HUBER Technology Nordic AB

Technical road runoff treatment with HUBER Disc Filter RoDisc®

The Bavarian Capital Munich is one of the large cities in Germany with the highest percentage of impervious surfaces (46.6% built and sealed). Due to the increasing building density, cities are generally faced with the problem of lesser and lesser infiltration of rainwater water during storm events and the associated increasing risk of overflowing local sewers. Moreover, road runoff water contains not only grit and gravel but also considerable amounts of eco-toxicologically relevant substances from tyre wear and tar residues, for example heavy metals, such as cadmium, zinc and lead, as well as polycyclic aromatic hydrocarbons [PAH] and petroleum-derived hydrocarbons [PDH]. During rainfalls, the abrasion particles from road surfaces are washed directly into surface waters or the combined sewer system.

Compared to the continuously generated residential wastewater, road runoff is on average generated only during 5% of the time and in varying intensity. Suddenly occurring storm events generate massive concentrations in the road runoff.

Installation of the road runoff treatment plant under a roundabout

The environmentally sound treatment of road-run offs is still an unsolved problem. A water safety regulation for the treatment of wastewater from highly frequented roads has been developed in Switzerland especially for this application. It is generally differentiated between two types of road runoff treatment systems. Due to the extensive sealing of surfaces, the runoff of precipitation water cannot be ensured anymore with retention soil filters on a natural runoff treatment plant but is treated in a so-called technical road runoff treatment systems.

To meet the requirements of a technical road runoff treatment systems, HUBER SE has modified its HUBER Disc Filter RoDisc ® especially for this application. Since the end of 2015, two of these treatment plants have been operated in the Lucerne area. The plants "Seetalplatz" and "Frohburg" are designed for a road catchment area of 3.2 hectares and 2.1 hectares. The roads in the catchment area of Seetalplatz are frequented by about 50,000 vehicles per day. An important point during the project engineering phase was the careful consideration of the course of the roads. On winding roads, the concentration of wear particles from road covers and tarred surfaces is significantly increased.

The road runoff treatment plant consists of several treatment stages. The road runoff flows through a line network to the treatment plant, preferably by gravity if possible. Settleable solids, such as grit and gravel, settle in the preceding coarse material separator due to difference in density. The wastewater flows then into a settling tank where the finer suspended particles settle and are removed at intervals via the sludge. In the last treatment stage, the pre-treated wastewater with a volume flow of 30 l/s is directed to the HUBER

Disc Filter RoDisc® prior to being discharged for infiltration or to a water course.

The efficiency of road runoff treatment plants is categorized according to the solids and heavy metal reduction they achieve. As to solids, a separation efficiency in excess of 85% is reliably achieved, and more than 60% of the heavy metals (measured with zinc and copper) are reliable removed.

The decisive advantages of HUBER disc filter plants lie in the absolute surface filtration and intensity of filter cloth cleaning. These are two indispensable factors as both tar and tyre abrasion particles have a high tendency to irreversible adhesion. Furthermore, the filter discs are designed to reduce the space requirements of the plants to a minimum.

A member of the HUBER Group

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