

HUBER Hydro Filt Decentralised Stormwater Treatment



Sustainable treatment and infiltration of metal-containing stormwater runoff from metal roofs

- Adsorption of metals
- Cost-effective alternative to central plants
- Easy maintenance
- Long system life
- Allows for installation under roadways

►► The situation

As an alternative to conventional discharge of roof runoff into the sewer system decentralised retention and infiltration of rainwater has increasingly become an issue. This is particularly of interest in urban areas it can be considered a sustainable and cost-effective alternative or add on to the traditional dewatering systems. The load of the wastewater treatment plant inflow will also be reduced and additionally the regeneration of groundwater and the natural water cycle supported.

Against this background, treatment of rainwater runoff prior to discharge into ground-water, or above-ground water courses or a sewer is becoming increasingly important due to the high pollutant loading. When comparing decentralised dewatering concepts, on-the-spot treatment has turned out to be the most cost-effective and ecological solution.

German DWA standards only allow infiltration of runoffs from uncoated covers made of copper, zinc or lead into a minimum of 30 cm activated topsoil layer, or after treatment within an overgrown filter plant with a pre-treatment and retention area. However, as the space requirements for this method are high, and frequently too high in urban areas, the alternative could be underground infiltration.

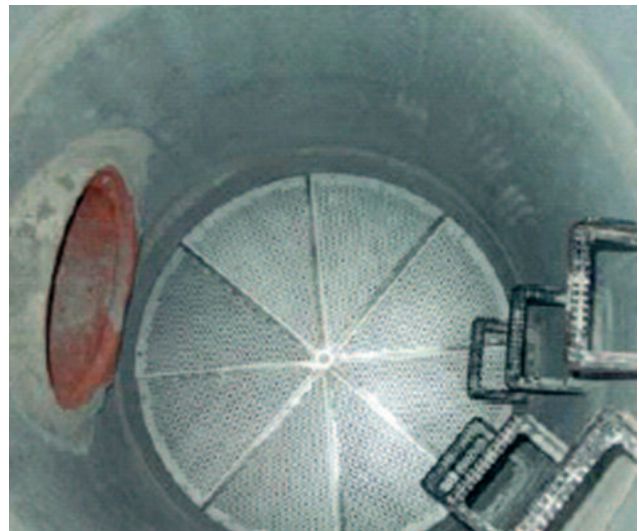
►► The solution

The HUBER Hydro Filt is an innovative and efficient filter system for purification and subsequent filtration of rainwater containing metal from the roofs of buildings. The system consists of an upflow filter with the insert of a special filter material installed into concrete shafts approved specifically for the purpose of rainwater infiltration and the chemical-physical process of ion exchange removes metallic ions from the rainwater to be treated.

The special features of this filter system are its capability to virtually completely remove the high concentration of pollutants within the first flush at the beginning of a storm event, and its easy regenerability. Depending upon the filter utilisation rate and amount of roof runoff to be treated, the filter material is regenerated on site to re-establish its full adsorption capacity, or may be replaced.



Copper roof with a patina



Shaft with a built in HUBER Hydro Filt with lateral connection for the partial drain pipe



Zeolite filter medium for the HUBER Hydro Filt

►► The function

The HUBER Hydro Filt System consists of a shaft into which an infiltration ditch with a porous partial drain pipe is connected, and the innovative filter installed within the shaft with an upward flow stream through the zeolite filter medium.

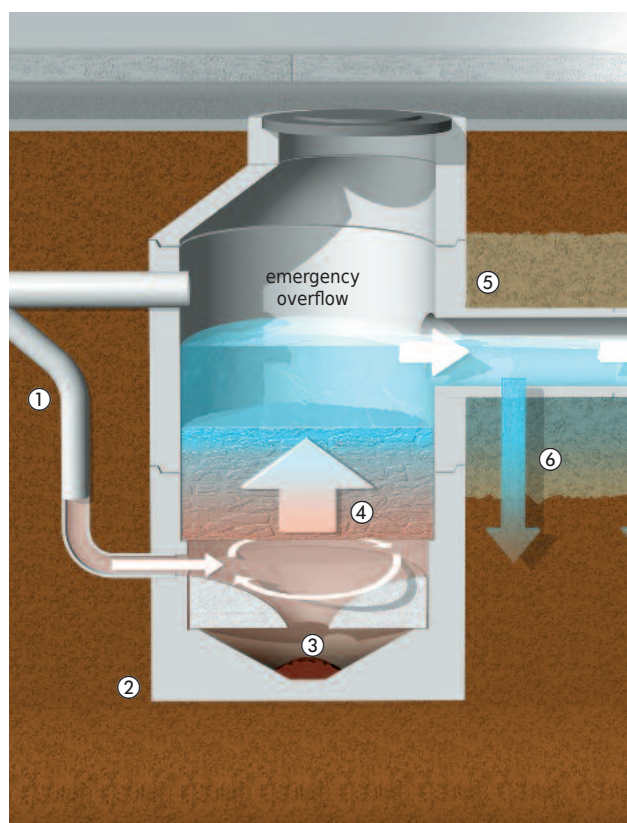
The roof runoff to be treated flows through a frostproof inlet ① into the bottom part of the shaft ②, which has the function of a sedimentation chamber ③ where a separation of the mineral materials contained within the rain-water runoff takes place. The advantage of this method is, when compared to conventional well drains, that mineral solids and pollutants are removed prior to the filter unit ④ so that filter blocking is eliminated. The upward flow stream then enters through the Hydro Filt, which is installed within the shaft that contains the filter medium. An additional material separation as a result of chemical precipitation and complexation takes place within the connected partial drain pipe ⑤ which is manufactured of drain concrete with a pH-reactive bottom. The remaining residual material is then cleaned by the sand within the infiltration ditch ⑥.

The complete system is highly cost-effective and requires only minimum maintenance and cleaning. The preceding sedimentation chamber prevents silting up of the plant, in particular the HUBER Hydro Filt and the partial drain pipe. Every 8 – 10 years, dependent upon the filter utilisation rate, the mineral particles within the sedimentation chamber have to be removed through a suction line via an external connection for the suction pipe.

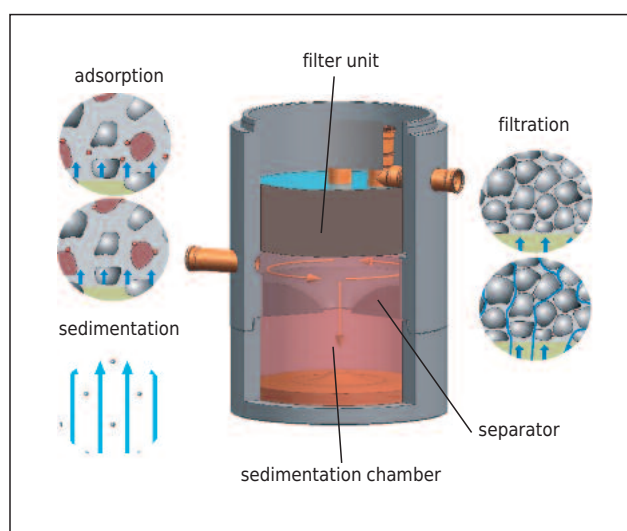
If there is an emergency overflow, the stormwater to be treated flows through the shaft directly into the partial drain pipe that retains in this case the pollutants. The maximum pollutants retention is thus ensured under any operating conditions to protect the soil and groundwater.

►► The benefits

- Complete underground system design
- No additional above-ground space requirement
- Long system life as silting up is prevented
- Easy and minimum maintenance
- Cost-effective alternative to central plants
- Allows for installation under roadways (up to construction class III)



HUBER Hydro Filt System with flushing shaft and concrete HydroPipe



Schematic drawing of the treatment process in the filter unit area

►► Installation examples

A selection of installation examples will convince you of the HUBER Hydro Filt system.



Academy of Fine Arts Munich
Roofage $A_{red} = 5200 \text{ m}^2$



Restaurant in the English Garden in Munich
Roofage $A_{red} = 620 \text{ m}^2$



Government building in Munich
Roofage $A_{red} = 1800 \text{ m}^2$



Retirement home with zinc roof
Roofage $A_{red} = 2600 \text{ m}^2$

►► System sizes

Hydraulic system dimensioning and length of drain pipes depend on the project-specific data.

Shaft diameter DN 1000

Maximum roofage $A_{red} = 500 \text{ m}^2$

Shaft diameter DN 1500

Maximum roofage $A_{red} = 1000 \text{ m}^2$

HUBER SE

Industriepark Erasbach A1 · D-92334 Berching
Phone: +49-8462-201-0 · Fax: +49-8462-201-810
info@huber.de · Internet: www.huber.de

Subject to technical modification
1.0 / 3 – 8.2010 – 4.2005

HUBER Hydro Filt Decentralised
Treatment of Stormwater