

## HUBER RODISC® ROTARY MESH SCREEN IMPROVES EFFLUENT QUALITY ON WWTP ALTÖTTING, BAVARIA

### CASE STUDY

The HUBER RoDisc® Rotary Mesh Screen is an efficient, economical and fast to implement solution to upgrade wastewater treatment plants. The screen produces a virtually solids-free effluent. The municipality of Altötting counts a total of 13,000 residents in 43 districts. The sewage treatment plant consists of a mechanical treatment stage with a screen and grit trap plant and an anaerobic settling tank for biological phosphorus elimination. The aeration stage consists of two tanks aerated intermittently and two secondary clarification tanks. Simultaneous precipitation is possible if required to remove residual phosphorus.

The clarified water is discharged into the river Inn, a category I water body of quality class II. The aim of the project was to reduce COD, BOD and phosphorus in the WWTP effluent and reduced the loads discharged to the receiving watercourse. The municipality reviewed all options and then decided to test a downstream filter plant. In June 2010 we installed a HUBER RoDisc® Rotary Mesh Screen test unit on WWTP Altötting.

The test unit with 10 µm aperture was installed downstream of the secondary clarification tank. The screen is fed via a submerged pump which is located in the collection chamber downstream of the secondary clarifiers. The screen consists of horizontally arranged rotating filter discs installed on a central shaft and are submerged by up to 65 %. The disc segments are covered with a woven polyester mesh. The wastewater to be treated flows through the segments from inside to outside and the filtrate is discharged over a weir at the inlet end of the screen. The advantages of using such a mesh are in particular its defined separation size, two-dimensional structure, long life and stability. The filter discs remain in rest position during the filtration process, which results in low operating costs. The solids retained at the screening surface lead to water back-up and cause thus the water level to rise within the discs and central pipe. When the predefined maximum water level has been reached, the solids are removed from the filter surfaces by the slow rotation of the filter discs combined

with a spray nozzle bar. The spray nozzles are pump fed utilising some of the filtered wastewater (internal wash water circulation), this eliminates the need for external water supply.



The removed solids are washed into a trough situated below the segment openings prior to being discharged and the filtration process runs on continuously whilst the filter discs are being cleaned. The resulting level difference between the water level inside the central shaft and inside the concrete tank is the driving force within the filtration process and renders unnecessary wastewater lifting or sucking off

Samples were taken regularly upstream and downstream of the screen and tested for filterable materials (AFS) and chemical oxygen demand (COD) to determine screen efficiency. The test unit proved that the very fine 10 µm mesh removes virtually all filterable solids (AFS) from the wastewater flow. The average effluent concentration of filterable solids (AFS) downstream of the screen was constantly below 5 mg/l.

The screen could prove its high efficiency especially under storm water conditions with a high hydraulic load and increased sludge overflow from the secondary clarifier. Even with an increased sludge overflow of up to 30 mg/l AFS in the inflow the screen reliably achieved effluent values below < 10 mg/l (≥ 66 % reduction).

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An average COD reduction of 31.2 % could be shown during times of sludge overflow, with effluent values not above 30 mg/l COD.

Due to the low COD achieved in the effluent downstream of the screen, and thus the proven reduced oxygen consuming load discharged to the receiving watercourse, the investment for the screen can be compensated with reduced wastewater charges. In view of the economic benefits and the positive impact on the environment the municipality finally decided to buy a HUBER RoDisc® Rotary Mesh Screen. We received the order in April 2011 and selected a screen with 22 discs and 10 µm mesh for 1,008 m<sup>3</sup>/h throughput. The plant was commissioned in July 2012.

The HUBER RoDisc® Rotary Mesh Screen installed on WWTP Altötting represents a decisive contribution to the protection of the river Inn as the screen reduced oxygen-consuming loads and prevents eutrophication. The low pressure loss combined with small space requirements permitted the problem-free integration of the downstream filtration stage into the existing wastewater treatment plant.

