



Introducing the Symbios TPR4000™ Plasma Oxidation System

Product launch coming soon!



FEATURES

- ▶ Patented non-thermal plasma oxidation system
- ▶ Microbial and organic contamination control **without chemicals** for food and beverage surface and process waters
- ▶ 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 reduction for water treatment and contaminant removal applications
- ▶ Other possible applications include surface disinfection, food safety, 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	1
No. of electrode pins	200
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	~1 to 6 m ³ /hr (5 to 25+ gpm) <i>application specific</i> ¹
Compressed air	35 psi
Rotor spin rate	1000 rpm

¹Higher flow rates (100+ gpm) for applications such as disinfection can be achieved via multiple reactors 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 >15,000 mg/L
Temperature	$\Delta \leq 10$ °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

²Ranges/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*