Trust your data and reduce costs while improving compliance to regulations

Situation:

A customer in the chemical manufacturing industry contacted Hach® because they were struggling with a water quality issue related to effluent organics loading. The site is part of a community of manufacturing plants that use a common wastewater treatment system. The facility owner charges each plant for the loading concentration of organics in the wastewater. These costs were independently measured by the facility owner and were unpredictable costs for the plant who contacted us. To better understand the magnitude of the loading and, when identified, where the load originated from, our customer needed a solution. The solution had to be reliable, cost-efficient, and deliver results that could be trusted as well as survive in a critical industrial application.

Background

The sample at this location was somewhat a challenge and they knew it. The water used in production cooling water has a lot of iron and manganese (Mn) particulate in it. Everything it encounters turns orangish-red and tends to settle out in the lines. They had to add a step to the sampling process to filter the Mn out to protect their analytical equipment and planned to continue filtering. It was understood that filtering out Total Organic Carbon (TOC) happens as well when the Mn is filtered; a small price to pay for protecting their unreliable TOC analyzer. The customer knew that they would have to allocate budget to find a robust solution. Management was bought into finding a solution and with each event resulting in a significant cost to the facility, the timeline to find a solution could not be shorter.

Alternatives investigated:

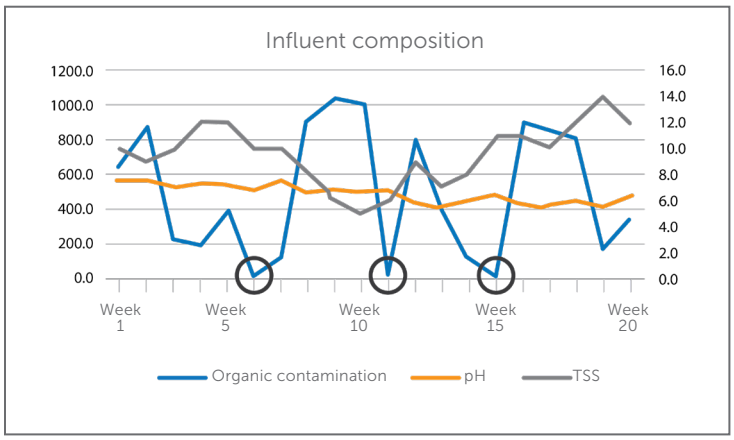
This chemical facility had been working with a traditional TOC analyzer, and purchased an ~$50,000 (USD) analyzer from a different company's sales team. Unfortunately, this analyzer was expensive to maintain, both in terms of the labor required for continual maintenance, and the costs for replacement parts required for the proper functioning of the unit.

Case Study: Organics Management with Hach's BioTector for TOC

Traditional TOC analyzers are based on lab instruments, like thermal combustion or UV persulfate technologies, that require careful care and are sensitive to any slight change in the wastewater matrix. In no way was this analyzer unit capable of continuous use in this harsh environment and the Methyl Methacrylate (MMA), a comonomer used in paints, that was in their sample. When their unit went down they turned to the original equipment vendor again and in an effort to make sure data was not interrupted ended up buying another analyzer – a painfully costly decision of $100,000 (USD); and as it turned out, still no working solution.

The experience led them to contact Hach. The Biotector with its patented Two-Stage Advanced Oxidation (TSAO™) oxidation technology was ideally suited to meet the customer's needs.

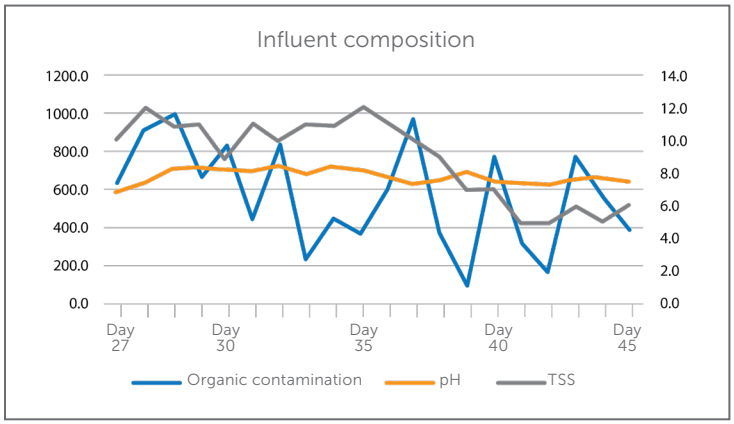
Hach and the customer talked over the details of the sample and sampling location to be sure that any solution offered would meet the full scope of requirements. A thorough assessment of the installation location, the matrix, and the data requirement was documented. To confirm the wastewater matrix, a sample was sent for analysis at a third party lab so that there was a full view of the sample make up. At the end of this assessment process, the goal for the analyzer and what purpose/value was needed from the sampling for the plant's effluent was clear. Several options were considered, including the Hach online TOC analyzer, BioTector. With its industrial design, self-cleaning reactor and sample tubing, and powerful TSAO oxidation technology, the BioTector was found to be a perfect fit for the application. The value and costs were well aligned to give a positive customer return.



Example data from facility prior to installation of BioTector online TOC analyzer - circled data represents a non functional analyzer

How the opportunity progressed:

Hach brought in technical application experts to review the documentation gathered about the application and sample, and the product needed at the facility was configured. As part of this process, photos of install locations were reviewed, and a detailed plan for installation was developed. Sampling is a key element of a successful installation, so a thorough review of sample delivery, quality, and quantity, was made. A final site visit with the local sales manager and application expert confirmed all details and finalized the installation and sampling plan. This cemented the confidence in a Hach solution, and the purchasing process started shortly thereafter. This is such an important step as the customer had previously been disappointed by another company. Having a Hach expert onsite bolstered the client's confidence in the Hach solution.



Example data from typical water analysis after installation of a BioTector online TOC analyzer

The on-site audit identified a few items to address, and in the end, these requests were received well by the customer. At a second site visit both the site operator and the chemical facility we were working with participated in a TOC lunch and learn for the site. During the discussions, two additional analyzers were installed at the facility manager's plant were discussed. With the two analyzers reaching the end of their useful life, this was a great time for both companies to align on a common TOC analysis strategy.

The solution

The customer purchased a dual-stream Hach B7000i TOC analyzer. Once up and running, and with organics now under control at the manufacturer's site, the facility owner audited the installation of the analyzer. A lead operator at the chemical company's facility described how the instrument was the best investment they had made, stating, "It just works!" Hach and the facility owner worked together to find a commercial and product solution that met their specific needs. Time was of the essence - the facility owner was aware that the two analyzers already installed at the plant would soon need to be replaced, and continued operation depended on installing new analyzers before a breakdown occurred. Two weeks later, the facility owner's analyzer group called and stated that both of their old analyzers quit working, and they were in a bind. Hach scrambled to get them their own analyzer, replacing the two old ones with a single new Hach B7000i.

Conclusion

With both analyzers installed and reliably delivering results that the manufacturing plant and the facility owner trusts, the plant is well-positioned to manage their organics for the foreseeable future. The customer's investment in Hach instrumentation mirrored Hach's investment in the customer's success. A winning combination for water quality.

Organics Management with BioTector for TOC:

- *Powerful oxidation to identify simple and complex compounds*
- *Unaffected by salts up to 30%*
- *Samples with oils, fats, greases, particulates are no problem**
- *No sample filtration or delicate sampling systems*
- *Self cleaning reactor*
- *High reliability (99.7% uptime)*
- *Low maintenance (6 month service/calibration)*

**See published specification sheet for full details*

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HACH World Headquarters: Loveland, Colorado USA

United States:	800-227-4224 tel	970-669-2932 fax	orders@hach.com
Outside United States:	+1 (970) 669-3050 tel	+1 (970) 461-3939 fax	int@hach.com

hach.com

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