

## PeCOD™ COD Analyser Delivers Rapid, Reliable and Accurate On-line COD Monitoring.

Aqua Diagnostic's unique new COD method using its patented PeCOD™ technology is proving to be a reliable on-line monitoring tool for industry looking to reduce costs through improved operational and environmental performance.

While the PeCOD™ COD technique has been proven to be a reliable alternative to the standard dichromate COD method<sup>12</sup>, recent installations of the new PeCOD™ COD on-line analyser, P100, has demonstrated that real time, reliable on-line COD monitoring is now a reality. The PeCOD™ COD technique has high tolerance to interfering species (chloride) removing the need for toxic chemicals such as mercury.

### Food and Beverage, Manufacturing Process Industry

The on-line PeCOD™ COD Analyzer system overcomes the well known problems in food and beverage waste water of large variations in organic content (100 mg/L to 20,000 mg/L COD) and high suspended solids to demonstrate the robustness of the technique. Reliable COD monitoring can support improved operational performance and reduce costly waste water discharges.

Figure 1 shows the comparison of measurements on 24 hour composite waste water samples from a food and beverage plant analyzed for COD by the PeCOD™ technique and for BOD by an independent laboratory using the standard 5 day BOD method. Applying a constant offset factor the PeCOD™ COD result shows excellent correlation with the BOD results.

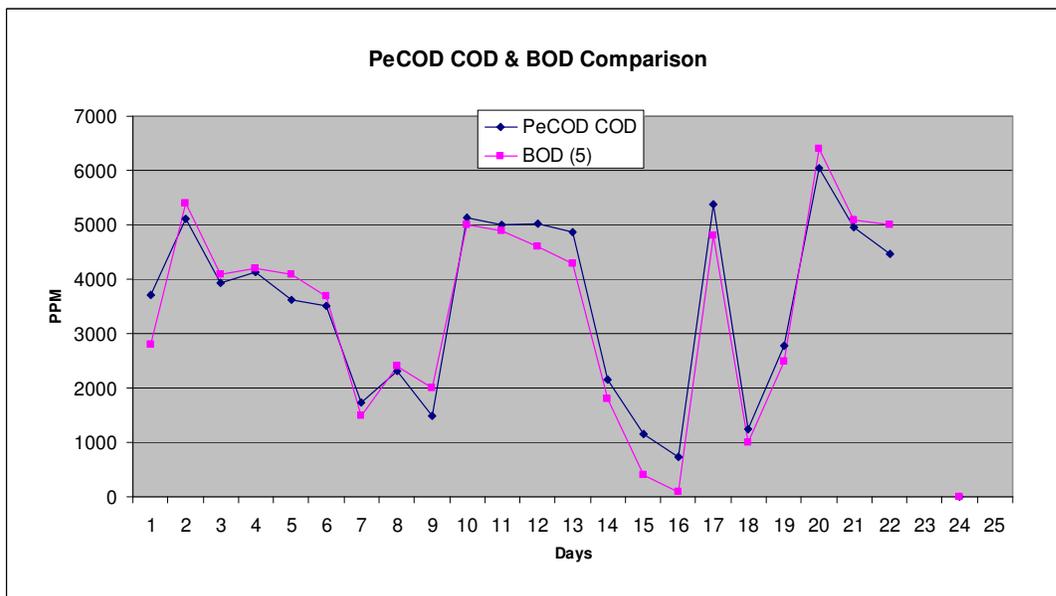


Figure 1: Comparison of PeCOD COD with actual BOD in wastewater, Food and Beverage Industry; 24 hour composite samples, 2006.

<sup>1</sup> Zhao, H. et al, Anal. Chem. **2004**, 76 (1), 155-160.

<sup>2</sup> Zhang, S., et al, Analytica Chimica Acta, 514 (2004), 89-97

Figure 2 demonstrates the variability of COD in a food and beverage manufacturer's trade waste caused by changes in plant processes. Measurements were performed on-line every 20 minutes. The large rise in COD values on the 4/12/2006 occurs during start up of additional manufacturing processes at the beginning of the week. The labeled peaks correspond to plant cyclic processes.

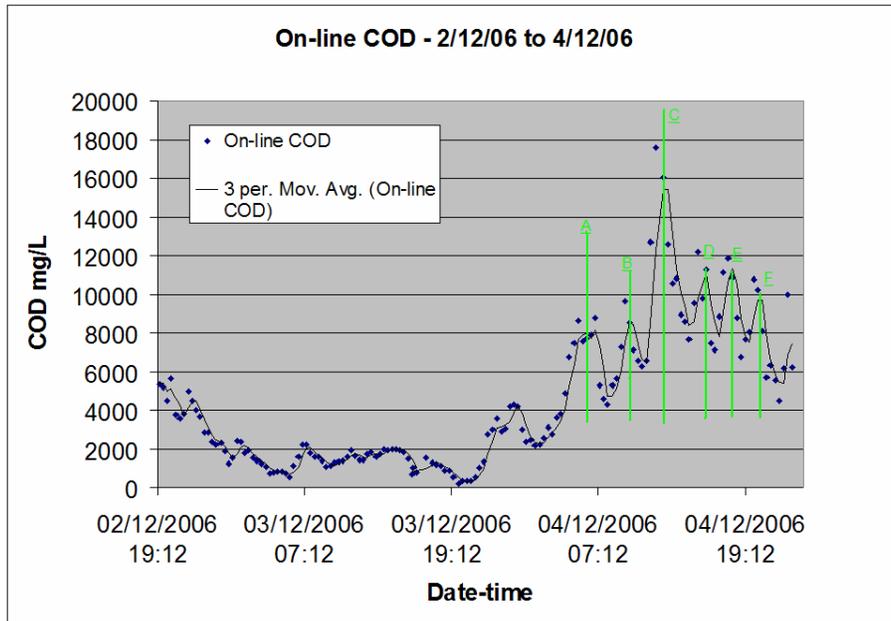


Figure 2: Online PeCOD™ COD monitoring

Figure 3 shows online COD data over a 9 day maintenance free period. The real time monitoring capabilities of the technique enable tracking of subtle changes in COD levels to individual plant processes in addition to large variations caused by plant shutdown and start up procedures.

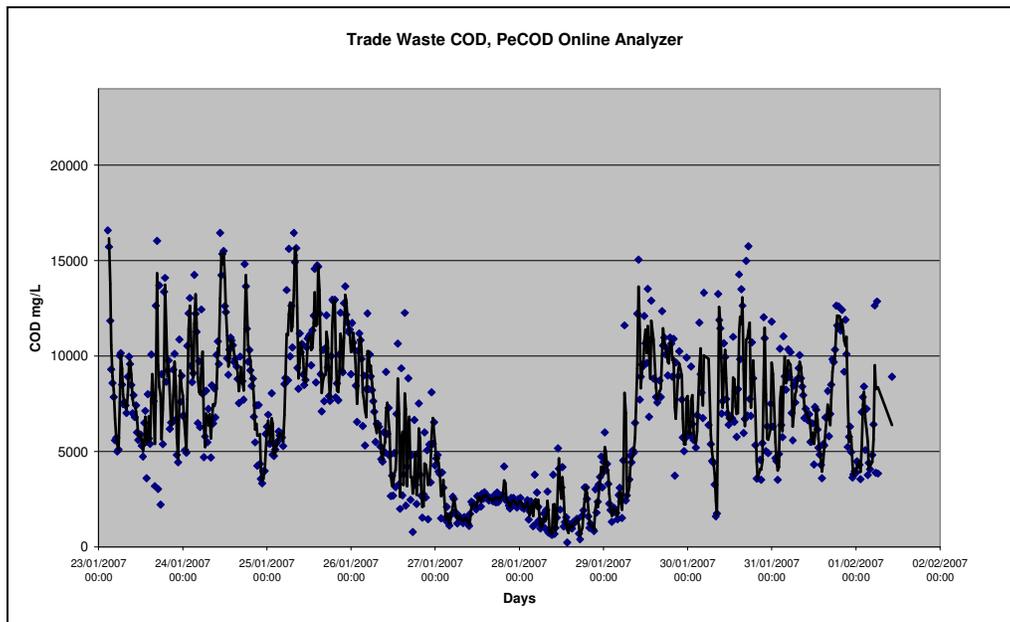


Figure 3: A 9 day continuous maintenance free on-line COD monitoring, 20 minutes cycles, Food and Beverage, 2007.

## Municipal Wastewater treatment

The PeCOD™ COD on-line analyser has also proven a reliable COD monitor for municipal waste water treatment plants. COD monitoring has been conducted on primary stage effluent at a municipal wastewater treatment facility.

Real time COD event monitoring will enable efficient secondary stage treatment, reducing operational and discharge costs in regional plants vulnerable to COD surges from industrial sources.

Comparison of on-line COD data, averaged for a 24 hour period, with corresponding 24 hour composite samples analysed using the standard dichromate method shows excellent correlation as illustrated in figure 4.

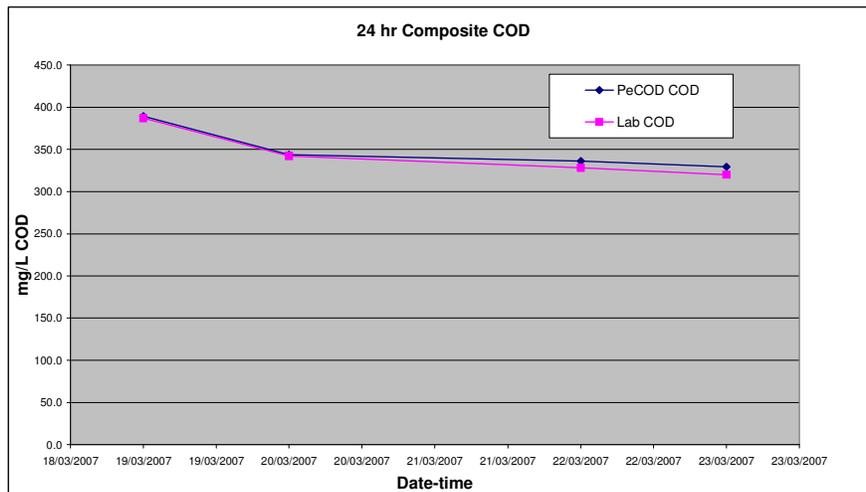


Figure 4: Randomly selected days for comparison of 24 hour analyses.

On-line COD measurements with 20 minute intervals conducted over 9 days show a diurnal trend in the data (figure 5). Each rise and fall corresponds to a 24 hour period. The sewerage collection system also receives surface waters from the storm water system.

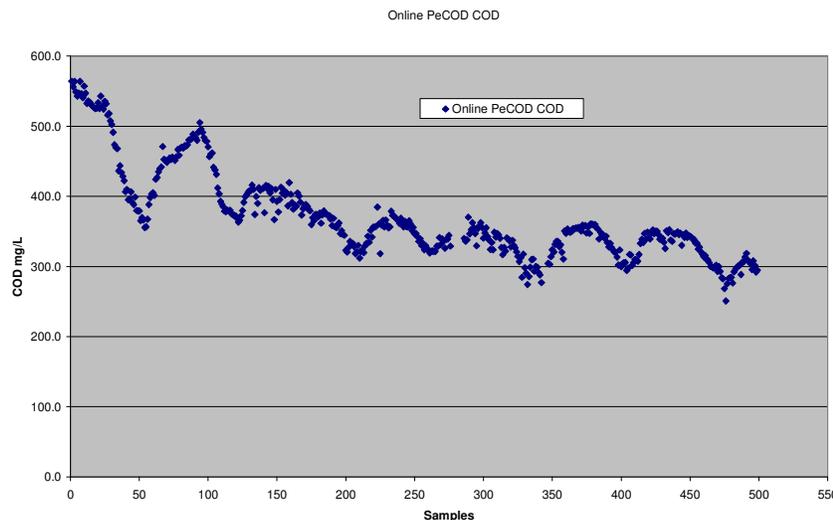


Figure 7: Online PeCOD™ COD of primary effluent.

In this example, an unusually high organic load was observed over a weekend (shown at the start of Figure 5). The source of high organic load delivered to the plant was not identified. However, operational adjustments could be made to accommodate the COD surge.

This illustrates the value of on-line monitoring whereby real time identification of high organic load events will enable pro-active management of the treatment process to prevent costly overloading of the treatment plant and infringement of discharge permits.

## Summary

Aqua Diagnostic's unique new COD method using its patented PeCOD™ technology is proving to be a reliable on-line monitoring tool for industry looking to reduce costs through improved operational and environmental performance.

Key outcomes from on-line installations of the PeCOD™ COD analysers include;

- An environmentally friendly technique reducing the need to use corrosive and toxic chemicals.
- Robustness of technique when presented with traditionally difficult samples.
- Rapid COD measurement capable events monitoring system for real time production processes to deliver reduced operating costs.
- A low maintenance technique suited to the requirements of on-line applications.

For more information about Aqua Diagnostic's range of COD analysers contact Aqua Diagnostic at [www.aquadiagnostic.com](http://www.aquadiagnostic.com).