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Three HUBER RakeMax® screens on WWTP Magdeburg/Gerwisch

The sewage treatment works Magdeburg/Gerwisch was officially commissioned in 1999 after a construction period of two and a half years. It is designed for 426,000 PE and operates with 90 percentage utilisation. An annual average of 17 million cubic metres of wastewater and stormwater is treated on this sewage treatment plant. All coarse waste material is retained in the three-line and two-line screening plant. When the sewage treatment works was planned 15 years ago for the installation of three fine screens, additional space was already planned for the later installation of three upstream coarse screens. In order to prevent the operating troubles which especially occurred with increased screenings volumes after storm events the plant operators Städtische Werke Magdeburg GmbH recently decided to order the three coarse screens.

The order for the coarse screens was placed with HUBER and we supplied and installed three RakeMax® screens with 20 mm bar spacing each. The channel width on site is 1,800 mm, channel depth is 1,500 to 1,900 mm. The type of coarse screen we supplied has an effective screen rack width of 1552 mm and a rack height of 1,650 mm. The screen design and hydraulic layout is based on 1,040 l/s per screen. The bar rack is designed to ensure the individual screen surface segments can easily and quickly be replaced even one against the other. The design with the bar rack divided into small segments instead of individual bars increases the static stiffness of the screen rack. Stability is increased even if the screen rack is exposed to higher loads.

A total of six rake bars with screw-fastened screen combs are installed on the chain system. Also the screen combs are made up of individual segments for easy and quick replacement if required. Due to the hydraulic conditions on site tear-drop shaped bars are used, which have well proven in operation already. Due to the flow-optimised design of the bars a significantly lower head loss can be achieved than with flat bars. The rake tines, extending at least 20 mm deep and far through the bars at the narrowest points of the screen rack, ensure that all screenings are taken up very reliably.



Discharge end of the coarse screen with wash press

The chains are driven by an electric motor. Maintenance-free ceramic bearings are used in the underwater areas. The chain side bars and bushings are made of corrosion-resistant stainless steel. The rollers are made of special plastic material due to the low frictional resistances. An electro-mechanical overload protection system (spring assembly with deflection monitoring) reliably ensures that the process is interrupted when the preset overload is reached, or in case of a blockage. A wiper pushes the removed screenings from the rake shelf by into the feed hopper of the downstream wash press. Each wash press is designed for a throughput of 3 m³ screenings per hour and achieves a DS content of at least 35%. The compacted screenings are dropped into the customer's double-screw conveyor which transports the screenings to the disposal container.

The three coarse screens and the wash presses were installed line by line as two lines always had to be available to ensure reliable wastewater treatment on site. After the successful exchange of data with the process control system and functional test of all switching and control units the respective coarse screen was put into operation for a test period of on average 5 weeks. The test operation of all three screens went off without problems. They have also operated without disturbances since their commissioning in April 2012.

On this occasion we would like to thank all parties involved in the project, especially everyone at the Magdeburg/Gerwisch sewage treatment works and Mr. Nabert and Mr. Peters of PWU Planungsgesellschaft Magdeburg, for the trust placed in HUBER.

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