

# MIRACELL®



White | Green | Blue

Miracell® is a modular, compact and completely automated domestic Wastewater Treatment Plant (WWTP) based on RBC\* technology. Miracell® can be configured to meet normal discharge or stringent water re-use requirements for off-grid residential communities, work sites, hotels, resorts and other communities, ranging from 5,000 GPD to 1 million GPD.

\* Rotating Biological Contactor or Biodisc

## ADVANTAGES

### **Plug and play:**

Easy installation / Short start-up time.

### **Low energy consumption:**

Uses 75% less electric power than traditional activated sludge systems.

### **Automated operation:**

No dedicated technician required

### **Low maintenance costs:**

...thanks to mechanical simplicity

### **Reliability:**

Little to no down time

### **Durable:**

Long operating life

### **Scalable:**

Simply add RBC modules

### **Quiet and odor-free:**

Compatible with residential, hospitality and commercial settings.

### **Attractive:**

Industrial Design award winner



[www.miranda-tr.com](http://www.miranda-tr.com)

## PROCESS DESCRIPTION

Miracell® is an automated, modular and scalable WWTP, with a capacity range of 5,000 GPD to 1 million GPD, using RBC technology. The biodiscs in each RBC module rotate slowly, powered by a highly efficient electric motor and gearbox. At any given time, 40% of biodisc surface area is submerged in wastewater while 60% is exposed to air. As the discs rotate, bacteria grow on the disc surfaces, breathing oxygen needed to digest organic material in the effluent and convert waste into carbon dioxide - all in a totally natural cycle. After biological treatment, the water is filtered in a settlement tank fitted with lamella plates, causing fine particles to settle and producing clear treated water ready for discharge or further filtration.

Miracell® consumes 75% less electric power than conventional activated sludge systems, since Miracell® units do not use aerators or blowers to force air into the wastewater stream. The simplicity of the RBC design also substantially reduces maintenance costs.

Miracell® RBC modules are built of corrosion-free advanced

composites and equipped with polyethylene discs. The RBC's shell has a tensile strength greater than steel and will not rust or deteriorate.

The quality of water treated by Miracell® exceeds the most stringent discharge standards and thus can be discharged directly to a stream, lake or the ocean. With further filtration (Miracell® Green and Blue models) treated water can be reused for a number of purposes.



**Components legend:**

- RBC** Rotating Biological Contactor
- LC** Lamella Clarifier
- SF** Sand Filter
- ACF** Activated Carbon Filter
- UF** Ultra Filtration
- UV** Ultraviolet Disinfection
- Standard Equipment
- Optional Equipment

## MIRACELL® MODELS - configured according to water discharge requirements:

### Miracell® White

- Most economical configuration
- Standard quality discharge water

**Components:** RBC, LC

**Outflow Values:** BOD 45, COD 120, TSS 45

### Miracell® Green

- Includes automated Sand Filter
- High quality discharge water can be used for irrigation

**Components:** RBC, LC, SF

**Outflow Values:** BOD 25, COD 110, TSS 35

### Miracell® Blue

- Includes automated Sand Filter & Ultra Filtration
- Optional equipment: Ultraviolet Disinfection & Activated Carbon Filter
- Highest quality discharge water: Many options for reuse, including fountains, car washes and cooling towers

**Components:** RBC, LC, SF, UF, ACF, UV

**Outflow Values:** BOD 10, COD 90, TSS 1

The above figures show achievable outflow values for BOD (mg/L) | COD (mg/L) | TSS (mg/L) with typical influent values of 300 BOD, 500 COD, 400 TSS

### MIRACELL®: TECHNICAL SPECIFICATIONS - 6 example configurations

MIRACELL®	Equivalent Population (person)	Treatment Capacity (1000 GPD)	Power Consumption	Width (inches)	Length (inches)	Height (inches)	Weight (lbs)
50	250	13.000	0.25 kw	75	85	96	1873
100	500	26.000	0.50 kw	75	170	96	3747
150	750	39.000	0.75 kw	75	256	96	5621
200	1000	52.000	1.00 kw	75	341	96	7495
250	1250	66.000	1.25 kw	75	427	96	9369
300	1500	79.000	1.50 kw	75	512	96	11243

Note: Pumps excluded from calculation of power consumption

### MIRACELL® vs ACTIVATED SLUDGE SYSTEM Power Cost Comparison Table



The above comparison is based on an average electricity rate of US\$ 0.10 / kWh