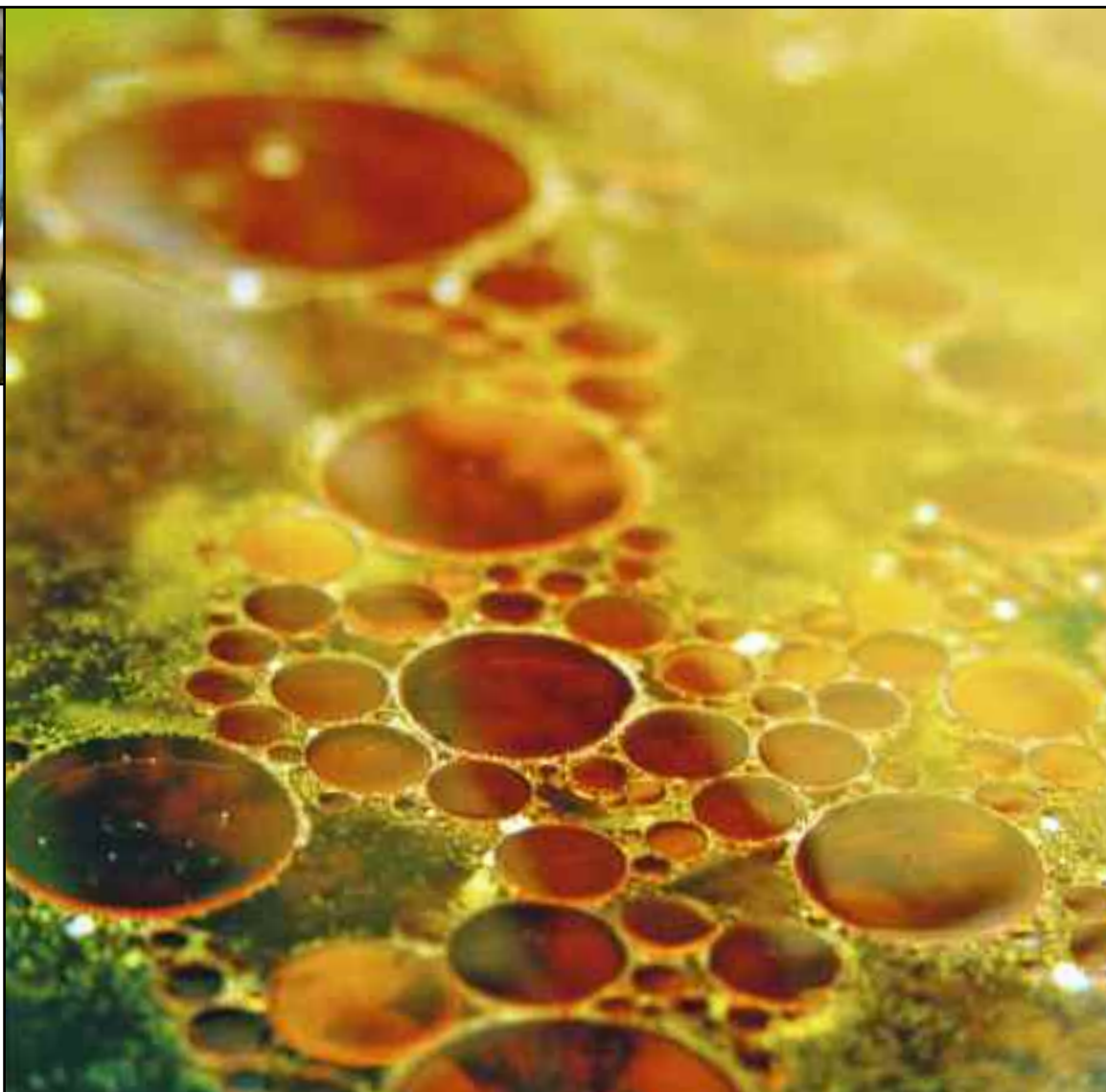


NEUTRA separators
for light mineral liquids
to EN 858 and DIN 1999





Systems for treating wastewater containing oily contaminants

NEUTRA separators have been tested to EN 858 and DIN 1999. They meet the requirements of class I (KW < 5 mg/l) or class II (KW < 100 mg/l), respectively.

High quality materials and practical designs facilitate the monitoring, servicing and emptying of NEUTRA separator systems.

The nationally applicable Annex 49 (wastewater containing mineral oil) of the German Waste Water Ordinance defines the types of operators and installations that must have a separator system.

The most important parameter to be maintained is a hydrocarbon limit below 20 mg/l. This requirement is regarded as fulfilled when a general German technical approval exists and the system is installed, operated, regularly maintained and tested in accordance with the ordinance.

The Professional Association for Drainage Technology Quality Assurance (GET) develops proposals for international, European and national standards.

Recommendation

To ensure maintenance of the existing safety standards and for planning the system in a commonly accepted manner, the EN 858 parts 1 and 2 standards must be used **together** with the DIN 1999 standard. This is the only way that design engineers and operators of the system can ensure the full functionality of the system.

No oily contaminants in our waters

Light mineral liquids present a special hazard for our waters. Gasoline, oil and diesel lead to reduced oxygenation and thereby adversely affect the natural self-cleaning process of water. Oily contaminants in wastewater need to be separated in pre-treatment systems in order to guarantee the water quality in accordance with the legislation for the management of water resources.

GET quality features

- External monitoring of the production processes
- Special stability certificates
- Documented quality management by the association
- Ongoing updates of the technical condition of the products
- Type testing and national certification
- Internal and external monitoring of the production
- Tested type structure SLW 60



Advantages of the GET guidelines

- Specification of additional quality criteria beyond the standard for drainage technology products
- GET guidelines close gaps created by European harmonisation
- Consumers have the opportunity to describe the required quality standards precisely by referring to the GET guidelines
- Monitoring certificates document the maintenance of these increased standards

Drainage systems for buildings and sites in accordance with DIN 1986/EN 752 and EN 12056

All wastewater outlets from business premises where motor vehicles are washed, serviced or filled with fuel must be connected to separator systems. NEUTRA separator systems are the ideal solution for separating light mineral liquids from wastewater. Due to the density difference, small droplets of light liquids float to the surface of the water. The smallest oil droplets accumulate on the coalescence material, combine to form larger droplets and form an oil film on the surface of the water that must be removed when the maximum storage capacity has been reached.

Over 40 years of experience and know-how

The development of economical and safe wastewater treatment systems with optimum cleaning efficiency requires detailed knowledge about the pollutants and how they flow through and separate from wastewater. Comprehensive official tests and approvals by the authorities are your guarantee for efficient systems based on the latest technology.

Components and function of separator systems

- NEUTRA sludge traps, from 650 l to 30,000 l, trap sedimentation material and protect the separator system
- NEUTRA gasoline and oil separators, class II, separate light and floating material from the wastewater through gravity

- NEUTRA class I coalescence separator for the physical separation of fluids through coalescence
- NEUTRA sampling shafts for monitoring and maintenance
- NEUTRAstop warning device

Compact systems in one unit or separate units

NEUTRA separator systems allow every operator to define their own particular combination depending on the type and degree of contamination of the water to be treated – either as individually selected components for a special purpose or in compact form in a single structure. If desired, a PE inliner can be chosen instead of the normal standards-compliant internal coating.

Biodiesel

In addition to separating light mineral liquids, our separator systems are also suitable for separating biodiesel and diesel fuel mixtures up to a ratio of 100% and are dimensioned and designed in conformance to the DIN 1999-101 draft standard.

Mall offers more than separator systems

For the further treatment of wastewater and the treatment and circulation of effluent from car washing stations, Mall offers a comprehensive range of biological processes that include general German technical approval.



Areas of application

- Filling stations and fuel storage facilities for road vehicles, aircraft and ships
- Washing stations for cars and self-service washing facilities
- Transportation companies, shipping companies
- Company fleets and maintenance depots
- Workshops of the railroad, military facilities, communal facilities and the automotive trade
- Company fleets and maintenance depots, vehicle maintenance workshops
- Other areas such as power stations, disposal companies, scrap metal yards etc.
- Road maintenance depots, work yards

Product information



Easy installation and assembly

NEUTRA separator systems are fitted with transport hooks, making it very easy to lift the units into place with slinging and lifting gear. If the subsoil is of load bearing capacity, it is usually sufficient to just place the normal layer of sand. A foundation slab is usually not required.

Pipes can be connected quickly and securely to the inlet and outlet, due to the mineral oil resistant, flexible and permanently sealed connectors for plastic pipes.

The installation of separator systems is basically governed by the local building guidelines. According to the principle guidelines contained in the applicable standards, they should be installed as close as possible to the source of pollution of the water.

Mall provides detailed installation drawings and instructions that help the design engineer and building contractor in their work.

Permanently leak-proof

The construction complies with the requirements of the standards (DIN V 4034-1), ensuring that loading and placing the units is safe. This also guarantees quick assembly of the components and the durable materials ensure that the system will be permanently leak-proof. Bearing rings for height compensation can be designed using the NEUTRAproof ring sealing system to bridge cracks and be permanently waterproof in accordance with the EN 858 standard.

The required sliding ring seals and load transfer rings are provided in the scope of delivery.

Trouble-free operation

NEUTRA separator systems are easy to maintain. They feature a self-closing mechanism with the float sensor protected in a special guide arrangement to ensure that the sensor cannot be damaged when the separator is emptied.

The separators have non-wearing coalescence inserts, which can easily be removed, cleaned and re-installed for maintenance purposes, without having to empty the separators.

Saving money through professional servicing and emptying when required

In accordance with EN 858-2 and DIN 1999-100, separator systems must be monitored and serviced by competent personnel. For this purpose, Mall offers the Service Set with log book as well as a Germany-wide maintenance service. This maintenance service has the additional advantage that the separator only needs emptying when required, which is a real cash benefit to the operator of the separator.

Emptying when required is possible, irrespective of the manufacturer and construction type of the separator.

Specialist training with instructions on site takes place regularly. A general inspection performed by Mall is required before commissioning and at a maximum interval of every five years.

NEUTRAcon sedimentation trap and NEUTRAsed sludge trap

The quality-controlled prefabricated containers are made of jointless C35/45 reinforced concrete according to DIN 4281 and DIN 1045, are strengthened for break resistance and have type-tested static loading. The settling materials contained in the waste water settle in the sludge trap because they are denser than the water.

Pretreatment

The effectiveness of the sedimentation process depends on the surface of the sludge trap, the flow velocity of the wastewater, the distance of travel between the inlet and outlet and the volume. The maximum permitted thickness of the sludge layer is 50% of the still water level. When this has been reached, the sludge must be emptied from the trap. After the wastewater has been cleaned from these substances, it flows into the separator.

NEUTRAcon

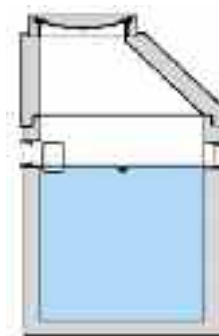
NEUTRAcon is a sedimentation trap with sedimentation chamber for washing facilities. A perforated immersed stainless steel screen holds back solid light-density materials at the edge of the container. The trap is available in round and rectangular shape with heavy duty grating cover. Sedimentation traps are installed for retaining coarse sedimentation material. They cannot be used instead of sludge traps for separators.

Capacities: 650 – 2,500 l

NEUTRAsed

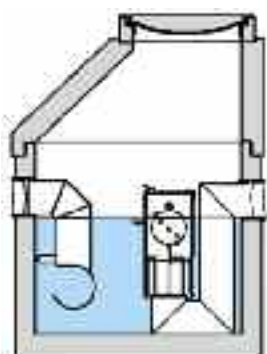
NEUTRAsed is a sludge trap in accordance with EN 858 and DIN 1999 for class I and II separator systems. As part of a separator system, the principle guidelines of EN 858 and DIN 1999 must be conformed to. The internal coating is resistant to light liquids and has been applied in several coats to the prepared substrate.

Capacities for sludge trapping: 650 – 30,000 l. Sludge traps are available for underground installation or free-standing installation in frost-protected rooms.

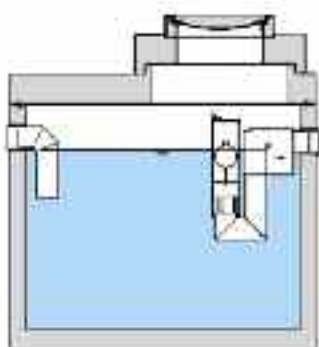




Separator, class II, to EN 858 and DIN 1999, (gasoline separator)

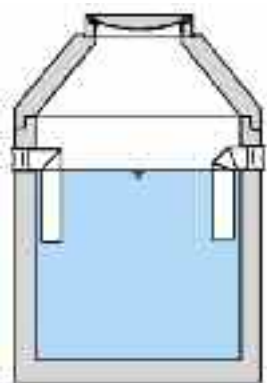


In gasoline separators, the light and floating pollutants, such as fuels, engine oils etc., rise to the water surface. The separating effect is significantly affected by the density of the light mineral liquids, the wastewater temperature and quantity as well as the contents of processing aids and cleansing agents.



Comparing pre-separators and gasoline separators

In contrast to the gasoline separator, the pre-separator has no self-closing mechanism. The self-closing mechanism fitted in gasoline separators is a safety device. The float sensor has been adjusted to the density of the light liquids to be separated and will sink together with the separating line between the light liquids and the water. The thicker the layer of light liquid becomes, the lower will the floating sensor sink, until the valve plate touches the ground. When the storage of the separator has filled to capacity, the self-closing mechanism will shut off the outlet.



NEUTRAplus NS 3 - 100

Gasoline separator in accordance with EN 858 and DIN 1999-100 with self-closing mechanism. The internal coating is resistant to light liquids and has been applied in several coats to the prepared substrate. The closing device is guided in an enclosed protection tube. All parts are manufactured from corrosion-resistant materials.

NEUTRAsub NS 3 - 30

Gasoline separator and sludge trap in accordance with EN 858 and DIN 1999-100 in one unit, with self-closing mechanism, optionally with integrated sampling device for taking representative samples from the flowing wastewater stream. The separator is used for retaining fuels escaping during the filling process of tanks and storage containers in accordance with the regulations governing fuel tanks and the administrative regulations for filling stations of the respective states/countries.

NEUTRAtwin pre-treatment basin

Sludge trap and pre-separator with a standards-compliant internal coating. The NEUTRAtwin can be used as a component in a wastewater and washing water treatment system for the retention of sinking and floating materials and thus relieve the downstream systems from as much load as possible. The NEUTRAtwin can also be used for providing an additional oil storage facility upstream from a separator system, in accordance with EN 858 and DIN 1999-100.

Separator, class I to EN 858 and DIN 1999, (coalescence separator)

*In contrast to a gasoline separator,
which separates the light liquids
contained in the wastewater just by
gravity, the coalescence separator
employs an additional physical
process – the coalescence effect.*

Optimised separation effect through the use of coalescence

Coalescence is the confluence of smallest light liquid droplets to form larger drops. The coalescence device inside the separator encourages this form of fine separation. It causes the (remaining) oils that need to be separated – after reaching a certain drop size – to rise to the water surface in the separator. In NEUTRA separators, it is easy to remove the non-wearing coalescence insert, which can then be checked and cleaned if necessary. To do this, the container does not need to be emptied. This will reestablish the flow and coalescence characteristics. Coalescence separators are also fitted with a self-closing mechanism as a safety device. The self-closing mechanism closes off the outlet when the separator's oil storage has filled up to capacity.

NEUTRAstar NS 3 - 100

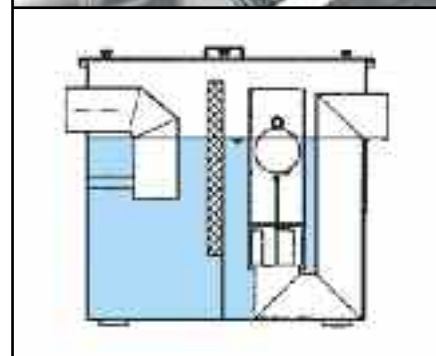
Class I separator with a self-closing mechanism at the outlet and a coalescence device. Components of 1.4301 stainless steel. Residual content of hydrocarbons less than 5 mg/l in the outlet. A standards-compliant sludge trap must be installed upstream of the separator.

NEUTRAsteel NS 3 - 10

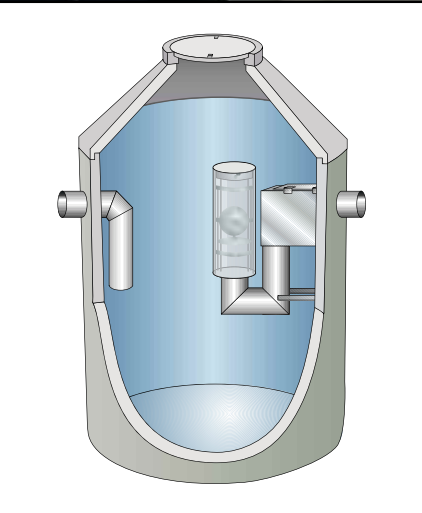
Coalescence separator made from 1.4301 stainless steel with self-closing mechanism for free-standing installation in frost-protected rooms. For the purpose of checking, maintenance and servicing, it is possible to completely take out the coalescence insert and to re-install it again.

Areas of application for NEUTRAsteel

- Power stations
- Groundwater cleaning
- Mobile separator system



NEUTRAcom separator, class I, with sludge trap and with or without a sampling chamber as desired



NEUTRAcom is a coalescence separator system combining the functions for sludge trapping, coalescence filtering and sample taking in one single chamber.

Compact and easy to check

At the inlet, the wastewater is guided into the large and well accessible sludge trap. The inlet port consists of noncombustible material and serves for guiding the water as well as an odour trap. Dirt particles and coarse material will settle here due to their greater density, while oils and other light fluids flow through the coalescence separator, rise to the water surface and form a floating layer. The specially developed lightweight coalescence module is very rugged and ensures that even smallest oil droplets are separated. The wide-meshed coalescence device is resistant against clogging and can easily be removed from the separator for the purpose of checking and maintenance and re-installed again.

The self-closing mechanism required by the standard is made of corrosion-resistant stainless steel and is mounted, well protected, in the visible inner area of the outlet construction.

Coalescence device

The newly developed coalescence module consists of a high-quality plastic fabric. The module can be easily removed for cleaning and re-installed without the use of tools.

Advantages

- Just one unit to be installed
- Just one inlet and outlet connection
- Compact and space-saving design
- Fitted components are corrosion resistant and designed for long-term service
- Functional elements can be inspected, removed and re-installed from above, even if the system is full, without emptying the contents
- Low installation costs
- Large oil storage capacity > 500 l
- Leak test is possible without removing the inner components

The version with an integrated sampling chamber is very suitable for retrofitting in existing piping systems. The height loss between inlet and outlet is only 20 mm.

Approval
pending

NEUTRAprim – the best of the breed among separator systems

NEUTRAprim combines a coalescence separator tested to EN 858, class I, a sludge trap and a self-closing mechanism at the inlet in a single separator system.

Setting new standards in hydrodynamic coalescence

The degree of efficiency of the integrated separator is a common element in all separator systems and this must conform to the outlet values defined in the test requirements of the EN 858 standard. This is implemented by Mall via a hydrodynamic device at the inlet that uses focused creation of turbulence to provide the kinetic energy necessary to overcome the surface tension of the hydrophobic oil droplets and thus encourage the agglomeration and floatation of the oil droplets, even at very low inlet flow rates.

Oil collection tank

The accumulated layer of light liquids floats to the top of the separator section and is channeled into an oil collection tank. This removes hazardous substances such as gasoline, diesel and other light mineral oils from the surface of the water.

The filling level of the collection tank can be monitored via a fill level display. In addition to this, the separator also provides additional storage capacity.

Self-closing mechanism

The system also has a closing mechanism that shuts off the feed to the monolithic main tank when the maximum oil layer thickness in this tank has been reached. This oil layer can only form when the oil collection tank is already full.

Advantages

- Oil sink in closed oil collection tank, consisting of two separate tanks resulting in an oil-free surface
- Tank capacity conforms to the limits determined in the German ordinance governing installations for handling substances hazardous to water (VAWS) and provide additional storage capacity in the monolithic separator
- High-performance separator with a free spherical passage diameter of at least 150 mm
- Non-clogging, filterless coalescence device
- Cleaning or replacement of the coalescence device is not required
- Disposal of clogged filters not required
- Sludge and light mineral liquids already separated at the inlet
- General inspection can be performed without removing the individual components





NEUTRApro and NEUTRAmax class II separator, class I separator, sludge trap and sampling chamber

NEUTRApro is a separator combining a sludge trap, a gasoline separator tested to EN 858-1, class II, a coalescence separator tested to EN 858-1, class I, and a sampling chamber in a single structure.

High oil storage capacity

Depending on the nominal size of the separator system the oil storage capacity ranges from 500 l to 1,691 l – a storage capacity that satisfies especially the requirements for approval and installation at petrol stations and fuel filling stations.

Easy sampling and maintenance

The clearly laid out structure and the easily accessible inner functional components allow the operator to easily monitor and maintain the system. The self-closing mechanism mounted in a cage and the coalescence device protected by a stainless steel housing are visible from above and easy to remove and clean even when the system is full. The sampling chamber integrated into the separator system allows sample water probes to be taken from the flowing wastewater with a standard bottle (1000 ml) without suction, pumping or siphoning processes.

Advantages

- Four functional elements in a single structure
- Tested and with general technical approval
- Fitted components are corrosion resistant and designed for long-term service
- Easily accessible functional elements, even when the system is filled
- Large oil storage capacity providing increased safety
- Space-saving and low-cost construction
- In accordance with EN 858 and DIN 1999
- The coalescence insert can be removed for cleaning and re-installed without draining the contents of the separator
- Conforms to the principle guidelines contained in the EN 858 standard and the DIN 1999 national supplementary standard

NEUTRAmax

In the case of heavy pollution with light liquids combined with high-pressure cleaning of heavily soiled vehicles, we recommend using the NEUTRAmax version. This tested system also contains an integrated sludge trap and class II and class I separators but the coalescence separator is integrated into the separator as a separate structure.

Nominal size can be reduced via a density factor of 1

When dimensioning these high-performance systems, a density factor of 1 should generally be used, regardless of the actual density.

NEUTRApass integrated bypass system

NEUTRARist RiStWag separator systems

NEUTRApass bypass system

When draining parking and storage areas, the wastewater must not be discharged untreated into the sewage system. To protect our waterways, legislation exists compelling operators to install treatment systems for water that is slightly contaminated with dirt and light mineral liquids. With rainfall, only the first large surge of water is heavily contaminated with pollutants because this rinses the contaminants from the surface. Modern bypass systems make use of this effect: For cost-efficient drainage, only the "first flush" is treated in the separator and the main flow is channeled directly into the sewage system via the bypass.

Advantages

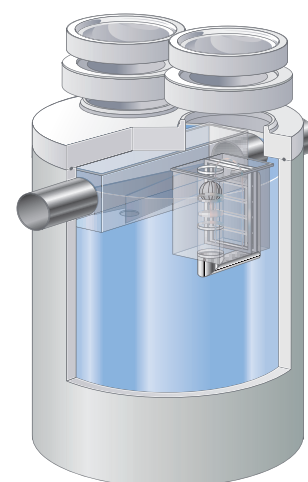
- A predefined volume is fed through the separator system. This allows the entire system to be smaller
- The entire water volume is treated up to the nominal capacity of the system and only then does the bypass come into operation
- The separator is not hydraulically overloaded, even at the maximum inlet flow rate
- Easy installation requiring only an excavation pit to be dug
- The integrated separator is independently tested for conformance to the DIN EN 858-1 standard
- Space-saving design since all functions are integrated into a single reinforced concrete tank

NEUTRARist separator systems

The contaminants contained in storm water runoff from roads in water catchment areas pollute the ground, groundwater and water balance. For this reason, the authorities stipulate systems for the reduction of pollutants and for retaining light mineral liquids in the water runoff.

NEUTRARist separator systems provide the ecological and economical solution.

Up to a design inflow of 175 l/s, our separator systems are joined together from rectangular reinforced concrete profiles measuring 4,050 mm in width. Larger separators consist of reinforced concrete elements measuring 6,000 mm in width, with semi-circular end elements. If required in a particular area, it is also possible to add a relief system upstream of the separator. Mall provides these systems as well, with dimensions to suit the particular application.



NEUTRAcheck sampling shaft for upstream separator systems



NEUTRAquick quick-closing sliding gate for liquids hazardous to water



NEUTRAcheck sampling shaft

For use as a component in a separator system according to EN 858 and DIN 1999. For taking a standards-compliant outlet water sample from the flowing wastewater. Functions without suction, pumping or siphoning processes. NEUTRAcheck can be viewed from above and allows monitoring, maintenance and cleaning of the system.

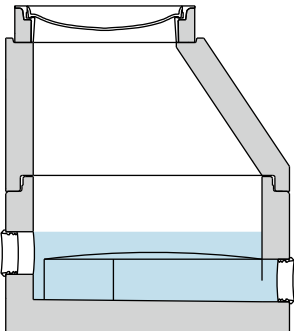
- Factory fitted, durable sealing elements matching the plastic pipes for the flexible pipe connection
- Shaft superstructure as per DIN V 4034-1, including pre-lubricated axial face seals, for an inlet depth of T, measured from ground level to the pipe base in the inlet
- Shaft cover in accordance with DIN EN 124 and DIN 1229

Technical features

- Quality-controlled prefabricated construction of waterproof, jointless reinforced concrete according to DIN 4281 and DIN 1045
- Trough and berm
- Fall height of 160 mm for taking outlet water samples

Options

- Version with a recess, gradient of 30 mm between inlet and outlet
- Stainless steel manual sliding gate at the inlet
- Backflow gate installed in the outlet
- Angled outlet



NEUTRAquick Mall quick-closing sliding gate

Magnetic, quick-closing sliding gate for use in safety overflow basins or with a light liquid separator system. In the case of an accident, the quick-closing sliding gate closes when the electromagnet is switched off. The slide plate falls downwards and closes the outlet in a matter of seconds. The liquids hazardous to water are then retained in the overflow basin.

Warning devices NEUTRAstop and NEUTRAless

NEUTRAstop

The comfortable and reliable method for monitoring separator systems. Two independent operating conditions within the separator system are measured with the help of modern electronic instrumentation and are reported before any malfunction occurs. The conductivity sensor will respond shortly before the oil layer has reached its maximum thickness. The level monitor records the level of liquid in the separator system.

Legal requirement

In accordance with DIN standards EN 858 and DIN 1999-100, alarm systems have to be installed in all situations where local conditions make it impossible to install the separator system with the required camber.

Advantages of the OASA system

- Standard device suitable for monitoring two separators
- Requires only a 2-wire connection cable between the device and the separator
- Easy sensor connection via gel-filled splice connectors
- 3 signal relays (OAW - oil on water - alarm, NW - level monitor - alarm, fault)
- Level monitor generates no heat
- OAW sensor does not malfunction when contacting metallic parts
- Optional: Serial interface for data transfer/remote monitoring

Technical information

- Ignition protection type / explosion group: [EEx ia] IIc
- EC examination certificate: TÜV 05 ATEX 2806
- Housing protection degree: IP 54
- Power supply: 230/115 VAC \pm 10%; 50 . . . 60 Hz
- Data interface: (SELV, max. 60 VDC)
- AC relay outputs: \leq 250 V, \leq 4 A, $\cos \varphi$ 0.7
- Sensor circuit with intrinsic safety protection type [EEx ia] IIc for use in category 1 (zone 0) areas

NEUTRAless – ideal for retrofitting to existing separator systems

- Wireless transfer of the data from the separator system to the analysis unit
- Detailed display and measurement of the oil layer and retention level
- Electronic operational log book





NEUTRAproof shaft sealing system, NEUTRAtool maintenance set



NEUTRAproof shaft sealing system

Innovative shaft sealing system for shafts with standard, displacement-proof bearing rings according to DIN V 4034-1. Mall GmbH offer a unique system for permanently and elastically sealing displacement-proof compensation rings in shafts without the use of mortar. The system consists of a retro-fitted compression seal ring pressed into place by a stainless steel tension ring. The sealing sleeve is tensioned inside the shaft with a special tool, thus pressing the rubber from the inside onto the compensation rings. This holds the shaft securely in position with an elastic seal. No chemical adhesives, binding agents or mineral plaster are used.

Advantages

- Height adjustment via bearing rings in accordance with DIN V 4034-1
- Vertical load bearing via shaft components allows compacting of the soil independently of the ring sealing system
- The sealing ring is installed afterwards, thus avoiding soiling of the sealing lips during construction work
- No chemical or mineral sealants are used
- Suits all low-level shaft superstructures (according to DIN V 4034-1, structure heights from 0 mm to 250 mm)
- Additional sealing ring for serial offset. Available in three lengths:
L = 210 mm to 250 mm
L = 260 mm to 300 mm
L = 215 mm for serial offset

NEUTRAtool

The NEUTRAtool maintenance set allows professional internal monitoring and maintenance of the system as required by the authorities. The operational log book supplied contains important notes, information and the necessary standard forms.

Save money and avoid problems

Regular monitoring and maintenance are basic requirements for correct disposal.

Safety that pays off

NEUTRAtool allows you to regularly measure the separated materials in your system and these measurements can then be entered into the operating documentation.

This allows you to always know what is happening in your system, saves you money in the long term, satisfies the requirements of the authorities and ensures safe operation.

Scope of delivery

- Operating documentation
- Telescopic rod
- PE measuring plate
- Screw hooks
- Sampling bottle
- Water detection paste
- pH indicator paper

Possible options

- Extension (1 m) for telescopic rod
- Settling glass (Imhoff sedimentation cone)
- Stainless steel frame for settling glass
- Oil layer thickness measuring device
- Oil measurement float sensor

Our comprehensive service for you

Mall offers a comprehensive range of products and services for separator and drainage applications. Our specialists can provide assistance in the design of systems and give advice regarding supplementary products, such as e.g. treatment systems for effluent from wash stations or retention of liquids hazardous to water. They can organise the delivery, installation and commissioning. This provides you with security and an economically viable complete solution.

You have to plan before you decide

The mall specialists will assess the conditions on site and will then prepare a concept design for an optimised system configuration. Mall will take care of supplying the technical documentation for construction as well as all required official documentation and approvals.

Everything you need for installation

Mall has its own special crane vehicles to coordinate delivery, unloading and placing of the system, and offers professional installation using pipe connections ready for push-fit connection, pre-lubricated axial face seals, right through to the general inspection.

Fault-free operation

Our expert technical service team performs the required general inspection before the system is commissioned. After taking part in our technical training, you are able to perform the monthly internal inspection and the six-monthly maintenance. We also perform the 5-year general inspection required for installed separator systems.





Mall subsidiaries and sales partners

NEUTRAplan sizing program

- For light liquid separators
- For grease separators



DIBt application approval



LGA quality protection

Design tips from the Internet

Let Mall help you to design your project

Useful tips and planning aids available online.

- Comprehensive environmental encyclopaedia
- Useful information on standards and guidelines
- Online sizing program
- Tender quotations and documentation

Visit us online!
www.mall.info



- Mall has been setting quality standards for decades
- Consultancy, advice and service all over Germany
- Ask your local contact person



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