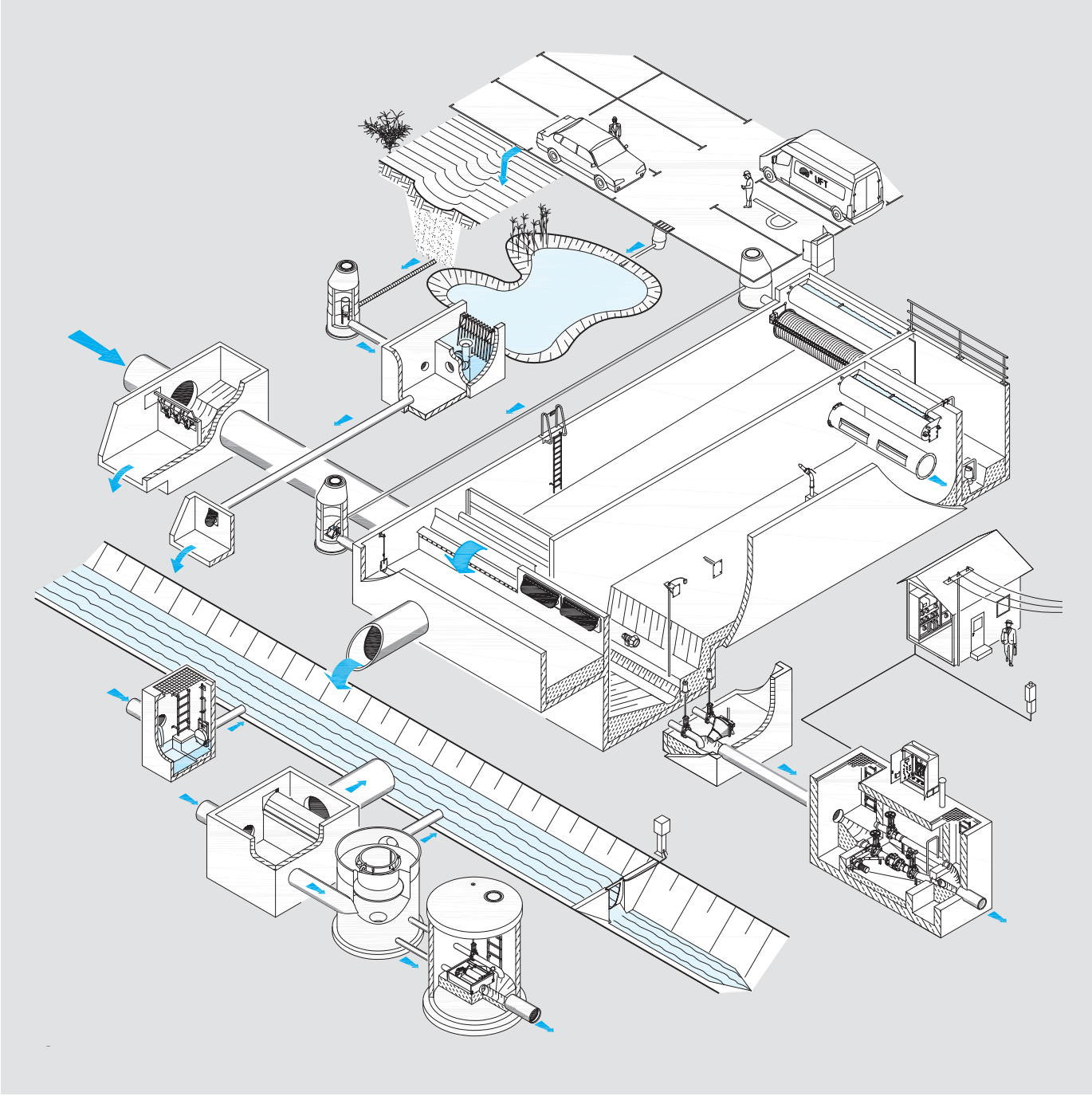
UFT
Pioneers in Stormwater Management

PRODUCT OVERVIEW

Stormwater Management

0001

HYDRO-MECHANICS | ELECTRICAL ENGINEERING | PROCESS CONTROL | SERVICE & MAINTENANCE | SCIENTIFIC SERVICES



Managing partners
Marion Falz-Wülk and
Michael Drechsler

A warm welcome in Tauberfranken

Our company is located in Bad Mergentheim, in the so-called 'beautiful Tauber valley', located midway between the source of the river near Rothenburg/Tauber and the confluence with the river Main near Wertheim. The name Tauber is derived from the Celtic word for water – and water has occupied us for almost 50 years.

UFT Umwelt- und Fluid-Technik Dr. H. Brombach GmbH was founded in 1977 by Prof. Dr.-Ing. Hansjörg Brombach as a spin-off of his research at the University of Stuttgart. His vortex valves, in those days groundbreaking, were highly welcome as blockage-resistant flow control devices for the combined sewer overflow tanks built extensively since the 1970s. Vortex devices are still in use today in many thousands of units and they are still available – in a wide variety of designs and especially for today's decentralised retention systems. In the following years, many new developments were made by Prof. Brombach and more than 60 patents applied for. UFT was there right from the start and we can rightly call ourselves 'pioneers in stormwater management'.

Since July 2023, Marion Falz-Wülk and Michael Drechsler have been at the head of the company together, supported by authorised signatories Dr. Gebhard Weiß and Dominik Hellmuth. Run as a limited liability company, UFT is 100 % privately owned. All partners work or have worked for the company.

In 2018 we were moving into our new extension: A sign of the growth of the company and also a commitment to the Bad Mergentheim location.

Today UFT has about 75 employees in Bad Mergentheim in Baden-Württemberg and in our branch office in St. Egidien near Chemnitz, Saxonia. Together with the UFT 'daughter companies' in Norway and the Czech Republic, the UFT group has an annual turnover of well over 10 million €. We also cooperate with more than ten partner companies and licensees worldwide and can look back on more than 10,000 successful projects.

What does the future hold?

The field of stormwater management is unmistakably changing today. First-generation plants need to be renovated and optimised, and new facilities are increasingly being constructed in decentralised drainage systems. UFT sees itself not just as a supplier. Rather, successful projects that can provide good long-term water protection at affordable costs require a sound knowledge of hydrology and hydraulics, of problems and methods of urban hydrology as well as of civil engineering, stainless steel processing, of electrical engineering and communications technology. We at UFT with our five divisions of **Hydro-Mechanics**, **Electrical Engineering**, **Process Control Technology**, **Service & Maintenance** and **Scientific Services** have the necessary know-how to reliably and expertly advise you as a customer in all these fields.

This product overview is structured according to our specialist divisions and gives you an initial overview of the diversity of our product and service range. Most of our products have their own product information, which you can also download as a PDF from our website www.uft.eu.

Enjoy browsing!

HYDRO-MECHANICS

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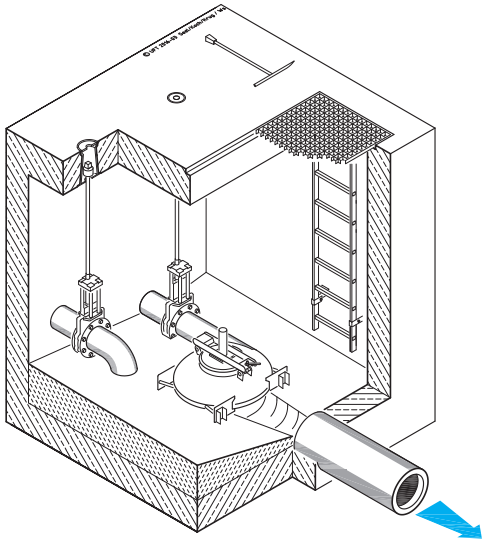
The UFT regional representatives in the head office and in the branch office in Saxony provide competent advice to all devices described in this product overview..

HYDRO-MECHANICS DIVISION

This division includes all equipment, processes and services where hydraulic-mechanical operation is the main feature, these include:

- flow controls and flow regulators
- flow meters
- water level control devices
- tank cleaning equipment
- devices for backflow prevention
- equipment for retention of gross solids
- accessories such as valves, pipes and fittings

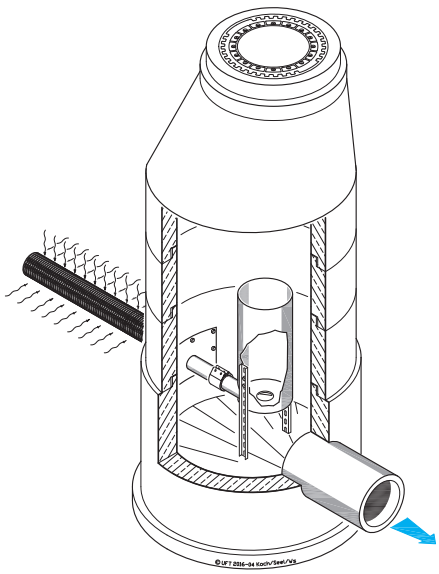
Our products are usually assembled and put into service by our own qualified technicians on site.



Vortex Flow Control
UFT-*FluidVortex*

HSU 0111

Solely flow regulated device for outflow control. High flow-resistance and a large open cross section. Fitted in control shafts in semi-dry installation, suitable for tanks and basins of all kinds.



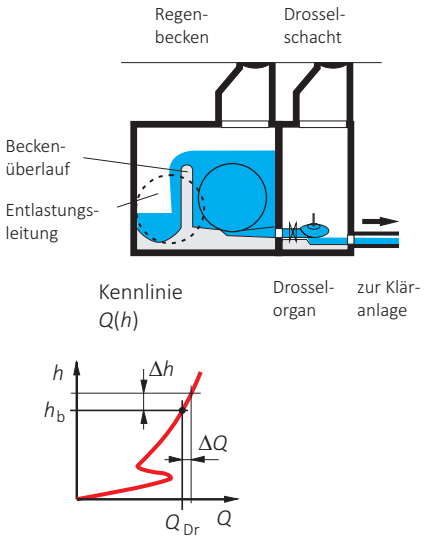
Vortex Flow Control for Subsoil Retention
UFT-*FluidVortex-R*

RIG 0111r

Passive flow control without moving parts and with integrated overflow. For regulating small outflows, e. g. from subsoil retention systems (trough-trench-systems)

FLOW CONTROL AT COMBINED SEWER OVERFLOWS AND STORMWATER TANKS

Each stormwater tank requires a flow control device which limits the discharge to a defined set value. In the case of CSO (Combined Sewage Overflows) and CSO tanks in combined systems, it is important to reduce the flow to the sewage treatment plant; in the case of detention and settling tanks in separate sewage systems, the discharge flow to the receiving waters is limited to an acceptable level to prevent hydraulic stress. Our product range contains a large number of device types with different properties for these applications. A flow control is usually designed in such a way that the design flow Q_{Dr} in L/s is reached when the water level in the tank is at the level of the overflow sill. Lower water levels generally result in a smaller flow, and vice-versa. This results in a hydraulic flow curve Q(h) which is characteristic for the flow control device. Often – but not always – it is ideal if the flow rate is constant regardless of the tank filling, i. e. of the water level h. This results in a vertical flow curve. The shape of the flow curve, showing the characteristic of the chosen flow control, is important for the hydraulic design and calculation of the structure and can therefore be requested from us at any time during the planning process.



Intended Purpose

In urban drainage systems, vortex throttles limit the discharge from CSOs, CSO tanks, stormwater retention basins and flood prevention basins. Due to the large open cross-sections and very effective secondary flow effects, the vortex throttle is blockage resistant. The device can therefore be used to advantage to reduce difficult-to-handle effluents loaded with solids, such as in combined and separate sewage systems or in sediment-laden waters from mining quarries, gravel works or other industry.

PROPERTIES OF THE VORTEX FLOW CONTROL UFT-*FluidVortex*

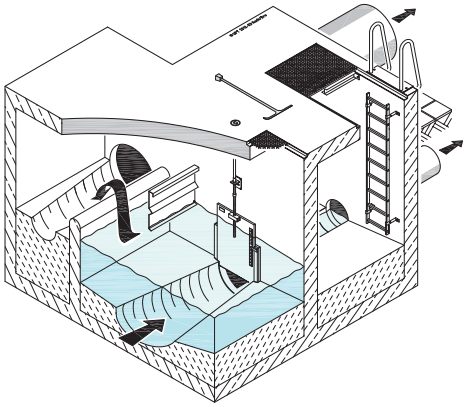
- high hydraulic resistance combined with large open cross-sections; therefore unaffected by blockages
- adjustment possible for different flow rates by simple exchange of an orifice plate – retrofitting also possible
- no moving parts
- no wear, high abrasion resistance
- no external energy required
- high operational safety
- corrosion-free construction
- quick assembly, no adjustment required
- oxygen injection by the discharge jet
- compact design, ideal for use in confined spaces

Intended Purpose

Today, decentralised drainage systems are generally used for new developments as well as for the reconversion of existing areas. Where the subsoil allows only a small infiltration rate to the groundwater, trough-trench-systems as subsoil retention systems with reduced discharge to the water course are often implemented. The UFT-*FluidVortex-R* Vortex Flow Control for Subsoil Retention performs two functions at the same time: when the infiltration ditch is only partially filled, it limits the discharge. In the case of very strong storms however, the integrated overflow spills the excess volume when the capacity of the retention system has been reached.

PROPERTIES OF THE VORTEX FLOW CONTROL UFT-*FluidVortexR*

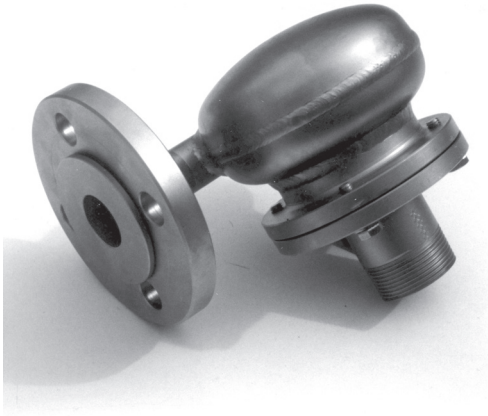
- large open cross-section
- control of very small flows
- no moving parts
- integrated overflow
- corrosion-free construction
- easy modification of flow due to changing demands
- simple visual inspection during operation
- high operational safety
- semi-dry installation in the control shaft
- can also be installed in round shafts with a diameter of 1,000 mm or more
- adaptation to any nominal diameter of the inlet pipe
- simple installation



Regulating Gate Valve
UFT-*FluidGate*

S
0112

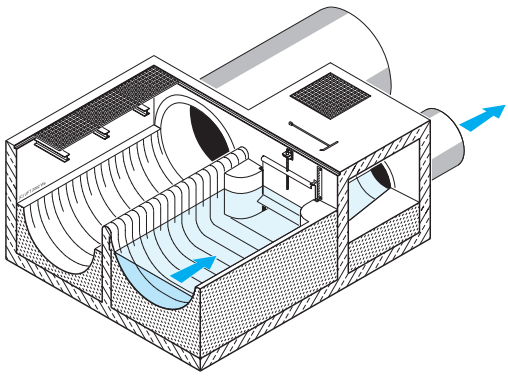
Adjustable control gate made from PVC with adjustment scale, for installation on vertical walls, for control of the outflow of combined sewer overflows.



High Pressure Vortex Flow Control
UFT-*FluidVortex-P*

SUP
0113

Passive flow control without moving components. Fixed inflow and outflow flanges. For reduction of high pressure inflows to small outflows.



Hook Gate
UFT-*FluidHook*

HS
0114

Adjustable gate for rectangular flow cross-sections. Optimised geometry for a small coefficient of discharge.

Intended Purpose

The Regulating Gate Valve UFT-*FluidGate* is used in combined sewer overflows and in diversion structures in all types of stormwater tanks and basins. It is particularly suitable for regulating medium to large flows, even at shallow water depths.

The gate valve is adjusted to a fixed opening width, which can be adjusted on a scale. The flow control effect is based on a constriction of the cross-sectional area and, consequently speeds up the water flow.

PROPERTIES OF THE REGULATING GATE VALVE UFT-*FluidGate*

- upstream installation
- installation on a flat, vertical wall
- precise and stepless adjustment of the flow
- suitable for medium to large flows at low to medium pressure levels
- indication of the opening width on a scale with pointer
- compact construction
- no bottom drop at the sewer invert required
- non-corrosive PVC and stainless steel construction
- jackscrew drive above water level
- can also be installed in low shafts (positioning block instead of jackscrew)
- low weight, robust construction
- easy handling

Intended Purpose

The UFT-*FluidVortex-P* High Pressure Vortex Flow Control is a special version of the UFT-*FluidVortex* Flow Control, specially adapted for extremely high pressures and very low flow rates. It is used wherever special emphasis is placed on resistance to clogging and high hydraulic resistance with low space requirements.

The fields of application are in special mechanical engineering systems, e. g. high-pressure hydroelectric turbines where water must be supplied at a defined flow rate to the cooling/lubricating slits in the shaft seals.

PROPERTIES OF THE HIGH PRESSURE VORTEX FLOW CONTROL

- high hydraulic resistance combined with large open cross-sections, therefore very insensitive to clogging, to limescale deposits and the flow is unimpeded by changes in wall surface structure
- small, compact design, can also be used in very confined spaces
- adjustment options for different flow rates by simply exchanging an orifice plate - even post installation
- no moving parts
- high abrasion resistance
- no external energy required
- corrosion-free construction
- quick assembly, pre-adjusted at the factory

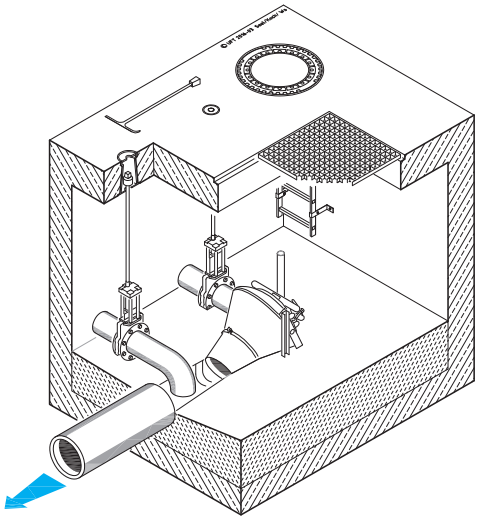
Intended Purpose

The Hook Gate UFT-*FluidHook* has been specially developed for regulating large to very large flows at very shallow basin depths, such as are often required at CSO overflows and in diversion structures of CSO basins. The opening width can also be adjusted with the use of a scale.

The UFT-*FluidHook* is available in various widths to achieve the desired well-defined characteristic regulating curve. The specially optimised hook-shaped geometry also results in a particularly strong throttling effect with a large open cross-section.

PROPERTIES OF THE HOOK GATE UFT-*FluidHook*

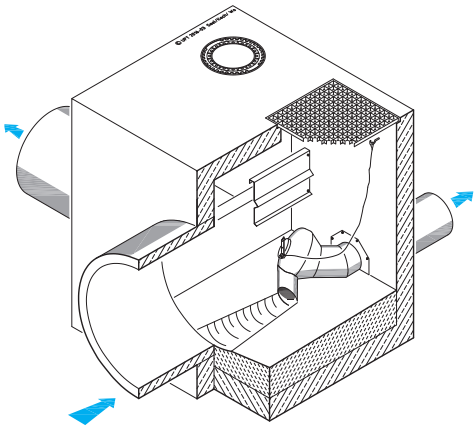
- optimised for large to very large flows with low pressure heads
- high loss coefficient, i. e. strong choke effect
- upstream installation
- for fixing to a flat, vertical wall in front of a rectangular passageway opening
- precise and stepless adjustment of the flow
- display of the opening width on a scale with pointer
- compact construction
- no bottom drop at the sewer invert required
- stainless steel and PE-HD corrosion-free construction
- jackscrew drive above water level
- low weight, robust construction
- easy handling



Conical Vortex Valve, semi-dry installation
UFT-*FluidCon*

SUt
0121t

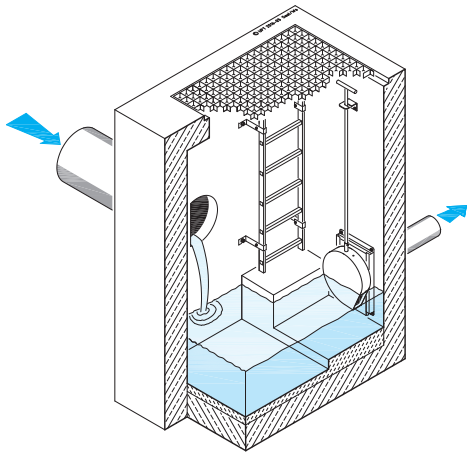
This active flow control device without any moving parts works solely by using the hydromechanical effects of the fluid. Constructed from corrosion-free stainless steel. Suitable for semi-dry installation at CSOs or CSO tanks.



Conical Vortex Valve, wet installation
UFT-*FluidCon*

SUn
0121n

This active flow control device without any moving parts works solely by using the hydromechanical effects of the fluid. Constructed from corrosion-free stainless steel and PVC, it is suitable for wet installation to control small to medium outflows.



Vertical Vortex Valve
UFT-*FluidVertic* basic

VLS-A
0122

Active flow control with very high flow resistance and large open cross section. Particularly suitable for controlling small discharges from rainwater storage basins.

Intended Purpose

UFT-*FluidCon* model SUt vortex valves are designed for use in sewers and for controlling the discharge of surface waters. They are used as regulating devices at the outlets of combined sewage overflows, storage capacity sewers, CSO tanks, storm retention basins, clarifier tanks and flood retention basins.

Vortex chamber units are a basic innovation of our company for the control of difficult-to-handle liquid flows. We can look back on over 8,000 units installed worldwide. The fact that not a single device has failed to date emphasizes the reliability of the principle.

PROPERTIES OF THE CONICAL VORTEX VALVE UFT-*FluidCon* SUt

- no moving parts
- no wear
- no external energy required
- large open cross-section
- high operational safety
- corrosion-free construction
- high-precision flow control
- little upstream backwater during dry weather flow
- only slight bottom drop of sewer invert required
- simple change of design flow
- easy and quick assembly
- no adjustment required
- easy handling and checking
- accessibility even when the tank is full

Intended Purpose

UFT-*FluidCon* model SUn vortex valves are designed for use in sewers. They are used as regulating devices at the outlets of combined sewage overflows, storage sewers, CSO tanks, storm retention basins, clarifier tanks, etc.

In contrast to the vortex valves in a dry installation, no separate flow control shaft is required for the vortex valves in a wet installation. The vortex valve is installed directly in front of the downstream pipe, at the end of a storage sewer for example.

PROPERTIES OF THE CONICAL VORTEX VALVE UFT-*FluidCon* SUn

- no moving parts
- no wear
- no external energy required
- large open cross-section
- high operational safety
- no separate flow control shaft required
- corrosion-free construction
- high-precision discharge regulation
- little upstream backwater during dry weather flow
- only slight bottom drop of sewer invert required
- simple change of design flow
- easy and quick assembly
- no adjustment required
- easy handling and checking

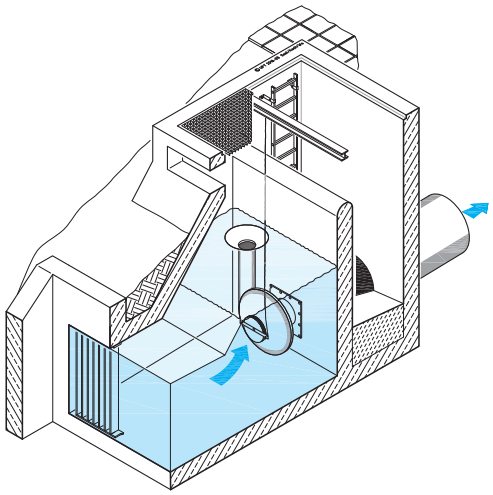
Intended Purpose

The vertical vortex valves UFT-*FluidVertic* basic model VLS-A are a special form of the vortex flow control which has proven itself thousands of times over. They work without any moving parts and without external energy. The regulating effect is caused solely by the flow properties. They develop a very high flow resistance with a large open cross section.

Vertical vortex valves are particularly suitable for flow limitation at clarifier tanks in separate drainage systems, in retention basins for runoff from roads, motorways and car parks and in subsoil storage systems.

PROPERTIES OF THE VERTICAL VORTEX VALVE UFT-*FluidVertic basic*

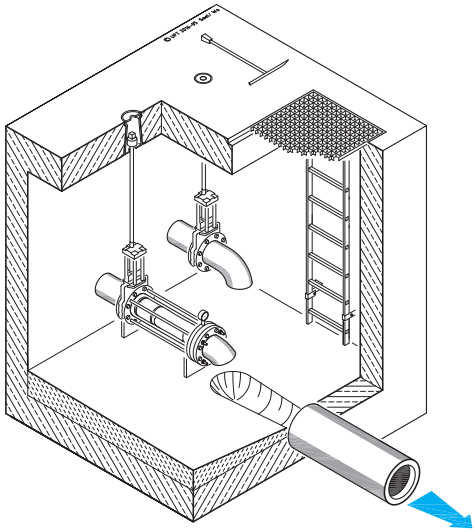
- large open cross-section
- no mechanically moved parts
- no wear
- no external energy required
- high operational safety
- corrosion-free construction
- precise flow control
- change of design flow is possible
- easy and quick assembly
- no adjustment required
- easy handling and checking
- version available for installation in circular shafts
- short delivery time



Pond Vortex Valve
UFT-*FluidPond*

DSV 0122d

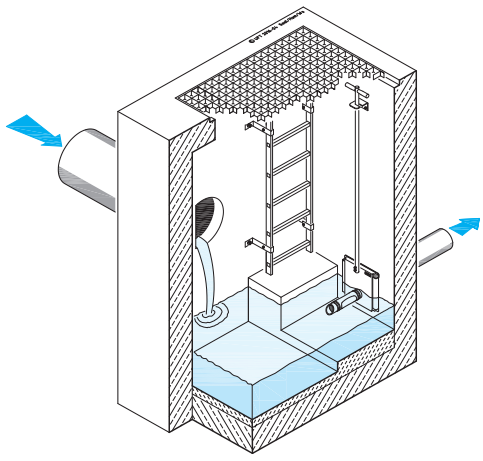
Active flow control with high flow resistance, to control discharges from stormwater retention basins with permanent water level.



Membrane Flow Control for semi-dry installation
UFT-*FluidHose*

SDt 0124t

Active flow control device which operates by the 'Bernoulli-Effect'. A flexible tensioned membrane hose is mounted on a flow control pipe so as to facilitate an almost constant flow. Corrosion free construction with no moving parts.



Membrane Flow Control for wet installation
UFT-*FluidHose*

SDn 0124n

Active flow control device with a flexible membrane hose, which operates by the 'Bernoulli-Effect'. For wet installation. Corrosion free construction with no moving components. Very steep characteristic curve.

Intended Purpose

The Pond Vortex Valves UFT-*FluidPond* are a special form of the tried-and-tested vortex valves mounted in the vertical position. They work without moving parts and without any external energy. The flow control action is effected solely by the fluid flow properties.

Pond vortex valves have a very high flow resistance with a large open cross-section. They are specially designed for use in small stormwater retention basins and ponds where a permanent water level must be kept. These basins can also act as a separator for light liquids when an immersion hood is placed on the valve inlet.

PROPERTIES OF THE POND VORTEX VALVE UFT-*FluidPond*

- large open cross-section
- no moving parts
- no wear
- no external energy required
- high operational safety
- corrosion-free long life construction
- precise discharge regulation
- easy and quick assembly
- no adjustment required
- high selectivity (steep characteristic curve)
- no extra sill for permanent water level required

Intended Purpose

CSO tanks in combined systems and stormwater detention basins in separate systems often have to be limited to small or even to very small dicharges. The core of the Membrane Flow Control UFT-*FluidHose* is a flexible rubber membrane which is pressed into two openings by the water pressure (Bernoulli-effect) and thus progressively reduces the flow cross-section in the throttle tube. This results in a very steep Q(h) characteristic.

The Membrane Flow Control also exists as a version for wet installation.

PROPERTIES OF THE MEMBRANE FLOW CONTROL UFT-*FluidHose* SDt

- steep Q-h characteristic
- easy installation
- no moving parts
- no external energy required
- corrosion free construction of PVC, PE-HD and acrylic
- rubber membrane using wastewater resistant perbunane
- only slight bottom drop of sewer invert required
- easy and quick assembly
- set up in the factory

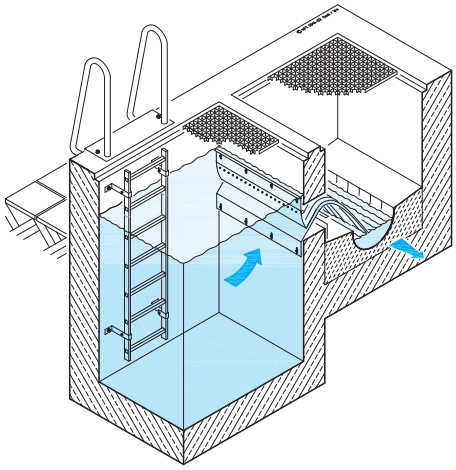
Intended Purpose

Dezentral stormwater detention basins and infiltration-ditch systems in separate systems often have to be limited to very small dicharges. The Membrane Flow Control UFT-*FluidHose* for wet installation has the same principle as the semi-dry installation: a flexible rubber membrane which is pressed into two openings by the water pressure (Bernoulli-effect) and thus progressively reduces the flow cross-section in the throttle tube.

The Membrane Flow Control for wet installation is also available in small and very small nominal sizes.

PROPERTIES OF THE MEMBRANE FLOW CONTROL UFT-*FluidHose* SDn

- steep Q-h characteristic
- easy installation
- no moving parts
- no external energy required
- corrosion free construction of PVC and PE-HD
- rubber membrane using wastewater resistant neoprene or perbunane
- only slight bottom drop of sewer invert required
- easy and quick assembly
- set up in the factory
- very small nominal sizes available
- may be exchanged with Vertical Vortex Valve UFT-*FluidVertic* type VLS A

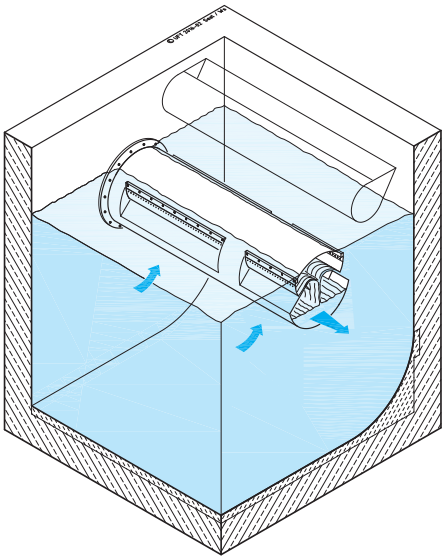


Self Regulating Clarifier Overflow

UFT-*FluidClari*

KÜ 0125

Wear-free, corrosion-resistant, active control device without external energy to maintain a constant inflow rate into clarifier tanks and basins. Also very well suited for retrofitting.



Pipe Clarifier Overflow

UFT-*FluidClari*

KÜR 0125r

Clarifier overflow in the shape of a pipe with bilateral inflow to maintain a constant inflow rate into clarifier tanks and basins. Wear-free, compact component, completely made of stainless steel.

Intended Purpose

In clarifier type basins in both combined and separate systems, the sedimentation chamber may only be fed with a limited flow rate in order to achieve a good sedimentation effect and to avoid the re-suspension of sludge.

The Self Regulating Clarifier Overflow UFT-*FluidClari* keeps the flow through the tank almost constant. The flow control takes place directly at the overflow weir edge. This ensures that the overflow water is drawn off evenly, with the same flow rate per metre of length, over the width of the tank. The active element is a sheet of pliable spring steel.

PROPERTIES OF THE SELF REGULATING CLARIFIER OVERFLOW

- simple, easy to understand, robust function
- no bearings, no seals, no wear
- no external energy required
- no measuring technology, no external drive
- almost constant flow rate
- oxygen input in the spray jet
- reliable and accurate function
- integrated retention of floatables
- can be combined with tipping flushers
- corrosion free, stainless steel parts only
- easy assembly, also suitable for retrofitting
- low-maintenance and long-lasting
- cost effective

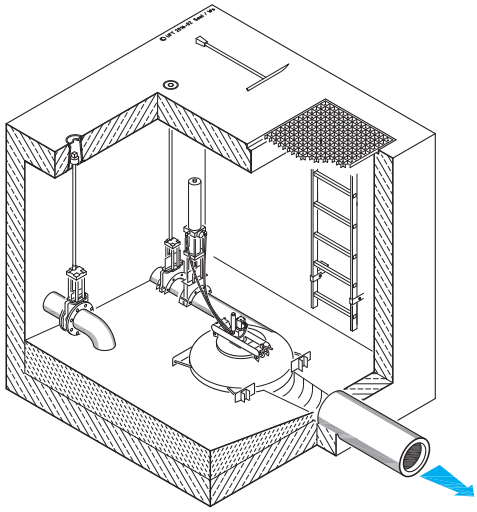
Intended Purpose

The Pipe Clarifier Overflow is a variant of our self-regulating clarifier overflow UFT-*FluidClari*. It consists of a large stainless steel pipe, if necessary in several sections with flange connections, with clarifier overflow fittings installed on one or both sides. The water enters with a low specific flow per metre of length. It is drained axially through the pipe and through an opening in the structure wall.

The Pipe Clarifier Overflow is ideal for rectangular clarifier tanks and is also suitable for retrofitting, for example when converting a first flush tank into a clarifier tank.

PROPERTIES OF THE PIPE CLARIFIER OVERFLOW UFT-*FluidClari*

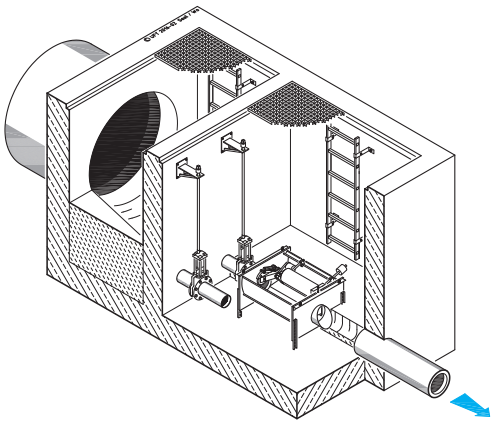
- no bearings, no seals, no wear
- no measuring technology, no external drive, no external energy
- almost constant flow rate
- the water is withdrawn evenly over the width of the tank
- low threshold load and low suction effect due to threshold on both sides
- clarifier overflow in tubular form, thus simplified structural design of the building (clarifier overflow gutter is obsolete)
- oxygen input in the spray jet
- reliable and accurate function
- scum board function is integrated
- low-maintenance and long-lasting



Turbo Vortex Flow Regulator
UFT-*FluidTurbo*

TUR 0131

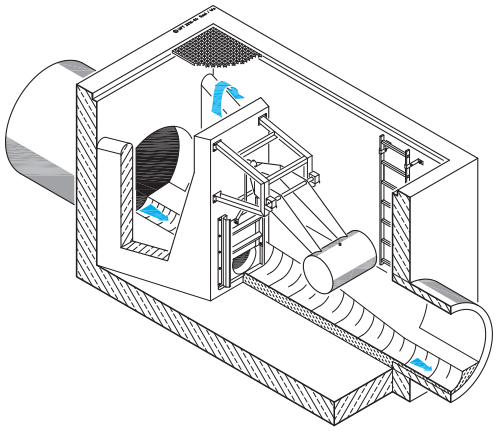
Flow regulator device requiring no external energy source. High passive safety by the combination of a vortex valve with a high flow resistance and a low-pressure hydraulic regulating plate.



Adjustable Knife Gate Regulator
UFT-*FluidMoon*

BRK 0132

Mechanical-hydraulic closed loop flow control with automatic blockage release mechanism. Suitable for small outflows.



Float Gate Regulator
UFT-*FluidCasca*

KAS 0133

Float piloted slide gate regulated by downstream water levels to automatically manage inline storage filling for sloped sewers, to maximize existing storage capacity. Retains upper water levels and empties storage facilities in response to the level of downstream waters.

Intended Purpose

For smaller CSO tanks in combined systems, flow regulators for small discharges less than 25 L/s are often required. Such flow control devices must be able to detect and flush blockages automatically.

The Turbo Vortex Flow Regulator UFT-*FluidTurbo* solves this task without external energy. In a vortex throttle housing, the stormwater drives a turbine wheel that supplies the necessary control energy and uses low-pressure oil hydraulics to operate a gate valve which limits the inflow.

PROPERTIES OF THE TURBO VORTEX FLOW REGULATOR

- closed-loop flow control: measurement of the flow by the turbine wheel and limitation by a gate valve operated by a low-pressure hydraulic cylinder
- constant flow
- no auxiliary energy required
- high operational safety due to integrated vortex chamber
- manages very small flows
- adjustable knob and replaceable orifice for changing the flow rate as required
- robust construction made of stainless steel and anodised aluminium, designed for continuous operation in sewers
- exceptional passive safety reserves
- semi-dry installation

Intended Purpose

The Adjustable Knife Gate Regulator UFT-*FluidMoon* is a universally applicable closed loop flow regulator in semi-dry installation. It was especially developed for use in CSO tanks as well as in clarification tanks and retention tanks of the separate systems, i.e. wherever it is necessary to control low discharges in the range of 5 to 25 L/s reliably and insensitive to blockages.

The Adjustable Knife Gate Regulator does not require a bottom drop. Provided there is sufficient gradient, the inlet and outlet pipe inverts can be at the same level.

PROPERTIES OF THE KNIFE GATE REGULATOR UFT-*FluidMoon*

- hydraulic-mechanical closed loop control
- only one single moving part
- steep discharge curve with constant flow
- dry weather flow without backwater
- suitable for small discharges
- no auxiliary energy, no electrical connection required
- optional: automatic blockage release
- minimal consumption of height of only 1 cm
- no specific mounting opening required
- manually adjustable flow, even under full load
- corrosion-resistant materials
- easy to understand function
- simple maintenance
- durable design

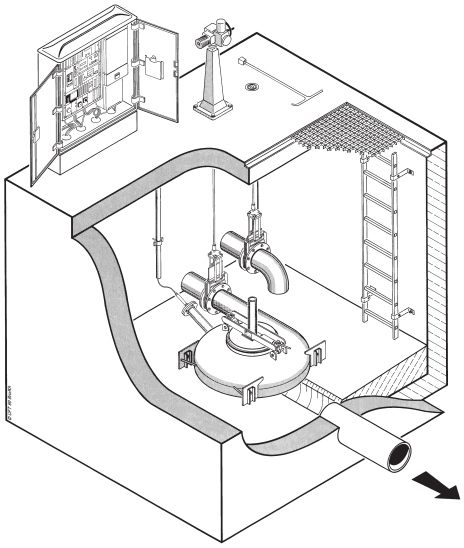
Intended Purpose

CSO tanks are often designed as storage capacity sewers. If the gradient is greater, however, very high sills and pressure-resistant manhole covers, combined with large pressure heights in the inflow to flow control, may be required. This can be avoided if storage sewers are managed in cascades.

For this purpose, the building is divided into sections. A UFT-*FluidCasca* Cascade Regulator controls the flow rate at the lower end of each section depending on the downstream water level.

PROPERTIES OF THE FLOAT GATE REGULATOR UFT-*FluidCasca*

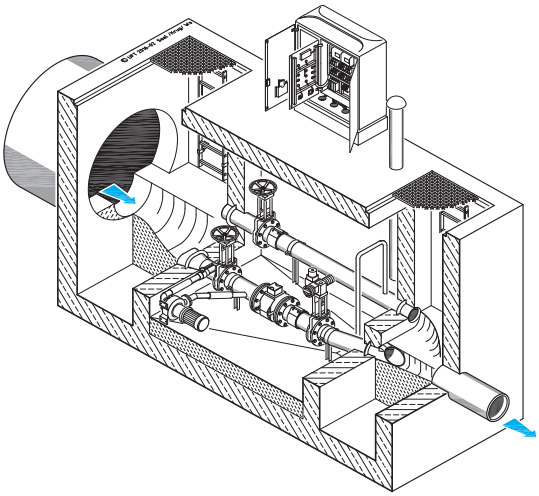
- regulation by the downstream water level
- no auxiliary energy, no electrics required
- better use of the storage capacity sewer volume
- smaller design pressure head for the throttle and thus possibly larger nominal width
- better ventilation of the storage sewer
- no pressure-resistant manhole covers required, thus also improved accessibility of the building for maintenance



Hydr.-Electr. Flow Regulator
UFT-*FluidVortex-E*

HE 0141

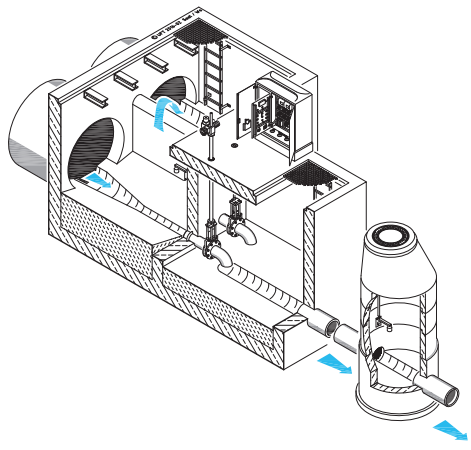
This regulator enables a constant flow with the high passive security of the vortex valve. Programmable control unit (PLC) with remote control option. For small to medium flows.



Flow Measurement and Control Station with Magnetic Flowmeter
UFT-*FluidMID*

MID 0142

Hydraulic installation optimised to measure flows in sewer pipes with high precision and to regulate discharges at CSO tanks. Suitable for remote operation.



Electronical controlled Flow Control Gate
UFT-*FluidEControl*

ES 0144

Electric-powered, active flow control which operates in response to the upstream water level. With automatic blockage release mechanism.

Intended Purpose

The Hydraulic-Electronic Flow Regulator with Vortex Throttle UFT-*FluidVortex-E* is particularly suitable for control of small to medium flows from 10 L/s to 200 L/s at CSO tanks in combined systems. The device is based on a vortex flow control equipped with an electronic pressure sensor. The electric signal controls a motor gate valve via a programmable logic controller, whereby a constant discharge is achieved. Due to the vortex flow control, the device has a very high level of passive safety.

PROPERTIES OF THE HE FLOW REGULATOR UFT-*FluidVortex-E*

- constant flow
- very fast-reacting feedback control loop
- high operational reliability thanks to integrated vortex flow control
- small flows manageable
- easy change of set flow
- robust stainless steel construction
- clear structure of the electrical components
- automatic detection of malfunctions
- subsequent optimisation of the setting parameters possible at any time
- connectable to any telecontrol system

Intended Purpose

The measurement and control Station UFT-*FluidMID* is specially designed for wastewater. It operates either with a magnetic-inductive flow meter (MID) with siphon for full sewers (culverted version) or with a MID without siphon for partial filled measurement. Both systems are suitable for accurate and continuous discharge measurement, as well as for flow recording in the sewer network. They are particularly recommended for use in medium to very large combined sewer overflow tanks, especially in the last tank immediately in front of the sewage treatment plant. The culverted version is suitable for accounting of fees.

PROPERTIES OF THE FLOW CONTROL STATION UFT-*FluidMID*

- continuous flow metering, also at night
- high measurement accuracy due to sophisticated flow meters from industrial series production
- no level drop of the sewer necessary
- specially-shaped inflow confusor ensures minimum pressure loss and low siphon depth at minimized air entrainment
- short intake length
- effective rinsing aids to prevent deposits
- reliable hydraulic design method
- shut-off function for reverse flow (optional)

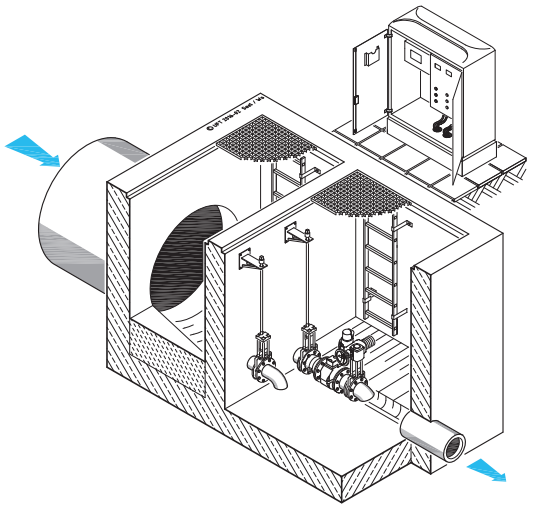
Intended Purpose

The Electronical Controlled Flow Control Gate UFT-*FluidEControl* limits the flow from all kinds of stormwater tanks for small to medium discharges. The upstream water level is measured and the flow control gate is actuated, so that constant outflow and a vertical discharge curve is achieved. In case of a clogging of the gate, the unit is able to detect and to remove it.

The UFT-*FluidEControl* can be applied wherever a discharge limitation to a constant value is required while a measurement of the dry weather flow is not needed.

PROPERTIES OF THE FLOW CONTROL GATE UFT-*FluidEControl*

- constant flow independent of the pressure height in the stormwater tank
- automatic detection and remove of blockage
- detection of downstream backwater
- minimization of number of gate movement cycles increases service life of mechanical parts
- gate in ‘lurking position’, thus minimizing response time of flow control
- serial remote monitoring interface as standard
- display for indication of water levels, gate position, discharge and messages as well as for input of parameters (e.g. setpoint discharge)
- internal ‘electronic logbook’
- dry weather routine
- flow control gate may be mounted in wet, semi-dry or dry arrangement
- robust standard components, ideal for retrofitting
- only a slight bottom slope is required for installation

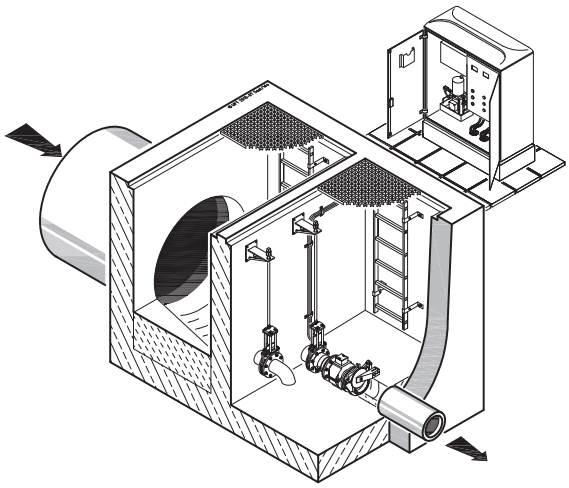


Universal Flow Control Unit

UFT-*FluidShortE*

UAR 0145u

Electric-powered flow control with short overall length for semi-dry installation, especially as retrofit equipment in existing tanks. With magnetic flowmeter, without siphon. Electrically operated flow control gate. Suitable for remote operation.



Discus Flow Regulator

UFT-*FluidDisc*

DR 0145

Electric-powered flow control with short overall length for semi-dry installation, especially as retrofit equipment in existing tanks. With magnetic flowmeter, without siphon. Hydraulically operated discus gate. Suitable for remote operation.

Intended Purpose

On the basis of our well-proven UFT-*FluidMID* product series, we have newly developed the particularly compact UFT-*FluidShortE* flow control. This device has a very short measuring tube and can therefore also be used in cramped spaces.

The universal flow control UFT-*FluidShortE* is set up semi-dry and is therefore particularly suitable for retrofitting. Many old mechanical flow controls have this arrangement, so that when replaced with a Universal Flow Control Unit, no major conversion work is usually required on the structure itself.

PROPERTIES OF THE UNIVERSAL FLOW CONTROL UNIT UFT-*FluidShortE*

- very compact dimensions, short overall length
- suitable for retrofitting to existing stormwater tanks
- no separate mounting opening required
- high accuracy of the controlled flow
- flow setting can also be adjusted subsequently and optionally remotely (ideal if there are several expansion stages or if a future sewer network management system is planned)
- regulating valve installed in a closed pipe, therefore no spraying
- operation in case of power failure also possible via uninterruptible power supply (UPS)
- MID sensor in either version for full and for partial filling can be used

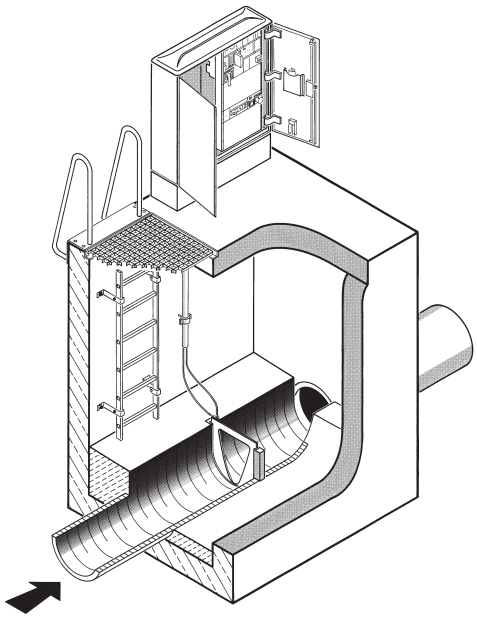
Intended Purpose

At many first-generation CSO tanks, the mechanical flow controls have to be replaced in the course of recalculation of the combined sewer system. Additionally, today many operators search for better monitoring of the structures and transmission of the operating status to a central control room.

Based on our proven measuring and control station with MID, we have developed the Discus Flow Regulator UFT-*FluidDisc* as a close loop flow control. This device is very compact, can also be used in cramped spaces and is suitable for retrofitting.

PROPERTIES OF THE DISCUS FLOW REGULATOR UFT-*FluidDisc*

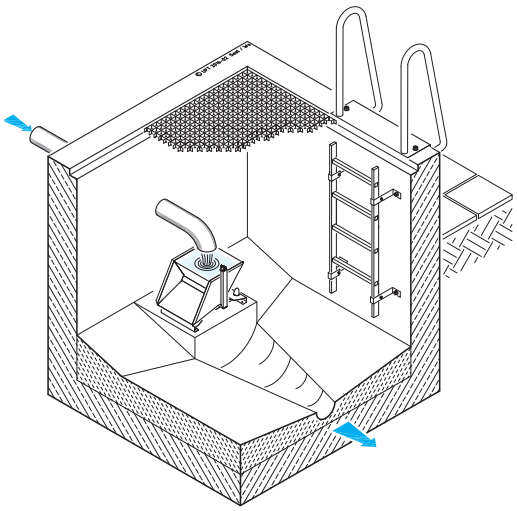
- very compact dimensions: short overall length and low overall height
- suitable for retrofitting to existing stormwater tanks
- no separate mounting opening required
- high accuracy of the controlled flow
- flow setting can also be adjusted subsequently and optionally remotely (ideal if there are several expansion stages or if a future sewer network management system is planned)
- no siphoning of the measuring tube required
- minimal changes to the structure due to semi-dry installation in most existing flow control shafts
- little spraying tendency
- low-noise hydraulic drive
- operation in case of power failure also possible via uninterruptible power supply (UPS)
- MID sensor in either version for full and for partial filling can be used



Parabolic Plate Orifice
UFT-*FluidVenturi*

VDM 0151

A compact, interchangeable, customised, precision-machined and floodable plate orifice for flow measurement in open channels and in partially filled pipes. Optional integrated air bubble injection with mechanically adjusted zero.



Tipper Flow Measuring Device
UFT-*FluidTipper*

KI 0152

Automatic symmetrical double-chambered mechanical tipping device to measure small or intermittent (down to zero) flows. With mechanical or reed counter.

Intended Purpose

A classical method of discharge measurement in sewer networks is the indirect hydraulic method with a Venturi-type measurement orifice plate or flume. Here, the discharge is derived from the measured upstream water level by a characteristic rating curve.

The special geometry of the milled parabola-shaped orifice plate provides an increased measurement resolution for low discharges, so that these can also be registered with sufficient precision. The water level can be measured using an ultrasonic or a very accurate radar sensor. Alternatively, an air bubbler with a fixed zero point integrated into the parabolic orifice is also available.

PROPERTIES OF THE PARABOLIC PLATE ORIFICE UFT-*FluidVenturi*

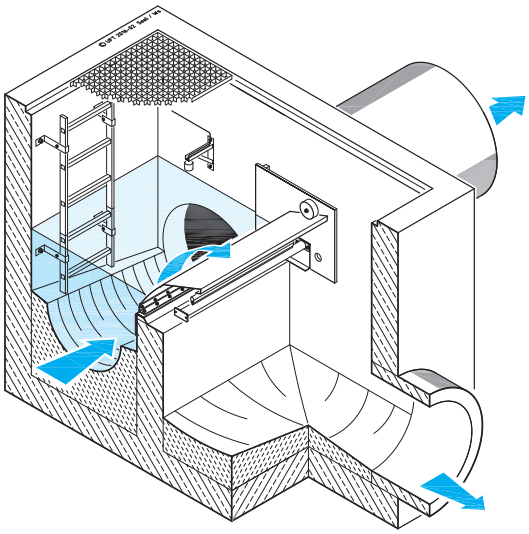
- harmonious parabolic constriction
- good resolution of the measuring range with small discharges
- individual, project-related dimensioning
- variable opening width of the parabola possible, thus adaptation to different design flows
- precise production of the sharp-edged stainless steel orifice plate by CNC milling
- optional air bubble opening on the front of the orifice plate, thus fixed zero point of the water level measurement

Intended Purpose

The Tipper Flow Measuring Device UFT-*FluidTipper* is a volumetric flow meter for small, strongly fluctuating or temporarily dwindling waste water flows which may also be polluted and loaded with solids. It is used for measuring the discharge of seepage or infiltration inflow from landfills, dams, for monitoring special industrial or military areas and for scientific purposes.

PROPERTIES OF THE TIPPING FLOW MEASURING DEVICE UFT-*FluidTipper*

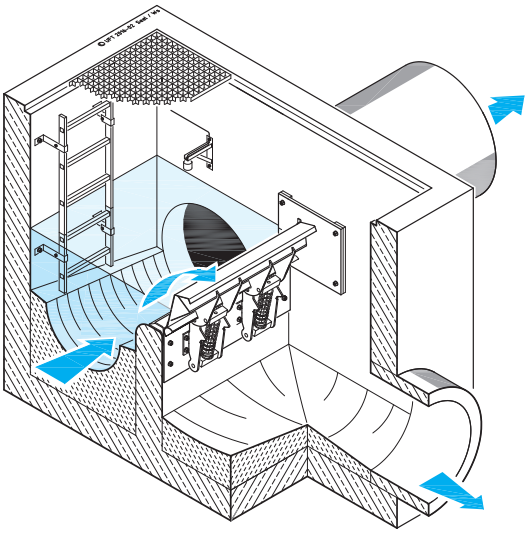
- measurement of small, strongly fluctuating and intermittent flows
- corrosion-free design
- no auxiliary energy required
- low-noise tipping
- also suitable for fluids charged with solids
- simple and quick installation
- can be used as a mobile measuring device for short-term applications
- can be linked to electronic data memories



Bending Weir
UFT-*FluidBend*

BK 0182

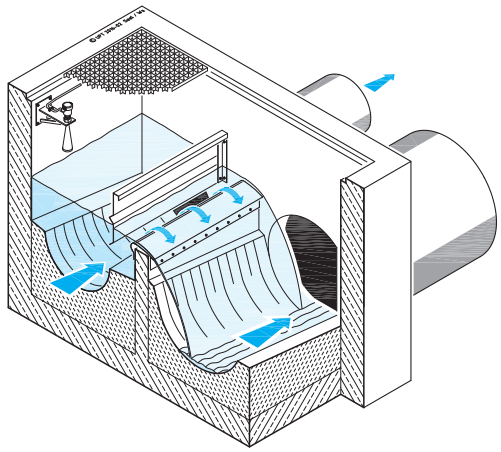
Automatic device to regulate upstream water level and to activate retention volume. Requires no external power and has no bearings or hinges. Suitable for monitoring overflow activity.



Spring-Loaded Weir
UFT-*FluidFlap*

FSK 0183

Automatic discharge weir without external energy as space-saving design with spring mechanism. For activating storage capacity, preventing backwater in the sewer system during rainfall and regulating the upstream water level to a practically constant height.



Overflow Weir Profile
UFT-*FluidWing*

TFM 0184

Broad-crested overflow weir with a wing-shaped spillway profile for hysteresis-free and exact measurement of overflow discharge without ventilating the current underside.

Intended Purpose

The Bending Weir UFT-*FluidBend* is a self-regulating discharge device for use as an overflow weir at combined sewer overflow tanks and in other storage structures. Compared with a fixed weir, the Bending Weir has a significantly lower apparent overflow head for the same discharge and the same length.

PROPERTIES OF THE BENDING WEIR UFT-*FluidBend*

- considerably greater discharge capacity than with a fixed overflow sill
- a Bending Weir of 1 m length can replace about 2 to 10 m of fixed sill with the same discharge and backwater (weir replacement factor)
- gain in storage volume (storage capacity activation)
- significant length reduction of the overflow weir and thus also reduced size and costs of the structure
- reduced discharge of pollutant particles transported near the sewer bottom (bed load) because the water is passing over the weir rather than underneath
- automatic operation without external energy
- low weight due to the use of special spring-type stainless steel, whose material characteristics are suitable for this application
- no cables, counterweights or cam discs
- high operational reliability
- long lifetime, low wear tendency

Intended Purpose

The Spring-loaded Weir UFT-*FluidFlap* is a self-regulating discharge device for use as an overflow weir at combined sewer overflow tanks and in other storage structures. Compared to a fixed weir, the flap has a much lower apparent overflow head for the same discharge and the same length and keeps the water level almost constant after the discharge has started.

PROPERTIES OF THE SPRING-LOADED WEIR UFT-*FluidFlap*

- considerably greater discharge capacity than with a fixed overflow sill
- the rise in the water level from the beginning of the overflow to large discharges is limited to a few centimeters
- activation of additional storage volume, at the same time avoiding an excessively high water level in the inlet sewer
- significant reduction in the length of the overflow weir and thus also in the size and costs of the structure
- reduced discharge of pollutant particles transported near the sewer bottom (bed load) because the water is passing over the weir rather than underneath
- automatic operation without external energy
- flex free and torsionally rigid construction made of stainless steel
- resetting mechanism in the form of space-saving arranged compression springs
- no cables, counterweights or cam discs
- high operational reliability
- long lifetime, low wear tendency

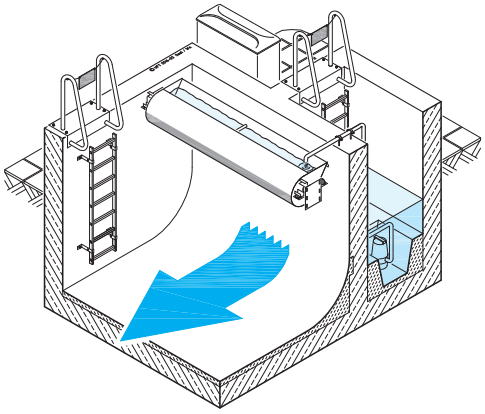
Intended Purpose

According to several technical guidelines in Gemany and other countries, overflow weirs at CSO tanks should be equipped with monitoring devices in order to measure and record the overflow activity into the water bodies. In addition to the overflow duration and frequency, the determination of the annual overflow volume in m³/a is often required.

In our hydraulic laboratory, we have developed a combination of a new type of overflow spillway profile and a scum board, that provides accurate and hysteresis-free flow characteristics, even for a very low overflow head. Ventilation of the underside of the jet is not necessary.

PROPERTIES OF THE OVERFLOW WEIR PROFILE UFT-*FluidWing*

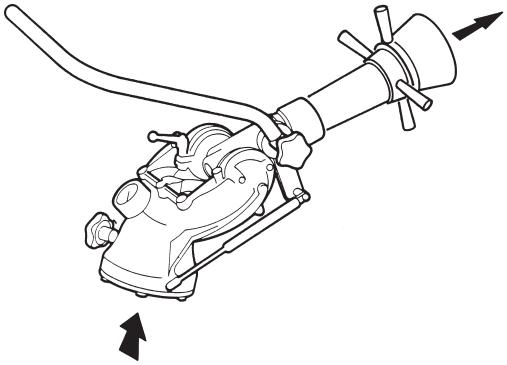
- broad-crested weir with a wing-shaped profile
- smooth, streamlined shape
- hysteresis-free hydraulic characteristics
- no ventilation of the underside of the jet required
- high measuring accuracy at low overflow head
- low flow resistance even at large discharges
- can be used with or without scum board
- hydraulic design method
- calibrated by an independent university institute
- easy installation, also suitable for retro-fitting
- delivery of the complete monitoring system
- data evaluation as a customer service
- simple maintenance



Tipping Flusher
UFT-*FluidFlush*

SPÜ 0211

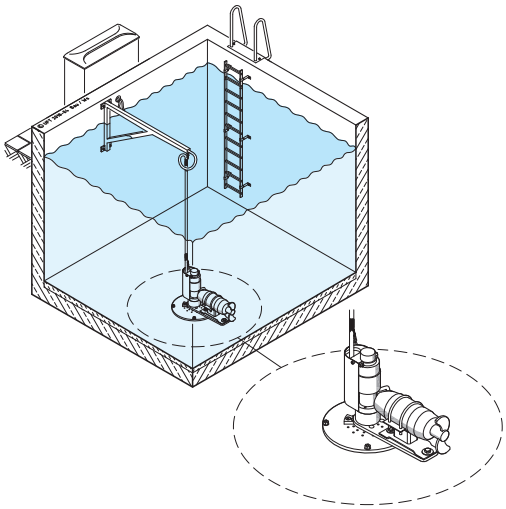
Low-noise tipping trough for cleaning all types of empty retention tanks. Lightweight construction with a stiff circular cross-section. Optimised flusher geometry and dynamic movement produces a short powerful flushing wave. Wide spans possible.



Water Cannon
UFT-*FluidCannon*

SWK 0213

Stationary, hand-operated water cannon for cleaning all types of tanks. Wide range of emission settings.



Swivelling Stirrer Unit
UFT-*FluidSway*

SRW 0214

Pivoting agitator with hydraulic swivel drive and explosion-proof submersible motor for cleaning stormwater tanks during emptying.

Intended Purpose

CSO tanks are filled up by storms typically about 50 times a year. After each filling, the settled sludge must be removed as soon as possible to prevent it from rotting.

A very effective way of automatically cleaning rectangular basins is to flush them with a strong surge of water with the aid of a UFT-*FluidFlush* Tipping Flusher after the tank has emptied.

Tipping flushers require some drop height, but only a small volume of flushing water and very little external energy to clean the tank.

PROPERTIES OF THE TIPPING FLUSHER UFT-*FluidFlush*

- low external energy demand
- powerful, short, singular rinsing flush wave
- small flushing water volume required
- low noise emission
- large flushing distance up to 100 m
- large span possible up to 12 m, depending on tipping volume
- balanced, smooth movements
- automatic reset from any position
- maintenance-free lightweight construction with circular cross-section made of stainless steel
- weight of the water filling up to 10 times greater than weight of empty flusher
- reliable design method
- more than 1.700 references worldwide

Intended Purpose

The flushing water cannon UFT-*FluidCannon* is a stationary, hand-held water blaster for the cleaning of CSO tanks and clarifiers of all kinds. It is particularly suitable for tanks that cannot be reliably cleaned by automatic flushing aids such as tipping flushers, agitators, jet pumps, etc. due to their shape.

The Water Cannon is also suitable as a flushing aid supplementary to automatic devices, e.g. for rinsing the walls, for cleaning corners and fittings, pump sumps and gutters.

PROPERTIES OF THE WATER CANNON UFT-*FluidCannon*

- can be used for cleaning all types of stormwater tanks
- retrofitting recommended in cases where automatic cleaning devices do not show fully satisfactory results
- as a supplement to automatic cleaning devices for cleaning difficult areas such as walls, corners, sumps and gutters
- simple operation, no rebound
- large coverage of the trajectory spray
- adjustable jet nozzle, full-jet spraying
- personnel do not have to go down into the tank
- no unwinding, winding, entanglement and cleaning of hoses, no set-up time, immediately ready for operation

Intended Purpose

The Swivelling Stirrer Unit UFT-*FluidSway* is used to clean all types of stormwater tanks during emptying to the sewage treatment plant, including those with irregular geometry or with supports in the tank space. The agitator generates a powerful water jet, which mixes the deposited sludge back into the water phase. Due to the hydraulic controlled pivoting back and forth with adjustable swivel angle, the jet sweeps a large part of the tank bottom. Islands of non-mobilized sludge are thus avoided. A water level tendency detection prevents premature startup in clarifier type tanks.

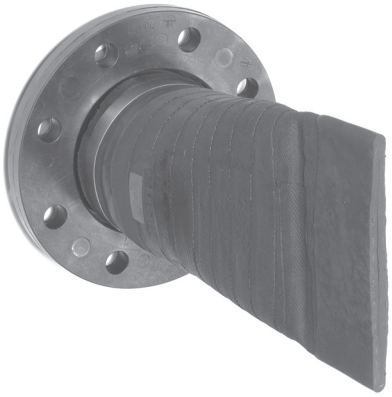
PROPERTIES OF THE SWIVELLING STIRRER UNIT UFT-*FluidSway*

- effective cleaning by remobilisation of sludge deposits during the emptying of the stormwater tank
- powerful agitator motor in industrial standard, available in several performance classes
- pivoting arrangement, thus covering a large area of the tank floor with the propeller jet
- robust hydraulic drive, space-saving compact hydraulic unit
- very large, adjustable swivel range (max. 360°)
- especially suitable for irregular tank chamber geometries
- corrosion-resistant materials
- explosion-proof version

Check Valve
UFT-*FluidSwing*

R
0221

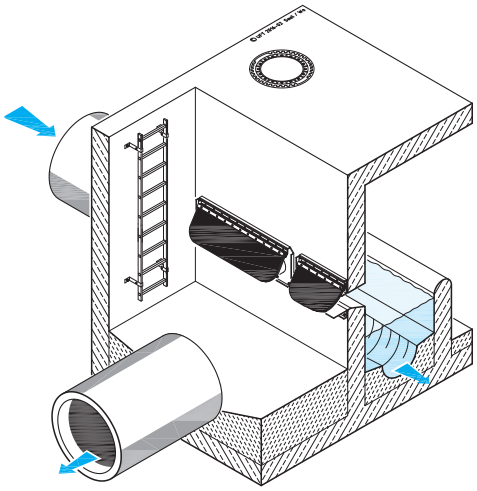
Simple check valve device without housing, low hydraulic resistance in the flow direction. Perfect seal during backwater due to high surface pressure of the soft rubber flap on the narrow rim of the stainless steel outlet.



Check Valve
UFT-*FluidFlex*

V
0222

This simple back-pressure valve consists of a duck-bill shaped rubber sleeve without a housing. Medium hydraulic resistance in flow direction and a very tight seal against back pressure. Especially suitable for turbulent currents and high back-pressure.



Slot-Type Check Valve
UFT-*FluidSlot*

SKL
0223

Flood protection device without a housing, with a very low resistance in the flow direction. Perfect seal during backwater due to high surface pressure of the soft rubber flap on the narrow rim of the stainless steel outlet.

Intended Purpose

The housing-free check valve UFT-*FluidSwing* is designed for use in water and wastewater. It is particularly suitable where small head losses in the direction of flow are required and the sealing pressure is moderate, e.g. in sewers, in all types of stormwater tanks (e.g. for automatic emptying of off-line basins), as backwater protection at storm outlets and also for various applications in the sewage treatment plant.

Check valves of nominal sizes DN 100 to DN 800 are offered as standard.

PROPERTIES OF THE CHECK VALVE UFT-*FluidSwing*

- housing-free construction
- no bearings, no mechanics
- absolutely corrosion-resistant
- easy opening in flow direction
- safe closing in blocking direction
- simple installation

Intended Purpose

The housing-free check valve UFT-*FluidFlex* is designed for heavy-duty use in water, waste water and seawater. It is particularly suitable for protecting small to medium flow rates against flow reversal, e.g. in sewage pumping stations, in sewer systems with backwater problems or in mining subsidence areas, in sewage treatment plants or coastal protection.

The valve is insensitive to turbulence in the downstream water. Approach velocities of up to 2 m/s are permissible.

PROPERTIES OFT THE CHECK VALVE UFT-*FluidFlex*

- housing-free construction
- no moving parts, therefore low maintenance
- absolutely corrosion-resistant
- safe closing, even in turbulent downstream water conditions
- simple installation

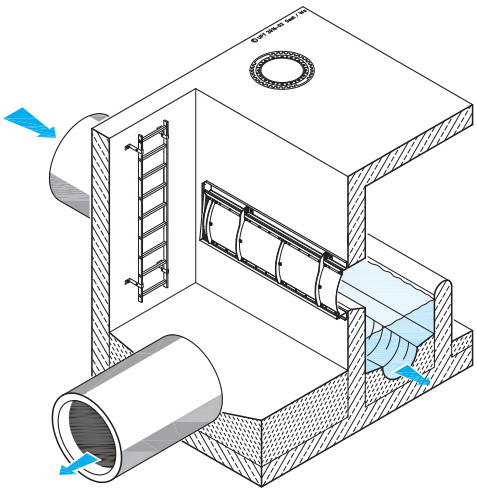
Intended Purpose

The slot-type check valve UFT-*FluidSlot* is installed on the downstream side of an overflow weir. It prevents massive backflow from the water body into the sewer system or into the storm tank during floods.

The requirements of DIN 19 569 Part 4 regarding the permissible leakage rates are met. On long weir sills, several slot-type check valves are installed next to each other.

PROPERTIES OF THE SLOT-TYPE CHECK VALVE UFT-*FluidSlot*

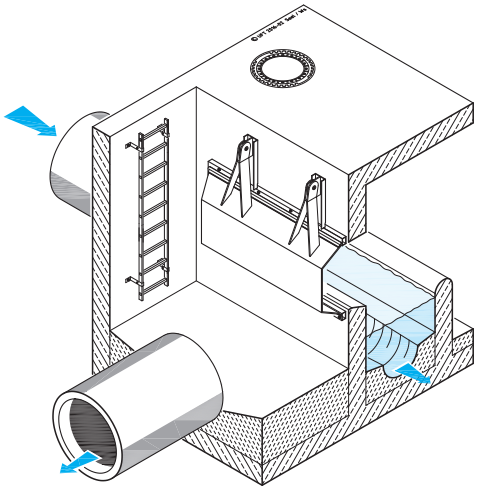
- the rubber flap opens at low opening pressure in flow direction
- retrofitting by doweling possible
- no bearings, no mechanical parts
- in the event of reverse flow, the flap seals immediately and reliably in the blocking direction
- no risk of blockage
- corrosion-resistant
- the slot-type check valve has a higher flow capacity than a circular check valve



Frame Flap Valve
UFT-*FluidFrame*

SPK 0224s

Rigid, robust rectangular flood protection device with cambered gate membrane and reinforcing frames, space-saving construction. For openings of medium size and high backpressure heads.



Pendulum Flap Valve
UFT-*FluidPend*

PK 0224

Rigid, rectangular flap valve with a trapezoid cross-section. A backflow prevention device particularly for overflow weirs at CSOs where high backpressure and large flows are expected.

Inline Check Valve
UFT-*FluidWaStop*

RV 0226

Check valve with cone-shaped rubber membrane inside a thin-walled pipe section. Very low head loss in flow-direction provides a tight seal in reverse flow direction. Particularly suitable for installation in pipelines.

Intended Purpose

If the water level in the downstream waters rises during flooding, low weirs run the risk of flooding by backwater. River water then backs up in the sewer system and overloads the sewage treatment plant. It may even flood cellars and streets.

Overflow weirs often have a considerable length. Such large openings can be reliably sealed with rigid flaps such as the Frame Flap Valve UFT-*FluidFrame*. During floods, it prevents massive backflow from the waterbody into the sewer system or into the storm tank.

PROPERTIES OF THE FRAME FLAP VALVE UFT-*FluidFrame*

- the frame flap opens at low opening pressure in flow direction
- compact structure
- the sealing lip presses firmly against the frame and provides a circular seal
- no external energy required
- robust, low-maintenance mechanism
- retrofitting by doweling possible
- high pressure head permissible

Intended Purpose

If the water level in the downstream waters rises during flooding, low weirs risk being flooded. River water then enters the sewer system backwards and overloads the sewage treatment plant or can even flood cellars and streets. On large rivers, the pressure head can be several meters.

Large openings on long discharge thresholds can only be reliably sealed with rigid flaps. The UFT-*FluidPend* Pendulum Flap performs this function, especially at high pressure heads.

PROPERTIES OF THE PENDULUM FLAP VALVE UFT-*FluidPend*

- the frame flap opens at low opening pressure in flow direction
- the sealing lip presses firmly against the frame and provides a circular seal
- no external energy required
- robust, low-maintenance mechanism
- retrofitting by doweling possible
- high pressure head permissible

Intended Purpose

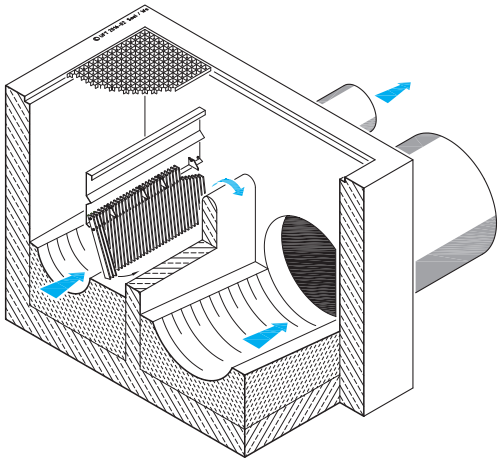
The Inline Check Valve type UFT-*FluidWaStop* is installed directly in a pipeline, optionally in the outlet or in the inlet to avoid undesirable backflow.

The valve can be operated in any position between horizontal and vertical. In stormwater treatment, it is suitable for installation in the separating structure of off-line CSO tanks or as backwater protection in a pipe, where it can also be retrofitted without any problems.

The valve can also serve as an odour trap and prevents the ingress of animals or unwanted objects.

PROPERTIES OF THE INLINE CHECK VALVE UFT-*FluidWaStop*

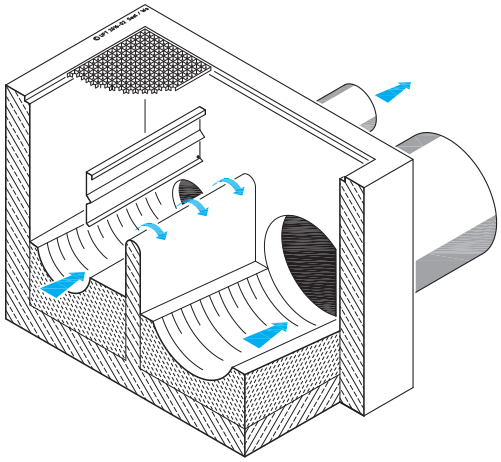
- tight reverse flow protection
- installation directly in the pipe: no head step required
- low pressure losses at the valve
- can be used also as an odour trap
- protection against sand, seaweed and other unwanted objects
- protection against ingress of animals into the pipes
- no moving parts, therefore low maintenance
- simple installation
- corrosion-resistant



Pendulum Static Screen
UFT-*FluidRack*

PR 0231

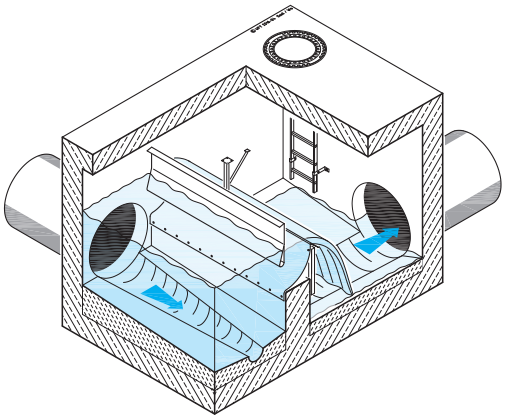
Pivotable bar screen to filter coarse materials from overflows. Pendulum construction ensures automatic opening under hydraulic overload conditions. Requires manual cleaning.



Standard Scum Board
UFT-*FluidDip*

TW 0232s

Fixed baffle constructed from folded stainless steel sheets to hold back floating materials from overflows.



Scum Board Overflow Set
UFT-*FluidDrop*

TWG 0232

Combination of drop-shaped scum board and curved overflow plate for floatables control. Especially for use in narrow structures and for retrofitting.

Intended Purpose

During storms, large quantities of combined sewage may be spilled into the water bodies at CSOs and CSO tanks. In such case it is often desirable to retain unsightly gross solids with screening installations. On smaller, easily accessible systems, however, it is often not economical to use expensive screens with automatic cleaning machines at overflows which are only rarely active.

On the other hand, the screen must not create a drastic back up of water in the sewer system in the event of a blockage. The Pendulum Static Screen UFT-*FluidRack* provides a compromise and opens automatically by the water pressure when it is blocked.

PROPERTIES OF THE PENDULUM STATIC SCREEN UFT-*FluidRack*

- no external energy, no power connection
- very large screening area, freely suspended or standing
- solid mechanism
- retrofitting possible
- variable bar spacing, can also be changed at a later date
- automatic opening in case of critical blockage
- easy manual cleaning of comb-shaped screen bars
- arrangement as rack packages, several variants of assembly
- corrosion resistant: materials optionally galvanised steel, stainless steel or anodised aluminum
- hydraulic design method available

Intended Purpose

CSOs and CSO tanks in combined sewer systems as well as clarifier tanks in separate sewer systems have overflow weirs which discharge considerable water quantities and pollutant loads into the water course.

Floating materials are often carried along, which are then unpleasantly visible on the riverbank. The Standard Scum Board UFT-*FluidDip* is installed in order to retain floating substances which are drifting on the water surface in the tank.

PROPERTIES OF THE STANDARD SCUM BOARD UFT-*FluidDip*

- floating material remains in front of the scum board
- completely made of waste water resistant stainless steel
- solid construction
- low weight
- streamlined angled construction
- low-maintenance
- overflowable in an emergency

Intended Purpose

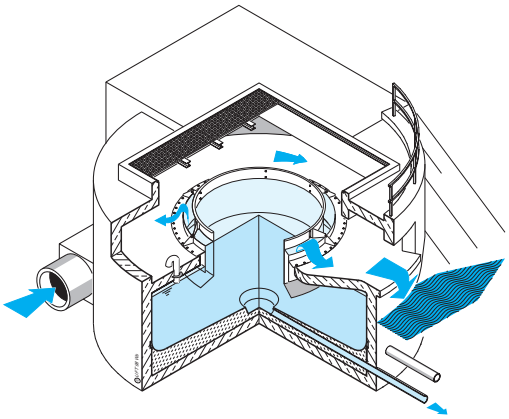
Scum boards are used to retain floating material in stormwater discharge facilities of combined and separate systems.

When retrofitting scum boards in older, existing structures there are often space problems because the required distance between baffle and weir sill makes incoming floatables rise behind the scumboard.

The Scum Board Overflow Set UFT-*FluidDrop* has been specially optimised for this application, but is also suitable for new structures.

PROPERTIES OF THE SCUM BOARD OVERFLOW SET UFT-*FluidDrop*

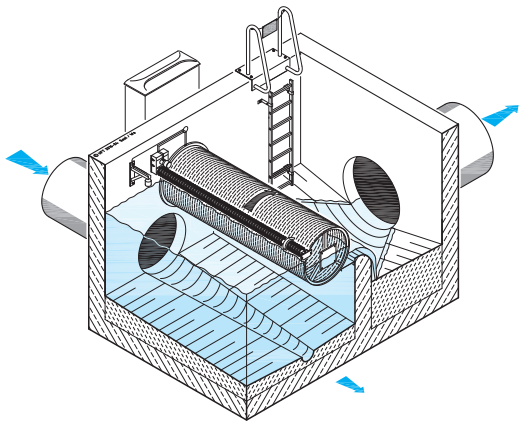
- particularly suitable for confined spaces, even for retrofitting in existing structures
- baffle does not protrude into the cross-section of the inlet pipe
- large, well rounded inlet cross section
- low flow velocities
- hydraulically optimised and calibrated in the factory
- deviations from the specifications of German guideline DWA-A 111 are permissible
- little tendency to blockage (no screen effect)
- smooth, curved stainless steel sheets
- substantially self-cleaning
- large variety
- can be combined with Overflow Weir Profile UFT-*FluidWing*
- low-maintenance
- completely made of waste water resistant stainless steel
- overflowable in an emergency



Vortex Separator
UFT-*FluidSep*

WA 0233

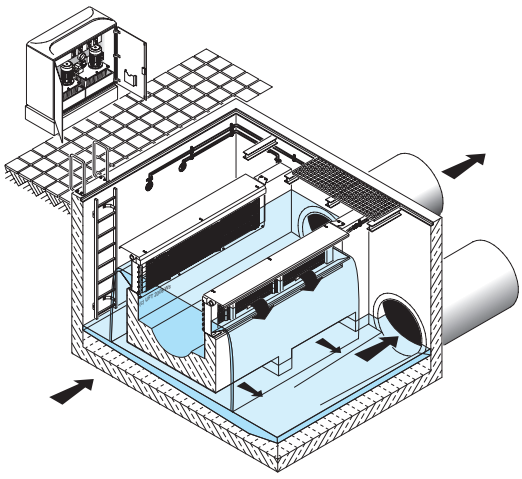
Vortex overflow structure for efficient separation of floating and settleable materials from sewer flows. Operation with hydrodynamic effects only. Suitable as a substitute for a small CSO tanks or as a separator on large, two-stage CSO treatment facilities.



Rotary Drum Sieve
UFT-*FluidRotor*

TDF 0234

Slowly Rotating drum sieve to retain unsightly gross solid materials on sewer overflows and sewer treatment facilities. The drum is continuously cleaned above the water line by a fast rotating cylindrical brush.



Fine Screen
UFT-*FluidBarScreen-ROMAG*

RSW 0235

Floodable, stainless steel, modular screens for horizontal flows which are continuously cleaned from an above-water cleaning mechanism.

Intended Purpose

The Vortex Separator UFT-*FluidSep* is a sedimentation unit that cleans overflowing combined sewage by separating the settleable substances and also trapping floatables. Unlike a sedimentation tank, the vortex separator is largely self-cleaning during operation: The sediments are concentrated in the centre of the vortex separator and permanently transported to the treatment plant by the underflow. The Vortex Separator UFT-*FluidSep* can be used as a replacement for small first-flush tanks up to V = 200 m³, whereby there is also the possibility of volume savings. Alternatively, it can be used as a separating structure for two-stage systems.

PROPERTIES OF THE VORTEX SEPARATOR UFT-*FluidSep*

- use of a controlled vortex flow to separate settleable and floating substances from combined waters
- high operational reliability, no moving parts
- largely self-cleaning during operation, thus low maintenance costs
- compact structure
- construction of small Vortex Separators as PE-HD prefabricated shafts and larger plants as in-situ concrete structures with stainless steel components
- separate flow control shaft
- design method for hydraulic behaviour and separation efficiency
- approximately 100 reference plants worldwide

Intended Purpose

Despite the great success of combined sewage and stormwater treatment prior to overflow, there are still complaints about unsightly contamination of the water banks by toilet paper, hygiene articles, kitchen nonwovens, etc. These substances often drift in the wastewater rather than floating on the water surface and cannot be effectively retained either by settling tanks or by scum boards.

The Rotary Drum Sieve UFT-*FluidRotor* is especially designed for the retention of unaesthetic coarse materials, including also some fine suspended matter, at stormwater discharges in the sewer system.

PROPERTIES OF THE ROTARY DRUM SIEVE UFT-*FluidRotor*

- reliable retention of floating and swimming coarse materials
- very large filter surface in the smallest space due to rotating sieve cylinder
- high flow rate at low surface loading
- gentle mechanical cleaning above the water surface with a soft brush
- removal of screened material with the wastewater flow
- low energy consumption, no aerosols, no noise
- filtration effect and retention of very fine particles by controlled build-up of a filter cake
- variable drum speed and intermittent operation possible; automatic forward and reverse run for optimum cleaning
- robust stainless steel construction
- explosion-proof hydraulic drives
- various arrangement options in the structure

Intended Purpose

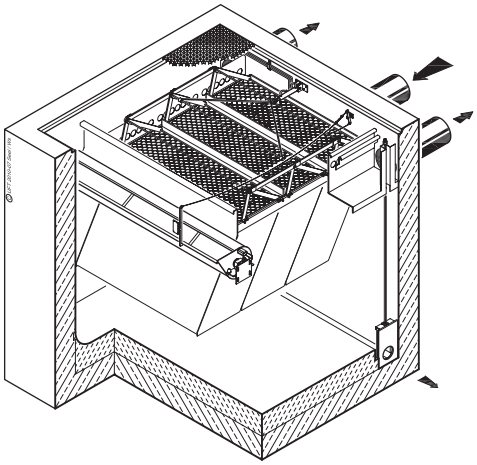
Many coarse materials, which often float in the combined water, can neither be effectively retained by settling in stormwater tanks nor by scum boards.

To solve this problem, the combined water from the overflow can be treated by screens or sieves.

The proven bar screen UFT-*FluidBarScreen-ROMAG* with its 4 mm gap width can be classified as a 'finest screen'. The cleaning device consists of hydraulically driven combs which reach into the screen from behind.

PROPERTIES OF THE FINE SCREEN UFT-*FluidBarScreen-ROMAG*

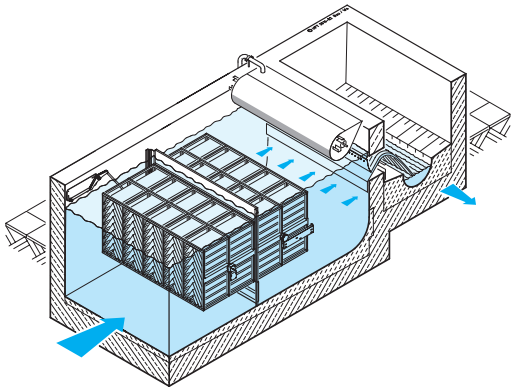
- reliable retention of floating and swimming coarse materials
- optimal gap width of 4 mm
- robust stainless steel construction
- smooth transfer of the screened material through asymmetrical combs
- removal of screened material with the wastewater flow
- no fixed cross-connections on the inlet side, which cause trapping and build-up of solids
- drive on the rear: no immersed parts
- powerful hydraulic drive
- low energy consumption, no aerosols
- modular design, so that the length and height of the screen can be varied depending on the application
- large active area and low surface loading due to fixed downstream weir sheet.



Tube Settling Unit
UFT-*FluidClear*

SKE 0237

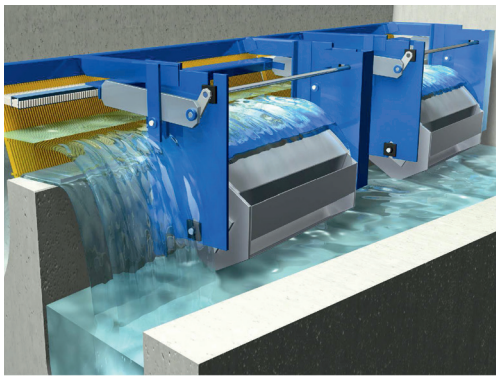
Settling Unit with honeycomb-shaped tube decks (lamella settlers) for the treatment of stormwater in separate systems. Prefabricated concrete structure to be installed as a stand-alone settling basin or as a supplement to a retention tank. Cleaning of the removable tube decks by swaying under water.



Cross Flow Lamella Settler
UFT-*FluidClearX*

XSK 0237x

Cross-flow lamella settler unit with roof-shaped horizontal-flow plate packs for the treatment of stormwater from separate sewer systems. For installation in rectangular clarifier tanks. Cleaning of the plate packs by automatic or manual pivoting under water.



Paddle Wheel Bar Screen Type GiWA

GiWA 0238

Floodable screen with vertical bars and rotating skimmer comb, driven by a paddle wheel independent of external energy, directly mounted on top of the overflow weir.

Intended Purpose

The Tube Settling Unit UFT-*FluidClear* unit is a new technology for the central treatment of rainwater. It very effectively removes settleable substances.

The basic idea is the separation of storage and cleaning: a stormwater tank of any shape and the lamella separator unit as a small compact treatment unit, which is continuously fed with a pump from the tank and which has a high retention efficiency for sediment for this small limited inflow. At the same time, hydraulic overloading and swirling is avoided. Alternatively, the unit may also be operated as a stand-alone settling structure.

PROPERTIES OF THE TUBE SETTLING UNIT UFT-*FluidClear*

- compact rectangular shaft for underground installation or above-ground installation
- independent of the size and configuration of the stormwater retention tank
- fed by a pump or by gravity flow, therefore flexible application
- small sludge volume for disposal with sanitary waste water
- optional: integrated tipping flusher
- simple electrical control
- high operational reliability
- maintenance-friendly design
- honeycomb tube deck packages can be removed individually

Intended Purpose

The goal of stormwater treatment in sedimentation structures is removal of sediments, in particular the very fine fractions of total suspended solids (TSS). Heavy metals and other pollutants preferably accumulate to those fine materials. Recent findings show that settling tanks of traditional design have only poor efficiency for this fine sediment.

An innovative solution for improved sedimentation is the Cross Flow Lamella Settler UFT-*FluidClearX*, in which the polluted rainwater is passed between plates. The suspended solids only have a small settling path length of a few centimetres.

PROPERTIES OF THE CROSS FLOW LAMELLA SETTLER UFT-*FluidClearX*

- high sedimentation efficiency due to uniform flow through the plate packs
- horizontal flow direction in the longitudinal direction of the tank
- no gutter system for draining of the purified water required
- no remixing of sliding sludge into the flow
- hydraulic coordination of clarifier overflow and emergency overflow in the same manner as in a traditional sedimentation tank
- can be combined with the Self Regulating Clarifier Overflow UFT-*FluidClari* for flow control at the clarifier overflow
- can also be used in shallow tanks
- ideal for retrofitting of existing rectangular settling tanks

Intended Purpose

Many coarse materials, which often float in the combined waters, can neither be effectively retained by settling in stormwater tanks nor by scum boards.

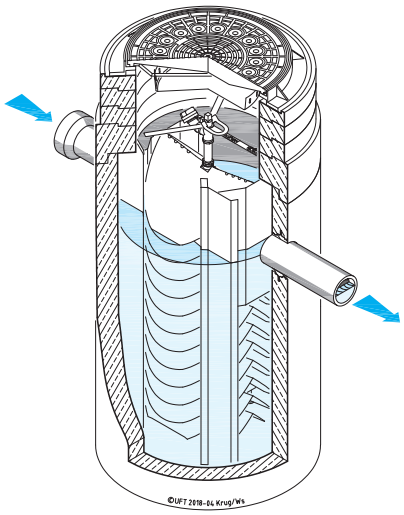
To solve this problem, the combined sewage from the overflow can be treated by screens or sieves.

The GiWA screen has vertical bars. The cleaning system works with a scraper mechanism with anti-lock protection and a water wheel drive independent of external energy.

An explosion-proof electric drive is also available as an option.

PROPERTIES OF THE PADDLE WHEEL BAR SCREEN TYPE GiWA

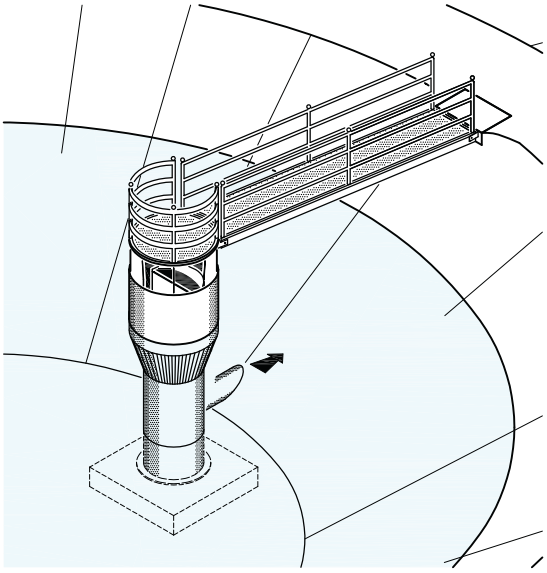
- mechanism driven automatically by water power
- modular design for weir sills of any length
- each module has its own drive unit (high operational reliability)
- no special mounting opening required for installation
- suitable for retrofitting
- all parts can be mounted and accessed from the downstream side
- minimum scraper path length – screenings are not ground by the screen bars
- non-blocking scraper mechanism
- permanent self-cleaning of the scrapers at the screen bars, even with small overflow volumes
- low maintenance



Sedimentation Shaft
UFT-*FluidSettle*

SED 0239

Decentralised treatment unit for separating settleable solids from the storm runoff of small catchment areas. Cross-flow lamella separator technology with pivotable and removable lamella stack.



Iron Monk
UFT-*FluidMonk*

EM 0241

A novel outlet structure for retention ponds with permanent water level, prefabricated completely in stainless steel and ready for operation.

A monk is a structure which is combining a flow control and a weir for sustaining a permanent water level. It is named after mediaeval monasteries which used such structures at their fish ponds.

Intended Purpose

The Sedimentation Shaft UFT-*FluidSettle* is a decentralised treatment unit for stormwater runoff prior to discharge into water bodies, especially for small catchment areas with moderate pollution in the separate system. The shaft works with cross-flow lamella separator technology to achieve a good separation efficiency for suspended solids, also for the fine fraction with grain sizes smaller than 63 µm.

For cleaning, the lamella stack can be pivoted manually around the vertical axis and pulled out before the shaft is emptied with a suction truck.

PROPERTIES OF THE SEDIMENTATION SHAFT UFT-*FluidSettle*

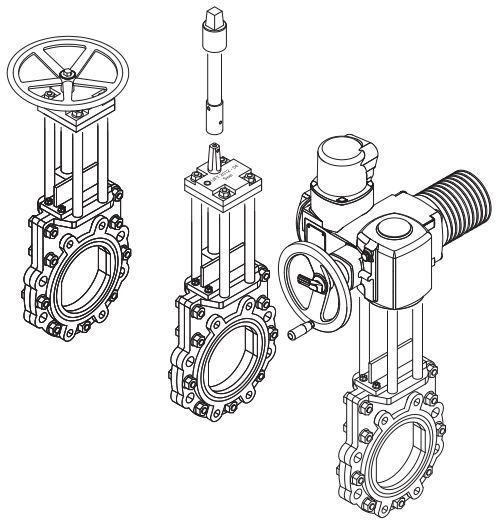
- low surface loading, thus very high sedimentation efficiency
- during operation no mechanically moved parts
- no wear
- no auxiliary energy required
- high operational reliability
- full flow treatment, no separate overflow shaft required
- can be combined with a downstream filter shaft for further cleaning (e.g. prior to infiltration)
- corrosion-resistant construction made of waste water resistant PE-HD and stainless steel in commercially available prefabricated concrete shaft
- minimal upstream backup, no height consumption
- simple maintenance

Intended Purpose

The 'Iron Monk' is a new type of outlet and weir structure for stormwater retention basins, completely prefabricated in the factory from stainless steel and ready for operation. It has an outlet flow control, an overflow with upstream scum board and optionally a coarse bar screen. The prefabricated monk is placed using a crane, aligned and bolted on a foundation prepared on site. The free-standing device is accessible via a footbridge. It directly indicates the position of the pond outlet, e.g. for emergency personnel in the case of an oil spill. The pulpit invites passers-by to stop for a visit.

PROPERTIES OF THE 'IRON MONK' UFT-*FluidMonk*

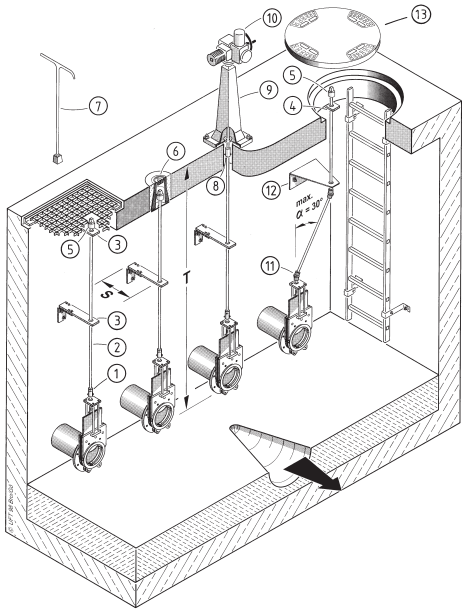
- appealing design
- fast assembly on site
- modular construction from different units
- large variation in flow capacity
- easily accessible
- reliable
- integrated screen for trapping of coarse material



Knife Gate
UFT-*FluidERU*®

P
0281p

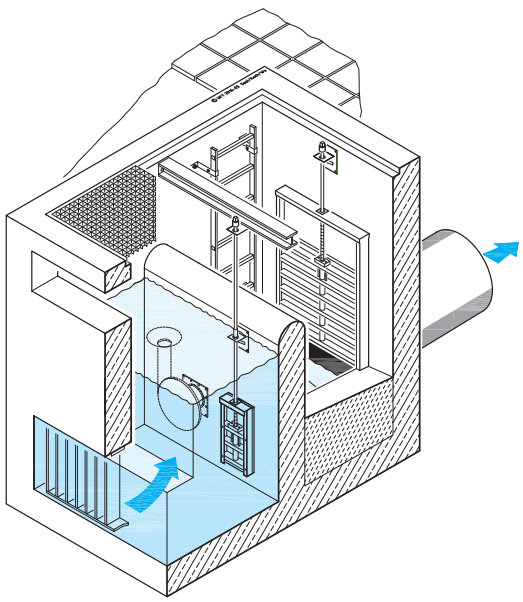
Sealed, watertight, knife gate valve installed between flanges for wastewater containing solid and fibrous material. To shut off and to regulate flow in either direction.



Spindle Extensions
UFT-*FluidSpindle*

SPI
0281s

A range of stainless steel spindle extension bars and fittings to allow operation of shaft-located control valves from ground level.



Wall Mounted Shut-Off Valve
UFT-*FluidKWT*

KSA
0281k

Shut-off valve without housing, made of stainless steel and PE-HD, for all shut-off tasks requiring simple on-off operation.

Intended Purpose

The Knife Gate Valve UFT-*FluidERU*® type P for installation between flanges is universally used as a shutoff gate valve upstream of flow controls or as a regulation valve in pipelines in stormwater treatment facilities of all types and in sewage treatment plants.

It is particularly suitable for use in solid- and fibre-loaded waste water. ERU® is a registered trademark of Erhard GmbH & Co. KG, Talis Germany, Heidenheim.

PROPERTIES OF THE KNIFE GATE UFT-*FluidERU*®

- thin, ground stainless steel plate as shut-off device
- in the case of fibrous or granular solids, the plate cuts its way onto the lower soft seal
- heavy corrosion protection
- can be equipped with numerous drives (manual, electric, hydraulic, pneumatic)
- can be installed between flanges or at the end flange of a pipe
- mounting in any desired position
- drip-free in both flow directions
- sealing elements and gaskets easily replaceable

Intended Purpose

The removal of any blockage in the flow control of a CSO tank is dangerous because rotten waste water can suddenly release high concentrations of hydrogen sulphide which may intoxicate the personnel in the shaft within seconds as soon as a valve is opened.

To avoid such accidents, it is strongly recommended that any gate valves of bypass pipes or flow controls are consistently equipped with spindle extensions to allow convenient operation from above. Thus, the need for the staff to descend into the confined-space structure for operation and be exposed to any toxic gases released is eliminated.

PROPERTIES OF THE SPINDLE EXTENSIONS UFT-*FluidSpindle*

- corrosion-free construction made of stainless steel
- custom-made product
- Street cap with square, operated with socket wrench
- individual solutions possible, also with cardan joints for directional deflection

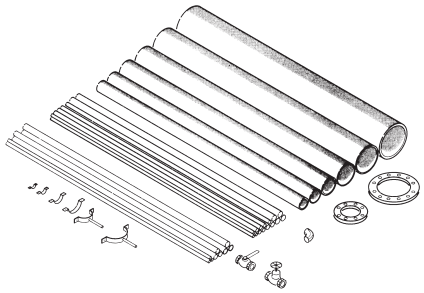
Intended Purpose

The Wall Mounted Shut-off Valve UFT-*FluidKWT* type KSA-MD is a valve for all shut-off tasks requiring simple on-off operation at medium pressure levels. Its choice of materials makes it suitable for use in rainwater and wastewater.

KWT® is a trademark of KWT Waterbeheersing, Netherlands.

PROPERTIES OF THE SHUT-OFF VALVE UFT-*FluidKWT*

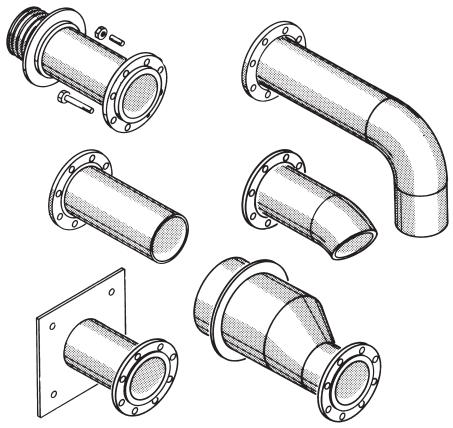
- maintenance-free
- short delivery time due to the modular design
- durable construction
- easy operation
- high chemical resistance and high ageing and weathering resistance
- low weight, therefore easy assembly
- corrosion-free construction made of PE-HD and stainless steel
- non-rising jackscrew spindle
- drive above water level
- maximum permissible water head 5 m
- closes reliably in both flow directions
- tightness class 4 according to DIN 19 569 part 4
- suitable for wet and semi-dry installation



Pipes
UFT-*FluidPipe*

ROH 0283r

Supply and installation of steel, stainless steel, PVC and PE piping including flanges, couplings, brackets, supports, connections and armatures.



Formed Fittings
UFT-*FluidFit*

FOR 0283f

Supply and mounting of standard and customized fittings in stainless steel or PVC for wall transitions, adapters, bends, outflows, couplings, and intersections.

Intended Purpose

We supply all pipes required for sewage treatment plant construction in various qualities and materials.

PROPERTIES OF PIPES UFT-*FluidPipe*

- stainless steel tube
- seamless steel tubes
- medium-weight threaded tubes
- plastic pipes (PVC or PE-HD)

Intended Purpose

We supply all fittings required for sewage treatment plant construction in various qualities and materials.

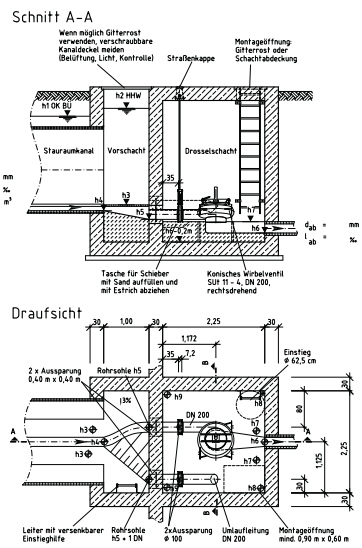
PROPERTIES OF FORMED FITTINGS UFT-*FluidFit*

- standard wall transitions with wall collar and flange
- wall transitions with wall panel
- flanges with wall plate
- extensions
- extensions with elbow
- adapters
- (eccentric) reductions
- inlet confusors with wall collar
- pipe couplings

Assembly Services Hydro-Mechanics

MH 0320

Qualified preparation, assembly, inspection and putting into operation of all hydraulic and mechanical devices from our range as well as products from other suppliers.



Documentation Hydro-Mechanics

DH 0330

Planning aids in the form of product informations, hydraulic dimensioning, dimension sheets, sample solutions, data sheets and operating and maintenance instructions.

Putting into Operation and Training Hydro-Mechanics

EAH 0340

Qualified introduction and optimization under local operating conditions of any water treatment system, control facility or device supplied by UFT. Personnel will be instructed in all tasks required for the operation, overseeing and maintenance of any facility or device.

Assembly Procedure

We have several assembly teams led by experienced master craftsmen. Our assembly supervisors have also qualified as sewage treatment operators. The assembly vehicles are equipped with all tools and equipment to deal with any eventualities.

Our technicians are familiar with the relevant safety regulations. The use of gas warning devices, access trestles, safety gear and other personal protective equipment is of course obligatory. Safety exercises on codes of conduct in sewers and confined space are carried out at regular intervals with our entire staff.

WHY ASSEMBLY SERVICE BY UFT?

A high degree of reliability and a long service life is expected from the technical equipment of stormwater treatment plants of all kinds. The structure has to be ready to deal with a sudden storm at any time. All systems must work automatically without any attendant staff. The operator of the plant assumes – often tacitly – a service life of the mechanical equipment of more than 20 years.

These high requirements must be considered in the planning and tendering phase. Careful and professional assembly, final inspection and start-up under load are the last but very important steps before handing over the system to the operator.

For the reasons mentioned above, we recommend our customers to let our personnel install the devices we have supplied. This completes the chain of planning, delivery, installation and commissioning – and we can guarantee the safe functioning of our entire work.

Intended Purpose

Stormwater treatment plants are expensive investments by taxpayers in environmental protection and make a significant contribution to keeping our waters clean. The technical equipment and its reliable and long-lasting function also plays an important role here.

Usually we offer several different types and sizes of equipment to solve a problem. For the flow control devices, for example, there are more than a dozen alternatives. That is why we put a lot of emphasis on providing the planner with planning aids at a very early stage.

HYDRAULIC DIMENSIONING

We generally carry out a hydraulic dimensioning of the devices in advance free of charge with the help of our computer programs. You will find a questionnaire in our planning folder to request project data.

The printouts of our design programs document the properties of the intended product, for example, the Q(h) characteristic curve (discharge curve) for a flow control. In a vortex valve facility, the design program also checks whether there is impermissible backflow in dry weather conditions, whether the flow velocities in the inlet and outlet pipes are sufficient for deposit-free operation or whether the emptying time becomes excessively long.

In most cases, hydraulic design is also part of the water law process. In this way, the planning engineer can be sure that the system will work as intended, in all operating conditions from dry weather flow to maximum flow in heavy rain.

ELECTRICAL ENGINEERING DIVISION

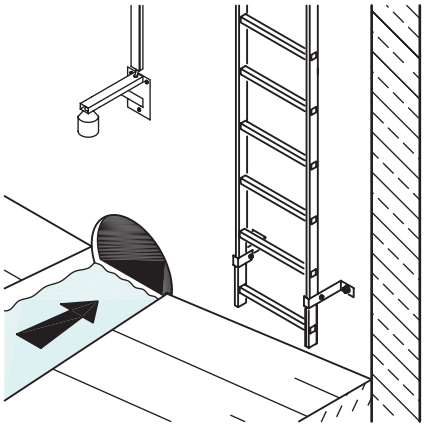
The electrical engineering division plans, produces, installs and services electrical monitoring and regulating devices for storm and waste water control systems in co-operation with the hydro-mechanical division.

- Individual wiring diagrams are developed using a standardised E-CAD system. Our preferred installation is a Stored Programmable Control System (SPS) and after years of experience we have a large library of tried and tested SPS programs.
- All control cabinets are manufactured and tested in house before they are installed on site and commissioned by our experienced technicians.

Control Cabinets for Free Standing and Interior Installation

KVS 0411

Complete basic equipment of control cabinets for the control of electronic system components. Decision support in the planning and tendering phase.



Water Level Measurement in Stormwater Tanks

WM 0423

Waterlevel measurement devices for all CSO facilities using ultrasound, suspended hydrostatic gauges or air bubble injection procedures.

Electrical engineering at structures for combined sewage and stormwater treatment

Stormwater treatment plants are often technically complicated structures, but their function makes a very important contribution to water protection. For this reason, many stormwater tanks, both in combined and separated systems, regardless of shape or size, are today equipped with electronic measuring and control technology. On the one hand, the required functions of the systems can in many cases only be achieved with the aid of sensors and automation. On the other hand, the desired monitoring of the systems by the operator and the required automatic documentation of the operating processes also play an increasing role. This can result in major savings for the operator in the maintenance and inspection of the stormwater tanks.

The cabinet housing the electrical components is located near the stormwater tank, either as free standing switch cabinet or mounted in a nearby building. It is usually possible to operate the system on site, even if all operating data is transmitted to a control center via a telecontrol system. Of course, the control cabinet also accommodates all other modules needed on site, from the power supply to the signal amplifiers of the sensors up to the programmable logic controller, in which the local 'intelligence' with all functions of the stormwater tank is implemented.

Intended Purpose

Control cabinets are required to accommodate the monitoring, control and regulation technology (I&C technology). The cabinets serve as weather protection and shield the electronic components. Control cabinets should be located in the vicinity of important units such as flow regulators and pumps.

In order to help the planner decide what is necessary and feasible and what is to be considered in the planning and tendering phase, we have developed a well proven concept for the basic equipment of control cabinets for various monitoring tasks.

BASIC EQUIPMENT OF A UFT CONTROL CABINET

- free standing control cabinet with two locks and internal sub cabinet or internal doors (for sealed cabinets)
- or control cabinet as a floor-standing cabinet in an operational building with doors for the operating and display devices
- mounting plate for holding the monitoring, control and regulation technology
- basic equipment of a switch cabinet, consisting of:
  space for metering device
  combined earth conductor
  plug socket combination
  control cabinet heating
  master switch
  control voltage supply
  potential equalization rail
  free space

Intended Purpose

Water level measurements operate according to various measuring principles. Immersion probes and the well-known air bubbling method measure the hydrostatic pressure at a certain point under water. Ultrasonic echo sounders and radar probes measure the distance between a measuring head and the water surface by reflection.

We use only products from well-known manufacturers with whose instruments we have had good experience. New instruments are thoroughly tested before being included in our sales program.

PROPERTIES OF THE WATER LEVEL MEASUREMENT INSTRUMENTS

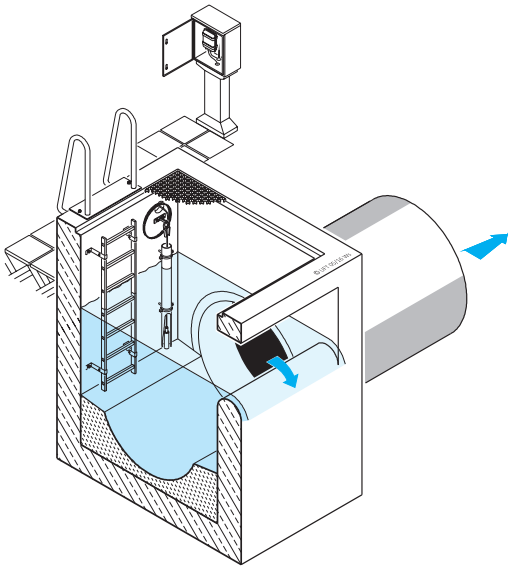
Water level measuring equipment provides information on:

- the current water level in a stormwater tank (filling)
- the water level in front of an overflow threshold for determining the duration and frequency of overflow or the discharge volume via this threshold (CSO, tank overflow or clarifier overflow)
- the water level in other system components, for example in a pump sump, as a signal transmitter for control systems which automatically actuate equipment such as pumps, agitators, tipping flushers and valves.

Automatic Control Engineering in Stormwater Tanks

MSR 0430

Electric Control Units for the manual and automatic operation of all regulating devices in response to water levels, flow levels etc. using relays and PLC. With remote control option.

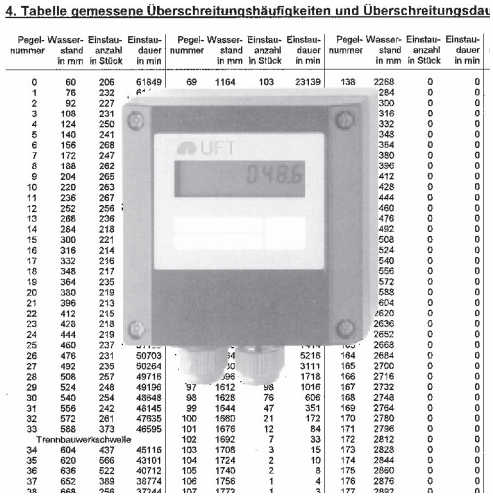


Tank Data System

REDAS 4

RD4 0441

Specifically parameterised data recorder to register hydrographs at storm water tanks.



4. Tabelle gemessene Überschreitungshäufigkeiten und Überschreitungsdau

Pegel-nummer	Wasser-stand in mm	Einstau-anzahl in Stück	Einstau-dauer in min	Pegel-nummer	Wasser-stand in mm	Einstau-anzahl in Stück	Einstau-dauer in min	Pegel-nummer	Wasser-stand in mm	Einstau-anzahl in Stück	Einstau-dauer in min
0	60	206	61849	69	1164	103	23139	138	2268	0	0
1	76	232	[illegible]						284	0	0
2	92	227							300	0	0
3	108	231							316	0	0
4	124	250							332	0	0
5	140	241							348	0	0
6	156	268							364	0	0
7	172	247							380	0	0
8	188	262							396	0	0
9	204	265							412	0	0
10	220	263							428	0	0
11	236	267							444	0	0
12	252	256							460	0	0
13	268	236							476	0	0
14	284	218							492	0	0
15	300	221							508	0	0
16	316	214							524	0	0
17	332	216							540	0	0
18	348	217							556	0	0
19	364	235							572	0	0
20	380	219							588	0	0
21	396	213							604	0	0
22	412	215							620	0	0
23	428	218							636	0	0
24	444	219							652	0	0
25	460	237							668	0	0
26	476	231	50703		[illegible]		5218	164	2684	0	0
27	492	235	50264		[illegible]		3111	165	2700	0	0
28	508	257	49716		[illegible]		1718	166	2716	0	0
29	524	248	49196	97	1612	98	1016	167	2732	0	0
30	540	254	48548	98	1628	76	606	168	2748	0	0
31	556	242	48145	99	1644	47	351	169	2764	0	0
32	572	261	47535	100	1660	21	172	170	2780	0	0
33	588	373	46595	101	1676	12	84	171	2796	0	0
Trennbauwerkschwelle				102	1692	7	33	172	2812	0	0
34	604	437	45116	103	1708	3	15	173	2828	0	0
35	620	666	43101	104	1724	2	10	174	2844	0	0
36	636	522	40712	105	1740	2	8	175	2860	0	0
37	652	389	38774	106	1756	1	4	176	2876	0	0
38	668	256	37244	107	1772	1	3	177	2892	0	0

Data Logger

REDAS mini

RDM 0441m

Data logger with internal memory for recording analog and counter values at stormwater tanks for which no power supply is available. Especially suitable for mobile use. optional mobile radio interface.

Intended Purpose

Controllers are used for manual and automatic operation of one or more units depending on different operating states of a system. Input variables for the controls are e.g. water levels in tanks, flow rates etc. The controller uses these input variables to generate output signals that switch motors, valves, pumps, etc. on and off.

From the continuous comparison of actual and designated value, e.g. the flow rate of an electromagnetic flow meter EMF, controllers generate output signals which are intended to keep the control error as small as possible.

PROPERTIES OF THE AUTOMATIC CONTROL UNITS

Based on our experience in equipping more than 10,000 rainwater tanks, we have developed concepts for the appropriate and necessary control and regulation technology. Such equipment consists essentially of the following units, which can be used depending on the type of tank, the equipment and the functions required:

- control and display unit for a valve with actuator, a pump or booster pump, a jet cleaner, an agitator or a tipping flusher
- power unit with switches and fuse protection for the above equipment
- reactive current compensation, soft-start device (depending on power supply company regulations)
- temperature monitoring of the motors
- daily time switch for daily routine of different equipment
- electronic PID three-point stepping controller with limit adjustment on site and via a remote control system
- programmable logic controller (PLC)
- software, PLC program library

Intended Purpose

During heavy rain CSO tanks and COSs often discharge raw water into the water courses. Numerous technical regulations recommend installing water level sensors and data loggers to record this overflow activity. These record where, how often and for how long these overflows are active and what annual volume of water they discharge into the water courses.

A ranking and rating procedure can be used to draw conclusions from the acquired data about the correct functioning of the structure.

PROPERTIES OF THE TANK DATA SYSTEM *REDAS 4*

- acquisition and processing of all common measuring signals via analog and digital inputs and outputs
- storage of water levels as hydrographs
- special evaluation with the help of our statistics program UFT-*FluidRank*
- data transfer optionally via Memory Card (MC), Compact Flash (CF), serial interface and notebook, with modem via the public telephone network or via mobile radio
- automatic readout, evaluation and warning in the event of limit value violations via modem (optional)
- remote control of relays and analog outputs (optional)
- plain text display, simple dialog operation via membrane keypad
- software for downloading and documenting measurement data available
- possible data evaluation as a service offered by UFT

Intended Purpose

The *REDAS mini* data logger is used to record analog and counter values where no external power supply is available. For example, records overflow activity of CSO tank overflows, CSO overflows or flow measurement with tipper flow measuring device.

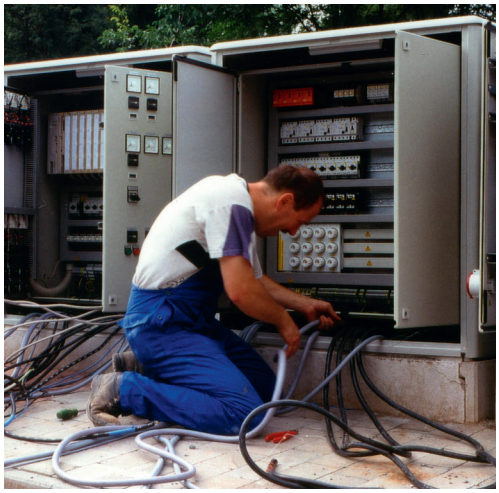
PROPERTIES OF THE DATA LOGGER *REDAS MINI*

- acquisition of all common measuring signals via analog and digital inputs
- storage of water levels as hydrographs
- data transfer and parameterization via notebook or PC, optional mobile radio interface
- LCD display
- software for reading, documenting, balancing and evaluating the measured data available
- data evaluation also possible as a service by UFT

Installation Services for Stormwater Tanks

INT 0491

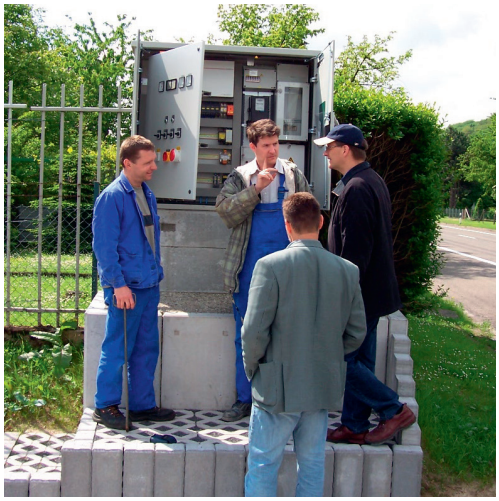
We carry out complete electrical installations in and around storm water and sewerage facilities and offer help and advise with planning decisions in the specification phase.



Assembly Services Electro-Technics

ME 0511

Qualified preparation, assembly, inspection and putting into operation of all electrical devices from our range as well as products from other suppliers.



Putting into Operation and Training

EAE 0530

Qualified introduction and optimisation under local operating conditions of any control facility or device supplied by UFT. Personnel will be instructed in the operation, maintenance and control tasks required for any facility or device.

Intended Purpose

In addition to measuring, control and regulation technology (I&C technology), the type and scope of other installation technology should also be considered when equipping a stormwater tank. The installation technology, such as the type of cable protection pipes used in the tank, the sealing of the cables to the measurement shaft or the illumination of a tank, contribute to the longevity of the I&C technology and increase the operational safety.

In order to help the planner make decisions and give advice for the planning and tendering phase, we have compiled the installation technology.

NOTES FOR THE PLANNING OF INSTALLATION TECHNOLOGY

The following details must be taken into account when planning and tendering for stormwater tanks:

- potential equalisation: foundation earthing, lightning protection, band earthing, earthing anchor points
- laying of empty conduits, supporting cables, wall and ceiling passages, sealing inserts (water, gas)
- laying cables in manholes and tanks carrying waste water
- installation technology for monitoring and flow regulator shafts in the explosion-free zone
- installation technology in Ex-zone 1
- documentation: Empty conduit installation plans, position of the earthing connections
- on-site preparatory work

Assembly Procedure

We have several assembly teams led by experienced master craftsmen. Our assembly supervisors have also qualified as sewage treatment operators. The assembly vehicles are equipped with all tools and equipment to deal with any eventualities.

Our technicians are familiar with the relevant safety regulations. The use of gas warning devices, access trestles, safety gear and other personal protective equipment is of course obligatory. Safety exercises on codes of conduct in sewers and confined space are carried out at regular intervals with our entire staff.

WHY ASSEMBLY SERVICE BY UFT?

A high degree of reliability and a long service life is expected from the electrical equipment of stormwater treatment plants of all kinds. The structure has to be ready to deal with a sudden storm at any time. All systems must work automatically without any attendant staff. The electrical equipment with measuring, control and regulation technology (I&C) is of great importance here. The operator of the plant assumes – often tacitly – a service life of the technical equipment of more than 20 years.

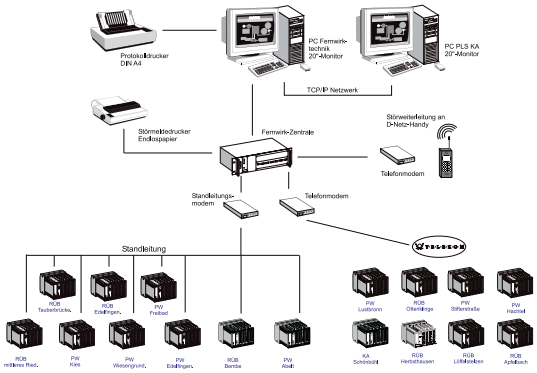
These high requirements must be considered in the planning and tendering phase. Careful and professional assembly, final inspection and start-up under load are the last but very important steps before handing over the system to the operator.

For the reasons mentioned above, we recommend our customers to let our personnel install the devices we have supplied. This completes the chain of planning, delivery, installation and commissioning – and we can guarantee the safe functioning of our entire work.

PROCESS CONTROL TECHNOLOGY DIVISION

The process control technology division plans, sets the parameters and installs systems for the digital monitoring of drinking water and waste water plants. These include process control and remote control systems. The division works closely together with the electrical engineering division in many areas.

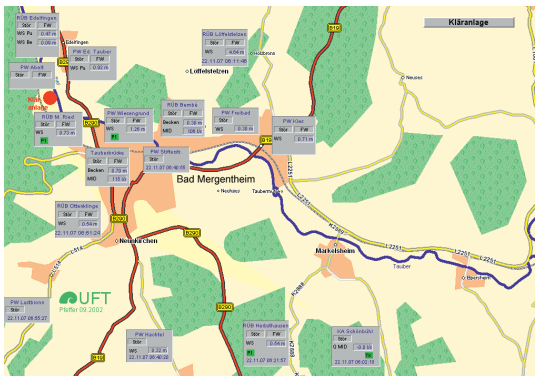
- We have many years of experience in the planning and establishing the parameters of process control and remote control systems
- We install the complete system with network technology and server-client environments
- We rent out facilities and provide our own hosting solutions
- We support operators in handling their plants with service contracts



Remote Observation and Control Facilities

FW 0648

The observation and control of one or more storm water treatment plants from a centralised facility over fixed or telephone lines



Process Control Technology: Project Examples

FW 0648b

We have already successfully installed the technical systems for monitoring and remote control of one or more stormwater treatment facilities in numerous municipalities. In each individual case we have found tailor-made solutions in cooperation with the operator. We would like to present some projects as examples.

Process Control Technology

Intended Purpose

Remote control systems and process control technology in the sewage network and stormwater treatment require thorough planning and adaptation of the system to the individual needs and competence of the operators. There is an almost infinite number of variants. We are happy to make our experience available for project planning and system selection.

We have nationwide approval as a specialist electrical company and install electrical systems and remote control technology to professional standards. The systems are commissioned by us and then handed over to the operating staff ready for operation.

FUNCTIONS OF THE REMOTE CONTROL FACILITIES APPLIED BY UFT

- output of daily, monthly and annual reports
- optional protocol editor according to German guideline ATV-DVWK-M 260
- maintenance intervals, administration of component data, spare parts lists
- registration of the most important activities in the control process archive
- output of fault reports, daily, monthly and annual reports
- recording of operating hours for various components
- output of different hydrographs
- recording of the overflow activities of stormwater facilities
- manual entries of values, laboratory values, rain gauge etc.
- individual password protection
- backup and data protection functions
- if required, we can connect to the remote control system from our office for remote maintenance.

Intended Purpose

Remote control systems and process control technology in the sewage network and stormwater treatment require thorough planning and adaptation of the system to the individual needs and competence of the operators. There is an almost infinite number of variants. We are happy to make our experience available for project planning and system selection.

We have nationwide approval as a specialist electrical company and install electrical systems and remote control technology to professional standards. The systems are commissioned by us and then handed over to the operating staff ready for operation.

PROJECT EXAMPLES FOR PROCESS CONTROL FACILITIES BY UFT

- Bad Mergentheim: Drainage network with eight CSO tanks, eight pumping stations and a sewage treatment plant
- Bad Mergentheim: Monitoring of five health spring waters in automatic mode
- Walldürn: Sewage network with seven CSO tanks and eight pumping stations
- Creglingen: Drainage network with 40 remote control stations
- Boxberg: Process control technology with two workstations for the wastewater treatment plant with 3,500 process variables, telecommunications system and complete IT infrastructure

SERVICE AND MAINTENANCE DIVISION

Service and maintenance in the field of storm water treatment are increasingly important business fields, both for purely hydro-mechanical and electrical systems. It was therefore logical to reorganise this area into a separate UFT department as from 2016.

- Our employees in the Service and Maintenance department are experts in both hydro-mechanics and electrical engineering and can therefore fulfill the tasks of a maintenance contract, which often covers both areas, in 'personal union'.
- The operator as customer benefits from maintenance of the systems with the least possible organisational effort.

Service and Maintenance Hydro-Mechanics

SWH 0730

Maintenance, inspection and repair of hydro-mechanical systems on request or as part of maintenance contracts.

Service and Maintenance Electrical Engineering and Process Control Technology

SWEP 0750 / 760

Maintenance, inspection and repair of electrical or instrumentation and control systems on request or as part of maintenance contracts. Here, our service also includes taking over tasks of self-checking, e.g. balancing discharge water quantities and checking measuring equipment.

Comprehensive service: Inspection, maintenance and repair

Maintenance of the technical equipment of rainwater treatment plants consists of inspection, maintenance and repair in accordance with VDMA Standard Sheet 24657 (2013).

The inspection can usually be carried out by the operator's own personnel. All measures that serve to determine and assess the actual condition of the plant are inspections.

Maintenance, on the other hand, is often left to expert companies. The term maintenance covers all measures to 'delay the dismantling of the existing wear stock of technical equipment', i.e. measures to maintain the target condition.

The term repair includes all repair measures to restore the target condition. Repair can also include the improvement of a technical system, i.e. the replacement of a defective system component with a new component of higher quality, which leads to an increase in functional reliability and effectiveness.

Intended Purpose

Stormwater tanks and other stormwater treatment systems are expensive investments paid by taxpayers. Their reliable function contributes significantly to keeping our waters clean. Failure of mechanical and electrical equipment can lead to water pollution with regulatory, criminal and liability consequences.

In order to ensure the function of the system over a long period of time, it must be maintained regularly and professionally. For complex plants we offer maintenance of technical equipment.

SERVICE AT HYDRO-MECHANICAL PLANTS

For inspection, maintenance and repair of hydro-mechanical systems, it is generally necessary to visit the stormwater tanks regularly. Usually two visits per year are agreed in maintenance contracts.

During the inspection, flow regulators, for example, undergo a visual inspection and a functional test. Maintenance includes, for example, the lubrication and smooth running of a slide valve spindle. Repair is, for example, the replacement of defective assemblies as required.

Regular cleaning of the building is also part of maintenance. However, this should be done at shorter intervals, therefore requires local presence and is therefore usually handled by the operating personnel themselves.

Intended Purpose

The more complex a technical system is, the more important is regular and expert maintenance. This applies in particular to electrical equipment, instrumentation and control and remote control technology, which is characterised by very rapid technical progress and thus a previously unknown specialisation. Operators are therefore increasingly outsourcing this important task to UFT as a specialist company.

SERVICE AT PLANTS WITH ELECTRIC AND PROC. CONTROL TECHN.

Inspection, maintenance and repair is particularly necessary for electrical systems at stormwater tanks. In this case, maintenance contracts, in which the operator can delegate the responsibility for the permanent functionality of the structure as required by water law to a specialist company, make sense.

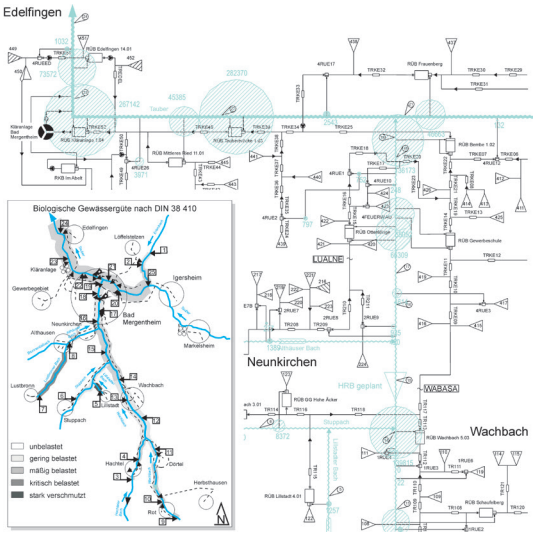
Thanks to the remote monitoring option, we can ensure permanent monitoring of many systems, so that the operator can be notified immediately in the event of malfunctions and faults may be detected and dealt with rapidly. Of course, the plants are also regularly visited by our trained service staff.

SCIENTIFIC SERVICES DIVISION

Our scientific services include urban hydrological studies, quantity-quality simulation, assessment on hydraulic and hydrological topics and hydraulic software.

We are one of the few private institutes in Germany operating a water laboratory where hydraulic modelling techniques are used to optimise the design of complex storage and control structures in behalf of our customers. The laboratory is also used to calibrate all our hydro-mechanical products.

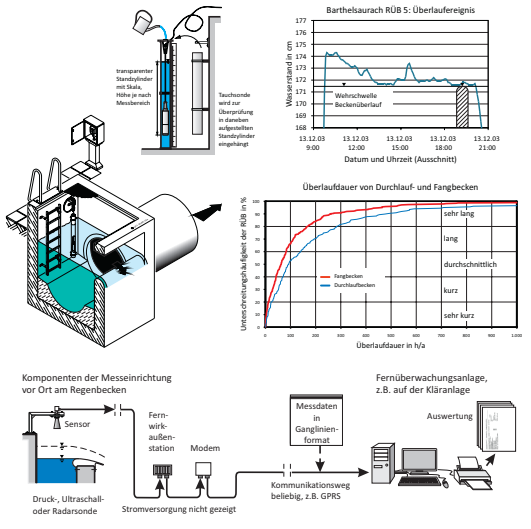
- We regularly work in practical research in the field of stormwater and combined sewage treatment for specialist authorities in Germany and abroad.
- Over 1,000 publications and research reports have been published in recent years.
- We are actively involved in workgroups developing new technical standards as well as in the training and education work of the DWA (German association for Water, Waste Water and Waste).
- UFT maintains its own literature databank on stormwater and sewerage handling.



Urban Hydrology Study

SHS 0921

Assessment of the stormwater and combined sewage treatment in accordance with the current technical regulations by means of numerical quantity-quality simulation for normal and further requirements. Optimisation of the drainage system through an overall view of the sewer system, the sewage treatment plant and the water body. Consideration of alternative drainage concepts, water quality studies and cost-benefit analysis.



Testing of the Measuring Device and Assessment of Overflow Activity of Stormwater Tanks

UFT-*FluidRank*

URM 0923

On-site inspection of the entire measuring chain consisting of sensors and data recording equipment. Estimation and evaluation of monitored data on overflow frequency and duration compared to other CSO facilities (UFT ranking and rating method). Optional study of possible causes of conspicuous overflow activity.

Scientific Services

Our company does not see itself as a pure equipment supplier, but since our foundation in 1977 we also work on scientific questions in the field of hydraulics, urban hydrology, and stormwater treatment. In recent years we have been working on behalf of several German federal states (Baden-Württemberg, North Rhine-Westphalia, Bavaria), on the question how to get the most out of combined sewage treatment plant systems, on overflow activity and the effect of stormwater tanks or on optimising the retention of pollutants using lamella clarifier technology. Other research projects were funded by the German Federal Ministry of Education and Research (BMBF) as well as by the EU, such as the project DESSIN in 2013-2017, where we once again examined the topic of lamella separators.

UFT conducts urban hydrological studies, quantity-quality modeling and infiltration inflow (I/I) studies as well as expert reports on various topics for municipal clients. Special highlights are hydraulic model tests in our own water laboratory.

Several UFT employees are actively involved with the DWA in various specialist workgroups and we can thus also incorporate our ample experience into new technical regulations.

UFT staff members are authors of numerous scientific publications in specialist journals and at international conferences.

Purpose of the study

Important for a cost-effective, efficient and approvable stormwater treatment is the overall view of the system of catchment area, stormwater treatment and sewage treatment plant as well as their mutual coordination, especially also the assumption of realistic, plausible values for sealed areas, population figures and wastewater and infiltration water flows.

This can best be achieved with a comprehensive examination of the entire system. We call this an urban hydrology study, a planning tool that is superior of the general sewerage plan.

PROCEEDING OF A URBAN HYDROLOGY STUDY

- definition of a time plan horizon
- determination of areas, careful estimate of realistic growth
- determination of number of inhabitants
- determination and definition of further key figures for the actual and planning status (e.g. wastewater and infiltration water flow)
- determination of infiltration inflow according to the ‘sliding minimum method’
- inspection of CSOs and CSO tank structures
- extensive discussion with the operating personnel
- estimation of precipitation load by synthetic long-term rain series
- calculation of emissions system by numeric quantity-quality simulation
- determination of the allowed imission capacity of the receiving waters
- matching of flow to the wastewater treatment plant with the flow from the stormwater tanks
- comparison of several planning variants, minimization of emissions
- cost-benefit comparison

Purpose of the study and service

How do you recognize a well-functioning combined sewage overflow tank? Is ‘my’ stormwater tank okay? The measured overflow activity of the tank is an important indicator for its correct function.

An evaluation of the overflow duration and frequency allows a statement without further hydrological data or even a simulation of the actual status. Normal overflow activity usually indicates correct operation. If the overflow activity, however, is significantly above or below average, the reasons should be investigated separately.

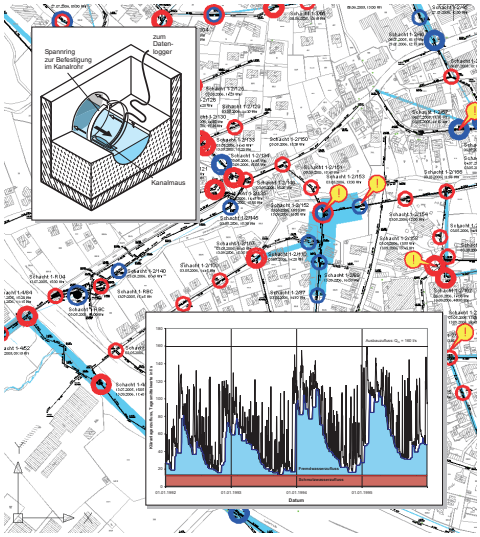
REASONS OF CONSPICUOUS OVERFLOW ACTIVITY

Possible reasons for particularly **long** or **frequent** overflows:

- reverse flow into the stormwater tank caused by flooding for a few days
- particularly strong inflow of infiltration water, especially in winter and spring
- particularly high rainfall and relatively short monitoring period
- outlet flow too low due to a partially blocked flow control unit
- stormwater tanks still needed further up the network
- fault in the design of the tank volume or in the discharge

Possible reasons for particularly **rare** or **short** overflows:

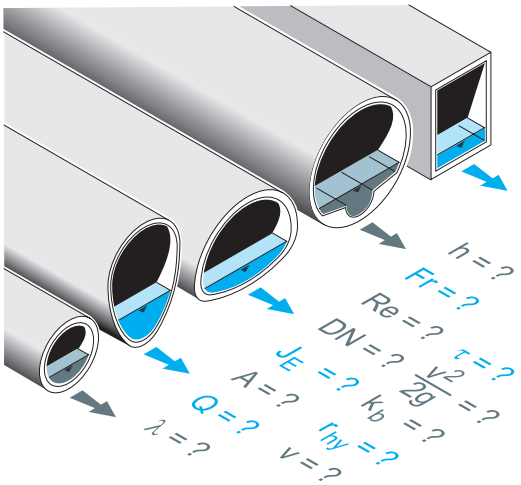
- especially dry or short monitoring period
- the catchment area of the stormwater tank is only partially drained using a combined system, but using alternative drainage systems instead
- flow control discharge too high



Infiltration Inflow Study

FWS 0924

Examination of the combined or separate sewer system for infiltration inflow with regard to the overall system. Determination of infiltration water flow at different points of the network by measurements and discharge estimates. Comparison of the volume of infiltration water at the sewage treatment plant using the 'Sliding Minimum Method'.



Hydraulic Dimensioning of Sewers

PCC 0941

Windows software to calculate the hydraulic dimensions for full and partly full pipes according to the DWA Standard A 110.

Hydraulic Laboratory

LAB 0951

We operate a laboratory in which hydraulic model tests (visualisation and calibration tests) can be carried out on all issues relating to urban drainage. Maximum flow rate 100 L/s, maximum pressure head 10 m.

Purpose of the study

For water management planning, e.g. for quantity-quality simulations as well as for the planning of new sewage treatment plants, knowledge of the origin, quantity and seasonal distribution of the infiltration inflow is essential. An infiltration inflow study comprehensively examines these aspects. Investigation of the effluent of sewage treatment plants according to the 'Sliding Minimum Method' provides the absolute amount and also the seasonal distribution. Flow estimates and measurements in individual sewer shafts allow conclusions about the local infiltration water yield in various stretches of the sewer system.

'SLIDING MINIMUM METHOD'

The Sliding Minimum Method developed by UFT is a phenomenological rather than a physical method: The flow curve of the daily wastewater treatment plant (WWTP) inflow shows many peaks on rainy days due to rapid runoff from the surface. However, after longer rain periods, typically in winter, the entire curve rises – a sign for the infiltration inflow. It can be calculated automatically by placing a 'lower envelope' under the curve of daily WWTP inflow. The minimum daily inflow from the past 21 days is assigned to each day. From the resulting 'staircase' curve, the assumed constant wastewater inflow is subtracted. The result is the average annual I/I values as well as an infiltration water hydrograph that often shows a maximum in spring and a minimum in autumn. The more years of data available, the more accurate the result.

Intended Purpose

UFT-*PipeCalc2* is a clear, easy-to-understand program that answers the most important dimensioning questions of pipe hydraulics quickly and easily. Ideal for occasional use, for example if the dimensioning of a control pipe or the capacity of a duct needs to be checked. Intuitive, simple operation.

FUNCTIONS IN UFT-*PipeCalc2*

- **Known and unknown**: You simply enter the known data and mark the ones you are looking for. With a single mouse click, the program determines all unknowns, including other derived values.
- **Full filling and partial filling**: PipeCalc2 calculates full filling and partial filling simultaneously and saves the tedious calculation of relative values and interpolation from partial filling tables.
- **Circular, eggshaped, rectangular and trough profiles**: In PipeCalc 2, in addition to the circular pipe, other frequently used cross-section shapes are included.
- **Bilingualism**: PipeCalc2 can speak English as well as German.
- **Integrated help system**: PipeCalc 2 contains an extensive check routine. Nonsensical, overdetermined or insufficient information is recognized and reported. The integrated help system answers questions about operation and calculation parameters. The hydraulic reference book is included!
- **System requirements**: Windows operating system, space requirement only approx. 2 MB.

Intended Purpose

Our hydraulic laboratory has its own water circuit with a deep tank of approx. 12 m³ capacity. A speed-controlled centrifugal pump with a high-precision magnetic-inductive flow meter (MID) extracts the water and feeds it into a distribution system. Water level sensors (pressure gauges) with various measuring ranges and data recording software are used to measure characteristic discharge curves. The results are extrapolated to prototype scale using the laws of physics

WHY MODEL TESTS?

Today, the most common water and wastewater structures can be adequately dimensioned with the laws of hydromechanics, if necessary also using numerical 3D flow simulation. However, there are remaining problems that require a special solution. Numerical computations can be expensive and time-consuming and it is questionable how accurate and meaningful the results are, particularly where the numerical model cannot be calibrated or where multi-phase flow computations of water, sediment and floating matter are required. It is often cheaper, safer, more versatile and also more informative to carry out a direct physical model test in the laboratory. All later operating states can be simulated on the hydraulic model. Even extreme and rare discharge conditions, e.g. catastrophic floods, can be easily investigated on the model. The designs can be visually checked and, if necessary, improved in the planning stage by means of model tests. The technical risk of later, expensive conversion measures can be greatly reduced by model simulation. Finally, where extensive numerical researches are to be carried out, these can be calibrated using model tests.