



# KEE

*Specialists in Domestic & Industrial Wastewater Treatment*



|| KEE NuDisc<sup>®</sup> RBC Technology ||  
- Rotating Biological Contactors





# NuDisc® Features and Benefits

Optimal Performance at Lowest Lifetime Cost and Lifetime Warranty

- KEE Lifetime warranty is available for new installs with a KEE 'Elite' service and maintenance package.
- A self-contained treatment system suitable for small to medium effluent flows up to 70m<sup>3</sup>/day in a single piece configuration.
- Capable of producing effluent with BOD <5mg/l, Suspended Solids <5mg/l, Ammonical Nitrogen <1mg/l and Phosphorus as PO<sub>4</sub>-P <1mg/l.
- Can be designed and built in a variety of sizes and media specifications to match incoming flow rate requirements and discharge quality consents.
- Fabricated in lightweight, tough and corrosion resistant Glassfibre Reinforced Polyester (GRP).
- 'Plug & Play' system. The NuDisc® unit is simply craned into position and connected to power and inlet/outlet pipes.
- Incorporates KEE Process NuDisc® technology offering substrate and flow balancing.
- Compact unit offering space efficiencies where land is at premium.
- Mechanical/electrical components provide a 100,000 hour L<sub>10</sub> design life. 30 year design life on all structural components.
- Virtually silent and odour free.
- Offers the lowest lifetime cost when compared to all other systems currently available in the commercial market.
- Stable and reliable 'fixed film' process ensuring consistent performance. Extremely low power consumption and associated carbon footprint. Nutrient removal can be included in new plants from onset or retrofitted to existing plants.
- Low maintenance costs and simple to operate and maintain.
- Handles and maintains performance during peak flow (high usage) conditions
- Enclosed design minimises fly and insect nuisance and offers protection against the weather.
- New, improved final settlement chamber with sludge return system (optional on NuDisc® BA-BF), to reduce solids entrainment in the final effluent.
- NuDisc-R® incorporates an additional option of a built-in or modular Biological Tertiary Filter before discharge enabling outlet flow to be reused for irrigation, toilet flushing or other non-profitable purposes (subject to regulatory approval).
- Sleek, lightweight GRP covers sections give easy and safe access for maintenance.
- Total Sludge Free System available upon request.

## EASY SHIPPING:

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



## FOR HIRE:

*KEE Free standing NuDisc® Single Piece Packaged Plant, easily delivered anywhere.*



***When installed, used, operated and maintained in accordance with KEE recommendations and installation guidelines, the NuDisc® offers consistent performance, long life, low carbon footprint and the lowest lifetime cost compared to any other system on the market. KEE also offer a fully managed service and maintenance solution for your plant, tailored to care for and protect your equipment throughout its lifespan.***





# NuDisc® Treatment Systems

Self-Contained, Single Piece System offering Substrate and Flow Balancing

## NuDisc®

### Applications and Technology

The NuDisc® offers a reliable, cost effective and low maintenance wastewater treatment solution for a wide variety of locations not connected to mains drainage. KEE manufacture the NuDisc® in a range of sizes designed to serve flows from a single domestic property to a small Housing Estate, Hotel, Office Complex, Leisure and Holiday Park, Hospital, Care Home, Public House, Restaurant, Petrol Forecourt, Industrial or Process Plant,

Caravan or Camping site, and many other potential applications.

For larger plants, larger diameter RBCs are available in modular configuration. These modules can be supplied as factory built units in GRP (Glass Reinforced Polyester) tanks with covers or can be installed into concrete tanks built on site. Additionally, separate primary and final settlement tanks can also be installed for larger treatment plants.

Both the NuDisc® range and modular RBC systems can be configured for:

- BOD Removal
- Nitrification
- De-Nitrification
- Ortho-Phosphorus Removal
- Combination of the above
- Wastewater reuse or irrigation (subject to consent)
- Disinfection

(RIGHT)

KEE NuDisc® showing upstream and downstream RBC stages.

(FAR RIGHT)

KEE NuDisc® treating wastewater from a nursing home.



(RIGHT)

KEE NuDisc® serving a cluster of houses.

(BELOW CENTRE, TOP)

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.

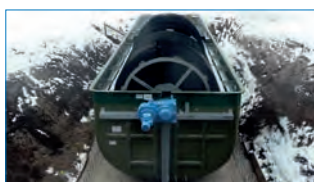
(BELOW CENTRE BOTTOM)

KEE NuDisc® installed at Hassop, Derbyshire.



(ABOVE)

Example of NuDisc® modular configuration. Galbally Wastewater Treatment Plant with Physical Biological Tertiary Filter.



(ABOVE, RIGHT)

BK NuDisc® installed at a Youth Hostel in Norway 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.



## Installation

The NuDisc® is normally installed on a concrete slab in an excavation, without the need of any additional site related works.

Once the unit is positioned, levelled and ballasted, the excavation is then backfilled with an appropriate material suitable for the ground conditions, soil stability and water table. Once backfilled, only the low profile cover is exposed above ground level. The inlet and outlet pipes are then connected and the control panel is wired up and that's it, the NuDisc® is ready to treat the wastewater.

The NuDisc® can be adapted for above ground installation if required. This is particularly suitable for temporary site installations such as work camps, hospitals and military bases, or to assist under performing plants or systems during refurbishment.



**The compact NuDisc® system** features an RBC as the biological stage and is configured to reduce the inhibitory effects of household chemicals (such as detergents and cleaning chemicals) on the biological treatment stage. The unrivalled process stability of the NuDisc® maintains constant effluent quality, despite variations in plant usage and flow rates during the day. By 'smoothing' flow rates and spreading the biological load, the NuDisc® delivers optimum performance for small flows in a single, self-contained, 'Plug & Play' modular unit.

The Rotating Biological Contactor (RBC) is essentially a central shaft with Polypropylene Copolymer Media sheets attached to it which provides the fixed 'home' for the bacteria to live and grow. The RBC is rotated slowly so that a proportion of its surface area is submerged in the effluent at any one time. As the RBC rotates, the surface of the media is subjected alternately to wastewater (sewage) and air. This process promotes an aerobic, biologically active film of micro-organisms (biomass) to become established on each side of the media sheets.

As the biologically active film grows in size, it becomes self-regulating and oxidises the pollutants in the sewage. The micro-organisms use the polluting material (which is measured as Biological Oxygen Demand (BOD) or Ammoniacal Nitrogen or TKN) as a substrate. As they multiply in number, they maintain a specific biomass thickness to ensure optimum process efficiency.

### Operation and Maintenance

Regular, competent sludge removal and simple lubrication schedules for bearings and the geared motor will maintain a standard plant at optimum performance.

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

For more detailed or technical information on KEE's NuDisc products, please call our KEE Process Team on 01296 634500 or email [sales@keeprocess.com](mailto:sales@keeprocess.com)

