



NuDisc® Treatment Systems

Carbonaceous, Nitrification and Nutrient Removing Range

KEE 1600 NuDisc® being loaded at the docks on its way to Grenada in the Caribbean.



General

The KEE Process NuDisc® is a totally self-contained, covered, single piece packaged treatment system. Introduced to provide BOD removal, nitrification and nutrient removal.

NuDisc® installations are compact, unobtrusive and virtually silent in operation. The NuDisc® offers a reliable, cost effective and low maintenance solution for wastewater treatment for sites not connected to mains drainage. The whole plant is contained in a Glassfibre Reinforced Polyester (GRP) tank, designed to a structural code for partial installation in the ground, with only the cover showing.



*FOR HIRE:
KEE Free Standing NuDisc®
Single Piece Packaged Plant,
easily delivered anywhere.*



Applications

The NuDisc® includes primary settlement stage, sludge storage, organic and hydraulic balancing through anoxic stage RBC, aerobic stage RBC and final settlement for removal of biological solids. This is all housed in a single tank.

The KEE Process size range is designed to serve flows from a single house through to small groups of houses, Public Houses, Restaurants, Filling Stations, Industrial premises, Hotels, Guest Houses, Schools, Training Centres, Leisure Complexes, Caravan and Camping Sites, Theme Parks, Holiday Homes etc. A suitable plant can be selected to achieve the specified quality of final effluent which can include only BOD removal or can also include nitrification, denitrification or phosphorus removal or a combination of all these. NuDisc® is a compact nutrient removing packaged plant.

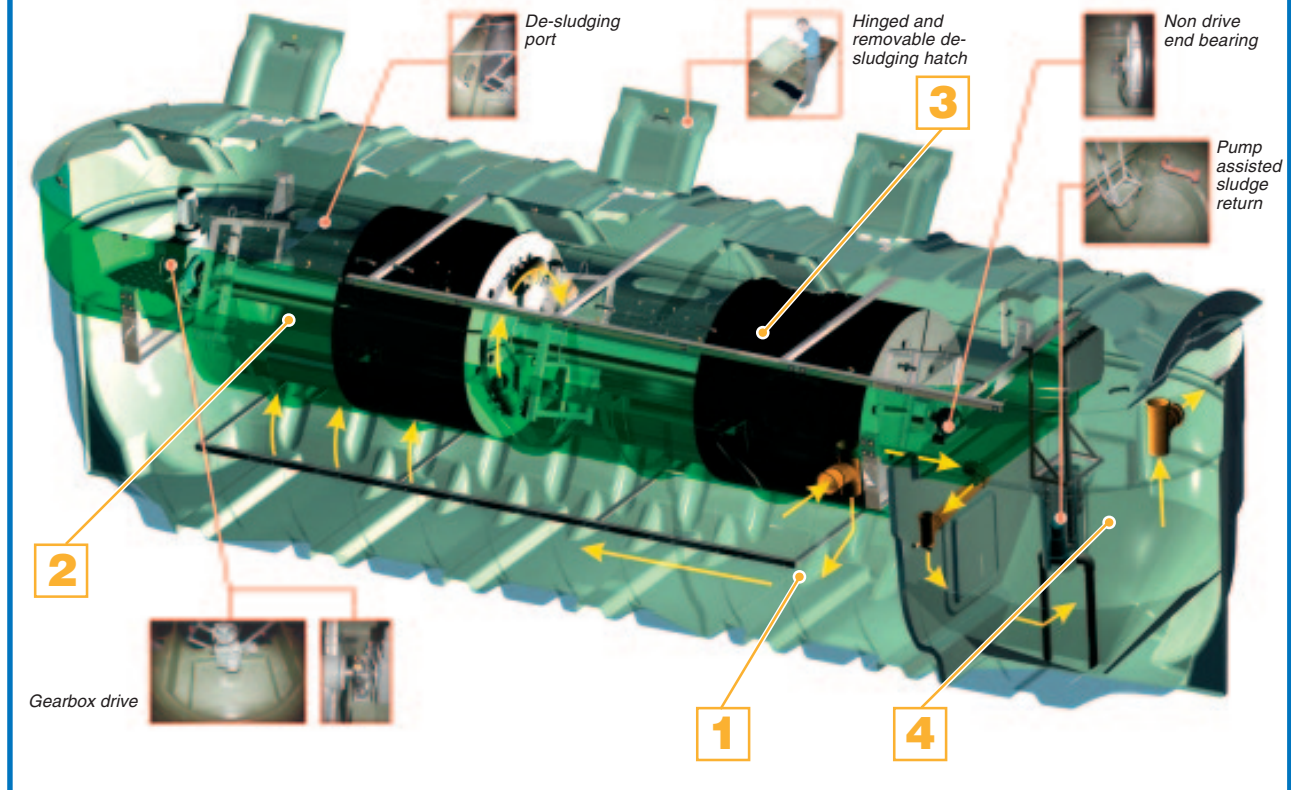
Up-to-date technology

The KEE Process NuDisc® Technology ensures optimum performance by smoothing flows and spreading biological load evenly over the whole day. Nutrient removal can be included in new plants from onset or can be retrofitted to existing plants.

NOTE: Detailed description of KEE NuDisc® Technology is contained in KEE Wastewater Treatment Technologies Brochure on RBC.

The new KEE range of NuDisc® units offer many advanced features specifically aimed at simplifying operation and maintenance.

Long design life of structural components, mechanical items, low power demand and ease of operation and maintenance provides extremely low life time cost.



The NuDisc® System also helps to reduce the inhibitory effects of household chemicals, for example detergents and cleaning chemicals on the biological process.

This unrivalled process stability of the NuDisc® system for small flows, is an assurance for maintaining constant effluent quality in spite of variations in plant usage and flow rates during the day.

The diurnal peaks in the flow regime for domestic households are evened out in the anoxic RBC stage prior to the aerobic stage RBC and the final clarifier.

Operation and Maintenance

Operation of the NuDisc® is simple and does not require specialist personnel knowledge. Regular sludge removal and simple lubrication schedules for bearings and geared motor at regular intervals maintain the plant at its optimum performance. Improved final settlement chamber with sludge return system (optional on NuDisc® BA-BF), for the return of sludge to primary settlement chamber by means of pump assisted hydrostatic desludging reduces the risk of solids entrainment in the final effluent. The RBC is driven at approximately 1rpm by a low powered electric geared motor selected for long life and economic operation.

Central to the operation of each NuDisc® is the Rotating Biological Contactor (RBC), which supports a biologically active film (biomass) of anoxic and aerobic micro-organisms.

The Treatment Process

Wastewater flows into the Primary Settlement Tank (PST) [1], where solids are settled out and are retained. The accumulated sludge is drawn off periodically.

Partially clarified liquor containing fine suspended solids flows upwards into the first stage of the Biozone which houses the Anoxic RBC [2], for initial breakdown of organic pollutants by the biomass (biodegradation).

Suspended solids return to the PST via the slot in the bottom of the Biozone and the liquor is transferred to the second stage Biozone and the Aerobic RBC stage [3], for further treatment. Any solids remaining are settled out in the hopper bottomed Final Clarifier [4]. The quality of the treated effluent is suitable for discharge to a water course, subject to approval from Regulating Authorities or similar.

The image below shows the anoxic stage RBC biomass film associated with initial bio-degradation and the second aerobic stage RBC media with an extremely active but thin layer of biomass which is associated with a high degree of treatment including nitrification.

All the main structural components, including GRP tanks, RBC shaft, media support structure and media are designed for 30 years life; the mechanical items such as the drive and bearings are selected for 100,000 hours L_{10} life. When used, operated and maintained in accordance with recommendations, the NuDisc® offers a long life. Consequently NuDisc® offers the lowest lifetime cost and consistent performance compared to any other system on the market.



Quality

KEE Process has pioneered the development of packaged treatment plants with many thousands of successful installations world-wide.

NuDisc® is robustly constructed from corrosion free materials, designed and manufactured generally in accordance with BS 6297. KEE Process Ltd is an accredited company: BS EN ISO 9001: 2000 Quality Management System Approval.

◀ NuDisc® showing Anoxic and Aerobic RBC stage.

NuDisc® - Serving a cluster of houses.



NuDisc® treating domestic wastewater at a Retirement Home.

Installation

Installation of the NuDisc® is simple. It is a lightweight single piece structure, which is normally installed on a concrete slab in an excavation. Once the unit is lowered into the excavation, only the low profile cover is exposed. The NuDisc® is levelled and ballasted; excavation is then backfilled with a suitable material; the inlet and outlet pipes are connected and the control panel is wired up. The unit is now ready to receive wastewater for treatment to a very high standard. The shallow low profile cover provides unobstructed, safe and complete access to various components for maintenance and desludging.

The NuDisc® can be adapted for above ground installation if required. This is particularly suitable for temporary installations aimed at assisting under-performing works or to relieve plants undergoing refurbishment.



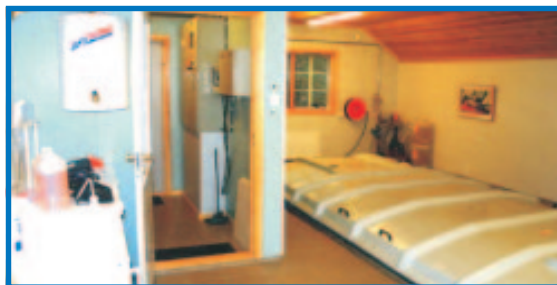
World Wide

The KEE Process NuDisc® is available directly from KEE or through Authorised Distributors or Licensed Manufacturers in most parts of the World. These overseas outlets are dedicated and have technical skills to assist with most applications and can also provide aftersales service provided by KEE Process Ltd.

F11 NuDisc® - 200 PE plant in Germany



2 x F13 NuDisc® treating domestic wastewater for a Media Corporation



BK NuDisc® - Treating highly variable flow from a Youth Hostel Cafeteria complex in Norway



▲ KEE NuDisc® installed above ground to reduce installation costs. Soil from the surrounding area is mounded up to the plant to protect against cold weather and provide an effective "platform" for access. NuDisc® F11 treats Municipal wastewater from 200 PE.

◀ NuDisc® BK installed at a Youth Hostel to treat wastewater to a high degree including nutrient removal (phosphorus reduction down to under 1 mg/l).

During Winter this 150 PE Plant treats wastewater from the Caretaker's family of 4 persons only, but in Summer the population can increase to 150 persons and for a short period of 4 to 5 weeks the population peaks to about 200 persons.

This plant is installed in a building due to the extreme cold weather in Norway.

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