

Wastewater Treatment Plant of Kaiserslautern

High energy savings and improved discharge values!

Stadtentwässerung Kaiserslautern is operating the central wastewater treatment plant with a capacity of 210,000 PE. The plant contains three activated sludge tanks with a total volume of 22,500 cbm for the biological wastewater treatment.



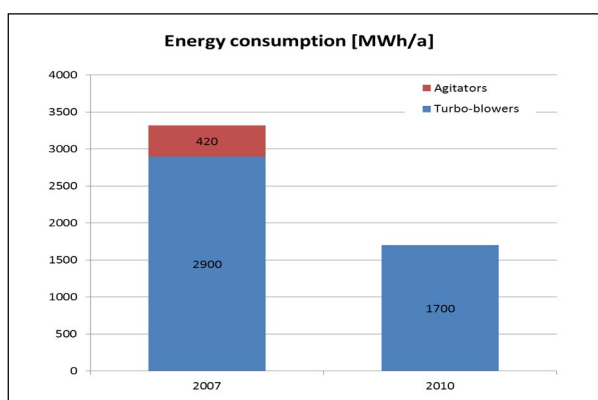
Tasks and requirements:

Due to the age of the existing fine bubble membrane diffusers, they needed to be replaced in all three activated sludge tanks. In addition, significant energy savings were meant to be achieved for the turbo-blowers by replacing the aeration system, without affecting the purification performance of the wastewater treatment plant unfavorably.

Measures taken:

Following detailed examination of different suppliers and methods the decision was made in favor of *RUDOLF MESSNER UMWELTECHNIK* and the companies' holistic and comprehensive optimization system, containing a new process concept and the MESSNER Aeration Panel.

From March to November 2008 the whole mode of operation of the wastewater treatment plant was converted from an upstream and cascaded denitrification to the so-called "Plug Flow Technology" with intermittent denitrification. The existing membrane diffusers were replaced by high efficient MESSNER Aeration Panels. This concept provides a high density of aeration panels at the bottom of the aeration tanks allowing the absence of any agitators and any recirculation pumps and the involved energy costs. Regarding the purification performance an N_{Total} effluent concentration of less than 10 mg/l and energy savings of more than 20% concerning the turbo-blowers had to be guaranteed.



Results and Benefits:

Because of the holistic approach of the new process concept, the MESSNER Control System and the MESSNER Aeration Panels, the results far exceeded the guarantees given. Energy savings regarding the turbo blowers of more than 40% have been achieved. Additionally, 42 agitators became superfluous and could be dispensed with resulting in further energy savings of 420 MWh/a, and also savings in the associated

maintenance and replacement costs. The purification performance target of N_{Total} effluent concentration of less than 10 mg/l has certainly been achieved. Other favorable effects are: no formation of filamentous bacteria or foam, improved sludge index, significantly reduced formation of floating sludge, better sludge stabilization and improved drainage ability.