

WEEDLESS agitators



System components for biological water treatment



Based on our innovative system components, we have succeeded in gaining international reputation as a specialist in waste water processing technology, which we continuously assure and extend. Our R&D department work with great innovation commitment to develop, and optimize, our own system components, which are partly patented, in conjunction with process technology and engineering techniques as well as adapt them to new development achievements and methods. In addition, we take into account, of course, the increasingly demanding customer requirements such as first-rate quality, reduced operating costs, serviceability and faster return on investment. For this purpose, GVA's after-sales service also offers corresponding services for plant inspections, machine maintenance, rehabilitation and optimization of equipment and components.

WEEDLESS agitators successfully operate already in several hundreds of sewage treatment facilities all over the world

Agitators for waste water treatment facilities operate based on a simple principle, but they are of essential importance for the success and continuity of the overall process.

This is the reason why high demands are made on the efficiency and longevity of these components. The WEEDLESS agitators of GVA have been especially developed for stringent requirements resulting from permanent load, specific operation conditions and the often very differing composition of communal and industrial waste water.

Typical applications of WEEDLESS agitators are:

- Mixing of anaerobic and anoxic zones for biological elimination of phosphates and denitrification
- Application in mixing and balancing basins
- Pressure aeration with separate circulation

GVA agitators prove their high quality day by day in hundreds of wastewater treatment facilities. Being a system specialist in these technologies, GVA delivers not only components and process know-how, but its business operations also include sewage plant planning and consultation for sewage plant operators worldwide.

WEEDLESS agitators – always the right technology concept for each treatment technique

GVA agitators for all plant concepts regarding communal and industrial sewage

For more than 20 years, GVA has supplied high-quality system technology and components with extensive know-how for waste water purification facilities. The continuity and success of the purification process are essentially dependent on the constant circulation and mixing of the media in a sparing manner. The large-scale and slowly operating WEEDLESS agitators of GVA

designed for maximum flow come in horizontal or vertical design versions:

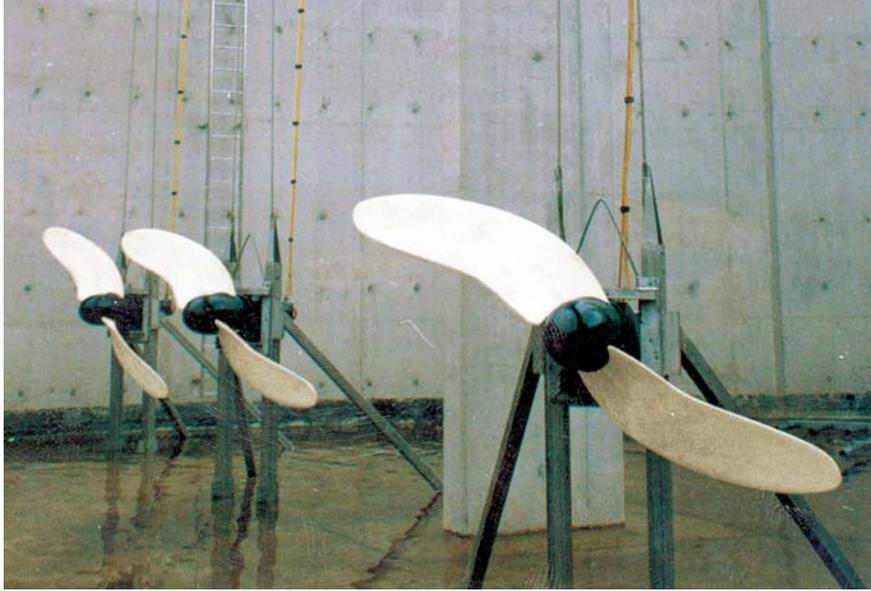
- WEEDLESS-T submerged agitators move the water in horizontal direction.
- WEEDLESS-V agitators initiate a mainly vertical circulation flow, where the water, as a rule, is moved from the basin bottom to the water surface.
- WEEDLESS-S floating vertical agitators are ideally suited for to changing water levels.

All types of agitators are available with two-blade or three-blade propellers in order to ensure the correspondingly optimum components for the circulation process in the basin. The angle of incidence of the blades can be adjusted in a form-fitting way between 30° and 45°. The various WEEDLESS drive versions cover a wide scope of standard types, and if required, other drive units can be supplied at any time, e.g. with pole-changing motors or combined with frequency converters. Depending on the design, the delivery rate of the agitators ranges from 1.0 to 7.5 m³ of water per second.

WEEDLESS-T submerged agitator – horizontal agitator with a patented space suspension system

WEEDLESS-T agitators generate a horizontal flow movement and are therefore primarily utilized in basins which allow a closed horizontal flow owing to their geometrical shape. In addition to circular and ring-shaped basins, this also includes ditches or extended circulation ditches. According to the WEEDLESS-T design, the propellers and submerged geared motors are mounted together on a guiding slide which is put down into the water on a corresponding guide linkage. At its operating position, this slide will then move into a special shock absorber system developed





Special demands are made on the fixtures and the gear casing of the WEEDLESS-T submerged agitator.

and patented by GVA, which absorbs the loads externally exerted on the agitator and, thus, ensuring long lifetime of the submerged agitator. In most cases, the flow direction will be through the drive unit to the propeller blades, however, the reverse movement is also possible under specific installation conditions.

The WEEDLESS-T submerged agitators are, in addition, excellently suited for simultaneous operation of agitators and aeration.

One important aspect regarding WEEDLESS-T submerged agitators is the continuous monitoring of the tightness of the geared motor. The submerged geared motor has been designed for permanent operation and is fitted, in the drive area, with a sliding ring seal. In addition, the tightness is controlled through a pre-chamber filled with oil as well as by measuring conductivity. Due to this, possible damage to bearings and gear wheels can be avoided.

WEEDLESS-V – vertical agitators for optimum mixing and circulation

Unlike horizontal agitators, vertical agitators can be used regardless of the basin form, because they generate an upward water flow. An eddy-shaped flow is created that is reversed at the surface and returns down to the bottom along the basin wall. This process is based on the principle of least resistance and results in reduced power demand. Because of placing the agitating unit in a dry position, there are no submerged components at all that need maintenance. Basically, these vertical agitators excel by their low operating and maintenance requirements.

The two-blade or three-blade propeller set is linked to the geared motor, attached to a bridge or support structure, by a vertical agitator shaft. The whole device is stable and highly resistant to vibration and has been designed for permanent operation.

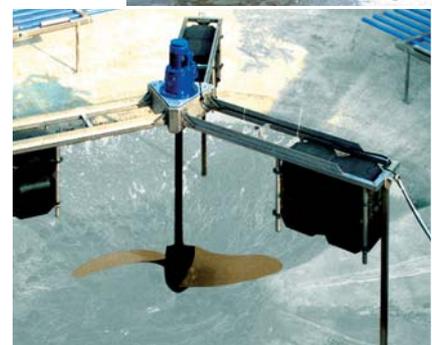
WEEDLESS-S – floating vertical agitators

The advantage of these vertical agitators is to ensure an unchanged, specified submergence depth of the propeller even in case of changing water levels. The floating agitator is based on the vertical agitator and attached to a raft-like structure which also carries the geared motor. The distance between the propeller and the water surface remains constant, and consequently these floating agitators are especially interesting for the application in balancing basins or SBR facilities. The whole device is attached to the basin so that it is quite firmly positioned relative to the layout, but it can freely move within a specified area.

Ideally suited for changing water levels: WEEDLESS-S vertical agitator



WEEDLESS-V agitators consist of a geared motor above water level and a propeller positioned below.



GVA system know-how – for you to be always up-to-date

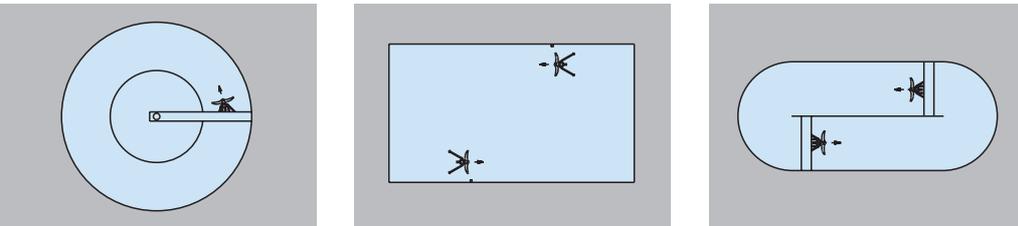
Use GVA's experience based on hundreds of sewage treatment facilities

For arranging agitation systems, too, it ever again becomes obvious that all aspects of plant layout and process technology have to be sufficiently taken into account. Whilst vertical agitation systems are usually placed centrally in basins and can be reached via bridges

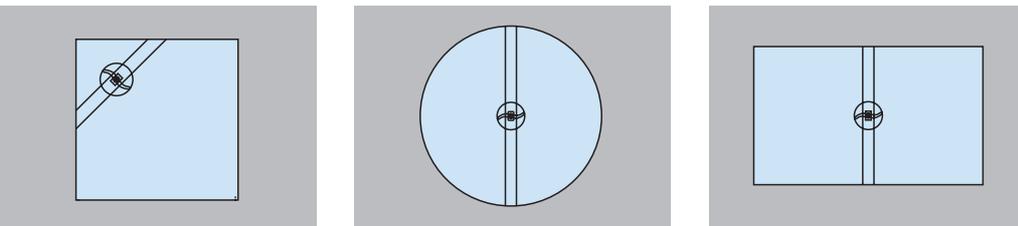
or support structures, in case of horizontally operating submerged agitators, care must be taken to enable the removal from the basin for service and inspection purposes from a safe place, because, as a rule, the basins cannot be emptied.

Here are just a few examples for the preferred positioning of the WEEDLESS agitators in applications already carried out.

Installation conditions regarding WEEDLESS-T horizontal agitators



Examples of arranging WEEDLESS-V vertical agitators



Process know-how – the total is more than the sum of its parts

A ready-tailored overall package is the basis of an efficient plant solution. GVA's long years of experience in the development, production, installation and servicing of ventilation and circulation equipment guarantees plant operators an optimum combination of process technology together with system components with innovative detail solutions.

The WEEDLESS-S floating vertical agitator developed by GVA goes to show that GVA tackles the current challenges regarding sewage technology and places new and innovative solutions for industrial and communal sewage treatment plant operators by means of advanced system components and process engineering techniques.