

Chemical-Free Water Purification Since 1993:

Photo-Cat is a chemical free process that destroys organic contaminants using a TiO₂ slurry-based photocatalytic process to purify or detoxify water. Photo-Cat removes chemical contaminants (such as **1,4-dioxane**), biologicals, viruses, oocysts, EDCs, PPCPs, sub-micron particulate, metal and can reduce bromate back to bromide. Photo-Cat has an established history of regulatory compliance since 1994 as it is the solution to the challenging MOTCO Superfund Site.

Benefits include:

- the strongest oxidation potential of all AOPs
- a unique reductive pathway for recalcitrant compounds
- biological destruction/filtration
- significant advantage in efficiency, cost and complexity reduction

Photo-Cat lifecycle costs are significantly less than conventional technologies such as activated carbon, UV ozone, UV peroxide, chemical oxidation, air stripping with off-gas treatment, and reverse osmosis. Photo-Cat is the economical choice for multi-year projects with complex water challenges.

This fully automated process can purify water to very high standards that exceed drinking water standards. Photo-Cat is essentially a solid state, automated device that operates unattended, with service intervals exceeding 20,000 hours.

Differentiation Between AOP & AOP+

Do not confuse the Photo-Cat process with other AOP processes.

Conventional	(eV)	AOP+	(eV)
UV/O ₃	2.8	Photo-Cat	3.18-4.8
UV/Peroxide	2.8	<ul style="list-style-type: none"> • Multiple Destruction Pathways • Oxidation & Reduction • Not Hydroxyl Radical Dependent • Strongest Oxidation Potential • Multi-barrier • Chemical Free • CAPEX & OPEX → Cost Reduction • Purifies Contaminants Others Can NOT 	
Ozone	2.07		
Cavitation	2.8		
E Beam	2.8		
Chemical			
• Hydrogen Peroxide	1.77		
• Permanganate	1.67		
• Chlorine Dioxide	1.50		
• Chlorine	1.36		
• Fluorine	3.05		
Etc.			

Photo-Cat has the strongest oxidizing potential of any commercially available AOP process and will destroy contaminants of concern that other AOPs can not.

Applications:

Municipal, Industrial, Oil & Gas, Marine, Food & Beverage

- Drinking Water
- Groundwater Remediation
- Disinfection & Sterilization
- Industrial Process Wastewater
- High Purity Water
- Bilge & Ballast Water
- RO Feed & Polish
- Reuse / Recharge
- Zero Discharge / Closed Loop



Simple & Efficient:

- No catalyst loss - continuously recovers all catalyst, 24/7 duty, Catalytic process reduces energy requirements, Quiet
- No wipers, No membrane cleaning, No off gas, No waste generated, No UVT dependence, No chemical oxidants like peroxide or ozone. No Carbon Requirement.

Automated:

- Audited not Operated, SCADA/PLC programmed operation
- Digital service manual online; Remote monitoring, control, and data logging
- Automatic fault detection and recovery, 0 to 100% turn down capability

Ability to Treat:

- Insensitive to dissolved solids and opaque fluids, Not inhibited by turbidity, UVT or pH levels
- Not affected by pressure, temperature, alkalinity
- Operates with water containing iron and other metals

Manufacturing Excellence:

- Corrosion resistant, High-grade stainless-steel construction, NEMA 4 rating
- Plug & Play installations
- Highly reliable using highly developed standard, off the shelf components

Photo-Cat Models:



Photo-Cat L
1kw-20L Batch



Photo-Cat DL



Photo-Cat DDL



Photo-Cat QDL
Up to 360 kW-4 MGD

Sizing: Is the product of Flow X Rate Constant (Energy/Volume).

The Next Step Is to Pilot:



Why Photo-Cat AOP+: Features & Benefits

- | | |
|--------------------------------------|--|
| ✓ Better Water at Lower Cost | ✗ No Annual Lamp Replacement |
| ✓ The Platform is the Plant | ✗ No Wiper or Quartz Replacement |
| ✓ Removes & Destroys Chemicals | ✗ No Hydrogen Peroxide or Stabilizer Residuals |
| ✓ Removes Color, Taste & Odor | ✗ No Bromate Production |
| ✓ Removes Pb, Hg, Cr6 | ✗ No Chemical Oxidant Storage |
| ✓ Disinfects & Sterilizes | ✗ No UVT Dependence |
| ✓ Reduced Complexity | ✗ No Pre-Treatment Requirements |
| ✓ Broad Temperature & Pressure Range | ✗ No THM or HAA Issues |
| ✓ Longer Service Interval | ✗ No Generated Waste |
| ✓ Lower Cost Structure | ✗ No Noise |
| ✓ >99% Online Duty | ✗ No Off Gas |
| ✓ NSF ANSI 61 | |
| ✓ Reduced Complexity | |
| ✓ > 25 Year Design & Membrane Life | |
| ✓ 0 to 100% Turndown Capability | |
| ✓ Generic Off the Shelf Parts | |
| ✓ Promotes Sustainability | |



340 Sovereign Road, London, ON, Canada, N6M 1A8
Ph: 519-473 5788, info@Purifics.com, www.Purifics.com

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