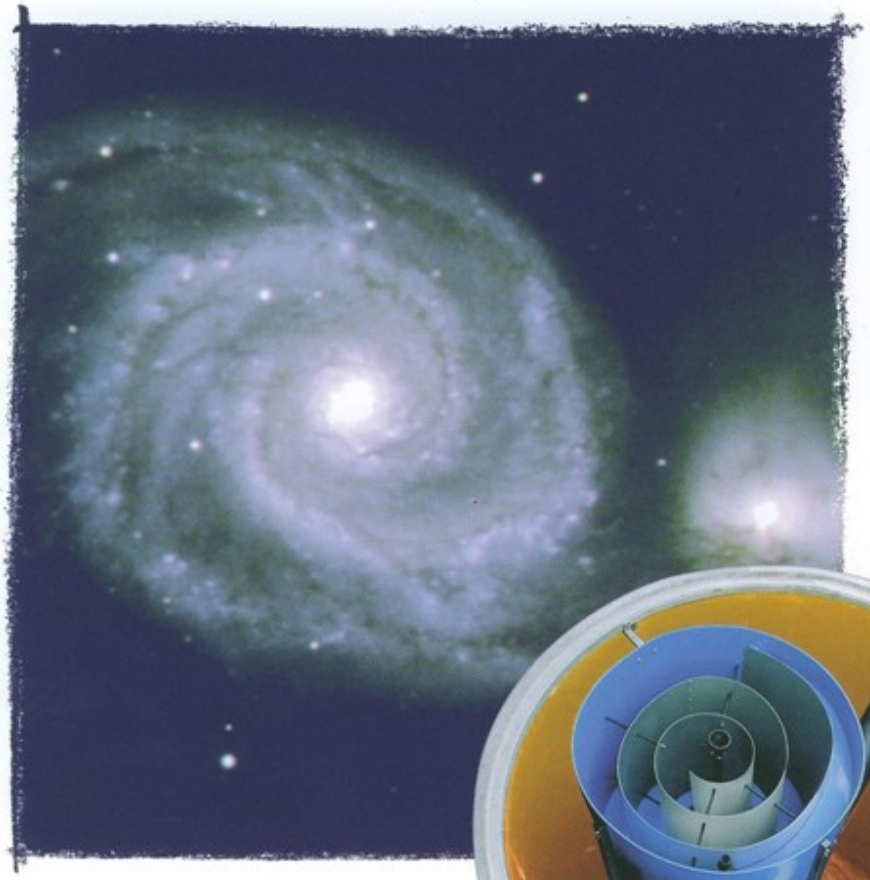
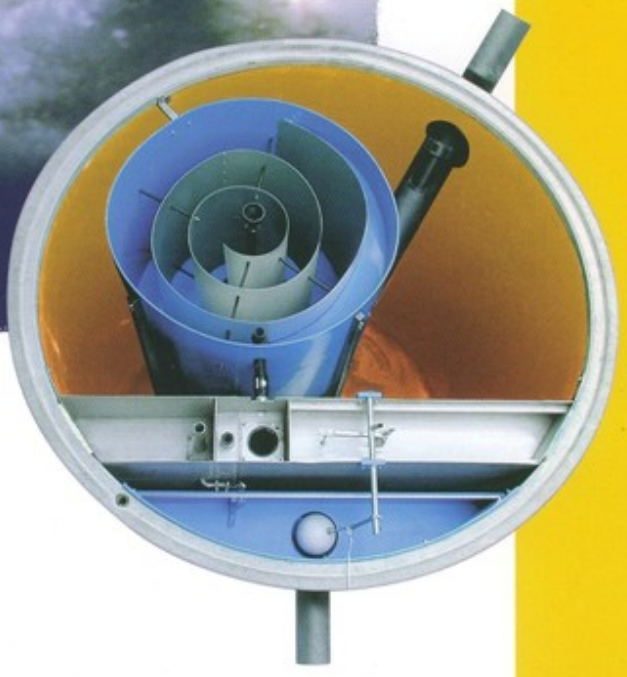
separating

AWAS
Galaxie System

The innovative approach to separation technology for the new millennium





philosophy
innovation
awareness

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Abwasseranlagen-Systeme

separating

The New Vortex Separation Technology with Flow Energy Processes – AWAS GALAXIE

Using the Forces of Nature

Research and development at AWAS are based on contemporary considerations involving natural physical processes.

The new spiral shape developed for the Vortex Separator System was derived from the motion mechanisms of the galaxies – mechanisms which cause separation of light bodies inwards towards the centre and heavy ones outwards.

A total of four different laws of nature have been implemented harmoniously in a single system, in which the only source of energy needed is a drop of about 10 cm.

Centrifugal and Centripetal Forces

In a manner similar to that of these cyclonic galactic motion forces, when the waste water enters the spiral system of the separator tangentially, sludge particles and light substances are separated from it along every single centimetre of the spiral path, which can be up to 700 cm in length.

While heavy particles move outwards centrifugally towards the baffles and are deposited, light liquids simultaneously flow inwards towards the inner walls, i. e. centripetally.

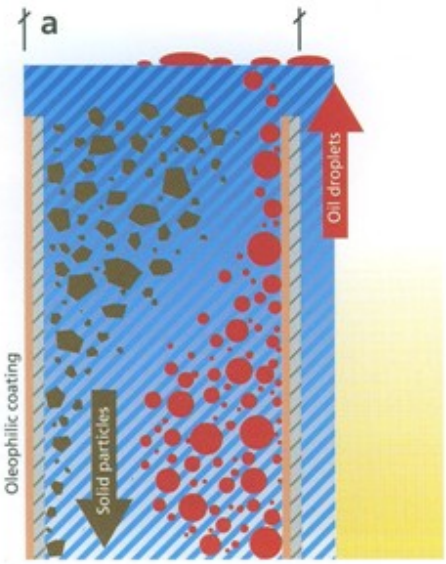
A dual effect for the purification of waste water.

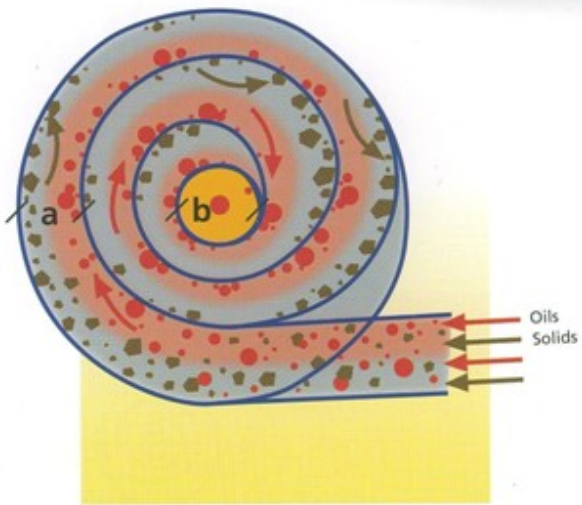
The Pulsating Force

The baffles in the spiral are at different distances apart. As a result, the flowing motion is slow at some places and faster at others. This produces the desired pulsating flow, which optimally supports the coalescence effect (fine separation) of the oil droplets.

In a manner like that of the coalescence effect, the pulsating flow also influences the sludge sedimentation process to such a positive extent that, in a sludge separation test conducted by LSG-ELAB/DIBt, a better result was obtained than in a conventional sludge trap with an impact wall.

A point worth noting is the non-clogging passage, with a width of ≥ 60 mm.





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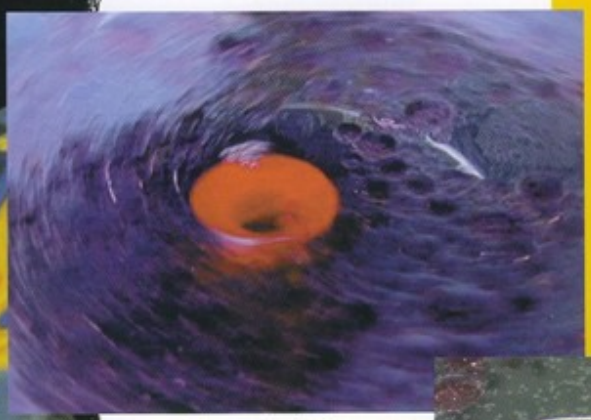


The vortex-induced suction energy draws even the finest of oil films towards the centre.

Because of the flow, oil droplets are detached from the baffle and float up towards the centre.

The Adhesive Force

Whereas the outer walls of the spiral system are designed to be oil-repellent ("oleophobic"), the inner wall is coated with composite material which attracts oil.

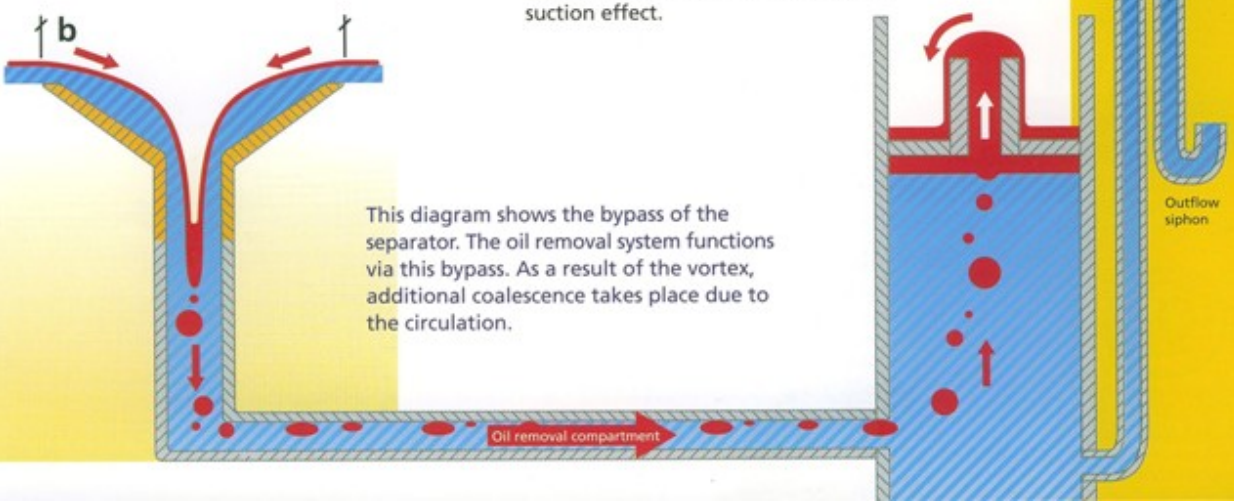
Thus, tiny oil droplets, which are in any case already moving towards the inner wall as a result of the centripetal force, experience an additional attraction and some of them adhere briefly to the baffle. Propelled by the water flow, they merge with other oil droplets to form larger droplets which rise more quickly; these larger droplets detach themselves from the upper edge of the baffles and float upwards towards the surface.

A self-cleaning system.

Coalescence Induced by Circulation and Vortex Action

In these GALAXIE separator systems, the oil accumulate at the centre as a result of the slow circulatory flow. It is precisely there that – in the type AWAS GALAXIE 2002 for example – the oils are removed from the surface via the funnel that is situated there. Because of the vortex energy with suction effect, a vortex is formed at the centre.

Even oil films are thus caused to circulate and agglomerate at the lower central point of the vortex. The resulting droplets „migrate" towards the oil removal compartment where, in the form of an oil trickle, they overflow into the oil collection compartment, while the purified residual water makes its way into the outflow via the siphon, which exerts a suction effect.



This diagram shows the bypass of the separator. The oil removal system functions via this bypass. As a result of the vortex, additional coalescence takes place due to the circulation.

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The Basic System: GALAXIE 1902–1905 SK

Within a single container, the Vortex Separator System AWAS GALAXIE contains all of the important components, such as sludge trap, light liquid separator, coalescence separator, automatic closure devices and sampling system, and can be supplied in the nominal sizes 3 to 150.

Simultaneous, Triple Effect

The GALAXIE system ensures simultaneous optimum separation of light liquids, sediments (sludge) and water **while still in the first component**, the vortex separator, by means of spirally configured baffles. At the same time – and this is sensational – coalescence (fine separation) occurs.

Vortex separator with spiral baffle

Container

- Reinforced concrete container as per DIN 4281 with internal coating as per EN 858 as standard.

Light Liquid Separator

- The construction principles comply with DIN 1999 Part 1, LGA-tested as per Parts 1–3 of the standard.

Coalescence Separator

- The first coalescence separator that functions in a non-clogging manner upstream from the sludge collection compartment by coalescence energy processes – without any coalescence material.
- LGA-tested as per Parts 4–6 of DIN 1999. The requirements of EN 858, Class I, are fulfilled.
- Thanks to the pulsating centripetal vortex-flow, a purification performance below 5 mg of hydrocarbons per litre is achieved in all nominal sizes. This has also been confirmed in the case of small inflow rates.
- Self-cleaning of the coalescence system is effected by the flow energy.

Automatic closure device with ball/lip seal

Sludge Trap

- For the first time, simultaneous, DIBt-tested sludge-separation while still in the separator and coalescence area with underlying sludge-collection compartment. According to the approval certificate, only 50 % of the standard sludge-trap is necessary!

Oil overflow of the GALAXIE 2002, with siphon

Inlet and Outlet Pipes

- Made of HDPE as per DIN 19534.

Sampling System

- Permits sampling from the liquid in the outflow.

Automatic Closure Device

- By ball/lip seal, independent of density.

The Super GALAXIE 2002

For the operator, the compact Vortex Separator System GALAXIE 2002 ensures a low-maintenance system and, in the long term, high purification performance with minimal operating costs, thanks to intelligent technology. Ecologically and economically, the sensible solution.

GALAXIE 2002 contains all components of the basic system, plus:

AWAS oil removal technology

with the following parts:

Oil/Water Inlet Funnel

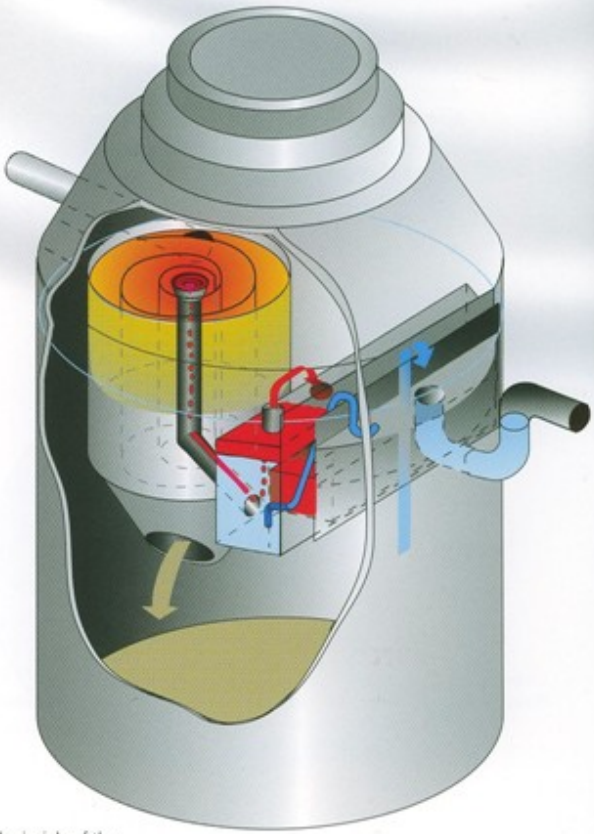
- creates the vortex at the centre of the coalescence device, produces an oil-free surface by means of the bypass, and transfers the agglomerated light liquids into the oil removal compartment.

Oil Removal Compartment

- separates water and light liquids by physical differences in density, and passes oils and other light liquids into the integrated oil-tank.

Integrated Oil-Tank

- capacity up to 460 litres plus safety volume in the separator,
- automatic, density-independent closure of the oil-tank, LGA-tested.



Functional principle of the Vortex Separator System AWAS GALAXIE as exemplified by the GALAXIE 2002

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Optional Equipment

For individual use of the GALAXIE Vortex Separator System, AWAS offers a number of special or additional items of equipment:

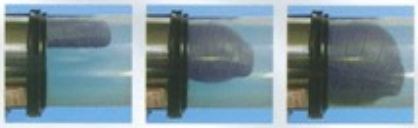
Reinforced Concrete Container
- as per DIN 4261 with HDPE inliner – **10-year durability warranty!**

Polymer Concrete Container
- proof against light liquids as per EN 858

GRP-Container
- as per EN 858

HDPE Container
- as per EN 858

Pneumatic Inflow-Closure
- Closure independent of density by means of oil-resistant self-resetting membrane, controlled via the max. liquid level in the separator (e. g. in the case of sewer backflow), **and hence no need to install the separator high up as per DIN.**



- Inflow and outflow closures can be operated manually (e. g. for routine testing as per standard). **No insepection manholes needed before and after the separator.**

Sludge Removal
- for uncomplicated removal of the sediments caught in the sludge trap.

Catamaran
- In the form of a "floating" separator too, the GALAXIE system has proven its worth in the combating of oil accidents on stretches of water.

Your Advantages for Installation, Servicing and Maintenance

All Components in a Single Structure
- Short installation time
- No danger caused by subsidence between the containers
- HDPE connecting pipes – increasingly required by the authorities
- Installed parts made of non-rusting materials

Small Container Volume
- **Only 50 % of the sludge trap required by DIN 1999 is necessary**

Coalescence by Motion
- i. e. without filters, fillers, screen plates or other coalescence material – **low-maintenance, self-cleaning coalescence technology free from backflow and clogging..**

Oil-Free Surface by Surface Removal in the GALAXIE 2002
- Avoidance of emulsification

Low Disposal Costs
- The stored quantity of light liquids is securely stored in the **integrated oil-tank** and is **easy to dispose** of in the form of residual oil.

High Safety by Automatic Two-Sided Closure Technology
- Operation-friendly ball closures without the need for adjustment depending on oil density prevent oil from escaping, and are **proof against sewer backflow and high water.**

The high reliability surpasses present-day German and European standards and laws, and will be the yardstick for future techniques and regulations.

Approvals and Tests

- DIBt Berlin · Deutsches Institut für Bautechnik (German Institute for Construction Technology)
  General construction-supervisory approval
  AWAS Galaxie 1902 · No. Z-54.8-288, AWAS Galaxie 1902-Öl · No. Z-54.8-289, AWAS Galaxie 2002 · No. Z-54.8-290
- LGA Bayern, Würzburg · Landesgewerbeanstalt Bayern (Industrial Institute of the State of Bavaria)
  Test certificates No. 20 36810, No. 20 21010, No. 20 21011, No. 499 031801 and No. 20 210
- LSG ELAB, Siegen · Lufthansa-Service-Gesellschaft (Lufthansa Service Company) ELAB
  Sludge separation test according to particle size analysis as per DIN 18123, No. 02 410 and No. 02 411 in inflow-outflow comparison

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No Just One Separator for Everything, but the Optimum Selection

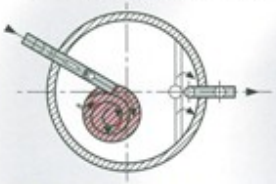
Your Individual GALAXIE System

Waste water containing oil occurs in many different branches of industry, commerce and trades, in communal drainage and in transport.

With its GALAXIE range of Vortex Separator Systems, AWAS offers for the first time a flexible solution to suit individual applications. The advantage manifests itself as (among other things) simultaneous efficient separation of sludge and oil, including coalescence.

GALAXIE 1902

– the low-cost vortex system for oil occurring in small quantities.

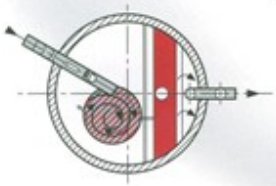


Specifications
- Basic system as safety separator
- Manufactured in nominal sizes 3, 6, 8, 10, 15, 20 and 30 l/s

Applications
- Premises of car dealers and hauliers
- Facilities for the washing of cars, commercial vehicles and rail vehicles

GALAXIE 1902-Oil

– the special filling station vortex system with oil safety volume as per TRbF and VAwS.

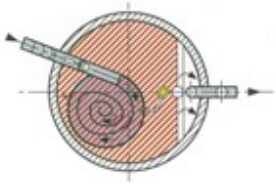


Specifications
- Integrated oil-tank and 2nd oil storage volume
- Manufactured in same nominal sizes as 1902 above

Applications
- Filling stations
- Premises of car dealers and hauliers
- Scrap yards
- Electricity substations
- Oil loading terminals and transhipment points

GALAXIE 1904-Oilhavarie

– the effective vortex system for possible major oil spills as per TRbF and VAwS.

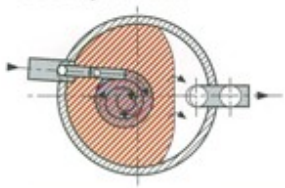


Specifications
- Adjustable oil storage volume up to 10 000 l by means of integrated oil collection compartment
- Manufactured in same nominal sizes as 1902 above

Applications
- Filling stations
- Scrap yards
- Electricity substations
- Oil loading terminals and transhipment points

GALAXIE 1905-SK

– the vortex system for surfaces used by vehicles.



Specifications
- Almost the entire separator serves as an oil storage volume
- Manufactured in nominal sizes 100, 150, 200 and 300 l/s

Applications
- Road drainage
- Drainage of vehicle parking areas

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for Every Application

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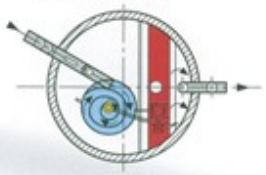
GALAXIE 2002

– the innovative oil-removal vortex system which cuts the cost of disposal. The central separator for multiple different waste water sources.



Specifications

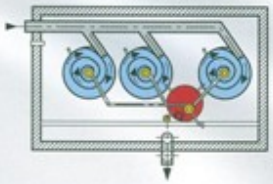
- Emulsion prevention by surface removal
- Manufactured in nominal sizes 3, 6, 8, 10, 15, 20 and 30 l/s

Applications

- Premises of car dealers and hauliers
- Facilities for the washing of cars, commercial vehicles and rail vehicles
- Scrap yards
- Metal-working businesses
- Barracks

GALAXIE Large Separator

– the parallel-connected, highly extendable vortex system.



Specifications

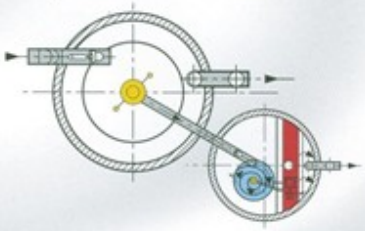
- Can be manufactured in all versions
- Manufactured in nominal sizes 40, 60, 90, 120 und 150 l/s, with parallel connection in each case

Applications

- Scrap yards
- Barracks
- Sites with a high proportion of sludge

GALAXIE round and round

– the large-area vortex system for major rainwater incidents.



Specifications

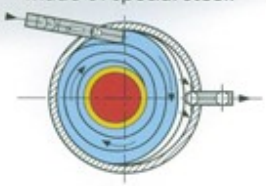
- A combination of clarifying system and sedimentation system with centrally positioned oil-separation and GALAXIE separator
- For rain inflows of up to 2000 l/s

Applications

- Industrial sites
- Airports
- Barracks

GALAXIE 3003

– the pressurised water vortex separator made of special steel.



Specifications

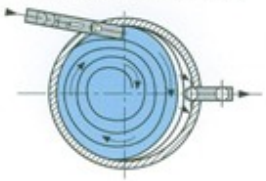
- Can be installed above ground
- Manufactured in nominal sizes 6, 10 and 30 l/s

Applications

- Mineral oil industry/refineries
- Industry
- Draining of large tank-farms

GALAXIE 4004

– the vortex system for separation of sand or other solids.



Specifications

- Sedimentation by motion instead of baffle plate thickeners
- Manufactured in nominal sizes 6, 10, 20, 30 and 60 l/s

Applications

- Before passing into the river
- Ahead of clarifying systems
- Industry

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AWAS Service Package:

We are certified as a competent company within the meaning of DIN memo 76.1997, Nr. 12.

Specialist Training Courses
- as per WHG 19, VAwS and DIN 1999

5-Year Inspection of Separators
- as per LWG

Service Stations Throughout Germany
- Service network covering the whole of Germany, with very short reaction times. 24-hour service with our own maintenance personnel is possible.

CAD Support and Use of Highly Modern Information Systems
- CAD utilisation, and direct exchange of data via ISDN or by e-mail, support rapid and correct execution of projects.

Documented Supervision of Installation
- with detailed record of installation and with photographic documentation

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AWAS®
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AWAS Product Range:

general

pumping
Ready-to-connect pumping stations Pressure drainage systems Pump technology

clarifying
Biological activated sludge systems
Small clarifying plants 4–250 PE
Large clarifying plants ≥ 300 PE
Biological reactors

separating
Separators for light liquids
Grease separators
Large separator plants

treating
Water recycling
Sector-specific processes
Biological treatment plants
Chemical/physical treatment
Quantum-physical treatment
Absorption plants

constructing
Monolithic poured-in-place concrete containers

Rain retention basins
Drinking water basins and treatment
Special structures
Planning/engineering consultancy

reporting
Press releases
Specialist articles
Trade conferences
Exhibitions

service
Analysis
Project planning
Installation
Maintenance