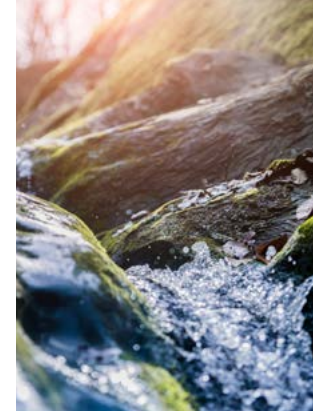
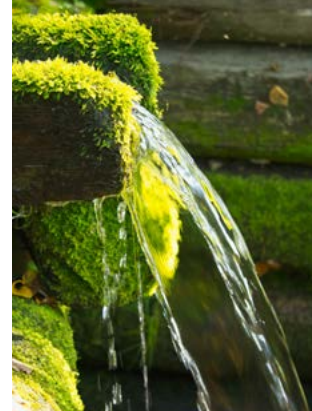


# STORMWATER TREATMENT



# INFORMATION

**3P TECHNIK**  
p. 4-5

**3P Showroom**  
p. 6-7

**Product overview  
and certificates**  
p. 8-9

**Our plants as  
3D-CAD data**  
p. 10-11

**Importance  
of maintenance**  
p. 12-13

# WHY MUST WE TREAT STORMWATER?

**3P NET MONITORING**  
p. 16-19

# WHAT IS SEDIMENTATION?

**OVERVIEW 3P  
SEDIMENTATION  
PLANTS**  
p. 22-23

**Hydroshark**  
p. 24-33

**Hydroshark Vario**  
p. 34-37

**Hydroshark Modular**  
p. 38-43

**Hydroshark with  
pump shaft**  
p. 44-45

**Hydroshark Gully**  
p. 46-49

# WHAT IS FILTRATION?

**OVERVIEW  
3P FILTRATION  
SYSTEMS**  
p. 52-53

**Hydrosystem 1.000**  
p. 54-59

**Hydrosystem 1.000  
multiple units**  
p. 60-69

**Hydrosystem 1.500**  
p. 70-75

**Hydrosystem 1.500  
multiple units**  
p. 76-85

# PROBLEM MICROPLASTICS

**OVERVIEW MICRO-  
PLASTIC FILTRATION  
SYSTEMS**  
p. 88-89

**Hydrosystem  
Microplastic**  
p. 90-93

**Hydrosystem Modular**  
p. 94-97

# OTHER TREATMENT PLANTS

**OVERVIEW OTHER  
TREATMENT PLANTS**  
p. 100-101

**3P Hydro Filter Channel**  
p. 102-107

**Budavinci**  
p. 108-113

**Hydrosystem 400**  
p. 114-117

# 3P FLOW REGULATOR

**Flow Regulator**  
p. 120-121

CONTENT





# 3P TECHNIK -

PROTECTING WATER  
EVERYWHERE, IN EVERY WAY

3P Technik, located in Bad Überkingen, Germany, is a leading player in solutions for the efficient treatment and use of stormwater. Our company has been active in stormwater management for over 25 years. We develop and produce innovative technologies that set the benchmarks in our industry. The company operates globally and markets its products worldwide.

3P Technik has extensive expertise in stormwater management for all phases of a project, from prototype development to approval, from design to support for the implementation. With a wide range of services, we cover the entire value chain. This means that our customers receive first-class products and services as well as optimum support for achieving their project goals.

Our corporate values are innovation, sustainability and efficiency. The focus of our actions is on environmentally-friendly and economical purification and use of precipi-

tation water. In this way, we pursue the goal of making a sustainable contribution to environmental protection and resource conservation. We offer our customers innovative technologies that are helping to shape the future of stormwater management.

Our dedicated team of experts is continuously working to develop solutions for the increasingly complex requirements of stormwater management. 3P Technik's products comply with all standards and specifications, which differ in each German state and are among the strictest in the world.

We only market equipment that has undergone rigorous laboratory and field testing, complies with legal requirements and has the necessary approvals. The product range includes a wide range of solutions such as the volume filter series with large filters, backwashable tank filters, sedimentation systems, downpipe filters and low-maintenance retention throttles.



# 3P VIRTUAL SHOWROOM

Our virtual showroom gives you a better understanding of how our products work through visualization. This innovative technology ensures enhanced planning reliability and facilitates informed decisions for your individual requirements.

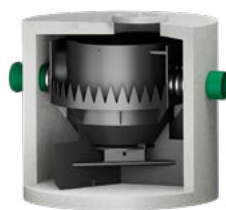
To the Showroom:  
<https://virtual.3ptechnik.de/>





# PRODUCT OVERVIEW AND CERTIFICATES

## SEDIMENTATION



### HYDROSHARK

- Interpretation according to **DWA-A 102, DWA-M-153**
- Tested according to **separation edict NRW**
- **LANUV-list NRW**
- **NJDEP certified**
- **NJCAT verified**



### HYDROSHARK VARIO

- Interpretation according to **DWA-A 102, DWA-M-153**
- Tested according to **separation edict NRW**
- **LANUV-list NRW**



### HYDROSHARK MODULAR

- Interpretation according to **DWA-A 102, DWA-M-153**
- Tested according to **separation edict NRW**
- **LANUV-list NRW**



### HYDROSHARK WITH PUMP SHAFT

- Interpretation according to **DWA-A 102, DWA-M-153**
- Tested according to **separation edict NRW**
- **LANUV-list NRW**



### HYDROSHARK GULLY

- Interpretation according to **DWA-A 102, DWA-M-153**
- Tested according to **separation edict NRW**
- **LANUV-list NRW**



### HYDROSHARK WITH BYPASS

- Interpretation according to **DWA-A 102, DWA-M-153**

## FILTRATION



### HYDROSYSTEM 1.000

- **DIBt approval**
- **LfU metal roof Approval**
- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**
- **LANUV-list NRW**
- **VSA performance test**



### MULTIIPLE PLANTS HYDROSYSTEM 1.000

- **DIBt approval**
- **LfU metal roof Approval**
- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**
- **LANUV-list NRW**
- **VSA performance test**



### HYDROSYSTEM 1.500

- **DIBt approval**
- **LfU metal roof Approval**
- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**
- **LANUV-list NRW**
- **NJDEP certified**
- **NJCAT verified**
- **VSA performance test**
- **SQUIDep certified (Australia)**



### MULTIIPLE PLANTS HYDROSYSTEM 1.500

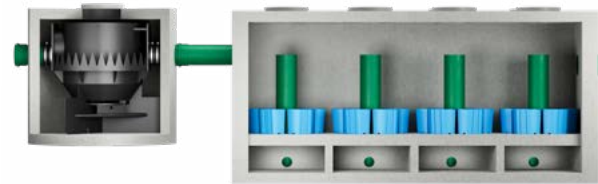
- **DIBt approval**
- **LfU metal roof Approval**
- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**
- **LANUV-list NRW**
- **VSA performance test**

## MICROPLASTICS



### HYDROSYSTEM MICROPLASTICS

- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**
- Tested in the **Field test**



### HYDROSYSTEM MODULAR

- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**
- Tested in the **Field test**

## OTHER TREATMENT PLANTS



### 3P Hydro Filter Channel

- **DIBt approval**
- **LANUV list NRW**
- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**
- **VSA performance test**
- **SQUIDep certified (Australia)**



### BUDAVINCI

- **DIBt approval**
- **LANUV list NRW**
- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**



### HYDROSYSTEM 400

- **LfU metal roof Approval**
- Interpretation according to **DWA-A 102, DWA-M-153, DWA-A 138**



### ECOSAVE PROTECT

- **DIBt approval**

## FLOW REGULATOR



### FLOW REGULATOR

- **Test certificate**



# OUR PLANTS AS 3D-CAD DATA

---

**Building Information Modeling (BIM)** is an innovative method in the building and civil engineering sector, among others, which fully digitizes structures and provides all information. This is a progressive approach to the planning aspect, which covers the full planning process.

BIM uses state-of-the-art technology and software solutions to provide information, data and models that are incorporated into the various project phases. These aspects create a holistic approach that offers many advantages. The main feature of BIM is the „3D model“, this fully digitized model contains all relevant information about our treatment plants and stormwater treatment systems and creates the basis for optimal collaboration and comprehensive information exchange between **manufacturers, engineers, planners, contractors and clients**. By using this overarching platform, various aspects of construction are optimized.

Likewise, the direct database integration into the „planning software“ used realizes a significantly more efficient planning and subsequent implementation, since all parties involved in the planning process have access to the same data and information status.



FOR MORE INFO SCAN HERE OR GO TO:  
[https://3p-technik.partcommunity.com/3d-cad-models/3p-technik?info=3p\\_technik&cwid=6410](https://3p-technik.partcommunity.com/3d-cad-models/3p-technik?info=3p_technik&cwid=6410)





# IMPORTANCE OF MAINTENANCE

SIMPLE, FAST AND RELIABLE

Treatment systems for stormwater runoff must be checked and maintained at regular intervals, otherwise the sludge traps will overflow, and the filters will block. To make this as easy as possible, there are of course maintenance instructions for all 3P plants. In addition, we offer training courses at which the maintenance of the systems is explained in a practice-oriented manner.



FOR THE 3P MAINTENANCE VIDEOS  
SCAN HERE OR GO TO:

**[www.3ptechnik.com/informationen-2/  
maintenancevideos/](http://www.3ptechnik.com/informationen-2/maintenancevideos/)**





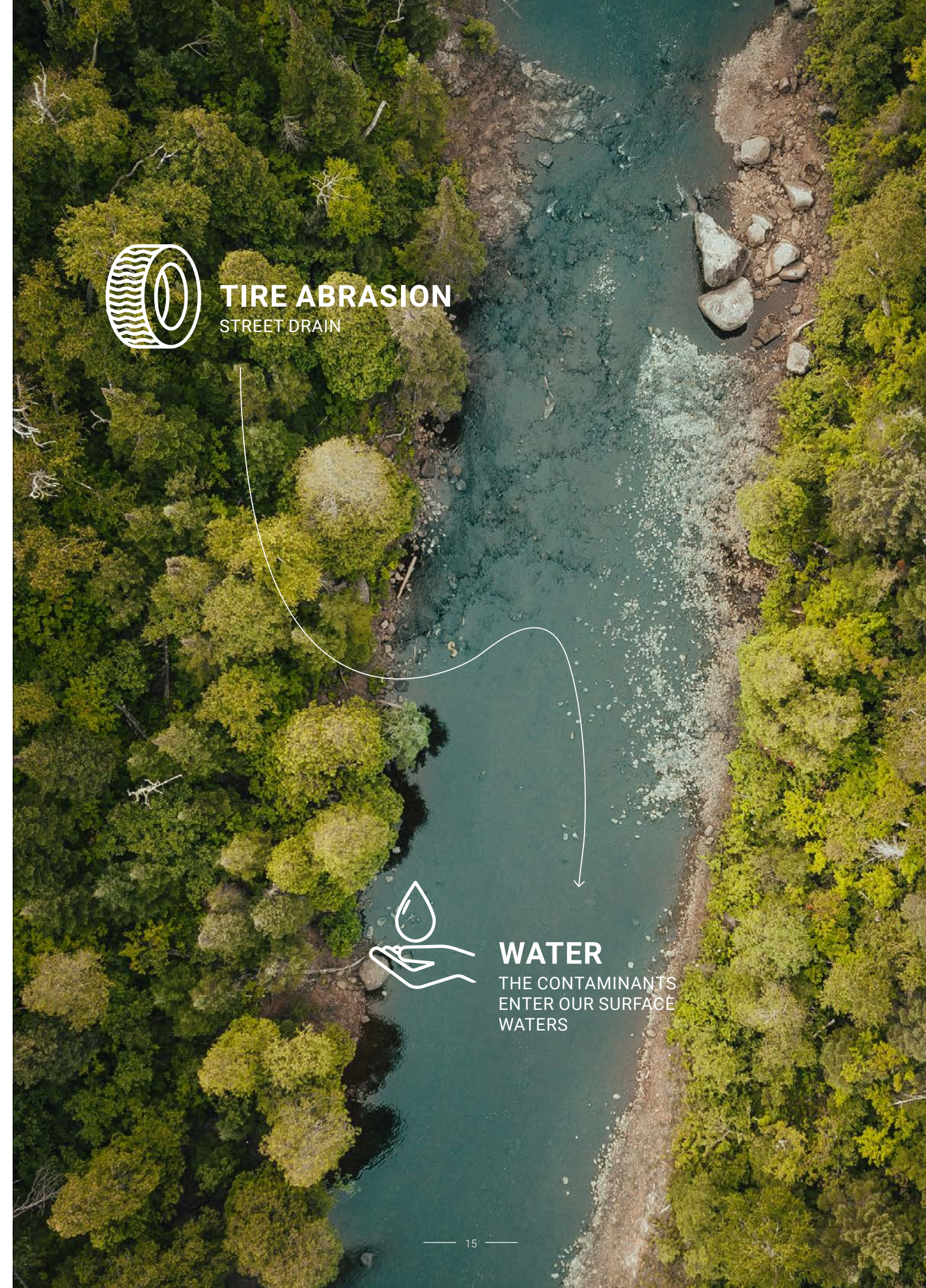
# STORMWATER TREATMENT

## WHY DO WE HAVE TO TREAT STORMWATER?

FOR THE PROTECTION OF OUR WATERS

Even today, the water protection targets in the world are far from being met. Whereas in past years sewage treatment plants or agriculture were often the cause of water pollution, today it is stormwater discharges from polluted surfaces such as heavily trafficked traffic areas, industrial sites, parking lots or even metal roofs. The loads of pollution in the runoff must be taken care of to protect our waters. Depending on the sensitivity of the waters, the need for treatment is crucial before discharge into groundwater is considered, as groundwater is our drinking water resource of tomorrow.

For large areas of e.g. several hectares, central treatment plants such as stormwater clarifiers or retention soil filters can be used for stormwater treatment. For smaller areas, inner-city areas with limited space or hotspots of contamination at e.g. traffic light intersections, decentralized treatment plants have become established. Depending on the substance or group of substances, different process technologies have to be applied.



**TIRE ABRASION**  
STREET DRAIN



**WATER**  
THE CONTAMINANTS  
ENTER OUR SURFACE  
WATERS



# 3P NET MONITORING

## MONITORS YOUR PLANT DURING OPERATION

The 3P-Net Box is a battery-powered remote GNSS positioning monitoring device. The device uses a GSM-based LTE-M/NB-IoT network to transmit measurement and position data to the 3P-Net server. A typical application is, the remote monitoring of your sedimentation and storm-water treatment plants.

## THE 3P MEASUREMENT DATA SERVICE

3P-Net is the all-in-one solution for measurement, visualization and data transmission. With the mobile remote monitoring solution, you have access to all current measurement data from anywhere and at any time.

### Simplified display of measurement data



1  
Sensor collects measurement data on site

2  
The 3P-Net cloud stores and processes the measurement data

3  
Levels, alarms and measured values of the site are displayed as clear graphics in the selected period. A map displays the active alarms.

4  
Measurement data and forecasts can be used to plan workflows and to predict and streamline operations.



**CONTROL**  
REMOTE MONITORING - ACCESS EVERYWHERE AND AT ANY TIME



**USER-FRIENDLY**  
EASY TO USE



### 3P-NET BOX

**with LVL sensor**  
Passive sensor measures the fill level in various applications, such as infiltration trenches



### 3P-NET BOX

**with overflow sensor**  
Passive sensor, signaling through float by means of magnetic field



### 3P-NET BOX

**with sludge level sensor**  
Passive sensor, determines the predefined sludge level via ultrasonic waves



### 3P-NET BOX

**with oil sensor**  
Passive sensor, determines the predefined oil film layer via conductivity of the surrounding medium





## 3P-NET BOX

with sludge level sensor, Lvl sensor,  
oil sensor or overflow sensor

# 3P NET BOX

## SAFE AND RELIABLE

- Five languages to choose from
- SMS and e-mail alerting
- Device register for the input of the plant operation and the maintenance instruction
- Digital memo for inspection review
- Possibility of connection with your current systems via APIs
- Environmental protection
- Improvement of value-added services
- Customized field reports
- Monitoring and localization of assets directly on the map

**The 3P-Net Box monitors your stormwater treatment plant during operation.**

### Automatic communication

If your sludge trap is full, a predefined oil layer is present, or the system is overflowing your 3P Net Box will alert you.

### Optimal fulfillment of official orders and requirements

Continuous monitoring and ensuring situational discharge of the systems saves you time and money. By recording the alarm data, you comply with regulatory requirements.

### NORMS

IEC 62368 1  
EN 62368 1  
EN 62311  
EN 301 4891  
EN 301 489 3  
EN 301 489 19  
EN 301 489 52  
EN 301 511  
EN 301 9081  
EN 301 908 13  
EN 303 413  
EN IEC 63000

### TECHNICAL DATA

- Dimensions 185mm x 150mm x 41mm
- Housing P68, IK08
- Operating temperature from -30°C to +60°C
- Powered by two replaceable 3.6V lithium batteries, size D/LR20.
- Lifetime up to 5 years, depending on application
- Antennas GSM internal optional external, GPS internal only
- Communication LTE-M, NB-IoT
- Data encryption AES-256 and HTTPS
- Locating via GPS
- Analog input , 4-20mA, resolution +/-10µA
- Analog input , 0-30V, resolution +/-1mV
- Two digital inputs 0-40VDC input with alarm and counter functions
- Digital output, SDI12, I2C, internal temperature sensor
- Two cable glands Ø 2.5 - 6.5 mm



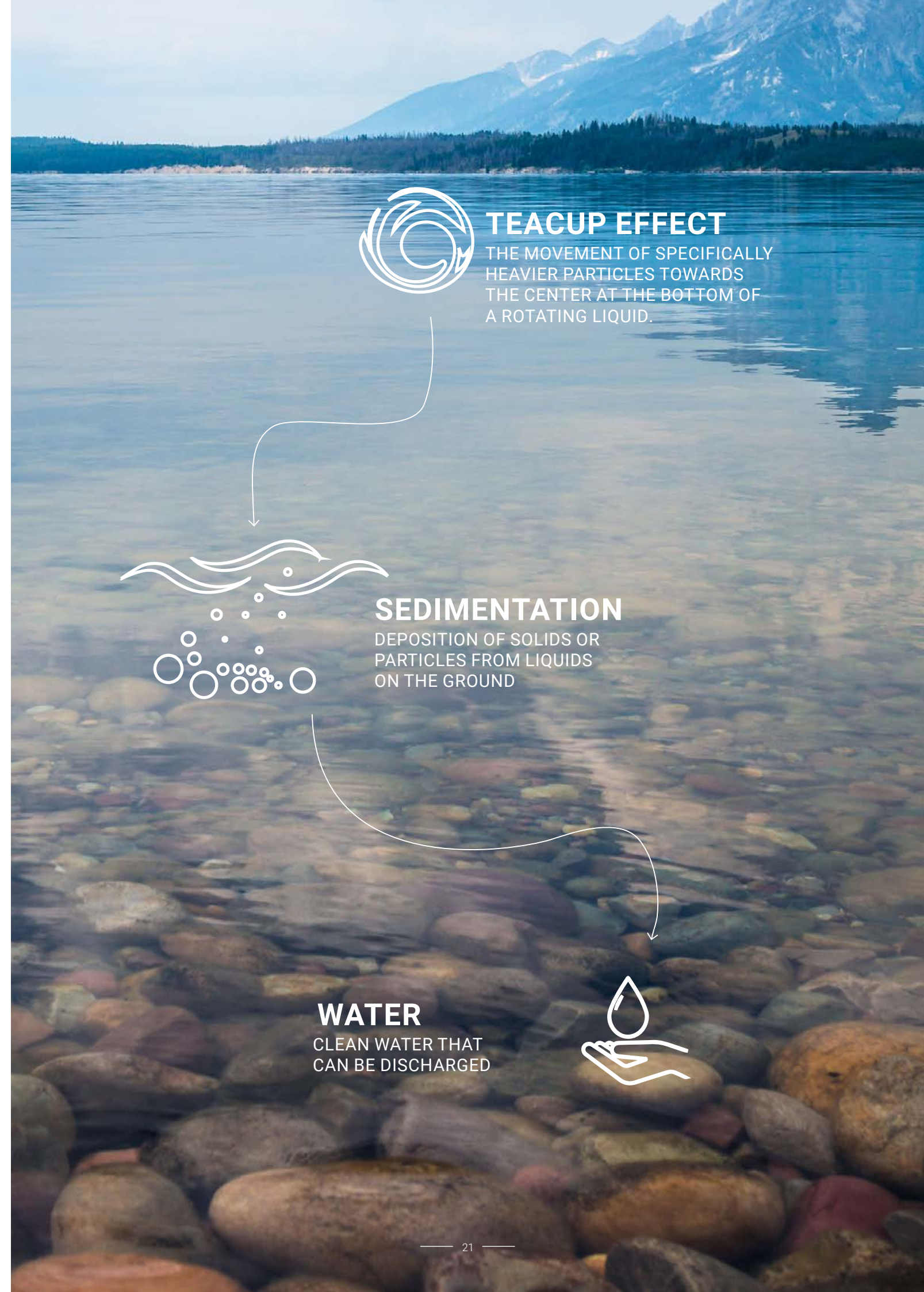
# WHAT IS SEDIMENTATION?

USE THE GRAVITY

When stormwater runs off roads, it can pick up sorbed pollutants, particulate heavy metals, and other chemicals. These pollutants can affect the water quality of streams, rivers and lakes and have negative impacts on the aquatic environment.

Sedimentation removes various contaminants from stormwater, including: Coarse particles, fine filterable solids (TSS), particulate pollutants, microplastics.

Sedimentation is an important process in stormwater treatment.



## TEACUP EFFECT

THE MOVEMENT OF SPECIFICALLY HEAVIER PARTICLES TOWARDS THE CENTER AT THE BOTTOM OF A ROTATING LIQUID.



## SEDIMENTATION

DEPOSITION OF SOLIDS OR PARTICLES FROM LIQUIDS ON THE GROUND

## WATER

CLEAN WATER THAT CAN BE DISCHARGED





# SEDIMENTATION PLANTS

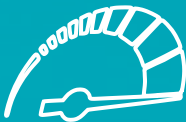
FOR DISCHARGE INTO SURFACE WATERS



**COST-EFFECTIVE**  
NO ABOVE GROUND SPACE  
REQUIREMENT



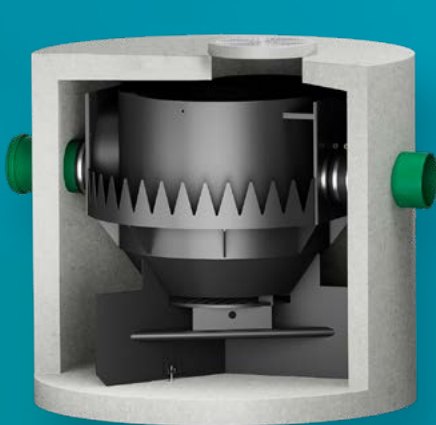
**USER-FRIENDLY**  
„PLUG & PLAY“ DELIVERED TO THE  
CONSTRUCTION SITE READY FOR  
INSTALLATION



**POWERFUL**  
HEAVY RAIN TESTED



**CERTAINTY IN PLANNING**  
SUPPORT FOR PLANNING AND DESIGN



## HYDROSHARK

The Hydroshark sedimentation system unerringly removes the filterable substances (TSS) from the stormwater run off. It thus protects bodies of water and infiltration systems.

Page 26-33



## HYDROSHARK VARIO

Our proven sedimentation plant Hydroshark: different angles and numbers of inlet and outlet as well as different pipe dimensions are possible and thus offer you maximum flexibility.

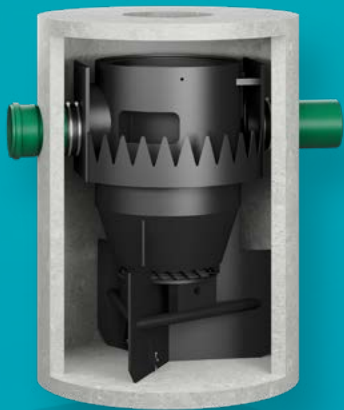
Page 34-37



## HYDROSHARK MODULAR

The combined structure for large areas. The modular design offers scalability options in various container shapes and sizes. The new configuration of multiple Hydrosharks enables automatic drainage after a rain event.

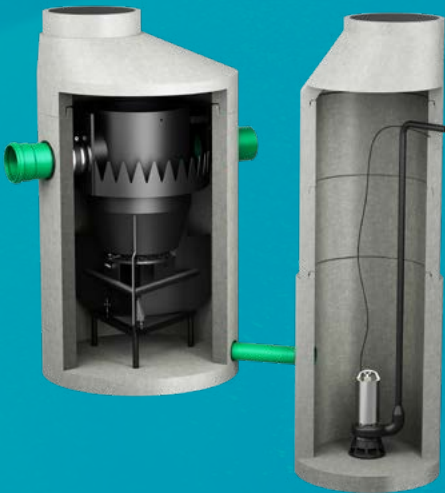
Page 38-43



## HYDROSHARK MIT BYPASS

The 3P Hydroshark with an integrated bypass eliminates the need for a separate separation structure. The bypass and its design depend on the maximum hydraulic capacity of the respective system and the project-specific requirements.

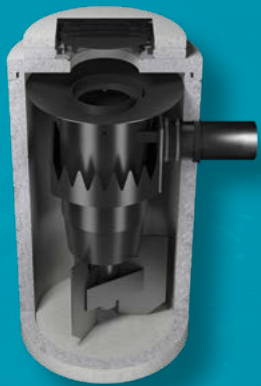
Page 28



## HYDROSHARK WITH PUMP MANHOLE

The new combination of Hydroshark with a pump manhole now also allows the familiar discharge after the rain event.

Page 44-45

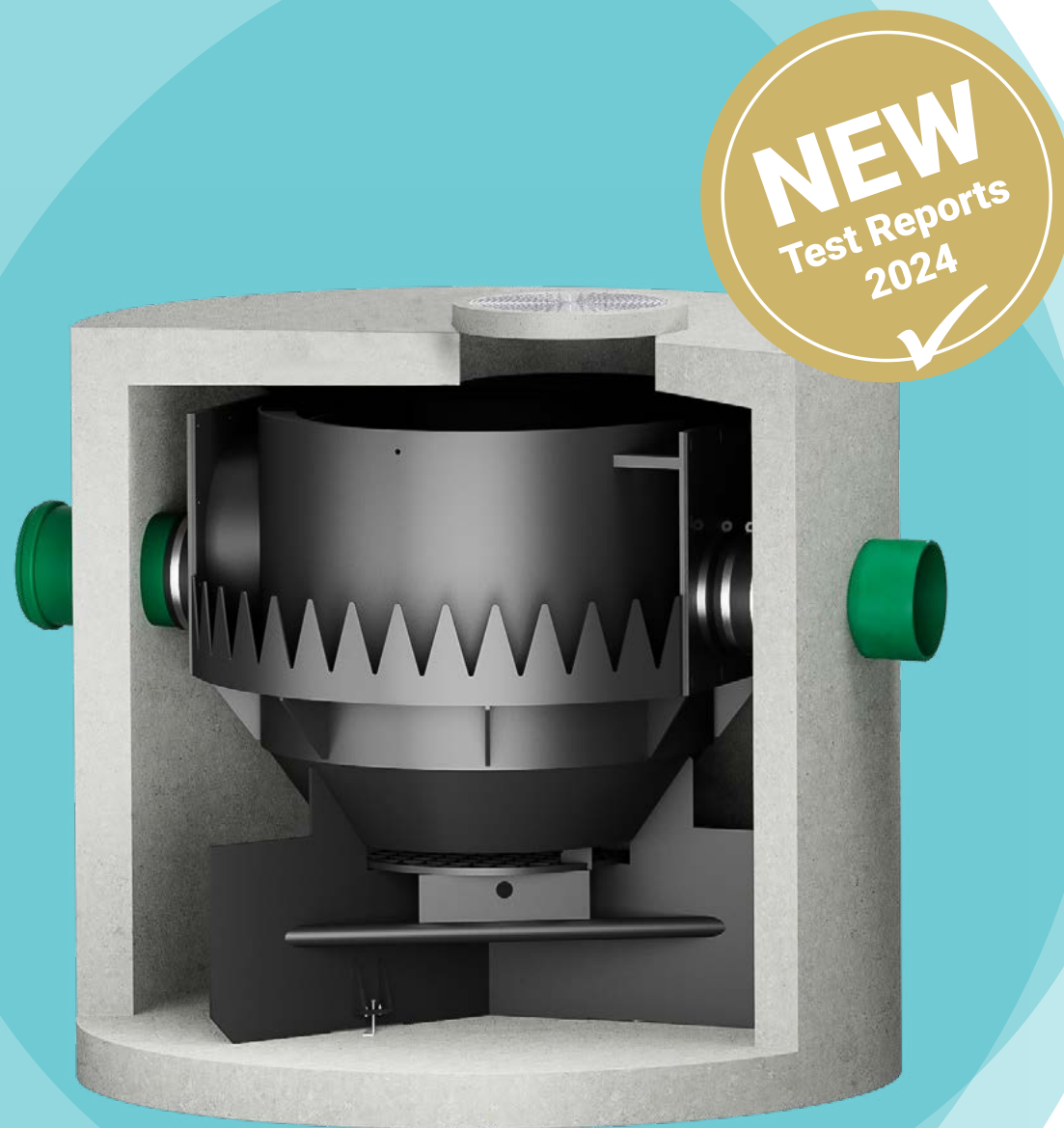


## HYDROSHARK GULLY

The 3P Hydroshark Gully combines the cleaning efficiency of a larger system with the decentralized idea of stormwater treatment through its unique functionality.

Page 46-49





- Physical treatment of stormwater
- Removal of solids (TSS)
- Underground system, therefore no above ground space required
- No height offset between inlet and outlet
- Easy control and maintenance
- Different sizes
- No blocking possible

# THE HYDROSHARK

## HYDRODYNAMIC SEPERATOR

**The Hydroshark sedimentation system unerringly removes filterable solids (TSS) from stormwater run off. Thus, it protects water bodies and infiltration systems.**

The water is first introduced tangentially into the plant in the middle of the system. There, the sedimentation of solids takes place due to the so-called teacup effect. These solids or sediments sink into the sludge trap below, which is hydraulically separated from the treatment chamber by flow breakers so that no remobilization of the settled particles occurs during

heavy rain event. The water then flows evenly upwards in the outer ring of the plant.

A weir ensures that there are no short-circuit flows in the system and that the flow is as homogeneous as possible. The water then flows through the weir into the drain. Light substances such as oils or pollen are effectively retained, as they cannot pass under the separator wall. There is no height offset between the inlet and outlet. The system cannot block. The system can be used on all surfaces, from roofs to traffic areas and industrial sites.

## APPLICATION AREAS

### HYDROSHARK



Traffic areas



Roof surfaces

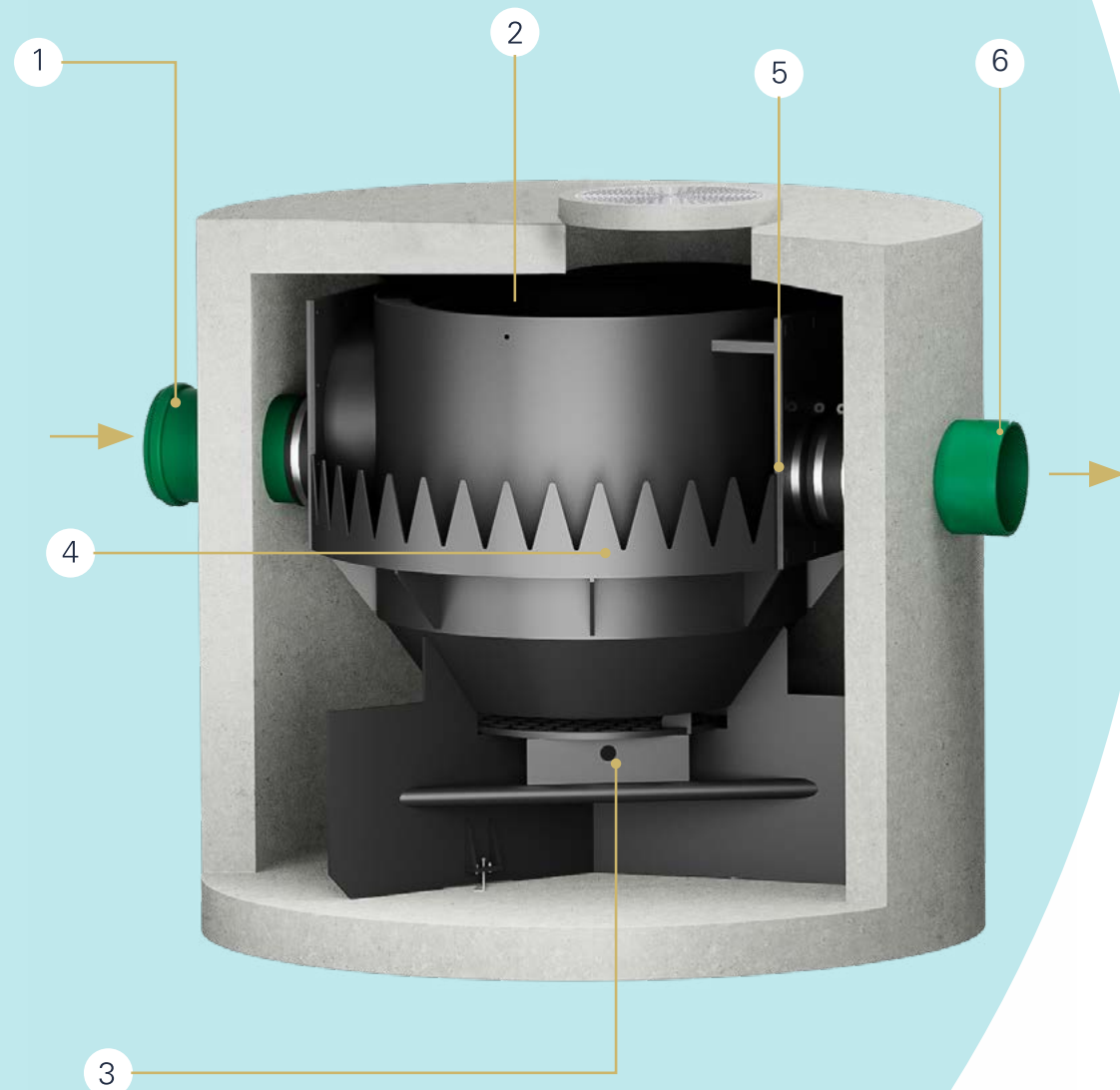


Special applications



# HYDROSHARK

## OPERATING PRINCIPLE



1. The water flows in tangentially in the center of the **hydro-dynamic separator**.
2. **Solids** settle towards the bottom, flowtables remains on the water surface.
3. The solids are collected in the **sludge trap**, which is hydraulically separated, from the treatment chamber via a flow breaker and a grate so that no remobilization occurs.
4. The **water rises** evenly on the side walls.
5. The treated water is collected in an annular space via a serrated weir and then transported to the outlet.
6. The water drains away.

VIDEO  
OPERATING  
PRINCIPLE



EXTRACTION VIA  
**DWA-A 102**

EXTRACTION VIA  
**DWA-M 153**

TESTED  
**SEPARATION  
EDICT NRW**

**LANUV-  
LIST NRW**

**NJDEP-  
CERTIFIED**

**NJCAT-  
VERIFIED**



# OUR 3P ENGINEERS ARE READY TO DESIGN

YOUR NEXT PROJECT



**MAXIMUM HYDRAULIC FLOW**  
up to 39 cubic feet per second / 1.100 litres per second

**SEDIMENT STORAGE CPACITY**  
up to 3 cubic yards / 4 cubic meters

**TESTED LIGHT LIQUID RETENTION > 98%**  
according to DIN EN 858-1



Not all available models or pipe sizes are shown. Get in touch with our engineers [contact@3ptechnik.com](mailto:contact@3ptechnik.com)



## REMOVAL PERFORMANCE

POLLUTANTS	REMOVAL
Trash and debris*	> 99%
Microplastic**	> 99%
Total suspended solids (TSS)***	> 94%
Mineral-oil hydrocarbons (MOH)	> 98%

\* Particle size range 0.1 mm to 4 mm  
\*\* Polystyrene, Polyethylen with microplastic deflector  
\*\*\* Particle size d50=122µm

MODEL DIAMETER		MAXIMUM PIPE DIAMETER		OIL STORAGE CAPACITY		SEDIMENT STORAGE CAPACITY		MAXIMUM TREATMENT FLOW RATE*		MAXIMUM HYDRAULIC FLOW**		CONNECTED AREA	
ft	mm	in	DN	gal	l	gal	l	cfs	l/s	cfs	l/s	ft²	m²
2	750	8	200	21	80	123	467	1.2	30	1.8	50	12,917	1,200
3	1,000	12	300	53	200	110	417	2.1	60	4.1	115	25,833	2,400
4	1,200	16	400	77	290	161	610	4.0	114	6.1	172	39,826	3,700
5	1,500	20	500	111	420	254	960	5.9	167	8.1	228	53,820	5,000
6	1,800	24	600	114	430	369	1,395	7.4	209	11.4	322	80,729	7,500
7	2,000	24	600	161	610	453	1,715	8.8	250	14.7	416	107,639	10,000
8	2,500	28	700	312	1,180	713	2,699	17.7	500	29.4	892	215,278	20,000
10	3,000	28	700	510	1,930	1,030	3,900	30.9	875	38.8	1,100	37,6737	35,000

\* Maximum treatment flow rate without overflow and remobilization 250 l/s\*ha.  
\*\*Maximum recommended hydraulic performance depends on pipe dimension, gradient and filling level of the pipe.

**Not all available models or pipe sizes are shown.** Contact [contact@3ptechnik.com](mailto:contact@3ptechnik.com) for support selecting the correct model for site specific and pollutant removal requirements.



# COMPLEMENTS

## THE HYDROSHARK WITH INTEGRATED BYPASS

**The 3P Hydroshark is now available with integrated bypass. The bypass can be customised to the project specific requirements.**

A main advantage of the Hydroshark bypass is the adaptability of the overflow threshold. The sedimentation system can be customised to a rainfall rate of either 15 l/(s\*ha) or 25 l/(s\*ha) to meet the specific requirements of each project.

Other rated rainfall rates can also be achieved at the customer's request. This ensures that the system is precisely tailored to meet individual needs and ensures maximum accuracy.

The hydraulic performance and area-specific overflow have been tested and approved by the IKT - Institut für Unterirdische Infrastruktur.

## TESTED LIGHT LIQUID RETENTION ACCORDING TO DIN EN 858-1

**The 3P Hydroshark achieved a retention of >98 % of mineral oil hydrocarbons. The retention of light liquids has been extensively tested and confirmed by the IKT - Institut für Unterirdische Infrastruktur - in accordance with DIN EN 858-1 standard.**

The performance test was carried out in a corresponds to separator class II.



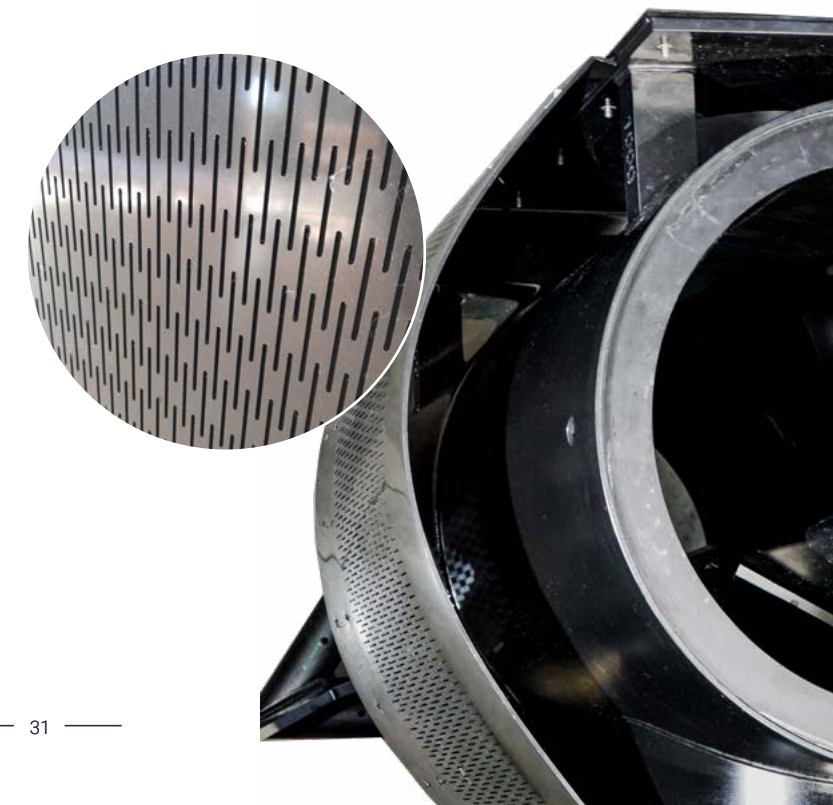
## HYDROSHARK WITH MICROPLASTIC DEFLECTOR

**A feature specifically designed for retaining plastic pellets has been added to the 3P Hydroshark range.**

The Hydroshark with microplastic deflector is designed to optimise the retention of plastic granulate. The system has been specifically designed to be highly effective at retaining lost pellets that can typically be found in industrial yards, whether in industries such as injection moulding, polystyrene or other plastics processing companies. The performance and retention capacity has been extensively tested and confirmed by the IKT - Institut für Unterirdische Infrastruktur.

**The system achieves exceptional retention rates of 99%.** This can be achieved even during heavy rainfall.

The Hydroshark with microplastic deflector is therefore not only an effective solution for minimising environmental pollution, but also an important step towards a more sustainable industry.







# REFERENCE HYDRO-SHARK EBERSBACH

## REHABILITATION OF INNER-CITY THOROUGHFARE

**In the course of the reconstruction of an inner-city thoroughfare in Ebersbach in the district of Göppingen, the drainage concept was redesigned in accordance with the planning specifications of the approval authority. The precipitation water is to be pretreated before it is discharged into a receiving watercourse. The quality of the 3P Hydroshark sedimentation plant was relied upon for the drainage of the traffic areas, which were contaminated with sediment and covered an area of over 4,000 sqm.**

Stormwater is collected via street drain and routed to the sedimentation facility via the base pipe.

For this purpose, too, the manhole was equipped with the Hydroshark sedimentation unit in advance concrete manufacturer and could thus be delivered to the construction site ready for connection. This proven „plug and play“ system ensured extremely fast installation and problem-free integration into the planned drainage concept.

The stormwater cleaned by the sedimentation plants is subsequently discharged into a small receiving watercourse. Thus, the clean rainwater is returned to the natural water cycle and ensures the preservation and protection of our aquatic environment.



# HYDROSHARK VARIO

AS VARIABLE AND INDIVIDUAL AS YOUR PROJECT

**The Hydroshark sedimentation plant series has been expanded to include the Vario product variant. With flexibly positionable inlet and outlet, our compact, highly efficient stormwater treatment plants can be installed even more laterally, quickly and in a space-saving manner in the future.**

When planning systems for stormwater treatment of traffic areas, the companies carrying out the work are often confronted with complicated or cramped installation situations. Sealed surfaces or additional lines for gas, electricity or communication, for example, make installation more difficult. In addition, in many cases existing lines continue to be used. With the standard opposite arrangement of the inlet and outlet at a 180° angle, complex adjustments are often necessary to adapt the installation to the structural conditions.

With the Hydroshark Vario, the connections can now be planned and manufactured at any angle. The customer defines the exact position of the inlets and outlets. We then produce the Hydroshark system exactly according to the customer's specifications. This shortens the time required for work on site and makes complicated installation situations much easier to solve. In addition to the flexible positioning of inlet and outlet, we now offer prefabricated connections ex works for all common piping materials, for example plastics, GRP pipes, reinforced concrete, cast iron or vitrified clay. This also contributes to simpler planning and faster installation. No further adjustment work is required on site for existing pipelines that will continue to be used.



- Variable angles for inlet and outlet
- Different pipe dimensions
- Physical treatment of stormwater
- Removal of solids (TSS)
- Underground system, therefore no above ground space required
- No height offset between inlet and outlet
- Easy control and maintenance
- Different sizes
- No blocking possible





# REFERENCE

## HYDROSHARK

### VARIO STEINHEIM

DEVELOPMENT OF NEW CONSTRUCTION AREA

**A retention and infiltration system has been planned for the development of the new construction area in Steinheim. In order to pre-clean the surface run off centrally at one location, a 3P Hydroshark DN 3.000 was planned here.**

Not only the large flow rate, but also the high cleaning performance are arguments for the application with the Hydroshark system.

The plant is operated in a permanent load and offers sufficient safety, so that no tee line had to be planned even for heavy rain.

For cleaning the plant, only the cover has to be opened, and the sediments pumped off with a suction vehicle. The large sludge chamber as well as the additional oil retention volume provide sufficient safety for permanent operation.



# HYDROSHARK MODULAR

## COMBINATION STRUCTURE FOR LARGE AREAS



**The new configuration of our Hydroshark now also allows automatic discharge after a rain event, as known for example from lamella clarifiers. This offers you the possibility for your construction project to pump the collected water, which then also contains a part of the retained solids, into the sewer. This means that the discharge volume is fully available for the next rainfall event, and remobilization of settled pollutants is avoided.**

Furthermore, this solution offers you a scalability that has never been seen before on the market. Due to the configuration of the Hydroshark, whereby the separation takes place in the inner area of the plant, this sedimentation plant is suitable for use in almost all vault shapes and sizes. Several Hydrosharks can be installed in one tank, thus offering you the cleaning of even the largest volume flows in the smallest space

- Physical treatment of precipitation water
- Removal of solids (TSS)
- Underground system, therefore no above ground space required
- No height offset between inlet and outlet
- Easy control and maintenance
- Unlimited combination possibilities
- No blocking possible
- Plant not in permanent load





# REFERENCE HYDROSHARK MODULAR KASSEL

FORWARD-LOOKING COMMERCIAL AREA

**Directly at Kassel Airport Calden, a large commercial park with excellent transport connections is being developed. High requirements are placed on the drainage of traffic areas within the site. Several 3P Technik Hydroshark sedimentation systems are used for the treatment of rainwater runoff.**

The planning basis for the treatment of rainwater runoff from roads and other traffic areas on the business premises is compliance with the target specifications according to the DWA-A 102 guideline of the German Association for Water, Wastewater, and Waste (DWA). Runoff across the entire area is collected and directed to Hydroshark sedimentation systems from 3P Technik. These systems retain filterable substances based on the AFS63 parameter, associated heavy metals, mineral oil hydrocarbons, and other contaminants.

An inflow distributor channels the collected rainwater into four Hydroshark sedimentation units of dimension DN 3000 for physical treatment. In a sludge trap, hydraulically separated from the treat-

ment chamber by flow breakers, solids settle to the bottom. Even during heavy rain events, settled substances cannot be remobilized. The water then rises evenly through an outer ring. The system's signature serrated weir prevents short-circuit flows and ensures a homogeneous flow. Light substances such as oils or pollen are effectively retained and cannot pass beneath the separator wall. The treated water is initially discharged into a retention basin and then into a stormwater sewer. The required water quality standards are reliably met.

For the installation of the system, the construction company first placed a prefabricated rectangular concrete structure into a prepared excavation. The four Hydroshark units, along with the prefabricated distribution pipes and inlet chamber, were then installed within this structure. Additionally, the system was equipped with a flushing gate and pumping technology. This setup allows the entire retention basin to be flushed after each rainfall event. The resulting sludge is pumped out and disposed of via a wastewater sewer.



# HYDROSHARK

## MODULAR EXTENDED

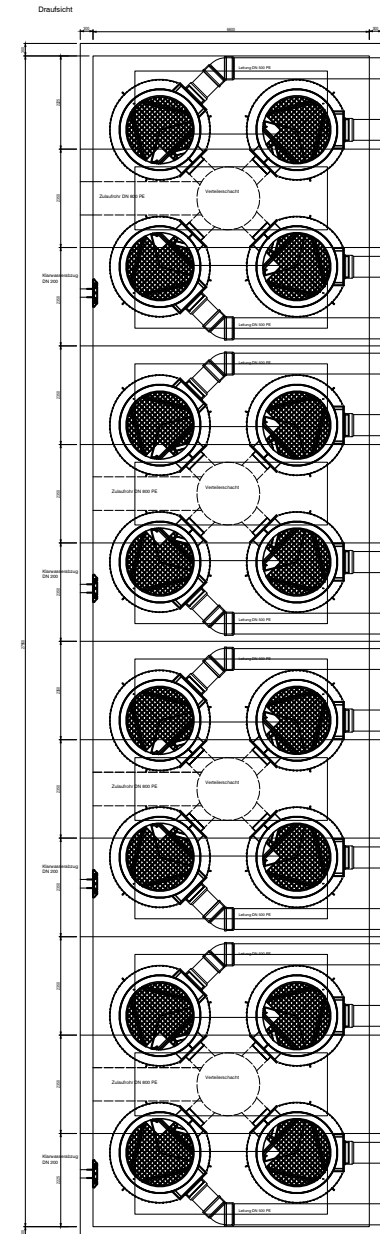
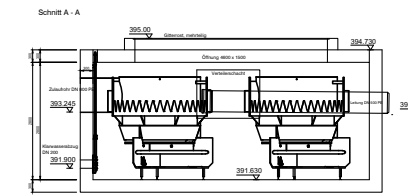
THIS SYSTEM IS MODULARLY EXPANDABLE

The Hydroshark can be used as part of a complete system.

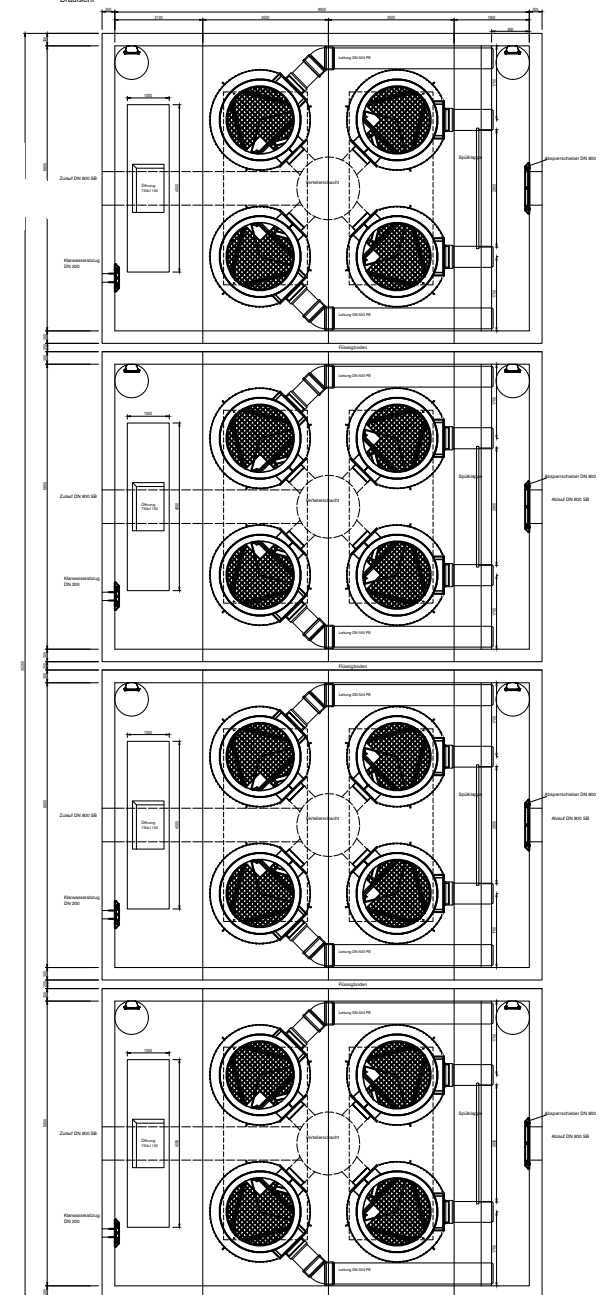
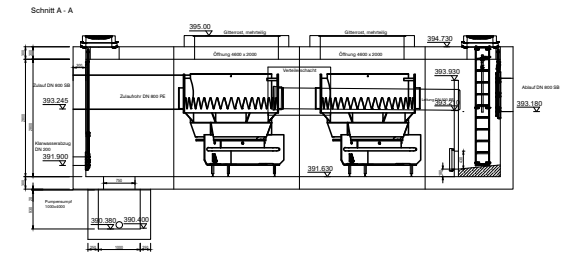
Thanks to the use of prefabricated components, the Hydroshark system is modularly expandable, making it particularly suitable for large connection areas.

The system can be operated either with or without a drainage function.

This makes the Hydroshark Modular flexible and adaptable to various applications and requirements.



without a drainage  
function

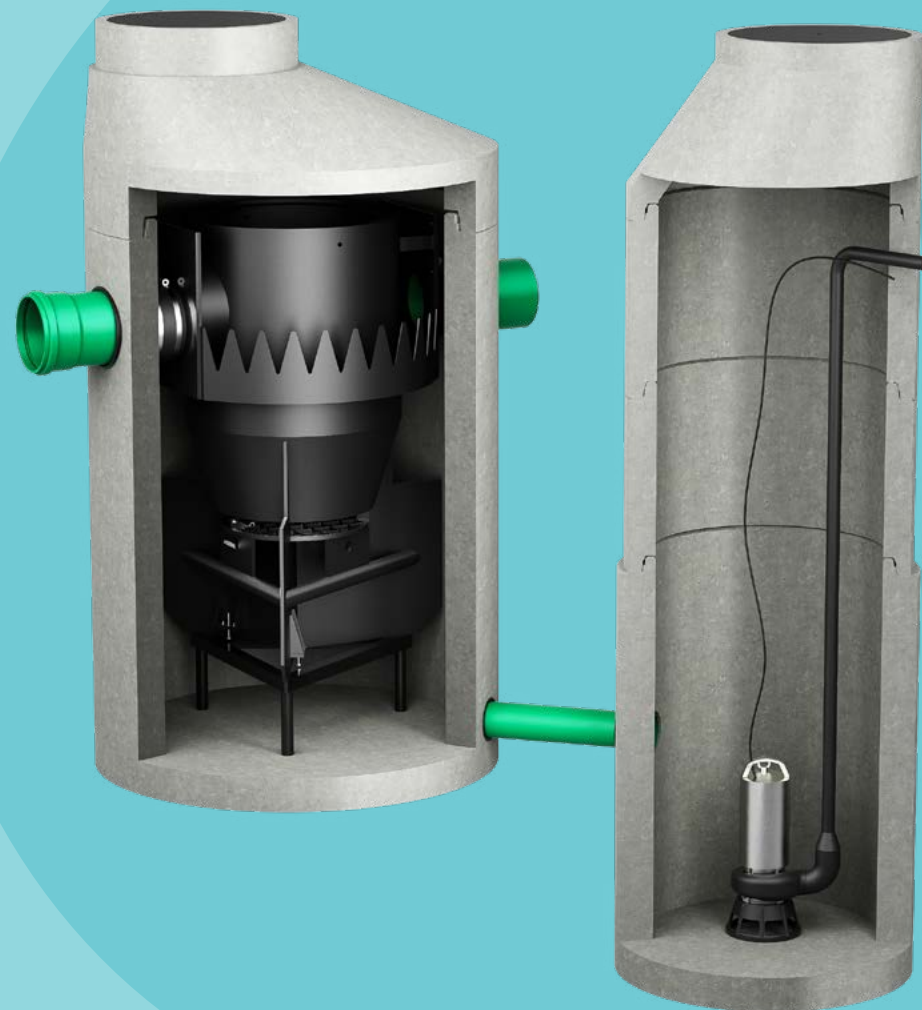


with a drainage  
function



# HYDROSHARK WITH PUMP SHAFT

## THE HYDROSHARK IN A NEW COMBINATION



**The new combination of our Hydroshark with a pump manhole now also allows automatic discharge after the rain event, as is common, for example, with lamella clarifiers or also with stormwater clarifiers.**

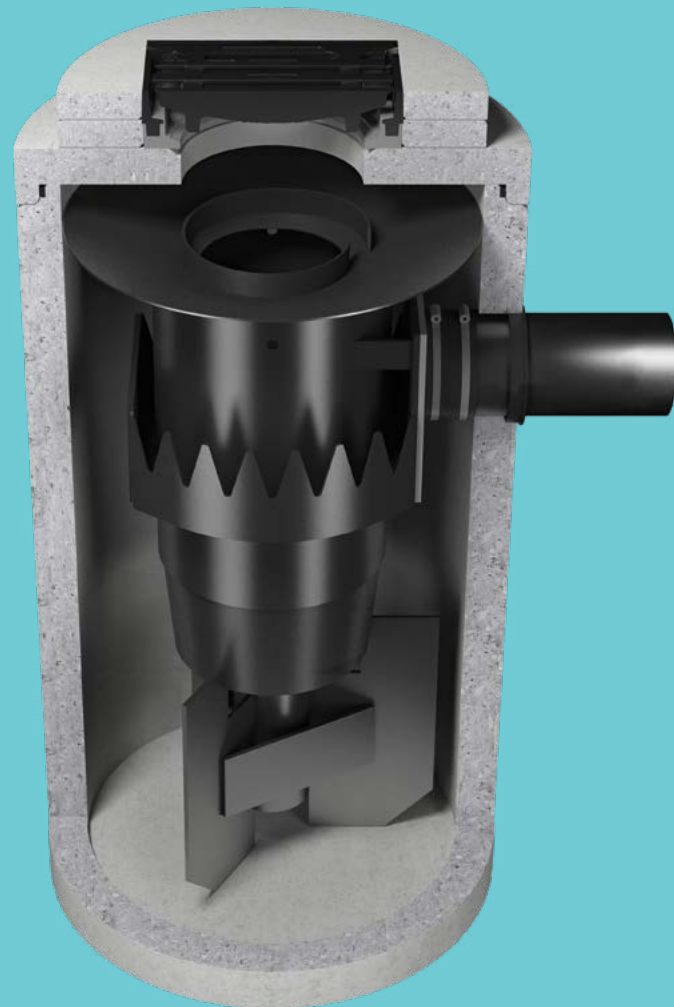
For construction projects, this offers the possibility of discharging the sedimented solids, which have been proven to contain a large proportion of the accumulated pollutants, automatically to the wastewater sewer.

- Removal of solids (TSS)
- Underground system, hence no above-ground space requirement
- No elevation difference between inlet and outlet
- Simple control and maintenance



# THE HYDROSHARK GULLY

## HIGH CLEANING PERFORMANCE STREET INLET



**The 3P Hydroshark Gully's unique mode of operation combines the cleaning efficiency of a larger system with the decentralized idea of stormwater treatment.**

It can be used to remove coarse materials, sediments, light materials and particulate matter from stormwater run off from streets and squares in a standard DN 800 manhole in the smallest possible space, so that it can be discharged into a body of water or even infiltrated, depending on the local conditions.

Re-planning is not necessary, as it replaces the „normal“ drains 1:1 as a decentralized treatment plant with its connectable area of 500 sqm and its suitability as a head inlet or for a side connection.

It thus combines simple planning and design with simple installation and maximum ease of maintenance, since all that is needed is a standard suction hose and trolley.

The emptying of sludge buckets is completely eliminated, as they are no longer needed with this system.

- Connectable area: Up to 500 sqm
- Connections: DN 150 - 200
- Inlet as head inlet
- Minimum loss of height
- Easy maintenance with standard maintenance equipment





## REFERENCE

# HYDROSHARK GULLY BAD ÜBERKINGEN

EXPANSION 3P TECHNOLOGY PRODUCTION

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**In the course of expanding our production, we have built another factory building at the Hausen site.**

In order to treat the surface water effectively and in accordance with the regulations and to subsequently discharge this into a nearby surface

water, we have used, among other things, our advanced 3P Hydroshark Gully. The Hydroshark family sedimentation plant is also particularly characterized by its user-friendly maintenance, while ensuring maximum efficiency and operational reliability.



# WHAT IS FILTRATION?

RETENTION OF SOLIDS AND DISSOLVED POLLUTANTS  
WITH THE ASSISTANCE OF A FILTER SUBSTRATE

If more extensive requirements are placed on storm-water treatment, whether for discharge to groundwater, in sensitive surface waters or for heavily polluted areas, sedimentation alone is no longer sufficient. Filtration using specially configured filter substrates allows targeted removal of dissolved pollutants from stormwater. Zeolites act as ion exchangers for dissolved heavy metals from traffic or metal roof run off. Activated carbon, with its large inner surface area, is used for the adsorption of dissolved organic substances. Admixtures of calcium silicates can provide phosphate reduction. In addition, our specially developed substrates are capable of retaining mineral oils and fine solids, thus protecting water bodies from pollution.



**FILTER**  
RETENTION OF  
SOLIDS AND  
DISSOLVED  
POLLUTANTS



**WATER**  
CLEAN WATER THAT  
CAN BE DISCHARGED  
INTO GROUNDWATER  
(THROUGH INFILTRATION)  
OR SURFACE WATER



# OUR FILTRATION SYSTEMS

SEDIMENTATION, ADSORPTION, FILTRATION  
AND ION EXCHANGE



**COST-EFFECTIVE**  
RELIABLE & EFFICIENT



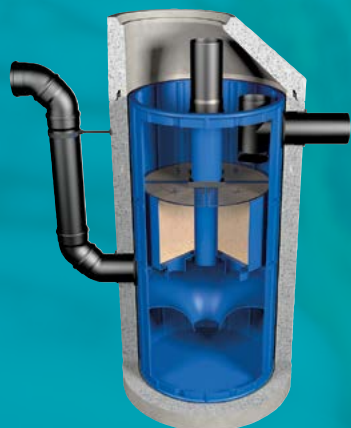
**USER-FRIENDLY**  
ALMOST UNLIMITED  
COMBINATION OPTIONS



**POWERFUL**  
HIGH SOLIDS RETENTION (TSS)



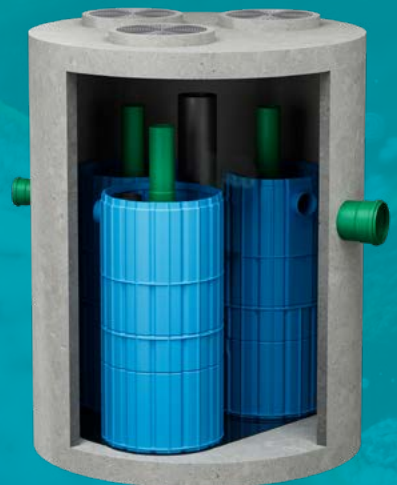
**CERTAINTY IN PLANNING**  
EFFICIENT FILTER BACKWASHING POSSIBLE  
WITH VARIOUS INTERNATIONAL CERTIFICATIONS



## HYDROSYSTEM 1.000

The Hydrosystem 1.000 combines sedimentation processes with a filter stage.

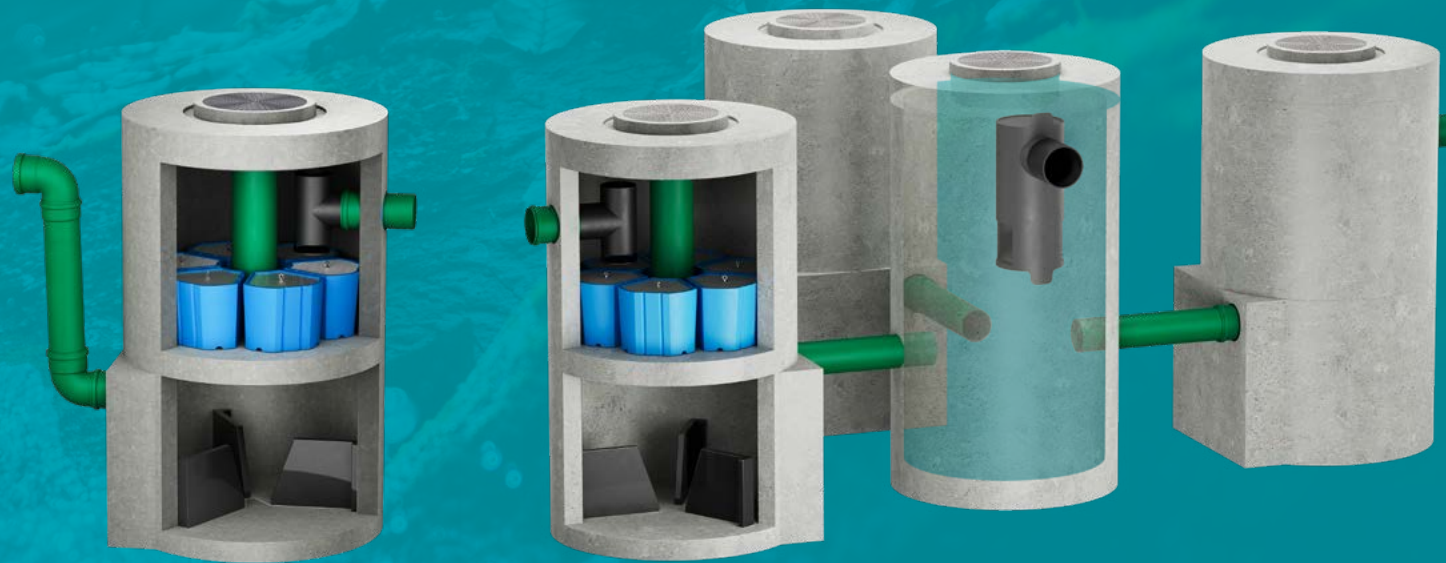
Page 54-59



## MULTIPLE SYSTEMS

For larger connection areas, 2 to 5 Hydrosystems 1.000 can be combined in one manhole structure.

Page 60-69



## HYDROSYSTEM 1.500

The Hydrosystem 1.500, with high performance on large areas, combines sedimentation processes with a filtering stage and is installed in a prefabricated concrete shaft at the factory.

Page 70-75

## MULTIPLE SYSTEMS

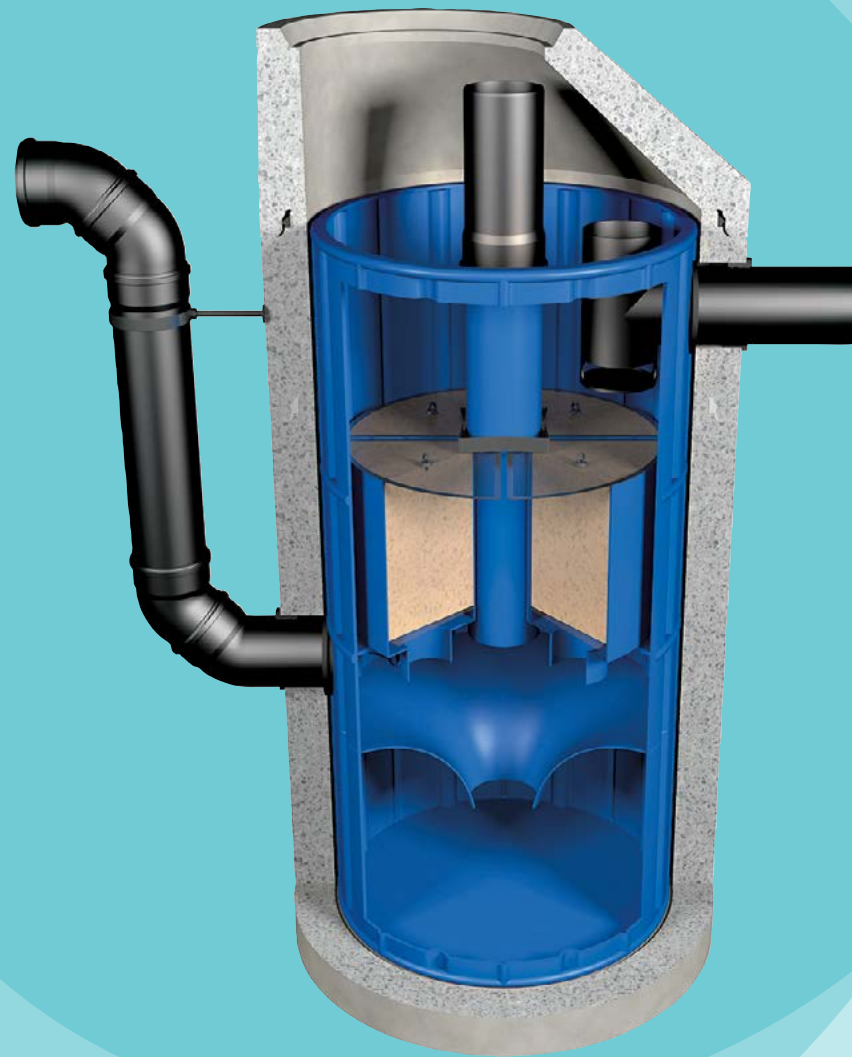
For larger connection areas 2 to 5 Hydrosystems 1.500 (or more on request) can be combined in a star arrangement.

Page 76-85



# HYDROSYSTEM 1.000

PROVEN QUALITY



**The Hydrosystem 1.000 combines sedimentation processes with a filtration. The stormwater is cleaned via sedimentation, adsorption, filtration and ion exchange.**

A hydrodynamic separator causes sedimentation of solids in a radial flow regime characterized by secondary flows. Due to the action of the separator, the solids enter the sludge trap calmed by the flow breakers. Above the separator chamber are the four filter elements. The water passes through the filter elements in the up flow process. The system removes pollutants such as heavy metals, petroleum hydrocarbons and polycyclic aromatic hydrocarbons from the stormwater. It also binds nutrients such as phosphates.

The quality of the treated water is so high that it can be discharged directly into the seepage or any receiving waters.

The height difference between inlet and outlet is only 25 cm. Since the system is installed under the traffic surface, it does not require any additional space on the property or in the road space. The treatment system can be used for traffic areas such as parking lots and roads of all traffic loads, industrial areas and metal roofs. Four different filter cartridges are available for this purpose. The drain is equipped with an immersion pipe for light material retention. The sludge trap can be exhausted via the central maintenance pipe.

- Cleaning of precipitation water drains from traffic areas, industrial areas and metal roofs.
- Manhole system, no space required on the surface
- Low height offset
- Easy control and maintenance

HYDROSYSTEM 1.000

## FILTER VARIANTS



**heavy traffic**  
For heavily loaded traffic areas.



**metal**  
For metal roof surfaces.



**roof**  
For roof surfaces

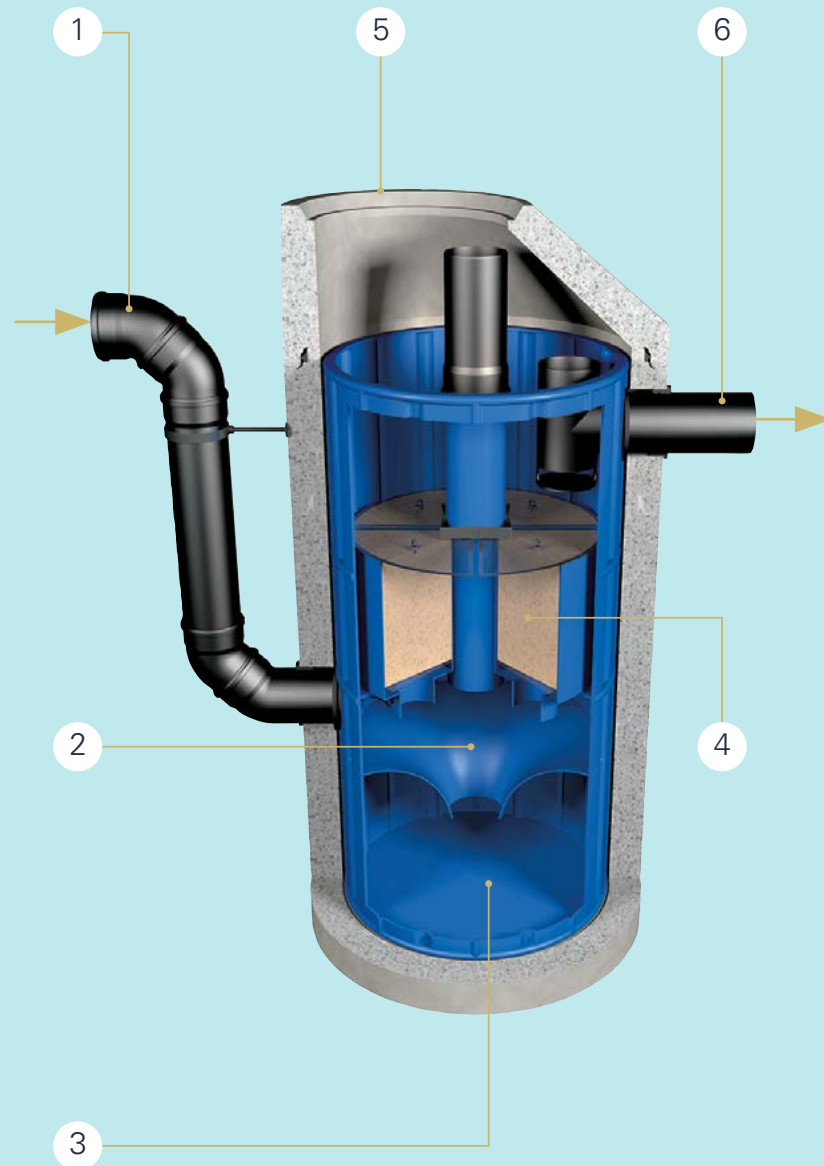


**traffic**  
For lightly loaded traffic areas.



# HYDROSYSTEM 1.000

## OPERATING PRINCIPLE



1. The precipitation water from the area to be drained is discharged at the lower end of the **shaft**. The water is deflected tangentially by the diverter.
2. Here, **sedimentation of particles**, especially of the sand fraction, takes place in a hydro dynamic separator due to turbulent secondary flows in a radial laminar flow regime.
3. These are collected in a **sludge trap** under the system via an opening in the lower part of the manhole. The sludge trap is vacuumed out at intervals.
4. Four **filter elements** are located in the center of the manhole. With this, the fine material is filtered in the up flow process and a large part of the dissolved pollutants is adsorbent bound. The filter can be back-washed from the top and can be easily replaced in case of complete clogging.
5. The **filter elements** can be easily removed through the existing manhole opening.
6. The clean water is located above the filter elements. It passes through an oil barrier and then flows via the **drain** into the seepage system or a surface water.

VIDEO  
OPERATING  
PRINCIPLE



DIBT  
APPROVAL

LFU METAL  
ROOF APPROVAL

EXTRACTION VIA  
DWA-A 102

EXTRACTION VIA  
DWA-M 153

EXTRACTION VIA  
DWA-A 138

LANUV-  
LIST NRW

VSA  
PERFORMANCE  
TEST





# REFERENCE

## HYDROSYSTEM 1.000

### SWITZERLAND

KNOTEN ALPINE VIEW

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**In Switzerland, water from roads above a certain traffic volume must be collected and treated before it is discharged.**

In existing buildings, this is sometimes not easy due to space constraints. Retrofitting with filter systems is the ideal solution when no above-ground space is available. This was also done at the Alpenblick junction in Cham, and the existing road surfaces were only opened at individual points and the manholes connected to the corresponding drainage lines.

Here, the main focus was on ensuring that, in addition to solids, dissolved metals and, above all, light substances are retained and do not enter the lake.

Type 1.000 hydrosystems were then combined into multiple units for the different area sizes, ensuring high quality cleaning performance even in the limited space available without affecting traffic flow during construction or maintenance.



# HYDROSYSTEM 1.000

## MULTIPLE PLANTS

POWERFUL IN COMBINATION



**For larger connection areas, 2 to 5 Hydrosystems 1.000 can be combined in one shaft structure.**

The feed is centralized, and all plants are fed evenly via the arrangement of the pipes.

The multiple units are completely connected in the factory, piped and equipped with a baseplate. There is only one inlet and one outlet. The plants can thus be installed „plug-and-play“ on site in a manhole with appropriate dimensions.

- Combination of 2 to 5 plants of type Hydrosystem 1.000
- Increase of connected areas up to five times
- Plug and play solution in one structure
- Uniform feeding of all plants guaranteed
- Fewer operating points in practice
- Connectable area: 1,000 sqm to 5,000 sqm

### HYDROSYSTEM 1.000

## FILTER VARIANTS



**heavy traffic**  
For heavily loaded traffic areas.



**metal**  
For metal roof surfaces.

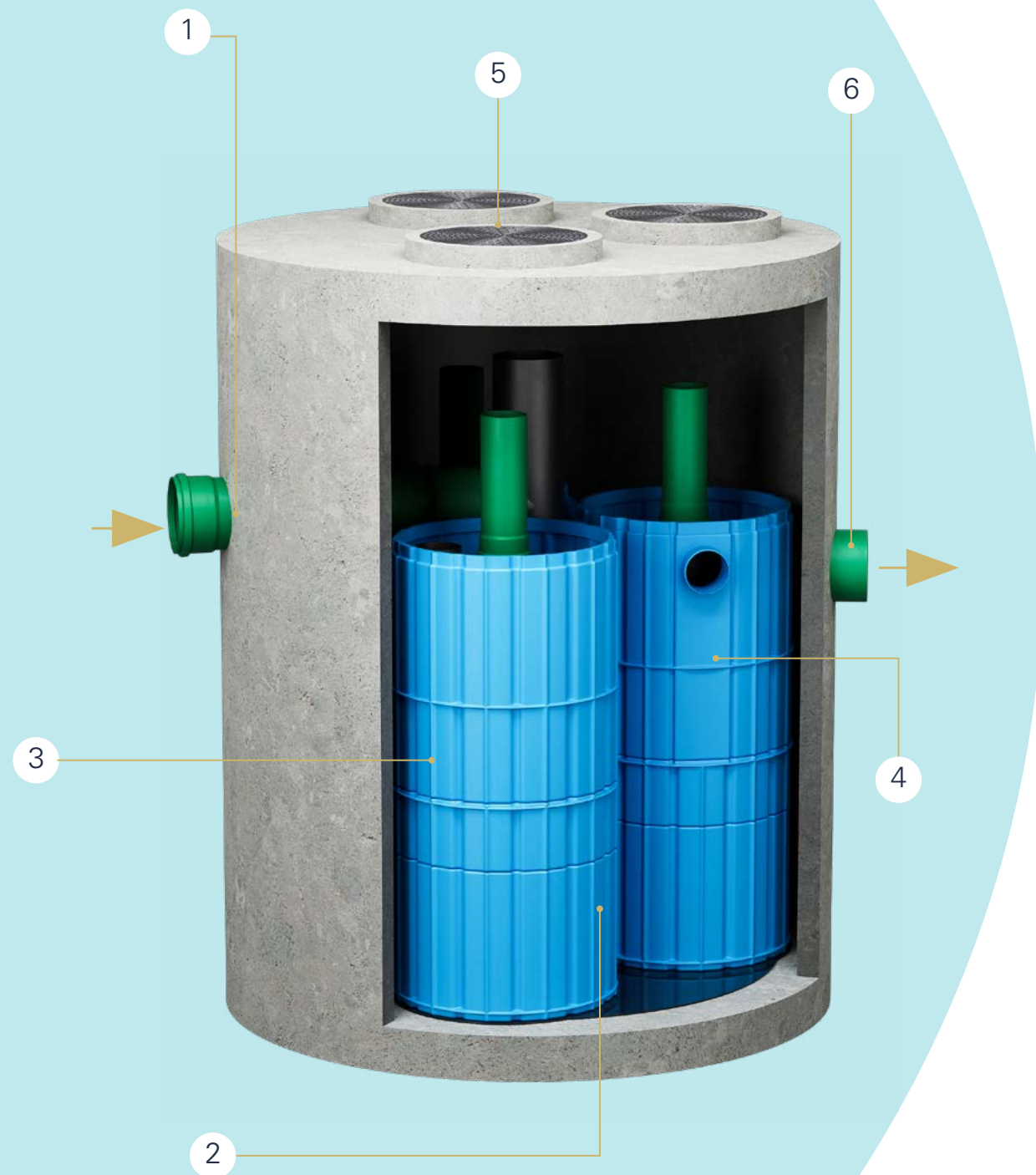


**roof**  
For roof surfaces



**traffic**  
For lightly loaded traffic areas.





# MULTIPLE PLANT

## OPERATING PRINCIPLE

1. The stormwater from the area to be drained is fed into the filter shaft via a **central inlet**.
2. The stormwater to be treated is fed downwards via the internal piping and flows evenly into the individual Hydrosystems 1.000.
3. Solids are collected in a **sludge trap** under the system. The sludge trap is vacuumed out at intervals.
4. **Four filter elements** are located in the center of the cleaning shaft. These filter the fine material in an up flow process and adsorptively bind a large proportion of the dissolved pollutants. The filter can be backwashed from above and can be easily replaced in the event of complete clogging.
5. The filter elements can be easily removed through the existing manhole opening.
6. Clean water is located above the filter elements, passes through an **oil barrier**, and then flows down the drain to seep away or to a surface water body.

DIBT  
APPROVAL

LFU METAL  
ROOF APPROVAL

EXTRACTION VIA  
DWA-A 102

EXTRACTION VIA  
DWA-M 153

EXTRACTION VIA  
DWA-A 138

LANUV-  
LIST NRW

VSA  
PERFORMANCE  
TEST



OVERVIEW

MULTIPLE SYSTEM

HYDROSYSTEM 1.000



3P HYDROSYSTEM 1.000  
**TWINS**



3P HYDROSYSTEM 1.000  
**TRIPLET**



3P HYDROSYSTEM 1.000  
**QUINTUPLET**



# OVERVIEW

## 3P HYDROSYSTEM 1.000

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
500	5	DIBt approval VSA performance test	Heavily polluted traffic areas DTV >15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic
650	6.5	LfU metal roof approval	Metal roof surfaces (copper, zinc, lead)	Metal
750	7.5		Lowly contaminated traffic areas with moderate Motor vehicle traffic	Traffic
1,000	10		Roof surfaces without significant metal content	Roof



## 3P HYDROSYSTEM 1.000 TWINS

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
1,000	10	DIBt approval VSA performance test	Heavily polluted traffic areas DTV >15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic
1,300	13	LfU metal roof approval	Metal roof surfaces (copper, zinc, lead)	Metal
1,500	15		Lowly contaminated traffic areas with moderate Motor vehicle traffic	Traffic
2,000	20		Roof surfaces without significant metal content	Roof



\* Internal bypass not considered.  
\*\* Flow rate according to DIBt approval

## 3P HYDROSYSTEM 1.000 TRIPLET

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
1,500	15	DIBt approval VSA performance test	Heavily polluted traffic areas DTV >15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic
1,950	19.5	LfU metal roof approval	Metal roof surfaces (copper, zinc, lead)	Metal
2,250	22.5		Lowly contaminated traffic areas with moderate Motor vehicle traffic	Traffic
3,000	30		Roof surfaces without significant metal content	Roof



## 3P HYDROSYSTEM 1.000 QUINTUPLET

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
2,500	25	DIBt approval VSA performance test	Heavily polluted traffic areas DTV >15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic
3,250	32.5	LfU metal roof approval	Metal roof surfaces (copper, zinc, lead)	Metal
3,750	37.5		Lowly contaminated traffic areas with moderate Motor vehicle traffic	Traffic
5,000	50		Roof surfaces without significant metal content	Roof







# REFERENCE MULTIPLE PLANT 1.000 MUNICH

## EXTENSION AND MODERNIZATION OF MUNICH KLINIK BOGENHAUSEN

**The modernization of the Munich Klinik in Bogenhausen and the construction of an extension will provide the already largest hospital of the Munich Klinik with a state-of-the-art operating theatre and more than 1,000 beds in the future. In the course of the renovation, the drainage of the precipitation water was also redesigned. Around 3,400 sqm of sealed and in some cases heavily soiled traffic areas need to be cleaned.**

This area includes, among other things, the helipad. A further roof area of almost 4,000 sqm must also be subjected to pretreatment before all the precipitation water is returned to the groundwater and thus to the natural water cycle via seepage trenches.

The great hydraulic and cleaning requirements that arise with such areas always result in a demanding planning basis. The challenge was to find a suitable stormwater treatment system that would satisfy all project participants.

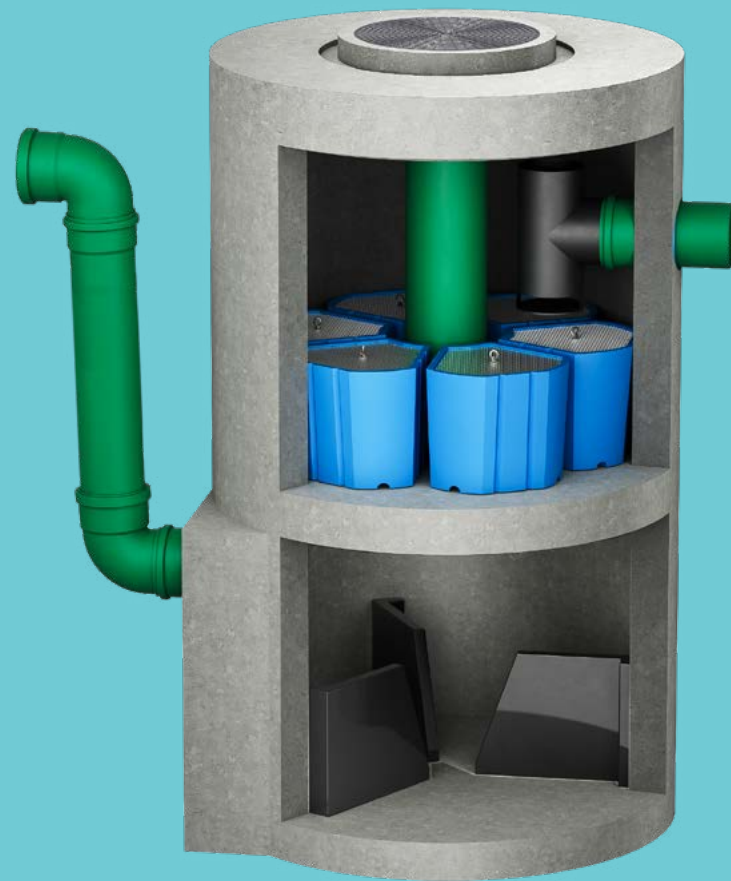
Since the existing subsoil consists largely of Isar gravel, it was unclear for a long time before the start of the project whether it would be possible to place the concrete manhole for the treatment plants as standard.

So-called sinking shafts came into question, which are brought into the ground piece by piece without the surrounding soil being able to slide in. The planner's choice of a suitable treatment plant thus quickly fell on the 3P Hydrosystem. The system is unique in that the actual filter unit can be easily inserted into the shaft that has already been placed in the ground. With regards to the drainage, the areas were divided into a Hydrosystem quintuplet and a twin. The Hydrosystem combines sedimentation processes with a filtration stage. Stormwater is treated by sedimentation, adsorption, filtration and chemical precipitation.

A hydrodynamic separator causes sedimentation of solids in a radial flow regime characterized by secondary flows. The action of the separator causes the solids to enter the flow-calmed sludge trap located below the separator hopper.

Above the separator chamber are the 4 filter elements. The cleaning capacity is designed to reliably meet the requirements of M 153, the DWA-A 102 and the Separation Edict NRW, which is a German regulation. A Hydrosark DN 1,500 sedimentation plant was also used as pretreatment for less polluted areas. Here, too, the entire filter unit was placed and installed in the concrete shaft on site.





# HYDROSYSTEM 1.500

POWERFUL ON LARGE AREAS

**The Hydrosystem 1.500 is installed in a concrete manhole with an inside diameter of DN 1500 at the factory.**

A hydrodynamic separator causes sedimentation of solids in a radial flow regime characterized by secondary flows. Due to the action of the separator, the solids pass into the flow-calmed sludge trap located below the flow breaker. Above the separator chamber are the six filter elements. The water passes through the six filter elements in an up flow process. The system removes pollutants such as heavy metals, petroleum hydrocarbons and polycyclic aromatic hydrocarbons from the precipitation water.

It also binds nutrients such as phosphates. The quality of the purified water is so high that it can be discharged directly into seepage or any receiving water.

The height difference between inlet and outlet is only 25 cm. Since the system is installed under the traffic surface, it does not require any additional space on the property or in the road space. The treatment system can be used for traffic areas such as parking lots and roads of all traffic loads, industrial areas and metal roofs. Six different filter cartridges are available for this purpose.

- Cleaning of precipitation water drains from traffic areas, industrial areas and metal roofs
- Manhole system, no space required on the surface
- Low height offset
- Easy control and maintenance

HYDROSYSTEM 1.500

## FILTER VARIANTS



**heavy traffic**  
For heavily loaded traffic areas.

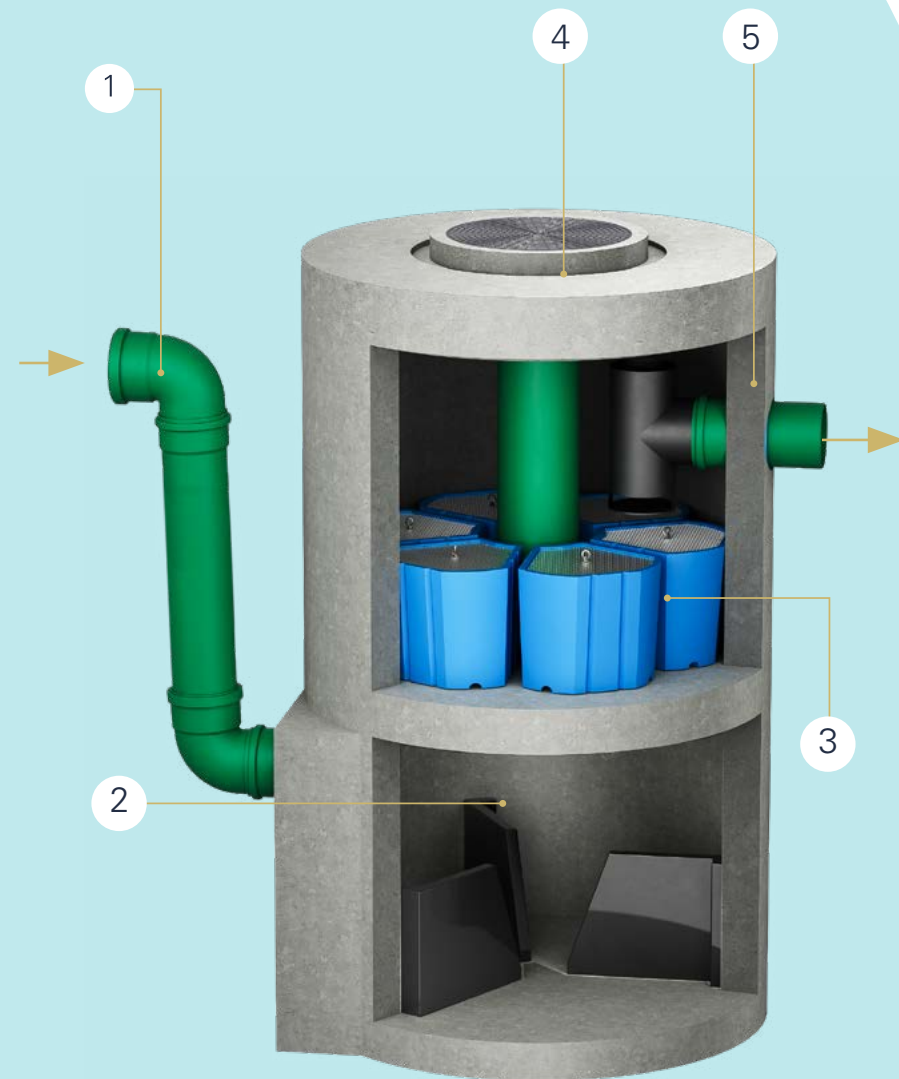


**metal**  
For metal roof surfaces.



# HYDROSYSTEM 1.500

## OPERATING PRINCIPLE



1. The precipitation water from the area to be drained is discharged at the lower end of the **manhole**. The water flows tangentially into the center of the manhole.
2. These are collected via an opening in the lower part of the manhole in a **sludge trap with flow breakers** under the system. The sludge trap is vacuumed out at intervals.
3. **Six filter elements are** located in the center of the manhole. These filter the fines in an upflow process and a large proportion of the dissolved pollutants are precipitated and adsorptively bound. The filter can be backwashed from above and can be easily replaced in the event of complete clogging.
4. The filter elements can be easily removed through the existing manhole opening.
5. Clean water is located above the filter elements, passes through an **oil barrier**, and then flows down the drain to seepage or a surface water.

VIDEO  
OPERATING  
PRINCIPLE



DIBT  
APPROVAL

LFU METAL  
ROOF APPROVAL

EXTRACTION VIA  
DWA-A 102

NJDEP-  
CERTIFIED

SQUIDEP  
CERTIFIED

EXTRACTION VIA  
DWA-M 153

EXTRACTION VIA  
DWA-A 138

LANUV  
LIST NRW

VSA  
PERFORMANCE  
TEST

NJCAT-  
VERIFIED





# REFERENCE HYDRO- SYSTEM 1.500 NEUSS

INVESTING IN A SUSTAINABLE AND  
ECONOMICAL SOLUTION

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**The GfA company in Neuss invested in the expansion of its existing company building in 2017/2018.**

**The market leader in industrial door drives opted for a sustainable and economical solution for treating the precipitation water on its company buildings.**

In detail, the concept was implemented as a compact storage tank was used, as well as a deeper compact rigole from the same manufacturer with a volume totaling around 365 cubic meters. With the help of the 3P Hydro-

system 1.500, the stormwater is purified unerringly with regard to dissolved pollutants, such as heavy metals, before it flows into the infiltration ditch. Particulate pollutant loads such as leaves and pollen are also safely retained by the stormwater treatment system.

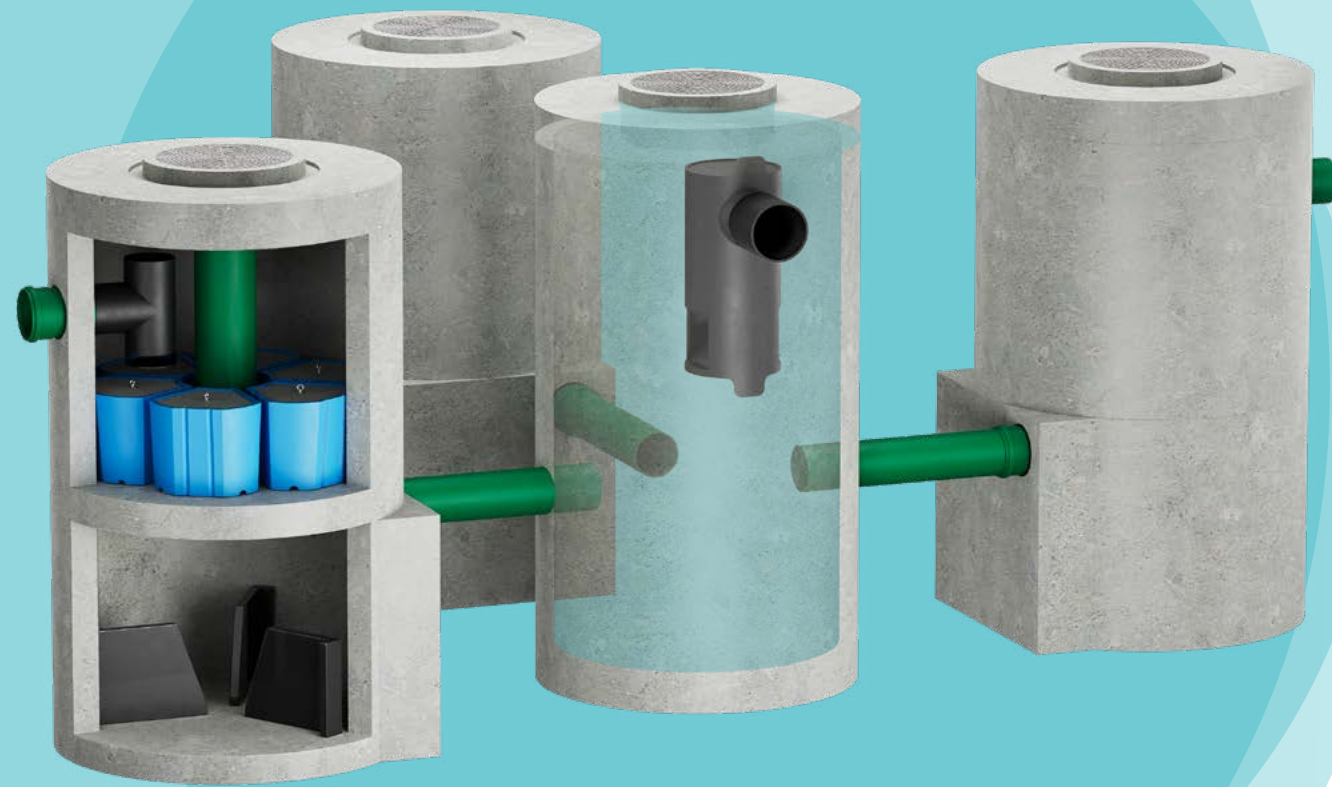
For the entire project, the client opted for another compact rigole with a total volume of 93 cu m as well as two more 3P Hydro-systems 1.500 for drainage



# HYDROSYSTEM 1.500

## MULTIPLE PLANTS

POWERFUL IN COMBINATION



**For larger connection areas, 2 to 5 Hydrosystems 1.500 can be combined in a star arrangement. The inlet is centrally located via a distribution manhole, which already ensures presedimentation and retains light materials.**

All systems are fed uniformly via the arrangement of the pipes. The hydro systems are pre-assembled in the factory, thus the plants can be installed via „plug-and-play“.

- Combination of 2 to 5 plants of type Hydrosystem 1.500 (more plants in combination, on request)
- Increase of connected areas up to five times
- Uniform feeding of all plants guaranteed
- Fewer operating points in practice
- Connectable area: 2,600 sqm to 8,000 sqm
- Flexibly expandable

### HYDROSYSTEM 1.500

## FILTER VARIANTS



**heavy traffic**  
For heavily trafficked traffic areas.

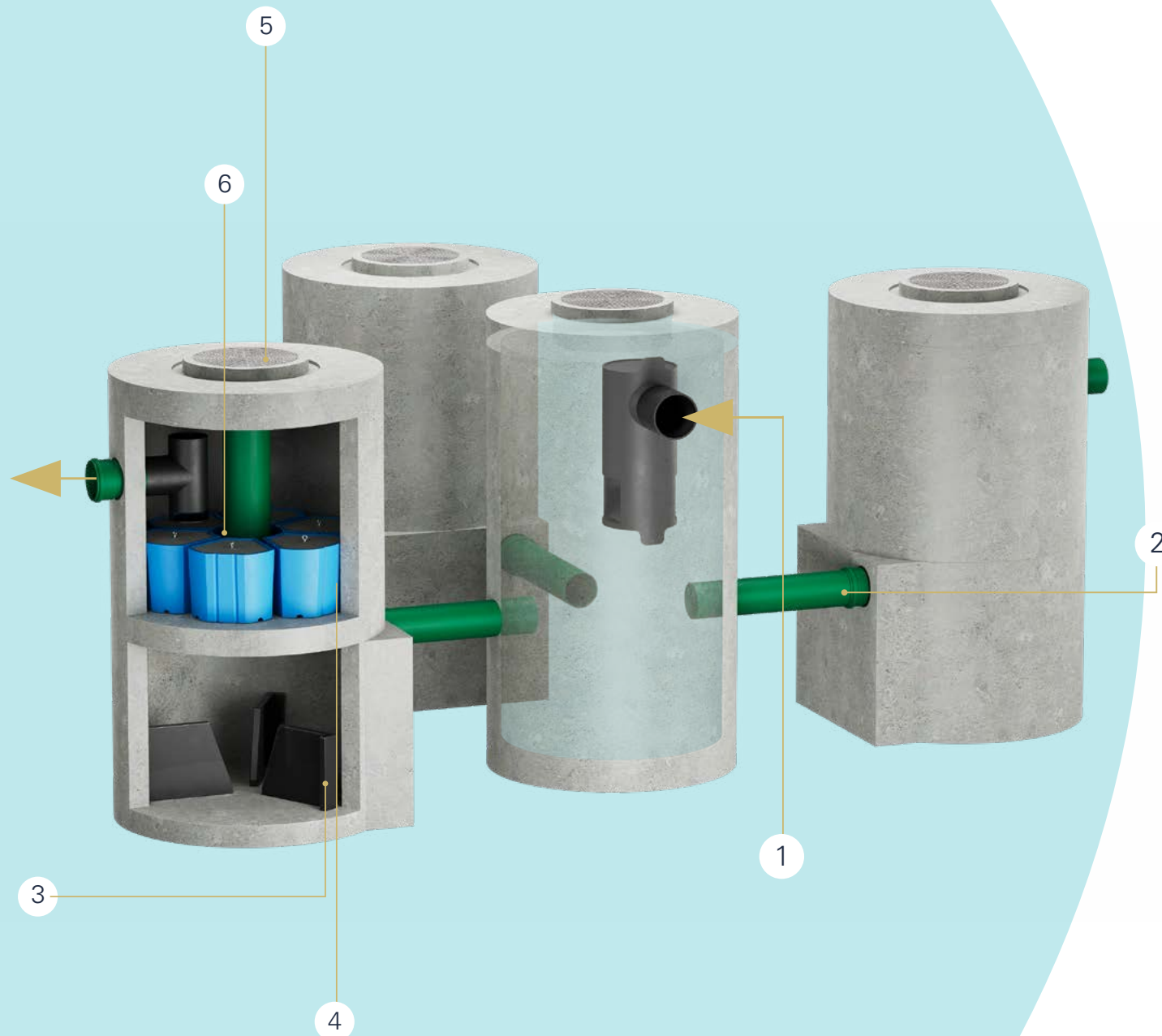


**metal**  
For metal roof surfaces.



# MULTIPLE PLANT

## OPERATING PRINCIPLE



1. The precipitation water from the area to be drained is discharged into a distribution manhole in a calmed manner. This provides Initial pre-sedimentation. The immersion pipe serves as an additional **lightweight retention** and ensures an even hydraulic balance.
2. The systems are then fed uniformly via the **distribution manhole** at the bottom of the manhole. The water is deflected tangentially by the diverter.
3. These are collected in a **sludge trap** under the system via an opening in the lower part of the manhole.
4. **Six filter elements** are located in the center of the manhole. These filter the fine material in an up flow process and a large proportion of the dissolved pollutants are precipitated and adsorptively bound. The filter can be backwashed from above and can be easily replaced in the event of complete clogging.
5. The filter elements can be easily removed through the existing manhole opening.
6. The clean water is located above the filter elements, it passes through an oil barrier and then flows via the drain into e.g. a collection sump, see-page or a surface water body.

DIBT  
APPROVAL

LFU METAL  
ROOF APPROVAL

EXTRACTION VIA  
DWA-A 102

NJDEP-  
CERTIFIED

EXTRACTION VIA  
DWA-M 153

EXTRACTION VIA  
DWA-A 138

LANUV  
LIST NRW

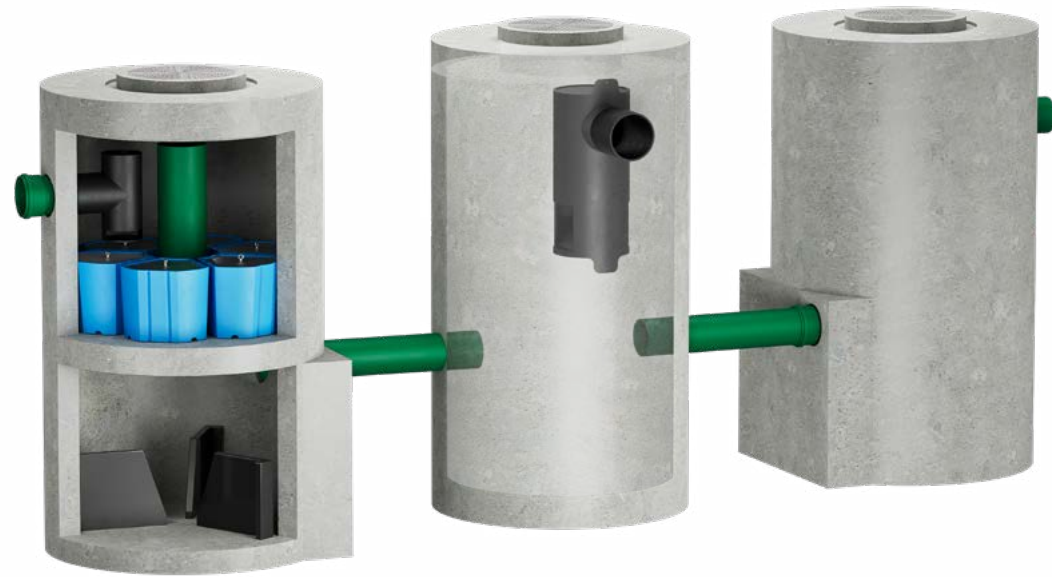
VSA  
PERFORMANCE  
TEST

NJCAT-  
VERIFIED

# OVERVIEW

## MULTIPLE PLANT HYDROSYSTEM 1.500

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3P HYDROSYSTEM 1.500 **TWINS**



3P HYDROSYSTEM 1.500 **QUADRUPLLET**



3P HYDROSYSTEM 1.500 **TRIPLET**



3P HYDROSYSTEM 1.500 **QUINTUPLET**



# OVERVIEW

## 3P HYDROSYSTEM 1.500

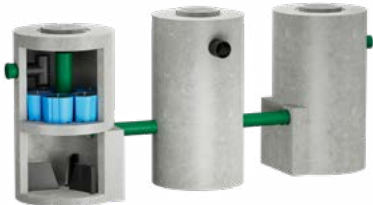
Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
1,600	16	DIBt approval VSA performance test	Heavily polluted traffic areas DTV>15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic

1,300	13	LfU metal roof approval	Metal roof surfaces (copper, zinc, lead)	Metal
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## 3P HYDROSYSTEM 1.500 TWINS

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
3,200	32	DIBt approval VSA performance test	Heavily polluted traffic areas DTV>15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic

2,600	26	LfU metal roof approval	Metal roof surfaces (copper, zinc, lead)	Metal
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\* Internal bypass not considered.  
\*\* Flow rate according to DIBt approval

## 3P HYDROSYSTEM 1.500 TRIPLET

Connectable area full flow treatment* [m²]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
4,800	48	DIBt type approval	Heavily polluted traffic areas DTV>15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic

3,900	39	LfU metal roof Type approval	Metal roof surfaces (copper, zinc, lead)	Metal
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## 3P HYDROSYSTEM 1.500 QUATRUPLET

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
6,400	64	DIBt approval VSA performance test	Heavily polluted traffic areas DTV>15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic

5,200	52	LfU metal roof approval	Metal roof surfaces (copper, zinc, lead)	Metal
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## 3P HYDROSYSTEM 1.500 QUINTUPLET

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
8,000	80	DIBt approval VSA performance test	Heavily polluted traffic areas DTV>15,000 with approval by the DIBt for discharge into seepage.	Heavy Traffic

6,500	65	LfU metal roof approval	Metal roof surfaces (copper, zinc, lead)	Metal
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# REFERENCE HYDRO- SYSTEM 1.500 FREIBURG

FREIBURG PUBLIC TRANSPORT  
MAKES DEPOT FIT FOR E-BUSES

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**Freiburger Verkehrsbetriebe AG has converted its bus fleet to electric mobility. To this end, the charging infrastructure was expanded and the depot was redesigned accordingly. The precipitation water is now no longer discharged into the sewer system, but seeps away directly into the groundwater after being treated by three Hydrosystem 1.500 filter systems from 3P Technik.**

The systems were delivered ready for connection and thus quickly and easily integrated into the drainage concept. Maintenance of the systems is user-friendly, as the filter elements can be easily backwashed and replaced without disrupting bus traffic.



# PROBLEM MICROPLASTIC

TINY PARTS - BIG DANGER FOR OUR ENVIRONMENT

**Via road runoff, two-thirds of the total amount of microplastics are discharged into the waters in Germany.**

Microplastics in the aquatic environment can lead to numerous negative effects. When plastics are ingested, tissue changes or inflammatory reactions can occur in living organisms. Humans are also affected via the food chain. Tire abrasion is the largest pathway into the aquatic environment. In 2020, a team of researchers from the Universities of Washington and Toronto discovered that the transformation product 6PPD quinone, which comes from antioxidants used in tires, is the cause of recurring acute fish kills.

Since microplastics cannot be biodegraded according to current knowledge, it is all the more important to keep them out of water bodies through extensive stormwater treatment.

In addition, microplastic particles left on the road can be further broken down by erosion and abrasion, increasing their dispersal and potential harmful effects.





# OUR MICROPLASTIC FILTRATION SYSTEMS

CONVINCINGLY STRONG IN THE FIELD AND LABORATORY



**COST-EFFECTIVE**  
COMBINATION OF FILTRATION  
AND SEDIMENTATION



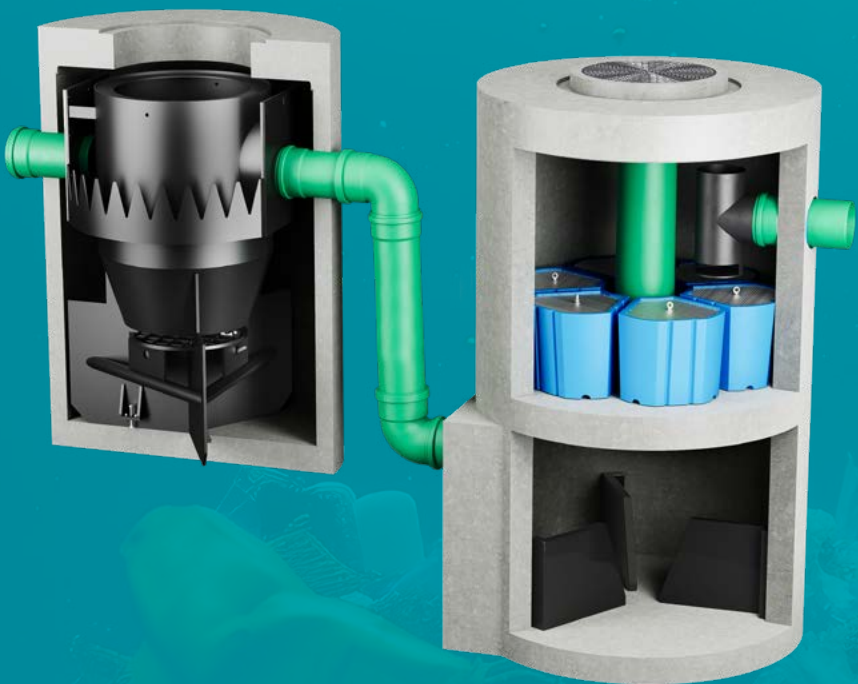
**USER-FRIENDLY**  
SIMPLE AND FAST CONTROL  
AND MAINTENANCE



**POWERFUL**  
HIGHLY EFFICIENT IN THE  
FIGHT AGAINST MICROPLASTICS



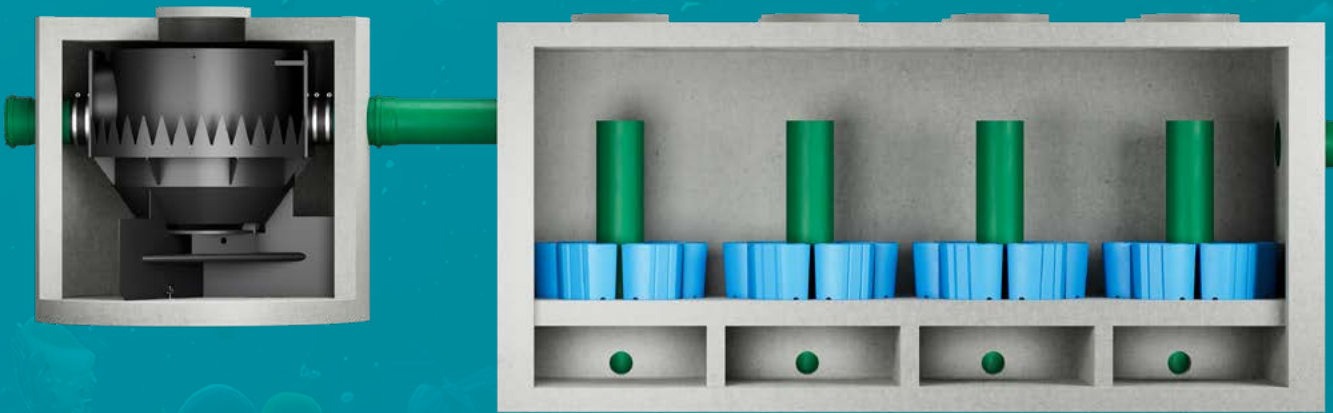
**CERTAINTY IN PLANNING**  
STUDY ON STORMWATER TREATMENT  
FOR ARTIFICIAL TURF PITCHES



## MICROPLASTIC

In combination effective. To remove microplastics from the drainage of sports and artificial turf fields, the combination of a Hydroshark with a filtration system is suitable

Page 90-93



## HYDROSYSTEM MODULAR

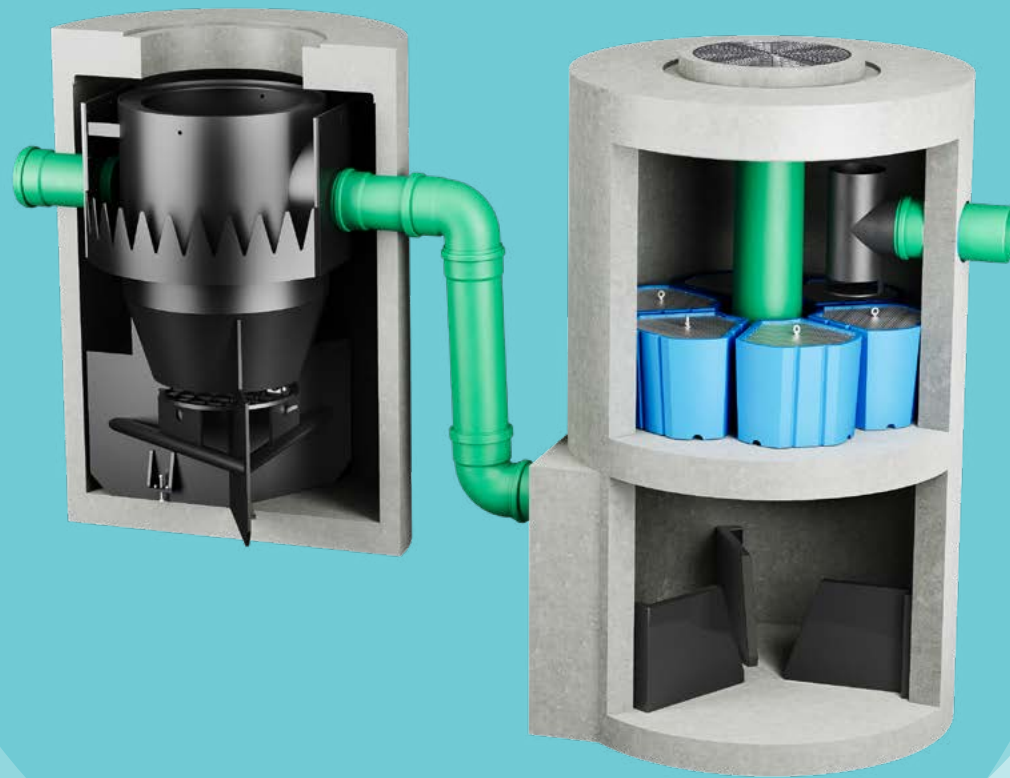
For larger catchment areas or higher flow rates, it is possible to individually combine a certain number of filter elements.

Page 94-97



# HYDROSYSTEM MICROPLASTICS

EFFECTIVE IN COMBINATION



**For the removal of microplastics from the run off of sports and artificial turf fields, the combination of a Hydroshark with a filter system from the 3P product range is ideally suited.**

In the 1st stage of the Hydroshark sedimentation plant, a large part of the filterable solids and thus of the microplastic particles are already removed. As a 2nd stage, hydrosystems can be used to retain finer microplastic particles as well as dissolved pollutants.

The existing piping can be retained when retrofitting e.g. an artificial turf pitch and the cleaning unit is simply integrated into the existing piping network. In this way, all new challenges can be met with minimal effort and without significant intervention in the periphery, and the pitches can continue to be used and played on with their complete longevity.

The connected area determines the required size of the treatment facilities.

- High efficiency for polluted precipitation water
- Effective cleaning performance due to two-stage sedimentation and filtration principle
- Easy retrofitting due to low height offset





# REFERENCE HYDROSYSTEM MICROPLASTIC COLOGNE

TWO-STAGE 3P FILTRATION PLANT  
RETAINS OVER 80 PERCENT OF POLLUTANTS

**During the renovation of a sports facility in Cologne, a two-stage filtration system from 3P Technik was used to treat the rainwater runoff. The filtration system effectively reduces the input of microplastics and other substances from the newly installed synthetic turf areas.**

The Cologne City Council provided a good two million euros for the conversion and renovation of the Fühlinger Weg sports facility in Cologne, which was implemented from October 2021 to November 2022.

The existing turf surface no longer met the current requirements for a modern sports field. It was also important to the clients that the facility be rehabilitated in an environmentally friendly manner. Larger asphalt surfaces were removed and partly replaced by water-permeable surfaces. The sports surfaces are now covered with synthetic turf and an environmentally friendly infill of sand-cork granules.

In order to rehabilitate the project ecologically, the drainage concept was also completely redesigned and equipped with a filtration system from 3P Technik. An important goal was to largely retain the microplastic input from the plastic turf surfaces. The small plastic particles, which are mainly caused by mechanical stress

during sports activities, are washed out with the rain. They can spread rapidly in the environment and from there also enter the food chain. To prevent this, rainwater runoff is thoroughly cleaned in a two-stage process. Rainwater from the sports fields and the pedestrian walkway is collected in a perimeter gutter, manhole inlets, and partially via drainage, and is directed entirely to the filtration plant. Afterwards, the runoff enters the seepage system via a box drain.

## Sampling shows high performance capacity

The system was sampled four times over a six-month period after completion. Sampling took place in response to heavy rainfall events. The retention effect of the filterable substances (AFS) from infill material and sediments of the paved areas was convincing. AFS retention values of over 80 percent were achieved in all sampling events, and in one case well over 90 percent. Dissolved copper and zinc were reduced, as were hydrocarbons, with inlet concentrations to the filter system already well below the legal limits. In none of the analyses were sum parameters of polycyclic aromatic hydrocarbons (PAH) detectable after filtration.



# HYDROSYSTEM MODULAR

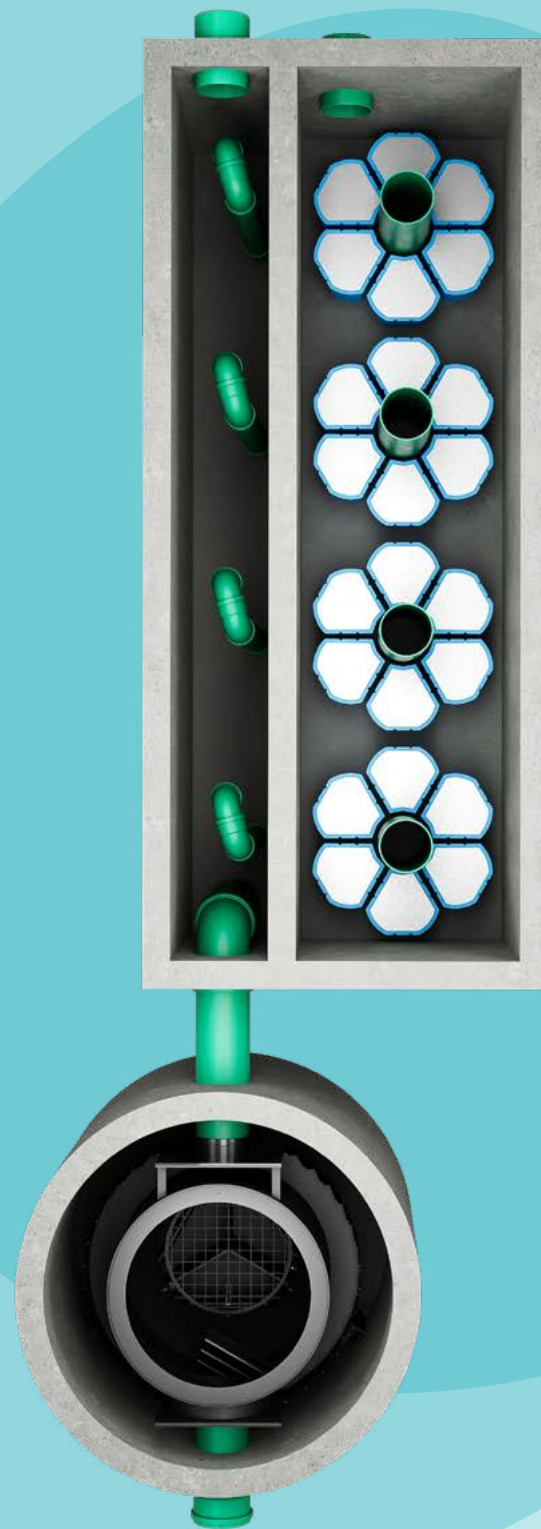
OUR BIGGEST SYSTEMS IN COMBINATION

**For higher catchment areas or larger flow rates, it is possible to individually combine a certain number of filter elements.**

For such filter structures, sedimentation and filtration are separated, i.e. a

sedimentation plant must be installed before the actual filter plant. Planning is done on a case-by-case basis according to the conditions of the catchment area and the cleaning objective.

VIDEO  
OPERATING  
PRINCIPLE



- Modular filter system for large areas to be connected and high flow rates
- Customized filter structure with Hydrosystem 1.500 filter units
- Two-stage plant, sedimentation unit and filtration unit
- Few operating points for large catchment areas
- Connectable area: > 10,000 sqm





# REFERENCE HYDROSYSTEM MODULAR NEU ULM

## CLEAN ROAD WASTEWATER FOR THE STATE GARDEN SHOW

**Several Ulm structures along the federal highway B10 will be renewed in the coming years. Everything must be completed by the State Garden Show in 2030. A key task was cleaning the rainwater runoff from the heavily trafficked route, which has so far been discharged into a surface water body polluted with contaminants.**

The B10 traffic axis, which cuts through the city of Ulm from north to south and acts as a barrier between the city center and the western district, has aged considerably. Approximately 85,000 vehicles travel daily over the two prestressed concrete bridges. Due to the increased traffic load in recent decades and the deteriorating structural condition, renovation is no longer feasible. This was confirmed by bridge inspections conducted in August 2022. In 2030, Ulm will host the State Garden Show for the second time in fifty years. Major infrastructure upgrades along the B10 must be completed ahead of this event.

As part of the project, the city of Ulm, as the commissioning authority, also prioritized water protection. Previously, rainwater runoff from the federal highway was discharged untreated into the Blau River, which flows into the Danube. Measurements conducted at various points by stormwater specialist 3P Technik revealed significant pollution with heavy metals such as zinc, copper, mineral oil hydrocarbons, and microplastics from tire abrasion. The task was to treat the runoff so that it could be discharged into the Blau as cleanly

and pollutant-free as possible. To achieve this, 3P Technik developed a concept connecting large road surfaces to a modular, two-stage filtration system designed for high flow rates. The sedimentation and filtration systems are easy to maintain and clean. In both the Hydroshark and Hydrosystem, accumulated sludge can be vacuumed from above. The filter elements in the Hydrosystem are backwashable and can be easily removed and replaced from above in case of complete clogging. Each complete system, consisting of one Hydroshark sedimentation unit and two sets of four Hydrosystem filtration units, can treat runoff from a traffic area of up to 15,000 m<sup>2</sup>.

Since the affected sections of the B10 pass through urban areas, compact and space-saving stormwater treatment solutions were required. Additionally, the reconstruction and renewal schedule is tightly planned, as the work, including building a new bridge and a tunnel, must be completed by the 2030 State Garden Show. The two-stage Hydrosystem is more compact than other solutions, making it ideal for this task. The systems are preassembled in concrete shafts, allowing them to be easily placed into prepared excavation pits on site and connected, significantly shortening construction times.

The systems for the first section have already been installed, and additional areas along the B10 are currently in the planning stage.



# FURTHER TREATMENT PLANTS

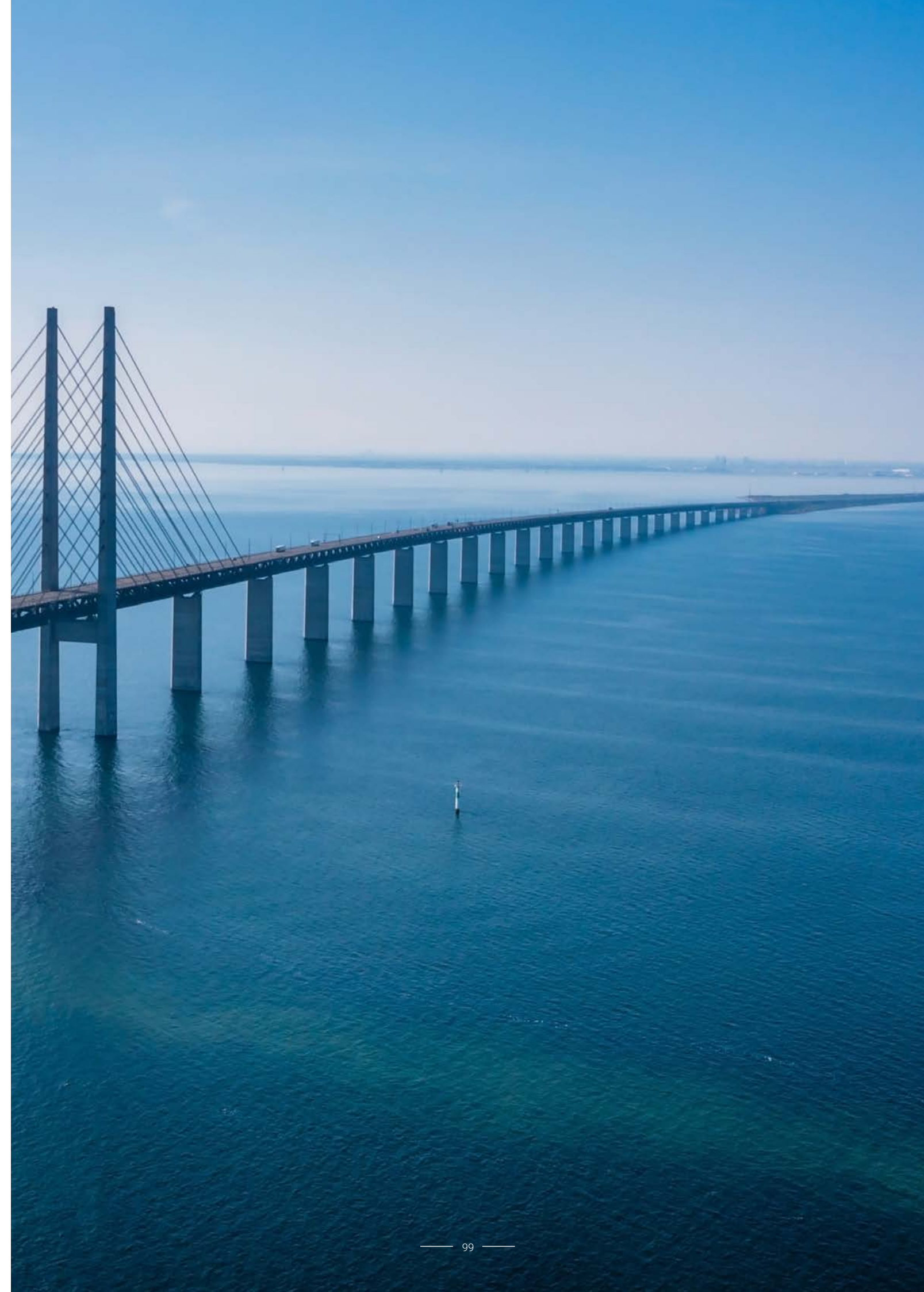
FROM CHANNEL DRAIN TO PAVEMENT COVERING

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To meet all individual project requirements, we have additional solutions in our portfolio that cover a broad spectrum.

For smaller construction projects, such as a single-family house with a metal roof, where rainwater runoff is to be infiltrated, our 3P Hydrosystem 400 with LfU approval, among other things, is the perfect solution.

We also offer a wide range of systems in the areas of surface coverings, gutter drainage and point drainage via road gullies, which also have DIBt approval, for example.





# OTHER TREATMENT PLANTS

A SOLUTION FOR ALL CIRCUMSTANCES



**COST-EFFECTIVE**  
LOW MAINTENANCE



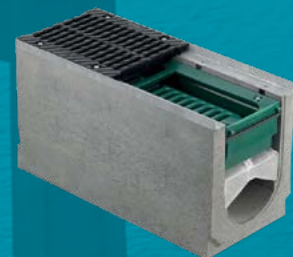
**USER-FRIENDLY**  
SIMPLE AND FAST CONTROL  
AND MAINTENANCE



**POWERFUL**  
OPERATIONAL RELIABILITY BASED  
ON YEARS OF FIELD TESTING



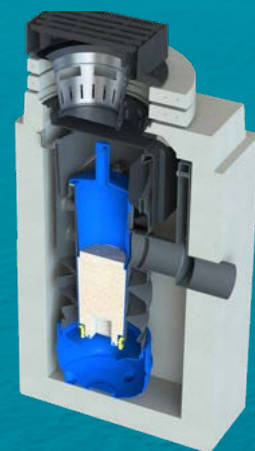
**CERTAINTY IN PLANNING**  
SUPPORT FOR PLANNING AND DESIGN



## 3P HYDRO FILTER CHANNEL

The treatment of the water takes place directly under the surface of the ground, which makes the system easy to control and maintain.

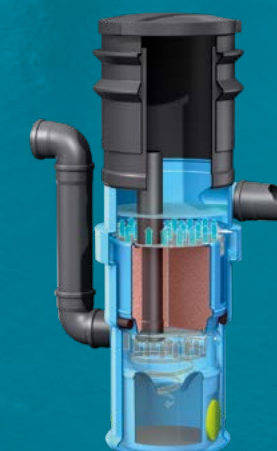
Page 102-107



## BUDAVINCI

The Budavinci as a street drain combines a hydrodynamic separator with a filter unit in a street drain and is easy to control and clean.

Page 108-113



## HYDROSYSTEM 400

The Hydrosystem 400 is the smallest variant of the Hydrosystem family.

Seite 114-117



# 3P HYDRO FILTER CHANNEL

LINEARITY FOR BEST RESULTS

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**The filter channel with sedimentation stage has several advantages over other systems.**

The treatment of water takes place directly under the surface of the terrain, which makes the system easy to control and maintain. The filter material is not loosely placed in the channel, it is in cushions. These are easy to remove and clean. According to the approval of the building authorities, the filter pads do not have to be replaced until after 10 years.

The filter system removes pollutants such as heavy metals, petroleum

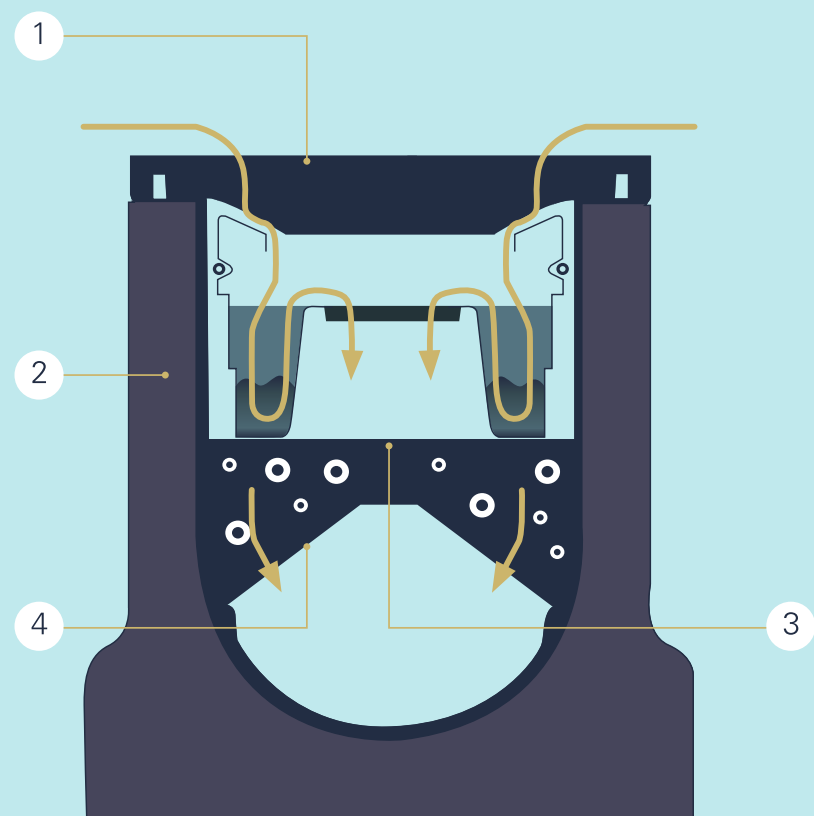
hydrocarbons and polycyclic aromatic hydrocarbons from precipitation water. It also binds nutrients such as phosphates. The combination of solids separator and filter acts on both particles and dissolved water ingredients. The treatment system can be used for traffic areas such as parking lots and roads of all traffic loads and industrial areas. Stormwater runoff can be treated to the point where it can be discharged to surface waters or groundwater. The modular design allows the application in almost all catchment areas. Maintenance is very simple and can be carried out by your own personnel. No special equipment is required.

- Filter pad, no loose material
- Applicable up to load class F
- Replacement interval of the filter pads > 10 years
- Longer use of the filter pad possible due to substrate testing



# 3P HYDRO FILTER CHANNEL

## OPERATING PRINCIPLE



1. The water flows into the **drainage channel** from both sides.
2. The **sedimentation box** cleans the water from coarse material such as leaves and sand. A rubber seal prevents the water from flowing around the channel.
3. The water pretreated in this way is directed onto a **filter pad**. Here, it is purified via filtration, adsorption, chemical precipitation and biological conversion.
4. The **treated water** collects below the filter and can be infiltrated on site or discharged to a surface water body.

### Flow areas

Connectable area full flow treatment* [sqm]	Approval	Description	Variant
20	DIBt approval VSA performance test	Heavily polluted traffic areas DTV>15,000 with approval by the DIBt for discharge into seepage.	Substrate Filter channel

VIDEO  
OPERATING  
PRINCIPLE







# REFERENCE BIRCOPUR MÜNCHSMÜNSTER

1.5 KM 3P HYDRO FILTER CHANNEL IN THE AUDI  
PRODUCTION PLANT

**BIRCO GmbH has been awarded the contract for drainage at AUDI AG's new production facility in Münchsmünster near Ingolstadt. A total of 1.5 km of the BIRCOpur channel system will be installed on the 42-hectare site. The Ingolstadt-based car manufacturer is thus relying on an innovative filtration solution for drainage. „Audi relies on future technologies - also in drainage. BIRCOpur is our answer to the new requirements in water filtration,” says Christian Merkel, Managing Director of BIRCO.**

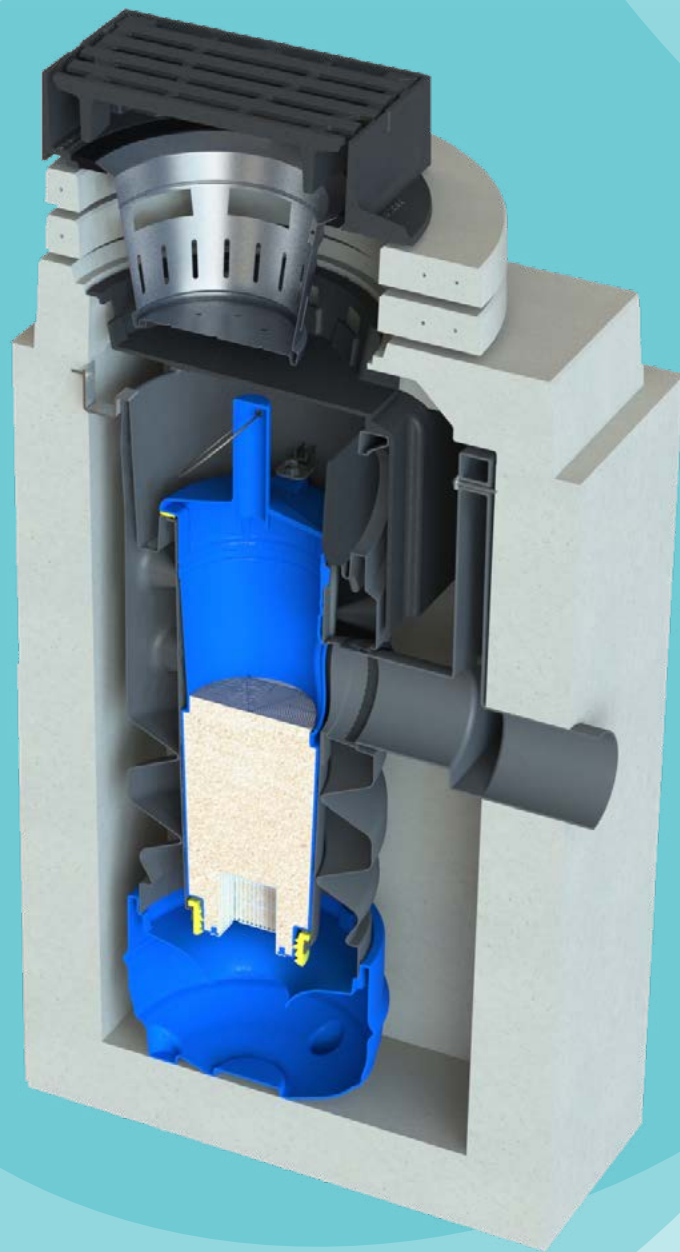
In addition to efficient drainage performance and a high load class, the protection of groundwater was a decisive factor in the planning of the drainage system. Therefore, close cooperation was maintained with the responsible water authority in Ingolstadt when selecting the appropriate drainage system. The decision was made in favour of BIRCOpur. Compactly installed in a line drainage system, filtration strength, efficiency and load capacity are combined in one channel system.

The channel body is based on the proven BIRCOsir channel system and is suitable up to the highest load class F 900. The BIRCOpur filtration solution based on this consists of interchangeable modules: a sedimentation box for coarse cleaning and a granulate filter pad. The latter cleans incoming water of organic and inorganic pollutants. Coarse cleaning prevents clogging of the filter pad, which therefore only needs to be replaced approximately every ten years.

The channel, which measures around 1,500 meters, was installed strand by strand on the new plant site in Münchsmünster. Audi had purchased a 42 hectare site here at the beginning of 2013 to create new production capacity.

Centers of excellence for the production of hot- and cold-formed components, die-cast aluminum structural parts and chassis components were created on 31 hectares.





# BUDAVINCI

## THE GULLY REINVENTED

**The Budavinci as a street drain combines a hydrodynamic separator with a filter unit in a street drain and is easy to control and clean.**

**The system does not require additional space, as it is located directly in the road space.**

The filter material is contained in a cartridge, which is replaced at intervals of between 3 and 5 years. The filter stage removes pollutants such as heavy metals, petroleum hydrocarbons and polycyclic aromatic hydrocarbons from the precipitation water. It also binds nutrients such as phosphates. The combination of

solids separator and filter acts on both particles and dissolved water ingredients.

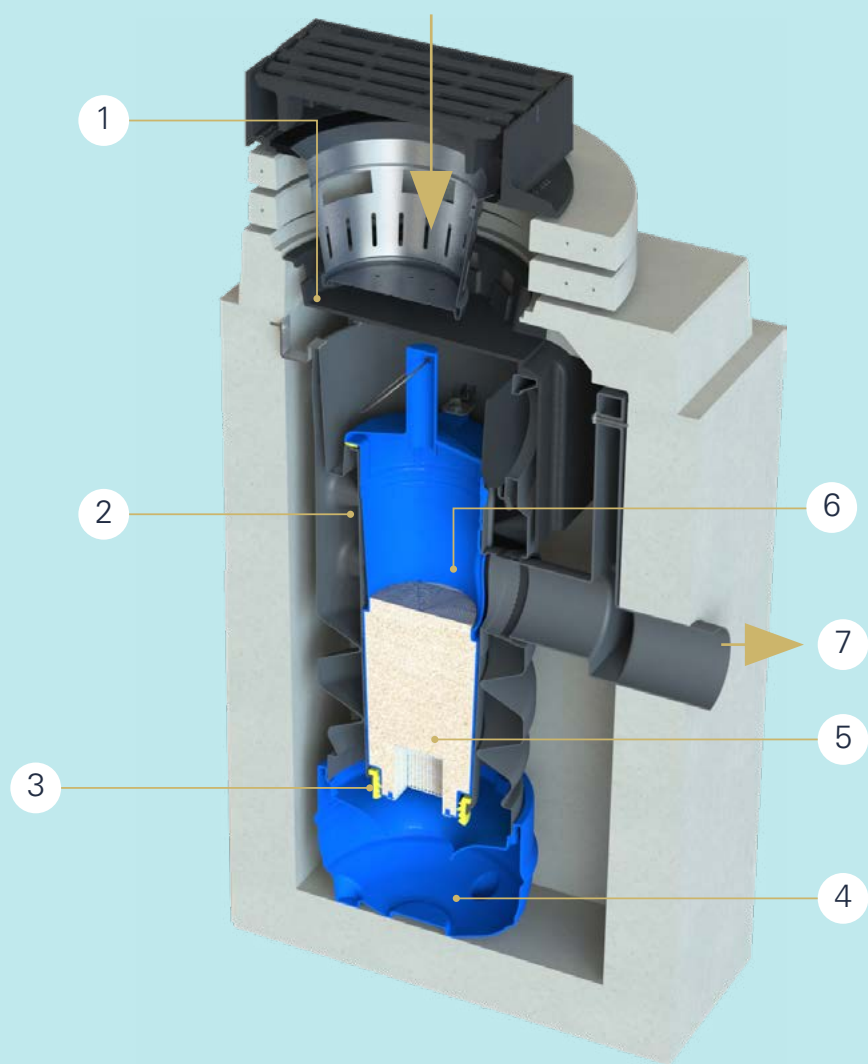
The treatment system can be used for traffic areas such as parking lots and roads of all traffic loads. Three different filter cartridges are available for this purpose. Even heavily polluted stormwater run off can be cleaned to the extent that it can be discharged into surface waters or groundwater. The modular design allows the application in almost all catchment areas.

- Treatment of polluted precipitation water from traffic areas
- System is located in the road drain, no space required on the surface
- Easy control and cleaning
- Filter material in cartridge
- Replacement interval of the filter between 3 and 5 years
- Connectable area between 100 sqm and 400 sqm depending on cleaning target
- General building authority approval of the DIBt
- Can be used according to Separation Edict NRW (on LANUV list)



# BUDAVINCI

## OPERATING PRINCIPLE



1. Stormwater runoff enters the system through a **baffle**.
2. From there, it flows through two channels into the **hydrodynamic separator**.
3. A radial **flow regime** is generated in the separator. Solids are separated downwards.
4. The solids are collected in a **sludge trap** under the system, which must be vacuumed out at site-specific intervals.
5. The water flows in an up flow process through a **filter element**.
6. The **filter cartridge** can be easily changed.
7. The treated water enters the storm sewer or a seepage system via the **drain**.

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
100	1	DIBt approval	Heavily polluted traffic areas DTV>15,000 with approval by the DIBt for discharge into seepage.	Type Z
200	2		Moderately polluted traffic areas for discharge to surface water.	Type E
400	4		Low-impact traffic areas for discharge to surface water.	Type N

\* Internal bypass not considered..  
\*\* Flow rate according to DIBt approval

VIDEO  
OPERATING  
PRINCIPLE







# HYDROSYSTEM 400

THE SOLUTION FOR SMALL AREAS

**The Hydrosystem 400 is the smallest version of the Hydrosystem 1.000.**

It is made of plastic and has an inner diameter of 400 mm. It can be installed in a manhole or placed directly in the reservoir or a soak away. For these cases, there are special mounting brackets. A round filter cartridge forms the heart of the plant. First, the water flows tangentially via a DN 100 pipeline into a hydrodynamic separator. From there, it flows upstream via the central filter element into the drain. A DN 70 emergency overflow ensures that there is no backwater, even in the event of heavy rain or a clogged filter. There is a sludge bucket under the filter

that is simply emptied into the household waste, so that the system can be maintained and cleaned by the operator himself. The filter cartridge can be backwashed with the garden hose.

This means that maintenance is possible without any problems, even without special knowledge and instruction.

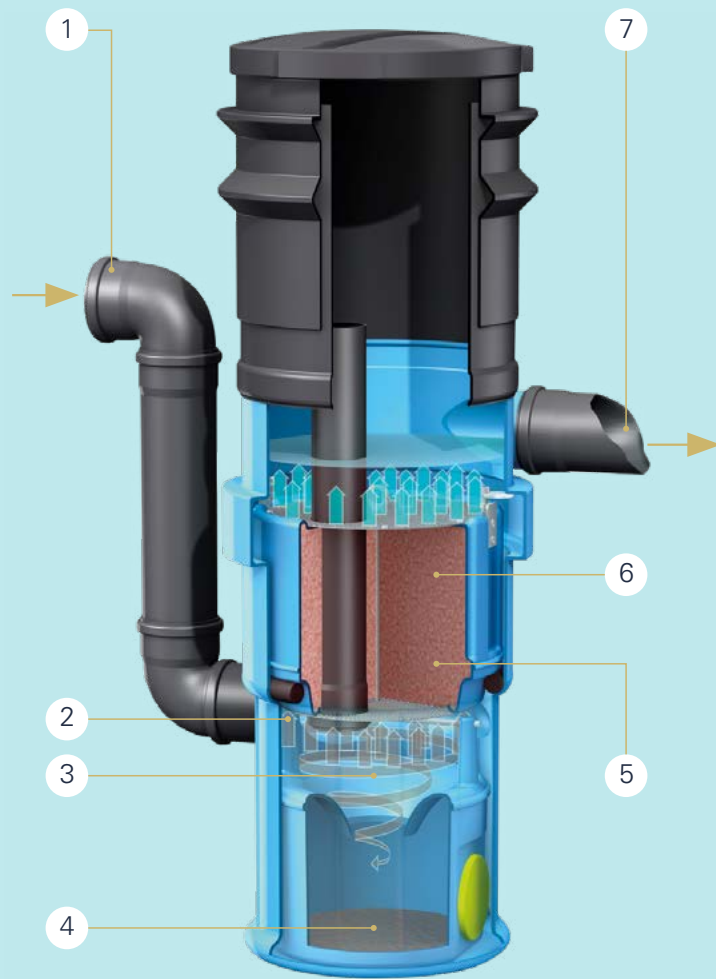
The Hydrosystem 400 has Bavarian state approval for metal roof drains. For this application, there are two different filter cartridges for copper and zinc roofs.

- Hydrosystem with a diameter of 40 cm
- Sludge bucket for easy maintenance
- All functions identical to Hydrosystem 1.000
- Connectable area: 100 sqm to 170 sqm depending on the pollution and the cleaning purpose



# HYDROSYSTEM 400

## OPERATING PRINCIPLE



1. Stormwater runoff enters the system through the **inlet pipe**.
2. From there it flows into the **hydrodynamic separator**.
3. A radial flow regime is generated in the separator. Solids are separated downwards.
4. The solids are collected in a **sludge trap** under the system, which must be emptied at site-specific intervals.
5. The water flows in the up flow process through a **filter element**.
6. The **filter cartridge** can be easily changed.
7. The purified water is **discharged** via the **drain** into the storm sewer or a seepage system.

Connectable area full flow treatment* [sqm]	Q <sub>max</sub> ** [l/s]	Approval	Description	Variant
130	1.3	LfU metal roof approval	Metal roof surfaces (copper)	Metal
175	1.75		Rainwater treatment for roof areas	Roof
100	1		Stormwater treatment for heavily trafficked traffic areas	Heavy Traffic

\* Internal bypass not considered  
\*\* Flow rate according to DIBt approval

LFU METAL  
ROOF APPROVAL

EXTRACTION VIA  
DWA-A 102

EXTRACTION VIA  
DWA-M 153

EXTRACTION VIA  
DWA-A 138





# REFERENCE HYDROSYSTEM

## 400 UNI GARCHING

FIELD TEST ON A ZINC ROOF

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**The rainwater run off from metal roofs made of uncoated zinc, copper or lead contains considerable concentrations and loads of the respective heavy metals. As these are not to be discharged into groundwater or surface waters to an excessive extent, they must be treated in Bavaria. According to Art. 41f BayWG, such treatment plants can be granted a general approval by the building authorities, which is intended to ensure that the filter systems function permanently in terms of water protection.**

The test for the approval was carried out on a real system in a field test over the period of one year, which was carried out by an independent institute.

The 3P Hydrosystem metal was tested from September 2009 to August 2010 at the Technical University of Garching on a zinc roof according to the test conditions of the State of Bavaria. On a zinc roof surface of 260 sqm 2 systems of the metal type were installed, each receiving the rain runoff of 130 sqm roof surface.

### Results

Water from the roof was first routed through magnetic inductive flow meters and then discharged through the filters. Automatic samplers were controlled by the flow meters and sampled the rainfall runoff. A rain gauge provides information on the intensity and duration of rain events. A total of 20 rain events had to be sampled, which were divided into three different classes of rain intensities, ranging from long-duration overland rains to heavy thunder showers.

Only rain events with more than 1 mm runoff were considered. The retention must be at least 90% for the application on zinc roofs and at least 98% for copper roofs. After the one year measurements, the filter material was additionally examined for loading in order to calculate how long the service life is for a filter element.



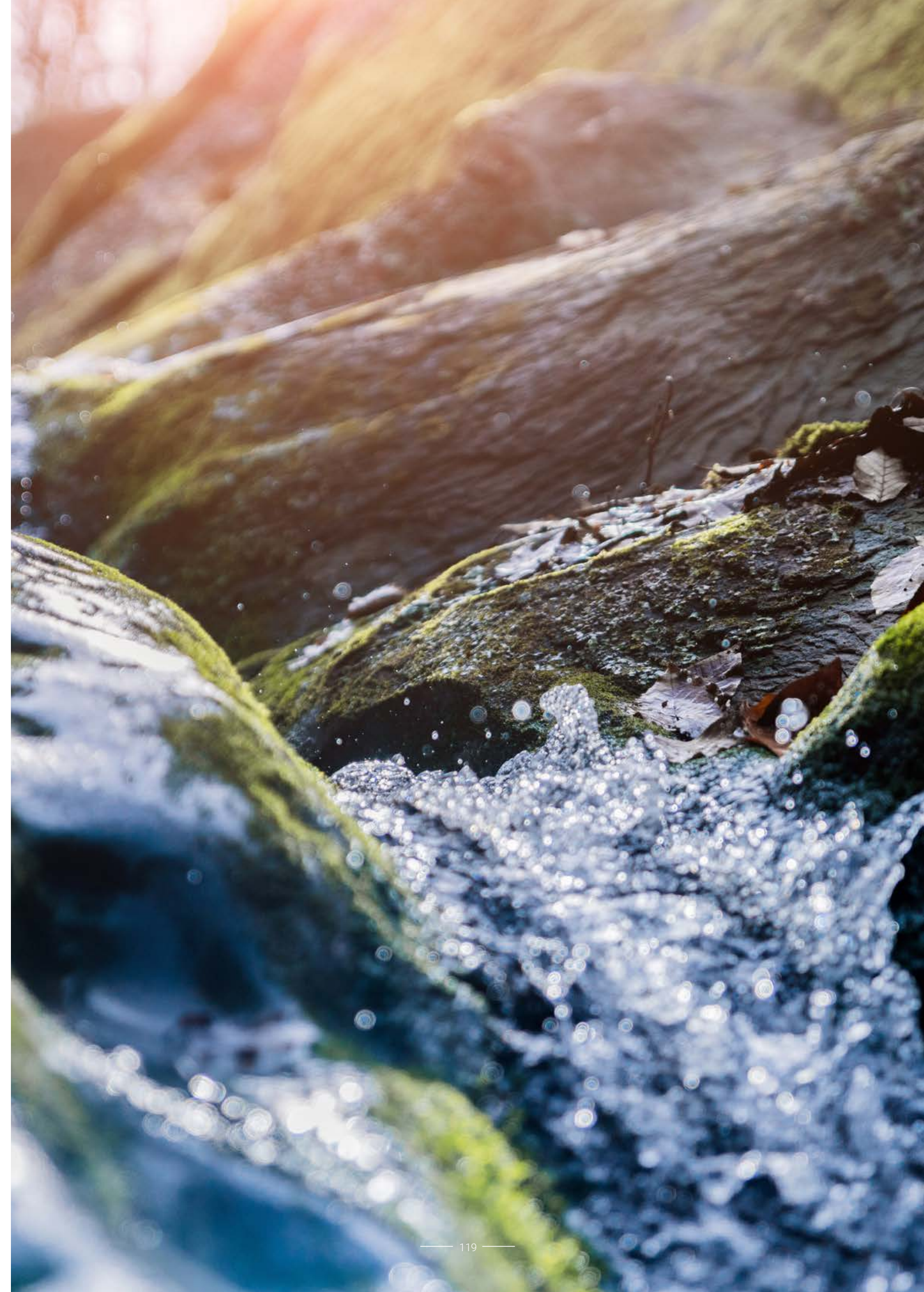
# 3P FLOW REGULATOR

## RETENTION MEASURES ON SITE

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The use of flow regulator in stormwater treatment is an important way to optimize stormwater management, reduce environmental impact, and promote more sustainable stormwater management. There are several types of flow restrictors that can be used depending on the specific requirements and conditions of a site.

Stormwater run off attenuators help reduce surface run off that normally flows from developed areas, roads, and other sealed surfaces. This reduces the risk of flooding and helps manage stormwater in urban areas.







- Discharge limiter from 1.0 l/s to 30 l/s
- Discharge only slightly dependent on water level
- Functionality with float
- Low maintenance
- No energy requirement
- Tested for up to 1.75 m water level

# FLOW REGULATOR

WE CANNOT LET EVERYTHING PASS THROUGH

**Heavy rainfall events pose increasing challenges to our sewer systems. Since the 1990s, the number of record rainfall events has been increasing worldwide. The result is urban flash floods with immense damage to buildings and urban infrastructure. Existing sewers are no longer adequately sized.**

**On-site retention measures are imperative to relieve pressure on canals and small water bodies and prevent flooding.**

For this purpose, storage volume on the properties or in the municipal space is created. Ideally, the discharge from the retention space is limited to a fixed maximum value, regardless of the level of the reservoir. The ideal throttle is a wishful thinking, but with our discharge limiters we already come very close to this goal.

The new generation of large plant throttles is ready for use. By dynamically opening the orifice plate in conjunction with a float, the flow is continuously adjusted to the water level. This ensures a uniform discharge even when the water level in the storage tank changes.

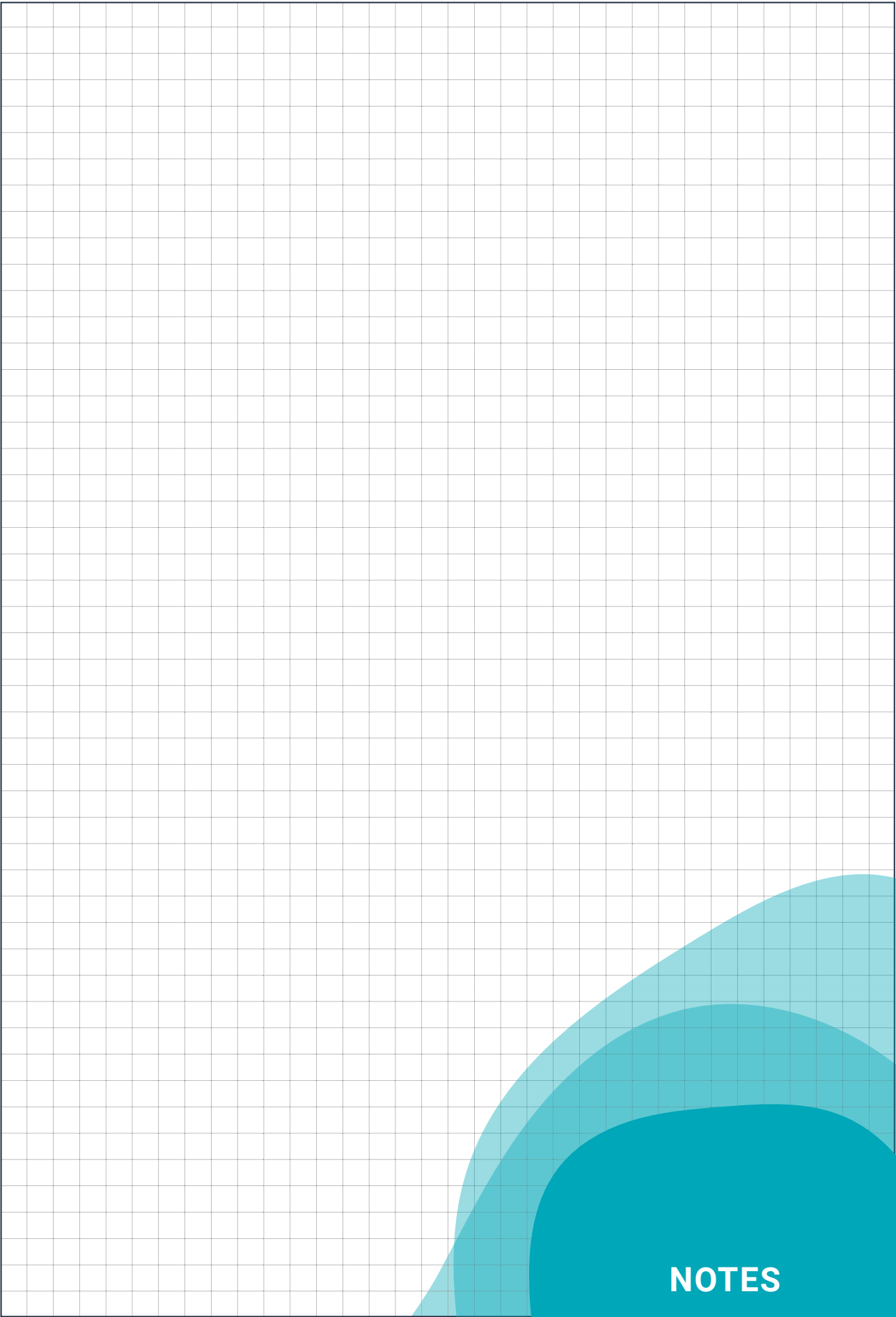
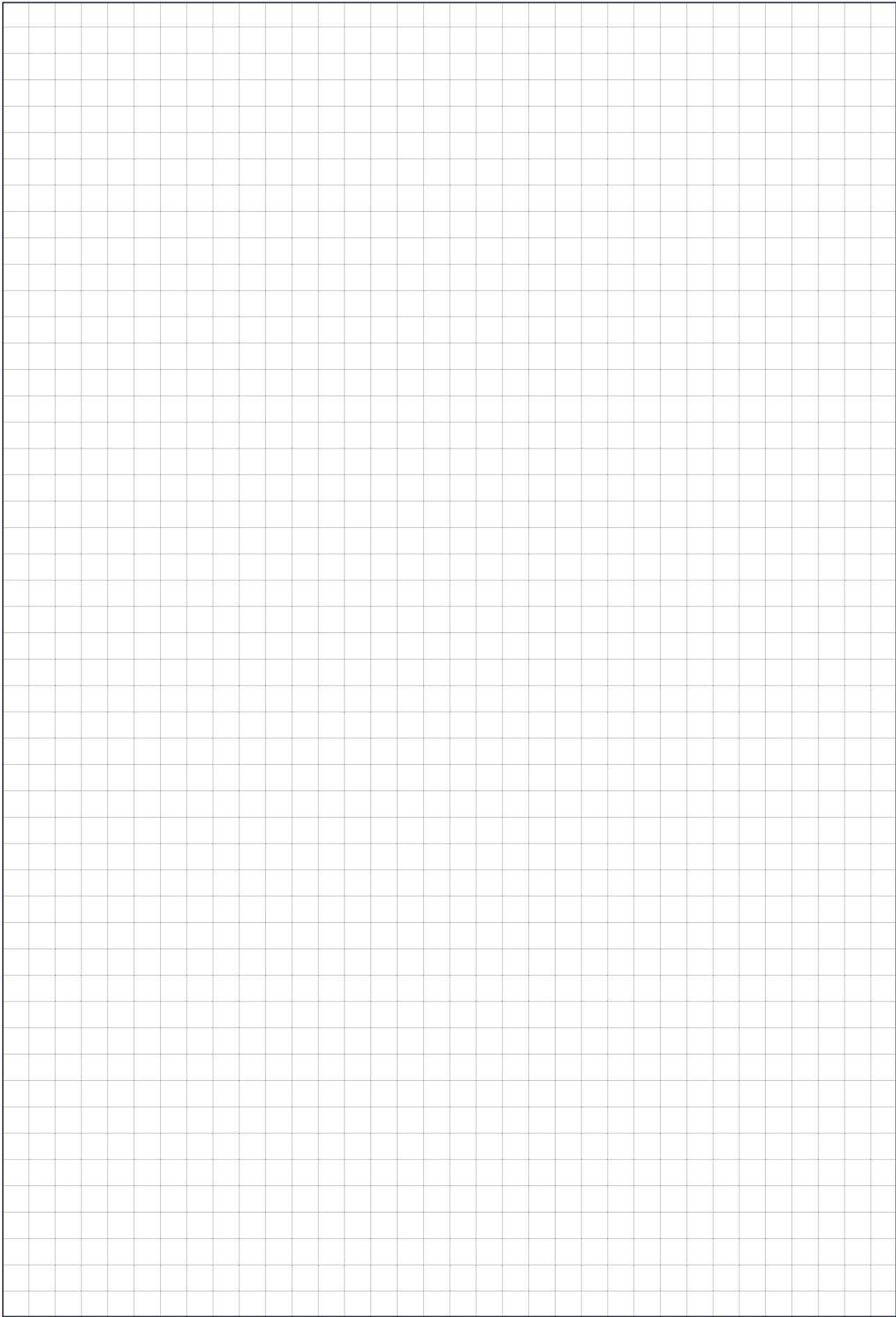
## Available flow rates:

1 l/s | 2 l/s | 2,5 l/s | 4,5 l/s | 5 l/s | 6 l/s | 7 l/s | 9 l/s | 10 l/s | 11,5 l/s  
13,5 l/s | 15 l/s | 16,5 l/s | 17,5 l/s | 19 l/s | 20 l/s | 22 l/s | 24 l/s | 25 l/s | 26,5 l/s

## CERTIFICATIONS OF THE FLOW REGULATOR







**NOTES**



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