

Higher environmental safety by improved performance of secondary clarifiers

The requirements on the effluent quality of a sewage treatment plant are subject of permanent tightening. At the moment it is a declared goal to reduce the phosphorus discharge on a minimum in order to decrease the pollution of the receiving water.

The German federal state Hesse has defined already an appropriate ordinance which will be binding at the beginning of 2019. It provides a monitoring value for P_{tot} of 0.7 mg/l and a mean value per month of 0.5 mg/l for sewage treatment plants of magnitude 4.

Operators of sewage treatment plants are challenged to take measures in respect to reach these values and they have to meet the requirements by the end of the year 2018.

One suitable measure to meet the threshold values is to optimize the hydraulic of secondary clarifiers.

In the context of an optimization process for a secondary clarifier the inlet construction was modified on the basis of CFD-simulations carried out by the FlowConcept GmbH. The goal was to stabilize the system behaviour and to minimize the discharge of suspended solids in order to meet the threshold values regarding the detention of phosphorus.

The following figures (figure 1) show the inlet construction in schematical views before and after the optimization at the end of the year 2016.

The water flows out of the existing inlet construction in a comparatively high position and undirected into the settling area. By the chosen optimization the water flows guided and deeper into the settling tank.

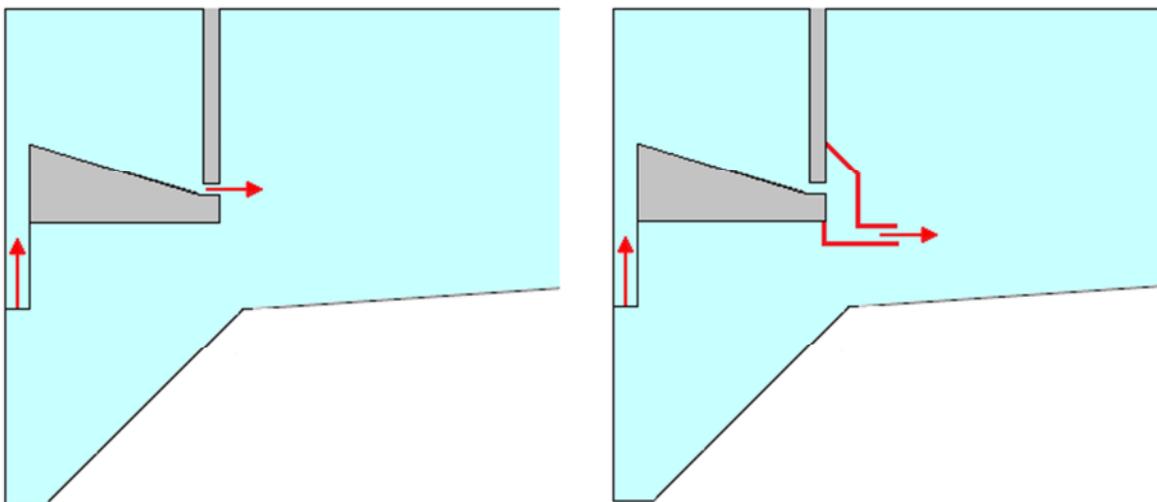


Figure 1: Inlet construction, before (left) and after (right) optimization.

After one year of operation a significant more stable system behaviour within the secondary clarifier was observed. This improvement could be found in a significant better degree of transparency, as well.

The following figure (figure 2) illustrates the development of the degree of transparency in the years 2015 up to 2017.

An improvement of the degree of transparency could be observed already with the start of the S>Select-process at the beginning of 2016.

The degree of transparency was significantly increased again in 2017 due to the optimization of the inlet construction at the end of 2016.

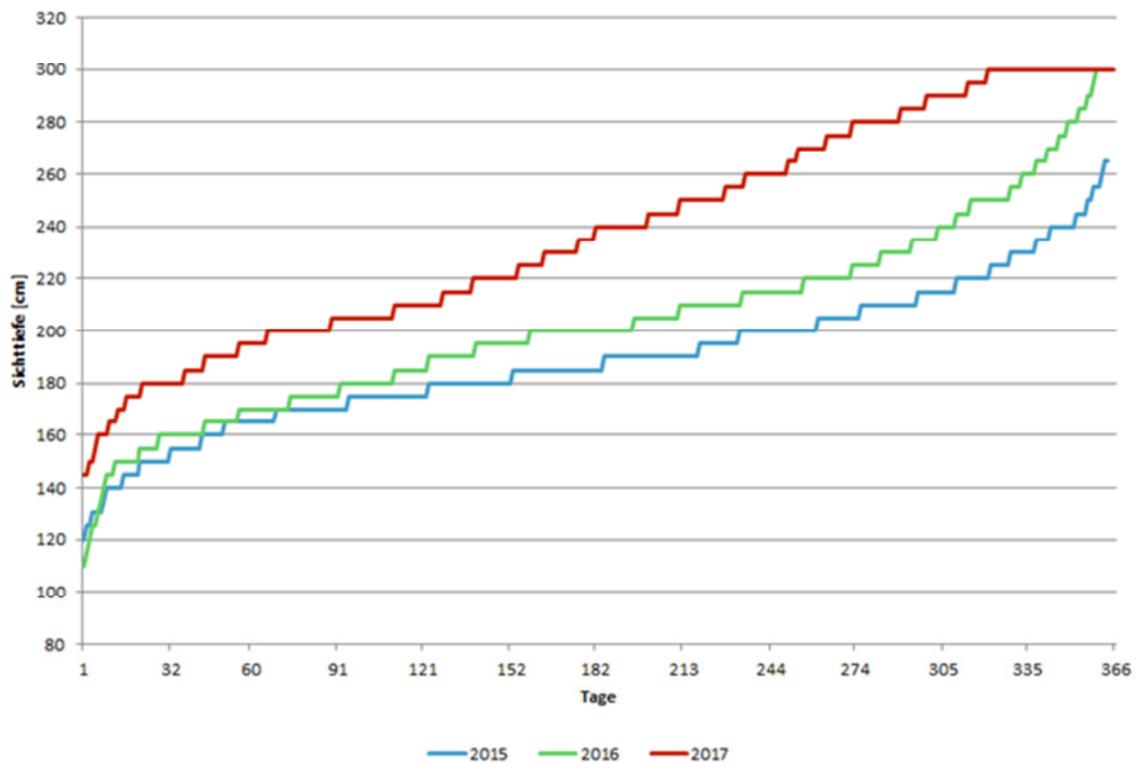


Figure 2: Development of the degree of transparency.

With a manageable effort of costs for the CFD-studies and the reconstruction of the inlet construction the required cleaning capacity could be reached.

You are welcome to contact us for more details.

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