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## Stormwater tanks with effective flood protection in the Principality of Liechtenstein

Due to ever increasing surface sealing high amounts of rain water occur suddenly and flow into the sewer system along with domestic wastewater. As the stormwater amounts which occur are very high therefore, the flow capacity must be regulated by means of stormwater tanks to relieve the sewer system. The municipality Ruggell therefore commissioned the engineering office Wenaweser+Partner Bauingenieure AG in Ruggell (Liechtenstein) to plan the stormwater tank "Kirche".



*Manhole cover SD7 with reduced installation height*



*Pressure door with central lock*



*Half-high locking lever*

Now as the stormwater tank has been erected the combined water (stormwater and domestic wastewater) from the sewers can be stored and passed on to the sewage treatment plant after storm events. At the tank inlet the stormwater is treated at first with HUBER HSW screens. If the stormwater tank capacity is exceeded, the water passes a second treatment stage before the overflow is discharged to the receiving water course. In this way the pollution load the receiving water course has to cope with is reduced to a great extent.

Depending on their mode of operation one distinguishes between different types of stormwater tanks: tanks designed to retain the first amount of discharged stormwater and stormwater tanks with overflow for settled combined sewage and tank overflow. The combination of both types is called a compound basin. The water in the stormwater tank designed to retain the first amount of discharged stormwater is very polluted as it contains the sediments in the sewers that are washed away with the first flush. The stormwater tank with overflow for settled combined sewage and tank overflow does not only store the rain water but also retains floating material and provides for additional clarification of the stormwater overflow discharged to the receiving water course. The stormwater tank "Kirche" is such a compound basin.

Several HUBER products were supplied under this joint project between Picatech Huber AG and Helmut Breschan AG: two high-performance HUBER HSW screens, pressure doors TT7 and TT7.Z and manhole covers SD7. The TT7 pressure doors are designed to be tight up to the upper tank edge and withstand the water pressure. The doors with locking levers are easy to operate. The manhole covers which were selected are pedestrian bearing manhole covers type SD7. As a gas pressure spring is installed as standard the cover can easily be opened and closed.

We wish to take this opportunity to thank the municipality Ruggell for their cooperation and confidence in our products. It has been a pleasure for us to work with them and develop this solution.

#### **Facts and figures:**

- Length 28.4 m, maximum width 16.5 m, maximum depth 8.4 m
- Maximum tank volume (compound basin): 250 m<sup>3</sup>
- Maximum pump sump volume (pumping station) 200 m<sup>3</sup>
- Installed capacity of the surplus pumping station: approximately 1,800 l/s

#### **Related Products:**

- [Manhole Equipment](#)
- [Technical Doors, Louvres and Windows](#)
- [Pressure-tight Door](#)
- [Storm & Sewer Equipment](#)
- [Combined Sewage Screens - Screens for sewer overflows](#)

**Related Solutions:**

- [HUBER Solutions for Stormwater Tanks](#)

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