

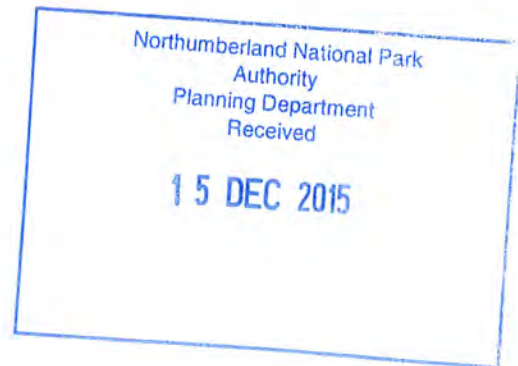


Sewage Treatment Systems

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Vortex Sewage Treatment Plant

The VORTEX™ sewage treatment plant is the only **ADJUSTABLE** sewage treatment system in the UK.

It can be set to work with varying populations simply by turning it either up or down on a hand-turn valve.

Approved by the Environment Agency and on the [British Water Certified List](#).

Unique Features of the VORTEX™ Sewage Treatment System

- Extremely clean effluent - up to **98.9% pollutant reduction**. Also OK for Northern Ireland with



- **98.2% BOD reduction.**
- **Fully adjustable** to suit the number of people using it.
- **The lowest electricity consumption of any electric plant** - from only **£25/year**.
- **Odourless** - complete aerobic digestion throughout the sewage treatment plant.
- **One piece tank construction** - not sectional - no leaking seals.
- **Very small size** enables economic installation in tight spaces.
- The VORTEX™ has a **unique debris screen** - The Vibro-Screen™ keeps tampons, wipes, etc. out of the plant but lets organic solids through.
- The VORTEX™ **recycles its own waste products** resulting in less sludge to remove.
- No Primary Settlement Tank - No Primary Tank Odour.
- **No need to buy a separate sampling chamber** - there is a unique sampling point within the tank. **This saves you another £300.**
- Simple and cheap maintenance - one piece construction ensures no structural weakness..
- Top Quality linear motor compressor - these compressors are much more expensive than cheaper diaphragm compressors used by other manufacturers, but they are **almost silent, use very little electricity** and CAN be repaired.
- **Cheap, easy installation. No Concrete needed** for dry sites
- **10 year tank warranty**- no metalwork to corrode inside or outside the tank.
- Can accept sewage pumped into it if required.
- **Versatile inlet depths** - Vortex™ sewage treatment plants can be supplied for 160mm, 650mm or 900mm inlet invert levels.
- Can be manufactured with the **inlet and outlet on the same side** at no extra cost for difficult sites.
- **EN 12566-3 2005** Test Report available on request.
- **Unbeatable ammonia reduction** - incredibly **down to 0.4mg/L**. Very important for sensitive watercourses.
- Accepted by the Environment Agency for discharge to watercourses and ditches, **without the need for a permit, if the installation complies with the General and Binding Environment Agency Rules**. If you have a ditch locally, ~~Click here to find out if you own the ditch at the other side of your boundary.~~ You may be surprised.
- The Vortex™ sewage treatment plant range is 4, 6, 8, 10, 15, 20 and 30 person sizes.
- Vortex plants are exported worldwide, from Iceland to Mongolia.

How the VORTEX™ Wastewater Treatment Plant Works

Most sewage treatment plants struggle to work when they are under-loaded. A good rule of thumb is that if a plant is working below 50% of its design capacity, there is not enough 'food' from the toilet solids to either grow, or maintain, a working bacterial population. The Vortex has solved this problem by having a simple hand-turned valve that can turn the amount of air required either up, or down, depending on the number of people using it. Such a SIMPLE solution to a complex problem.

The Vortex™ has advanced ~~activated sludge~~ features not found in any other sewage treatment plant in the UK.

The ONLY electrical component is a small, external linear motor compressor which operates ALL the process stages. There are no pumps, motors or any moving parts within the plant. Click for **How the VORTEX™ sewage plant is so energy efficient**

The Vortex Treatment Process (Schematic diagram only)

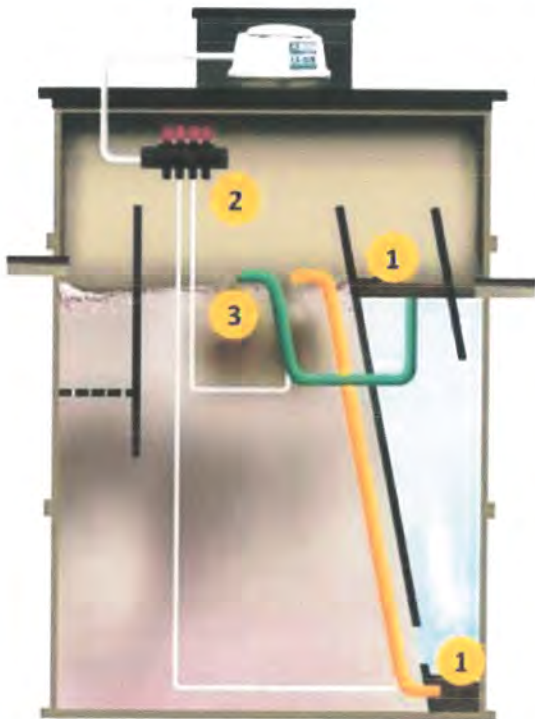
Wastewater from the building enters to Vibro Screen (1). Here coarse air bubbles are used to physically break down solid matter and form a mixed liquor with the water.

The mixed liquor flows into the Aeration Chamber (2). A bacterial culture is present in the Aeration Chamber which digests the pollutants in the wastewater. The bacterial culture must have a constant oxygen supply and this is provided by a fine bubble diffuser at the base of the tank.

UNIQUE FEATURE - The last red air valve on the control module allows the air to be regulated, more or less, to the diffuser. This enables the plant to be adjusted to work at maximum efficiency if it is underloaded. This is a very valuable feature, e.g. for a 5 bedroomed house (which needs a minimum 7 person plant) with only 2 people resident. This feature is not available on any other plant.



The mixed liquor then flows into the Clarification Chamber (3) where it is able to separate into clear, treated effluent and sludge. The clear effluent is able to flow past the scum baffle and out of the tank.



The Sludge Management System (SMS)

In the Clarification Chamber sludge accumulates at the bottom (settled sludge) (1) and top (floating sludge) (1) of the tank.

Air from the blower spurs from the regulator (2) to two sludge return pipes (3).

This creates a continuous vacuum that sucks the sludge from the bottom of the Clarification Chamber back to the Aeration Chamber. The floating sludge is returned by manually opening the valve once a month until it has cleared. If you don't want to do this, then you can order the plant with an Automatic Floating Sludge Return (FSR) kit. It only costs an additional £32 plus VAT and can also be retrofitted to existing tanks.

Optional Automatic Floating Sludge Return (FSR) Kit

In all ASP sewage treatment plants, floating sludge accumulates at the top of the Clarification Chamber. This sludge must be periodically returned to the Aeration Chamber. If you do not want to manually open the valve on a monthly basis, then fit the Automatic FSR kit as this makes the process automatic.

The Automatic FSR Kit enables the Vortex to automatically recycle the floating sludge in the Clarification Chamber back to the Aeration Chamber.

This reduces the need for the owner to manually manage the sludge build up in the tank, as has to be done with other sewage treatment plants.

No other ASP sewage treatment plant has this ability to manage its own sludge.

The Automatic FSR Kit is an optional extra and not supplied as standard. All Vortex sewage treatment plants are manufactured assuming an Automatic FSR Kit will be fitted. The tank can be easily converted back to manual without the need to buy additional components. It is only an additional £32 plus VAT when ordered with the plant. The FSR kit can also be fitted retrospectively to existing plants very easily.

Principles of the treatment process

Incoming sewage is screened to prevent accidental non-degradable products entering the digestion chamber. The Vibro-Screen™ allows organic sewage solids to enter the tank without problems.

The screened sewage is aerated and a microbial 'soup' develops that digests the pollutants and organic matter in the sewage. These beneficial microbes are constantly topped up with the microbes that settle out at the bottom of the final settlement tank, ensuring a constant supply of bacteria for the digestion process. There is **no need to add extra bacteria at all**, as is the case with some other plants.

The treated sewage then enters the final settlement chamber where activated sludge bacteria settle out at the bottom. These beneficial microbes are constantly returned to the digestion chamber to boost the treatment system performance.

The bacterial scum or crust that forms on the top of the effluent in the clarification chamber is returned through a pipe to the digestion chamber, once a month or can be automatic using the FSR kit. **This is an innovation unique to the Vortex™.** Other activated sludge plants need this crust removing, by hand, at regular intervals.

It saves a lot of unpleasant work for both the owner and the service engineer, resulting in lower cost servicing bills.

Please click on the link to view a video on [how to initially set up the Vortex sewage treatment plant](#).

Please read [Tank Delivery and Off-Loading Information](#) before ordering.

VORTEX Tech Drawing Downloads (N.B. The inlet and outlet pipe are on opposite sides of the tank. Drawings are for showing invert levels only - see PLAN VIEW below)

[VORTEX™ Plan View](#)

[VORTEX™ Brochure](#)

[VORTEX™ Warranty](#)

Normal Installations - 660mm. inlet invert

[VORTEX™ 4, 6, 8 and 10](#)

[VORTEX™ 15, 20 and 30](#)



Shallow Installations - 160mm. inlet invert

[VORTEX™ 4, 6, 8 and 10](#)

[VORTEX™ 15, 20 and 30](#)

Deep Installations - 910mm. inlet invert

[VORTEX™ 4, 6, 8 and 10](#)



Installation and Technical

Installation Manual

[VORTEX™ FSR Kit for Retro Kit](#)

[VORTEX™ Technical Data Sheet](#)

[EN12566-3 Results](#)

[VORTEX™ User Manual](#)

[VORTEX™ sewage treatment plant maintenance and servicing engineers](#)

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[Wastewater and Septic Tank System](#)

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