Symbios TPR4000™ Plasma Oxidation System

Continuous flow solution that simultaneously disinfects and reduces COD/BOD in difficult-to-treat fluids at up to 20X lower cost than alternatives without chemical additives or waste stream.

FEATURES

- Patented non-thermal plasma oxidation system
- Microbial and organic contamination control **without chemicals** for food and beverage surface and process waters, industrial wastewater, manufacturing, and energy
- Requires only air and electricity to **directly and continuously disinfect** process waters
- Residual peroxone disinfectants for **downstream control of microbial regrowth**
- Multi-mode action using UV light, radical oxygen species, and low-level oxidants (hydrogen peroxide, ozone, and others)
- Modular and scalable to your application
- Low power and compressed air requirements for seamless integration into your facility
- Automated and microprocessor-controlled
- In-line monitoring of effluent water quality

BENEFITS

- A **safer alternative** to acid and chlorine-based chemical additives
- **No toxic byproducts** – all components naturally break down to water and oxygen
- **Cost-effective, eco-friendly, and energy-efficient**
- Adaptable to variable influent waters
- Capacity to handle high levels of dissolved and suspended solids

APPLICATIONS

- Continuous treatment of process waters
- Demonstrated 99.9999% inactivation of aerobic bacteria in vegetable rinse waters
- Effective treatment with minimal contact time (seconds to minutes)
- COD and BOD reduction for water treatment and contaminant removal applications
- Other applications include surface disinfection, food safety, sanitation, wastewater recycling, and clean-in-place to save water and energy

Symbios Technologies is currently seeking partners and pilot test sites for this new game-changing product.

Please contact us to learn more!
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TPR4000™ Product Specifications

- Technical Specifications:

Parameter	Specification
No. of reactor chambers	2
No. of electrode pins	200 per rotor
Diameter	9 inches (23 cm)
Height	24 inches (61 cm)
Power source	Advanced Energy Pinnacle Plus+ 10 kW DC
Power requirements	3-phase 208 VAC
Power usage	300-400 W, ~0.5 to 5 kWh/1,000 gal
Flow rate	~25 m^3/hr (100+ gpm) *application specific*[1]
Compressed house air	35 psi
Rotor spin rate	1000 rpm

[1]Higher flow rates (400+ gpm) for applications such as disinfection can be achieved via multiple reactor pairs affixed to a skid running in parallel

- Ability to handle variable influent waters:

Influent parameter	Established TPR operational range[2]
pH	3 to 9
TDS	ND to >30,000 mg/L
Temperature	Δ ≤10 °C
TOC	1-10 ppm (low) to >1,000 mg/L (high)
TSS	ND to >1,000 mg/L
COD / BOD	ND to <3,000 mg/L

[2]Ranges/values listed indicate those that have been tested; actual system capabilities may extend beyond these ranges

- Additional features:
  - *Control interface*
  - *Full automation of power, current, and voltage (P/V/I) input*
  - *Automated data logging (P/V/I, arcs/s, ORP, pH, temperature, TDS)*
  - *Automated flow control valve and pump with microprocessor control*
  - *Complete rack enclosure*
  - *Safety features*