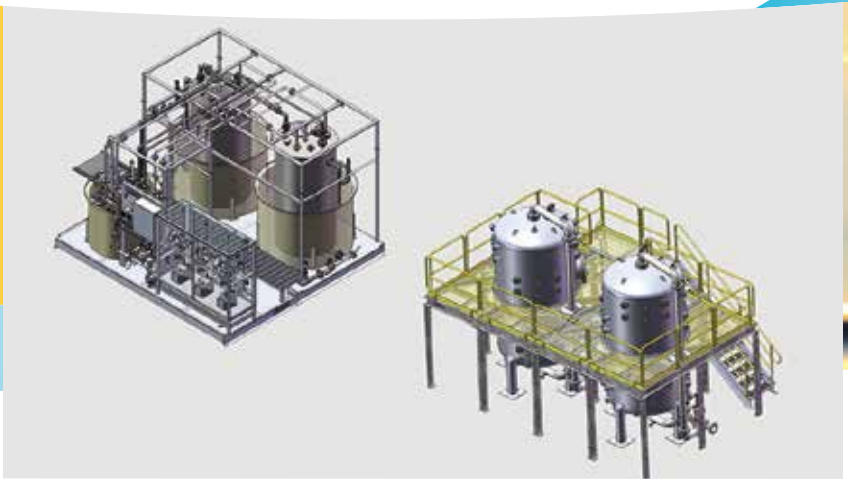


VANOX® AOP SYSTEM FOR TOC REDUCTION

HIGH FLOW TOC REDUCTION

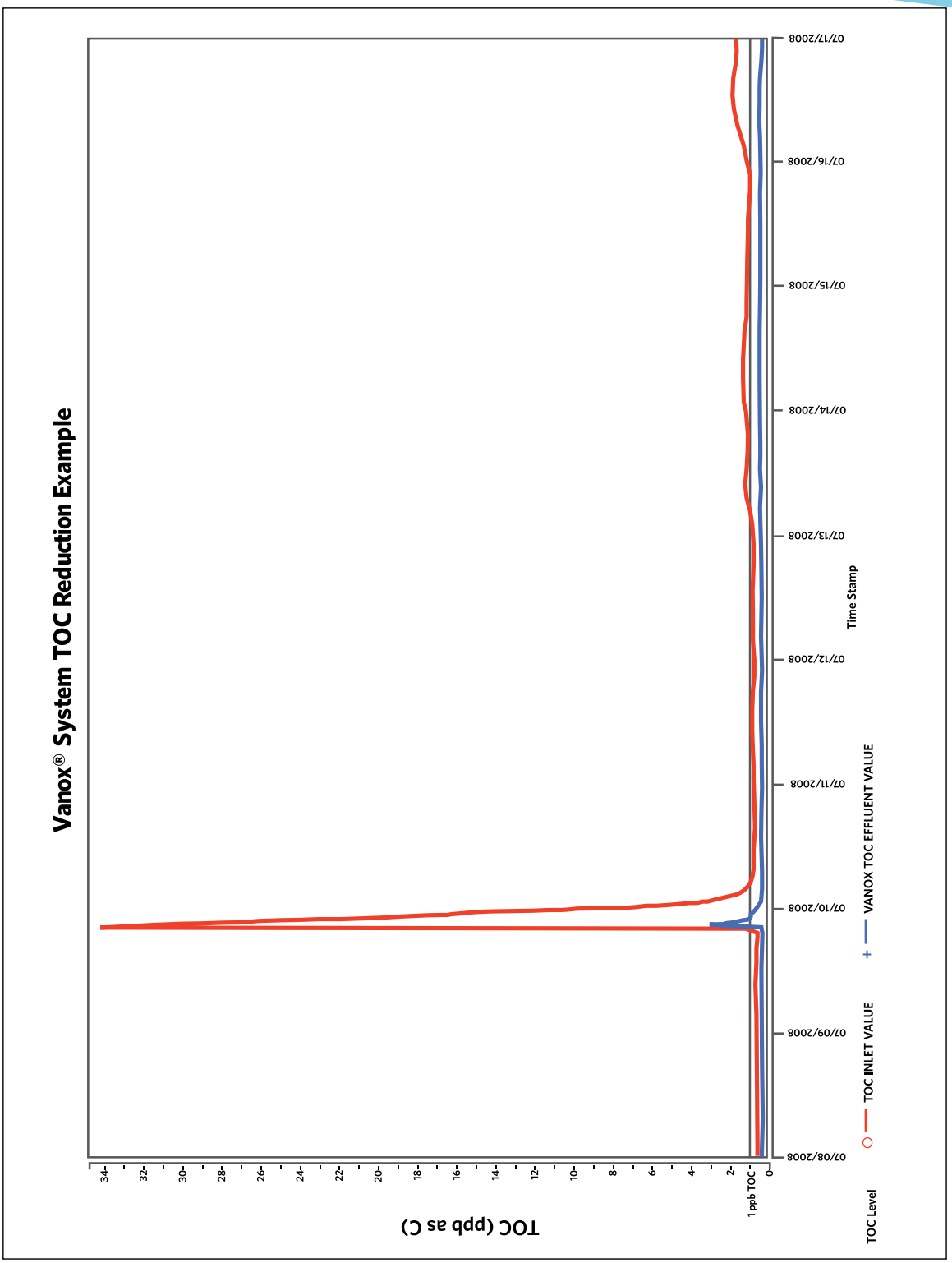
Evoqua introduces a high flow solution specifically for Total Organic Carbon (TOC) reduction, where realization that organic species can impact yield at every process stage that the product comes in contact with water. This treatment system can treat hundreds or thousands of gallons per minute surpassing the International Technology Roadmap for Semiconductors (ITRS) requirements.

Our proprietary advanced oxidation process — used in the Vanox® AOP system — can consistently reduce TOC to 0.5 parts per billion (ppb) and treat seasonal TOC variations in feed water. This is important, as organic carbon elevations above 1.0 ppb can directly affect the manufacturing process and has been shown to significantly impact product yields. The repeat orders for Vanox AOP systems by nearly every factory they are placed in are an indicator of how these tools are a valuable return on investment. Recent discoveries that the species of the TOC are as important as the quantity of TOCs has generated interest in the patented process from Evoqua that attacks the specific TOC species and has the greatest impact on microelectronics production. Species, such as urea, are the hardest to remove using conventional UV or UV Peroxide/Ozone technology but are readily reduced with the Vanox AOP system solution.

The Vanox AOP system removes and/or controls urea primarily associated with THMs (Trihalomethane), such as chloroform, which is generated as a by-product from the use of chlorine. The system also addresses urea and IPA, the primary organics that can require a more elaborate treatment. These difficult to control organics have been proven to impact yield and device performance, especially at the most demanding process steps.

These systems have been validated at a variety of flows and total organic carbon demands. The Vanox AOP system offers the ability to scale the systems for future demand with a modular design, coupled with the process ability to set the TOC effluent where the technology node requires it to be. In fact, the platforms have been found to be 450 mm, enabling technology for several leading edge factories.

The fully redundant (n+1) designed Vanox AOP system offers 365/24 uptime and is efficient. The Vanox system family of platforms control to meet the incoming demand required; preserving power, capital costs and chemical. By utilizing a suite of customized analytical measurement tools the Vanox AOP system offers continuous process control and access to streaming process data for constant tracking of the system and environmental parameters that it is responding to.



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