TOC DESTRUCTION

TOTAL ORGANIC CARBON REDUCTION USING UV

TESTIMONY

"Nam Solutions and Technologies (NSAT) and ULTRAAQUA entered exclusive dealership agreement since early of 2014. Differently from Europe, electronics and semiconductor industry plays an important role in ASEAN's economic development. Customers in such industry always highly demand ultra-purified water (UPW) to facilitate the production of their valued products. UV technology is needed not only for effective disinfection, but also TOC removal as well. When such market was dominated by very limited UV manufacturers, ULTRAQUA has soon been recognized as more competitive in life cycle cost along with effective TOC removal."

Wachira Pintong
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ULTRAAQUA
UV DISINFECTION SYSTEMS

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FOR ENERGY SAVING AND EFFICIENT TOC REDUCTION IN ULTRA PURE WATER

TOC REDUCTION IN SEMICONDUCTOR INDUSTRIES

200, 300SS TOC SERIES ARE MADE OF ELECTROPOLISHED HIGH-GRADE AISI316L

PLC CONTROL
- GFRP control cabinet
- 4.3" touch display
- System state monitoring
- Remotely controlling
- as standard

EASY MAINTENANCE
No tools needed for regular maintenance

8000 HOURS LAMP LIFETIME

TOC LEVELS CAN BE REDUCED TO<1PPB

Reduction of TOTAL ORGANIC CARBON in water is critical for the MICROELECTRONICS, in PHARMACEUTICAL INDUSTRIES, FOOD and BEVERAGE, PROCESSING WASTEWATER and POWER GENERATION INDUSTRIES, where even the smallest of contaminants can affect the products, their performance and enable the microorganism that feed on these organic impurities to spread.

Due to the low penetration depth of the 185nm light, the efficiency of the TOC reactors depends on the hydraulic conditions. The ULTRAAQUA UV TOC reactors have been optimized through combined chemical process and CFD modelling approach.

For an additional improved efficiency, the ULTRAAQUA UV TOC reactors can be combined with the addition of other oxidants like e.g. hydrogen peroxide and ozone

SIZING OF THE UV SYSTEMS IS BASED ON THE KINETIC MODELING APPROACH FOR TOC REMOVAL PREDICTION

TOC in ultrapure water is typically composed of natural organic matter and soluble microbial products from the source water. The elementary second order reaction rate constant of natural organic matter with the OH-radical has been investigated in a number of studies and is used in the ULTRAAQUA UV kinetic model together with an advanced model for the formation and concentration of OH-radicals

TOC reduction requires the use of higher UV energy level created at 185nm wavelength. TOC lamps simoultaneously emit light at 254nm wavelength ensuring combined disinfection and oxidation

ULTRAAQUA UV uses UV lamps emitting light at 185nm wavelength (this light has more energy than the 254nm used in UV water disinfection applications). This light energy promotes the formation of OH-radicals from photolysis of water. The OH-radicals react with the organic matter in the water leading to the oxidation into CO_2 (carbon dioxide) and H_2O (water) and resulting in the removal of TOC