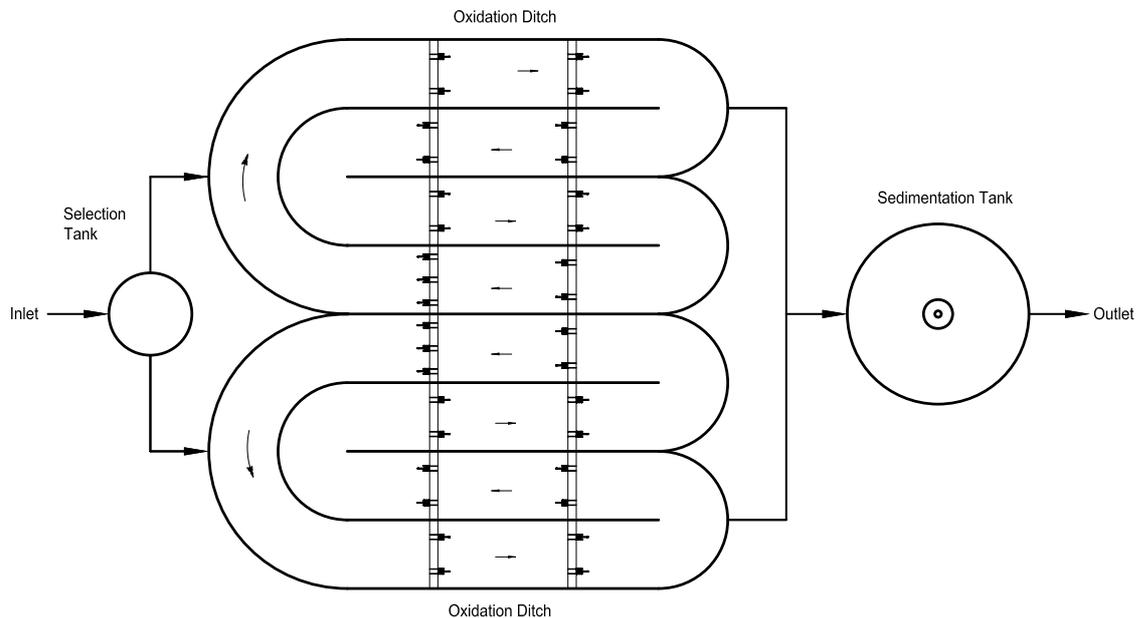
With the special geographical and climatic advantages as well as the tradition of sugar production, Guangxi Province (in South China) has become the largest sugar production base of China. Its market share is counted being over half of the whole national market. Among the large number of sugar refineries, Guangxi East Asia Sugar Group (GEASG) has become the second largest one of China's sugar industry.



The company does not only focus on production, but also takes great care of environmental protection. In order to implement the national regulation for "energy saving and pollutant reduction", GEASG has built biological wastewater treatment plants for five sugar mills of the group. Due to the excellent performance of aeration and mixing of FUCHS Aerators, GEASG decided to use 65 sets of OXYSTAR Aerators for three sugar mills, whereas the other two mills were equipped with aspirators of a US brand.

At the end of 2007 the carrousel shaped oxidation ditch of Funan sugar mill was equipped with 34 sets of OXYSTAR Aerators OS 30.0 (22.0 kW each). The aeration tank has a total volume of approx. 35,100 m<sup>3</sup>. Due to limited space a water depth in the basin of 7.0 m had to be chosen there, which posed a challenge to aeration and mixing. The OXYSTAR Aerators have overcome this problem by ideally combining and optimizing the functions of oxygenation and mixing. The arrangement of the aerators is shown in the following flow scheme.





With the harvest of sugar cane in autumn sugar mills begin their sugar processing campaign, which lasts from November to April of the following year. This leads to the seasonal character of the sugar wastewater. Additionally, the sugar wastewater is characterized by high COD and BOD loads as well as a high daily flow. The characteristics of the wastewater discharged to the activated sludge process are:

Flow rate  $\approx 28,000 \text{ m}^3/\text{d}$ ; COD concentration  $\approx 750 \text{ mg/l}$  and COD load  $\approx 21,000 \text{ kg/d}$ .

Since the OXYSTAR Aerators are in operation, they are showing excellent oxygen transfer and high reliability. Testing treated wastewater from the three sugar mills showed COD concentrations of constantly less than  $100 \text{ mg/l}$ , which undercuts government's "Discharge standard of water pollutants for sugar industry" ( $120 \text{ mg/l}$ ).

Whereas the aerators of the competition raised trouble at their sites, once again it becomes apparent that OXYSTAR Aerators are of an intelligent but simple design and very sturdy. High aeration efficiency and mixing capability, easy handling and mounting as well as low maintenance characterize them.

After having achieved this big success at GEASG, OXYSTAR Aerators have been chosen by other large groups from the same region – not only by sugar mills but also by paper and cardboard mills. The successful application of OXYSTAR Aerators in South China impressively shows that FUCHS Aerators are the ideal partner for sugar industry's wastewater treatment demands.