

ACT Natural™ – a natural way to treat wastewater

ACT Natural™ is designed to as far as possible imitate nature's own way of purifying wastewater. This means, among other things, that the system does not require any addition of chemicals. Instead, the system uses natural microorganisms and aquatic plants.

Ecological and Sustainable

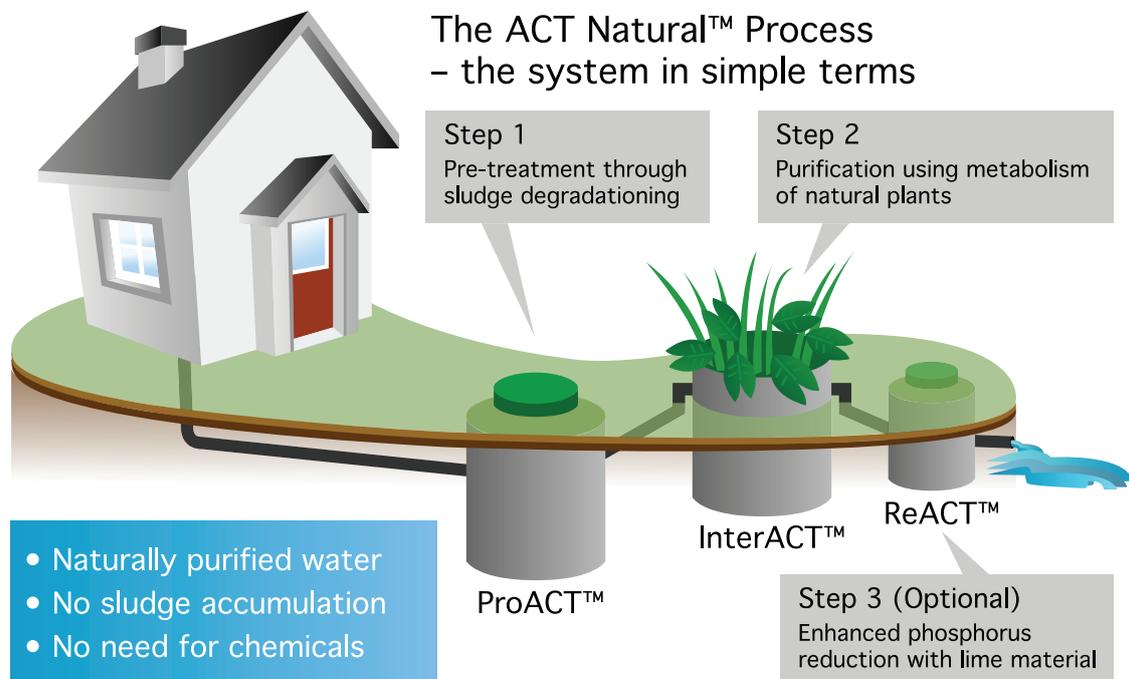
ACT Natural™ meets the authorities' requirements on water purification, has a low level of energy consumption, and uses no chemicals. Above all this, the system takes part in a natural ecological cycle and by bringing nutrients back into the food chain, actively contributes to increased biodiversity.

Easy and very reliable

Unlike conventional wastewater systems ACT Natural™ requires no sludge removals. In the initial ProACT™ the sludge is instead degraded into a form that can be treated by the micro-organisms and the plants in the system.



There is no need for replenishing of chemicals and very limited supervision of the system is required. The fact that ACT Natural™ contains only very few moving parts secures the system's efficiency and reliability.



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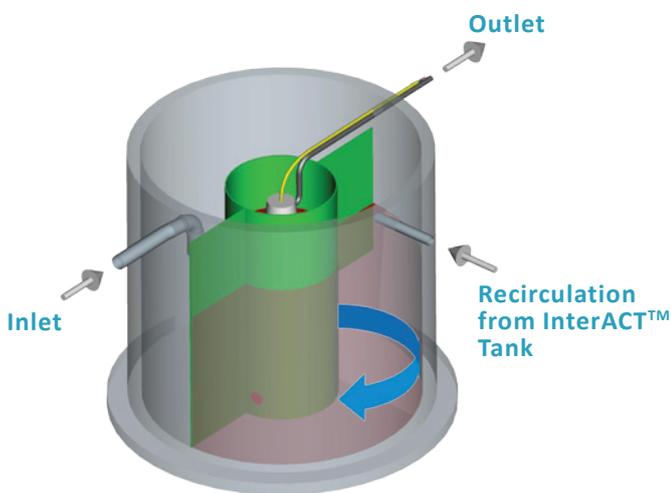
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Technical description

The ACT Natural™ system treats wastewater (i.e. gray-water + blackwater) in two main steps, combined with one of two alternative steps to achieve additional phosphorus reduction.

ProACT™

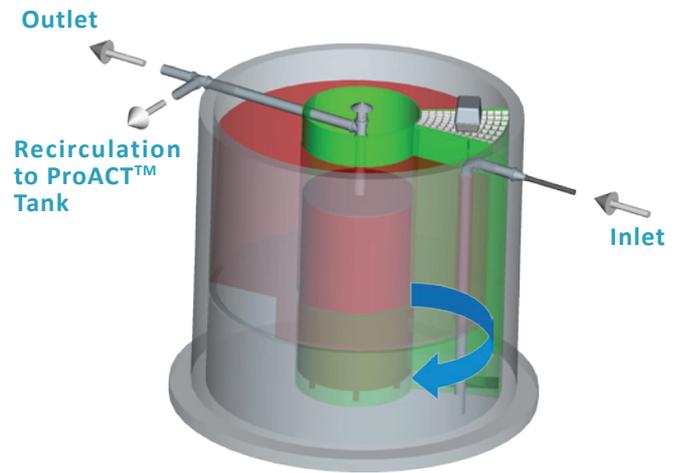
In the first step the wastewater is treated in an oxygen-free process. Here, the organic matter is dissolved. Then, the wastewater is led to a separate chamber where the dissolved organic matter is exposed to a large amount of microorganisms in a biobed culture. The water is then transported to a distribution well mounted in the center and exposed to a second biobed. In this way the ProACT™ reduces the sewage sludge biologically instead of separating it for eventual sludge removals. This is one of several unique qualities in the ACT Natural™ system.



InterACT™

After being treated in the ProACT™ the sewage is pumped gradually to the next main step, the InterACT™. Here the water is exposed to an aerobic process where circulation is ensured through an air pump that creates a natural swirled water flow (Vortex flow) while the water is optimally oxygenated. Since the organic matter is lighter than water, it rises and is exposed to another biobed. The microorganisms in the biobed convert the organic matter into plant available nutrients. On top of the bio-bed there is a bed of plants consisting of a specific set of aquatic plants that through its roots absorb nutrients.

The water is then transported to a distribution well in the centre of the tank, where it passes through a second biobed. On top of this there is a layer of Leca balls and plants. Together with the biobed these plants account for another step in the biological purification process.



From the outlet of the InterACT™, a part of the purified water is led back to the ProACT™ to enhance the nitrogen removal. Through this recirculation of the treated water, the nitrates are further reduced to gaseous nitrogen in the oxygen-free environment of the ProACT™. In the two main steps ProACT™ and InterACT™ organic matters and nitrogen is treated at a purification level that meets the strict requirements on wastewater treatment from the Swedish authorities.

ReACT™

A certain reduction of phosphorus is taking place in the two main steps. However, if an enhanced reduction of phosphorus is essential, the specific “phosphorus-trap” ReACT™ is recommended. ReACT™ consists of a tank containing a natural phosphorus-adsorbing material Polonite®. ReACT™ guarantees a phosphorus-reduction of at least 90 %.

After the phosphorus is accumulated in ReACT™ it is fully recyclable from the material and can be used to cultivate your fields!

FlorAct™

As an alternative to ReACT™ regarding enhanced phosphorus-reduction, we offer an after-treatment through a bed of plants, FlorACT™, built as shallow pond with biobeds and aquatic plants.

Control System

The ACT Natural™ system is controlled by a micro-computer. This device contains everything needed to control and monitor the system and in case of an abnormal condition it generates an alarm.

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