

Monitoring VFA/Alkalinity and wastewater effluent in paper industry



BioTector
B7000 TOC/TN

Objective

Environmental compliance & optimising treatment efficiency

Parameter

Total Phosphorus, Total Organic Carbon and Total Nitrogen (TOC/TN), Volatile Fatty Acids (VFA)/Alkalinity (FOS/TAC), pH, Suspended Solids

Integrated system consisting of:

- AnaShell type AS4500 insulated analytical shelter (2 m x 4 m) with H-AC unit, lightning protection, sink and boiler
- Phosphax sigma analyser for Total Phosphorus
- BioTector B7000 TOC/TIC and TOC/TN analysers
- EZ7200 analyser for VFA/Alkalinity
- EZ9130 Heavy Duty Filtration System
- Bühler 3011 automatic sampler
- SC4500 controller with 1200S-sc pH and Solitax t-line probes

Problem

A paper production factory in Germany had a challenging task of biological treatment of industrial wastewater with high carbon load and low levels of Nitrogen and Phosphorus. Optimised nutrient dosing is necessary to ensure treatment efficiency and avoid excess nutrients. The paper factory also faced challenges to monitor the anaerobic treatment efficiency by monitoring Volatile Fatty Acids / alkalinity ratio (FOS/TAC). While essential for bacterial activity, excess levels can cause a pH drop that is toxic to bacteria.

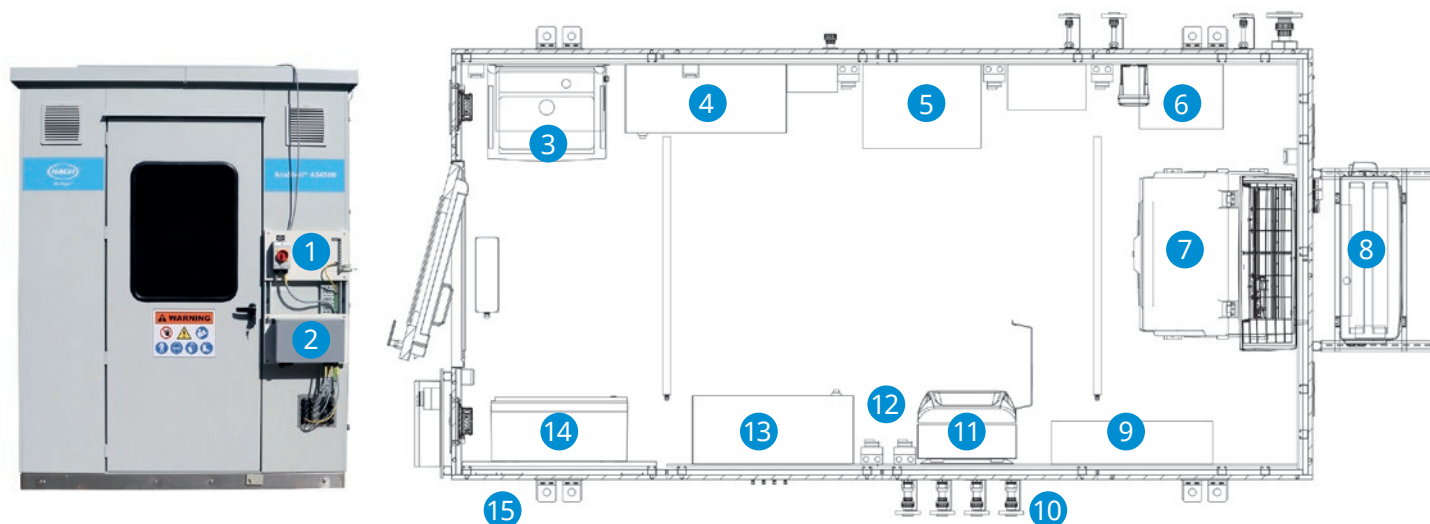
Solution

The Hach[®] inhouse engineering team designed a turnkey solution for optimising nutrient dosing and monitoring anaerobic reactors. A weather and corrosion resistant AnaShell analytical shelter provided enough space for sample preconditioning systems, analysers, and an automatic sampler. All instruments were pre-mounted, and the entire shelter underwent a factory acceptance test (FAT) prior to shipment for instant and sustainable operational reliability on site.

Benefits

- Thanks to the online monitoring of VFA and Alkalinity the anaerobic digesters are operating consistently and reliably.
- The AnaShell provides stable, laboratory-like conditions for the instruments to achieve high accuracy and uptime, plus a safe work environment for maintenance personnel.
- Significantly reduced project management workload through single source supplier.

Details & Components



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| 1 Main power switch | 13 BioTector TOC/TIC analyser |
| 2 Signal junction box | 14 Power distribution panel |
| 3 Sink with hot water boiler | 15 Lifting / mounting bracket |
| 4 BioTector TOC/TN analyser | 16 SC4500 Controller |
| 5 Phosphax sigma analyser and control unit | |
| 6 Sample vessel for pH and turbidity probes, plus Sigmatax sampling unit | |
| 7 Automatic sampler | |
| 8 Air conditioning unit | |
| 9 EZ Series Heavy Duty Filtration System | |
| 10 Inlet / outlet flanges with protective stainless steel bracket | |
| 11 EZ Series VFA/Alkalinity (FOS/TAC) analyser | |
| 12 Individual maintenance switch for every analyser | |