

Protoc TOC analysers at Heineken continue to optimise effluent quality and reduce operational costs

Six Protoc TOC analysers currently monitor key effluent streams:

The Heineken - John Smith's Brewery located in Tadcaster, currently use six Protoc TOC analysers to monitor key effluent streams and proactively manage their site effluent. The Brewery has used the Protoc TOC analysers technology for more than 16 years, from making the initial installations back in 2004. Some of the older instruments have now recently been replaced with the latest Protoc technology since these instruments are an integral part of the Company's environmental compliance program. The site has used these instruments to gain a better understanding of each production area and reduce the load entering the on-site treatment facility. Improved measurement and control, has improved effluent quality and reduced operational costs.



Image: The Tadcaster Brewery was established in 1758 and is Yorkshire's oldest Brewery and is now owned by the Heineken Group

The selection process:

In September 2004, John Smith's Brewery located in Tadcaster, decided to investigate how they could monitor their effluent quality and identify product

loss. They approached Pollution & Process Monitoring Ltd (PPM) to discuss their requirements and design a suitable monitoring solution.

To simplify the delivery of the project, the Project Manager at John Smith's, wanted a complete turnkey package from a single supplier. This would include a number of reliable on-line analytical instruments some pre-installed onto back-panels and others within walk-in GRP kiosks, complete with lighting, heating, sample delivery, sample preparation and preformed sample pipe-work. Additionally, consideration was given to whether the same Company, could provide the on-going service support. The Project Manager identified that PPM specialised in providing complete turnkey packages and had a team of highly trained instrument engineers, providing after sales service.



Image: Some of the instruments were pre-installed by PPM within a GRP analyser kiosk simplifying site installation and providing a secure weather proof housing

Analyser reliability was also a critical consideration. The project manager contacted a number of producers in the Food and Beverage sector which already had the Protoc analyser technology installed, to establish that the instrumentation was suitable for the brewing industry and that these instruments were properly supported. After receiving positive feedback, John Smiths asked PPM to attend site, make recommendations and prepare a monitoring proposal.

A site survey was conducted by PPM:

After conducting a comprehensive site survey, to evaluate the possible monitoring locations across the site drainage system, PPM identified seven key locations:-

- Beer Destruction
- Brewhouse
- Filtration
- Kegging
- Canning
- Bottling
- Fermentation

With such extensive monitoring in place, it was concluded John Smiths would be able to pinpoint any issues from specific production areas and ultimately improve effluent quality. The original installation of the Protoc analyser technology including pre-fabrication, was finally completed in March 2005.

The Protoc technology plays an important role in the site's operation and environmental compliance:

Future expansion of the Brewery was also being planned however the local Yorkshire Water treatment plant was not capable of handling any further load from the proposed expansion. Consequently, John Smith's decided to build an on-site effluent treatment plant, after which the Protoc analyser technology then played a key role in controlling the load entering the treatment facility and ultimately ensuring compliance to the imposed discharge consent.

Since making the initial instrument installations, it is acknowledged that a large reduction in effluent load has been achieved reducing the demands on the effluent treatment plant - with a significant reduction in associated energy use and operation costs. The Protoc TOC monitors play an important part in the Brewery's operation, any potential anomalies such as a leaking valve from the Brewhouse are quickly identified by the instruments. Hence, the analysers provide a comprehensive picture of effluent quality from key production areas which is summarised in a weekly report, circulated to all key personnel.

PPM currently complete the routine servicing although initially this work was performed by site operations which gave them good insight into the operational performance of the Protoc technology. Positive commentary was received from them about the instrument's automatic functionality: "The auto zero and calibration feature ensures the monitors are self-checking, giving confidence in the results we are seeing. This is an important feature."



Image: Protoc 300 TOC analyser with Paper Band Filtration sample preparation system

A further Protoc analyser was subsequently located in the Brewery yard, to monitor the surface water discharge to a local water course, to ensure rainwater collected in this area was free of contamination.

The Brewery is now part of the Heineken Group and more recently, the Company has upgraded some of the original installations after 15 years of continuous operation. The most recent investments have included relocation of one system into a fully engineered outdoor kiosk, providing improved access and weather protection. An additional monitoring station was also added to a brand new fermentation line which was commissioned in 2020.

Currently, the Protoc technology operate 24-7 in six locations which include the Bottling, Canning, Beer Destruction and Brewhouse production areas.

The continued use of the Protoc analyser technology over the sixteen year period, is testament to the proven reliability of measurement and the service support which PPM provides to the end user.

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