**TANGIBLE ENVIRONMENTAL & OPERATIONAL BENEFITS**

**LOWER CHEMICAL CONSUMPTION AND HANDLING**
Ozone completely replaces traditional disinfection agents. Hazardous chemical handling, transport and operational costs can be reduced. Ozonated micro-water helps enhance caustic cleaning which further mitigates chemical consumption.

**CUT ENERGY DEMAND**
Due to effective cold disinfection, large amounts of energy can be saved which is normally used to heat hot water and steam. This makes ozone technology environmentally sound with respect to moving towards a more sustainable production.

**STREAMLINING PRODUCTION**
In addition to environmental benefits and lower operational costs, overall Clean-In-Place cycle time can be improved:
- No final rinse – since ozone does not leave any by-products this phase can be avoided.
- The potent characteristics of ozone reduces disinfection time significantly.
- No evolution of final product
- Cleaning phase can be enhanced which means lower cleaning agent demand.

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**DIAGRAM**

**TYPICAL CIP CYCLE**

**OZONETECH CIP-CYCLE**

**DID YOU KNOW THAT…**
- ...overall Clean-in-Place cycle time can be reduced by up to 30 minutes?
- ...total plant water use can be reduced by 10%?
- ...a large scale brewery can save at least $100,000 annually in chemical consumables cost?

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**Ozonetech**, started in 1993, offers a wide range of proprietary ozone generators for cleaning air and water, all produced in Sweden. In order to ensure the best possible functionality, we have an in house design and consultation team, as well as servicing and installation technicians.

We have many good references from a broad range of ozone use. Our products are used for restaurant exhausts, cleaning of exhaust ducts/minimising odours and recycling of heat, as well as for different kinds of odour problems, such as rotating heat exchangers for homes, grease traps, garbage rooms, swimming pools, remediation of toxic environmental waste, etc.

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Ozone technology provides high-quality water absent of any microorganisms and particles. Aqueous ozone can also be used to efficiently sanitize bottles, vats, or the mechanical filling equipment and does not leave any detrimental chemical by-products. Ensure long durability and taste and at the same time lower the energy consumption compared to traditional hot water treatment, owing to the low application temperature of ozone.

The oxidizing capabilities of ozone effectively removes colors and aroma compounds absorbed by components such as seals and other wetted materials in mechanical equipment, vessels and pipes.

Ozone leaves no unnatural residues after use, which means no final rinse is required - natural oxygen is the only residue.

Ozone technology can provide high-quality process water and sanitizing a microbe-free environment:

- For large facilities with closed circulating water and cooling systems, ozone is the optimal solution for maintaining a microbe-free environment.
- Avoid legionella outbreaks from cooling towers.
- Reduce blow-off due to natural break-down into oxygen.

The mechanisms and characteristics of ozone:

- Ozone has an inherently high oxidation potential. Even at low concentrations, it offers significantly increased treatment capacity compared to typical disinfection agents.
- This makes ozone treatment very effective against organic residues (such as fats and proteins) and breaking down cell walls and membranes of microorganisms.

Overview of disinfectants:

<table>
<thead>
<tr>
<th>Compound</th>
<th>Advantage</th>
<th>Challenges</th>
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<tbody>
<tr>
<td>Ozone</td>
<td>• Gold application&lt;br&gt;• Microorganisms cannot develop resistance&lt;br&gt;• Ozone returns all harmful by-products&lt;br&gt;• No chemical handling&lt;br&gt;• Very low operational costs&lt;br&gt;• Does not leave any harmful by-products</td>
<td>• Separate mechanical installation&lt;br&gt;• Corrosive&lt;br&gt;• Oxidizes copper vessels&lt;br&gt;• Requires very clean surfaces before use&lt;br&gt;• Requires rinsing after use</td>
</tr>
<tr>
<td>Hypochlorite</td>
<td>• Effectively breaks down organic compounds&lt;br&gt;• Microorganisms cannot develop resistance&lt;br&gt;• Very low operational costs</td>
<td>• Corrosive&lt;br&gt;• Oxidizes copper vessels&lt;br&gt;• Requires very clean surfaces before use&lt;br&gt;• Requires rinsing after use</td>
</tr>
<tr>
<td>Peracetic acid</td>
<td>• High availability&lt;br&gt;• Leaves only a limited amount of by-products&lt;br&gt;• Cold application&lt;br&gt;• Requires strict handling procedures</td>
<td>• Limited durability&lt;br&gt;• Requires strict handling procedures&lt;br&gt;• Limited solubility&lt;br&gt;• Highly corrosive</td>
</tr>
<tr>
<td>Iodophors</td>
<td>• Effective disinfection&lt;br&gt;• Long lasting disables</td>
<td>• Requires strict handling procedures&lt;br&gt;• Requires separate storage&lt;br&gt;• Requires rinsing after use</td>
</tr>
<tr>
<td>Hot water and steam</td>
<td>• Effective disinfection&lt;br&gt;• High operational costs&lt;br&gt;• Time consuming</td>
<td>• Requires strict handling procedures&lt;br&gt;• Requires separate storage&lt;br&gt;• Requires rinsing after use</td>
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Don’t compromise – maintain quality, taste and durability of your product.