

PlanetDISK® Rotating Biological Contactor (RBC) Systems operation and maintenance advantages when compared to classical activated sludge (AS) methods:

PLANETDISK® RBC Systems has many unique and very valuable properties making it a very popular and the logical choice among all the known methods:

- **Low power consumption**
- **No field tests – ease of maintenance, low operator skill requirements**
- **Operator intervention is limited to preventative maintenance such as lubricating and periodic visual inspection.**
- **RBCs handle diurnal peak flows of 2.5:1 without process adjustment.**
- **No annoying odour**
- **No noise**
- **Smaller foot print**
- **Capacity can be lowered and increased easily**
- **Naturally Occurring Bacteria – no additional bacteria needed**

Low Power Consumption: RBC process requires less electrical energy than all other treatment processes known. PlanetDISK® is also among the least energy requiring RBC units in the world. The motor for a typical PlanetDISK requires 0.25 kW – 0.55 kW. The installed kW is required for start up only. When in operation the power draw is just 60% of rated capacity. During normal operation the balanced shaft rotates effortlessly. The shaft power draw is consistent and fluctuates only when start up is required. The rotational speed of the disks is around 3rpm. Slow speed is naturally associated with lower power requirements.

In AS, oxygen is introduced to the WW by blowing air thru diffusers. The source of air is a blower usually rated at 4- 5.5 kW for 50-75 m³/day capacity WWTP. For a similar capacity PlanetDISK® RBC system, the energy required for the electrical motor to rotate the disks is 0.37-0.55 kW. The huge amount of energy saving is the most important advantage RBC presents!

No Field Tests; ease of operation and maintenance: PlanetDISK® process regulates itself. When the owner/operator becomes familiar with the system, visual inspection is all that is required.

When we talk about wastewater we think of pollution. In the PlanetDISK®, pollution is considered a food source for the biological population. The biomass is a living matt of activity that attaches itself to the slowly rotating disks. Bacteria that are naturally present in the wastewater accomplish the purification. These microorganisms are often called bugs for simplicity. The bug population is directly related to the food source. If there is a lot of food the bug population will occupy a lot of disk surface area. When the flow or source of pollution is reduced, the bugs or biomass is reduced. This is a natural process that we do not need to influence.

There is no requirement to test for mixed liquor suspended solids (MLSS). There is also no need to calculate the sludge volume index (SVI). The slow rotation of the disk provides a large wetted surface area and efficient oxygen transfer. Higher than required dissolved oxygen (DO) levels are normally present.

High DO eliminates odours and does not inhibit the biological activity. Efficient plant operation is achieved without the need for measuring or adjusting DO. PlanetDISK® recommends that both the influent and effluent be tested during the start up period and until the owner/operator becomes comfortable with the process. An experienced eye can visually determine effluent quality by the colour, texture and quantity of the biomass on the disks.

Process Stability against shock loads : Activated sludge requires efficient solids settling and adequate biosolids recycling for satisfactory operation. Hydraulic surges and organic shock loads also can cause prolonged upsets. The RBC process does not require recycling, and because the biomass is attached to the media, it is not affected by clarifier washouts or shock loadings. RBCs handle diurnal peak flows of 2.5:1 without process adjustment.

No Odour: PlanetDISK® RBC units have no disturbing odour and can be easily placed nearby houses, play grounds and swimming pools. There is no forced air circulation and actually, correctly designed RBC units and processes consume odor rather than producing odor. In RBC systems, higher than required dissolved oxygen (DO) levels are normally present. High DO eliminates odours and does not inhibit the biological activity.

No Noise: PlanetDISK® units have less than 50 db noise level. One can imagine what a 3 rpm engine noise level can be! Thus it can be easily placed in housing projects where low noise operation is an absolute necessity.

Smaller foot print: In PlanetDISK® RBC MX model, there are upto 120 disks of 205 cm diameter and that means over 750 square meter surface area to grow bacteria! The footprint required for 1 PlanetDISK® MX model is less than 10m². The retention time for the wastewater for carbon removal is slightly less than 60 minutes and therefore the footprint is less than any other technologies known. This is another important advantage when the WWTP is required for housing, hotel, factory, etc sites where the land is extremely valuable.

Capacity can be lowered and increased easily: If the population decreases, some of the PlanetDISK® RBC units can

be shut down until the population capacity increases. Where there is capacity increase, additional PlanetDISK® units can be installed. If the increase in capacity is more than 20 %, sedimentation and buffer tank capacities also have to be increased.

Naturally Occurring Bacteria: There is nothing to add to the PlanetDISK® process except a small amount of electrical energy. Mother Nature provides all that is required for efficient biological activity.

The bacteria attach themselves to the disk media. With the rotation of the disks they receive the ingredient they require for their propagation. That ingredient is oxygen.

The disks are 40% submerged in the wastewater and have 60% exposure to the air. As the disks rotate the huge wetted surface area allows the oxygen to enter the wastewater and come in contact with the biomass. Simply put - the bugs breathe when out of the wastewater and consume pollutants when in the wastewater.

Operator Skill Requirements: PlanetDISK® RBC System is a self-regulating process that looks after itself. The operator requirements are limited to preventative maintenance. The operator only has to grease the bearings twice a month and take down a few operator notes.