



Horizontal UV Chamber

Several questions have been presented regarding the placement of UV oxidation chambers in the horizontal position as opposed to the vertical. Published information has indicated that horizontally mounted lamps are more efficient at removing or reducing total organic carbon (TOC). Dr. Meltzer apparently felt it was important enough to publish the identical text regarding the horizontal UV chamber mounting in three publications.

Previous tests performed utilizing vertical and horizontal mounted UV chambers indicated up to about a 30–33% increase in efficiency with the horizontal chamber. The difference here was approximately 1.0 ppb. The vertical unit produced water at about 3.0 ppb and the horizontal unit produced 2.0 ppb on the same feed. However, this data is not available and other potentially influencing factors had not been ruled out during the investigation. Higher TOC levels may also not show the same reduction.

The only theory at this point seems to be temperature or temperature difference. It has been demonstrated that a vertically mounted UV chamber can show a temperature increase from bottom to top of 5–7°C. The same chamber horizontally mounted only showed a 1–2°C difference from end to end. There is published information that shows up to a 20% decrease in relative UV intensity with an increase in temperature. So it follows that a large temperature gradient inside a vertically mounted UV chamber could cause a reduction in efficiency.

Furthermore, anyone that has removed an older or burned out UV lamp from a vertically mounted chamber probably found that the element located at the top of the lamp was burned out or blackened. When lamps fail or degrade a yellow to silver/black color can be found at each end of the lamp. This is where the heating elements are located. When the lamp ages or fails there is a darkening of the glass at each end of the lamp. The top of the lamps is almost always darker than the bottom. This would also indicate that the vertical lamp is too hot at the top and could cause a premature lamp failure. Visually, the closest comparison would be the darkened end of a fluorescent lamp that has burned out. (Most people have probably observed the dark ends of a spent fluorescent lamp.)

Sartorius AG
Weender Landstrasse 94–108
37075 Goettingen, Germany

Phone +49.551.308.0
Fax +49.551.308.3289

www.sartorius.com/arium

USA +1.800.3687178

UK +44.1372.737100

France +33.1.69192100

Italy +39.055.505671

Spain +34.91.3588566

Japan +81.3.33295533

Specifications subject to change
without notice.

Printed in Germany on paper that has been
bleached without any use of chlorine.

W/sart-000 · G

Publication No.: SLG2022-e01041

Order No.: 85030-514-92