Optimization of Petrochemical Plant using PeCOD

Companies within the petrochemical industry are under constant pressure to improve the efficiency of their processes in order to save costs and maximize profitability. However, the complex nature of petrochemical refinery processes presents a challenge for improving efficiency. Tweaking one process can easily cause upsets in another process, and ensuring there is no contamination between processes is of vital concern. The ability for a plant to improve their efficiency is highly dependent on their ability to self-monitor their processes, and as monitoring technology improves companies are concerned with developing new methods of optimization through self-monitoring.

A liquefied natural gas (LNG) processing facility near Calgary, Alberta is an example of a plant with this concern. They perform in-house testing of COD. This is used for effluent compliance, process optimization, and as a check to ensure there is no hydrocarbon contamination leaking into processes and flows that must remain clean. Propagation of this contamination throughout the plant can lead to the need for a full shutdown, incurring great cost in deferred gas and lost productivity. To improve their monitoring abilities and reduce the risk of requiring a shutdown, the plant has invested in a PeCOD® COD Analyzer for monitoring of their process water and effluent.

The plant operators received, installed, and began running the peCOD instrument by watching the Online Tutorial videos. Within a week they had confirmed the applicability of the method to the Petrochemical matrix, with correlation to Dichromate COD attaining an R^2 value of 0.9927. See (the graph) below for comparison data between Dichromate COD and peCOD for the first week of testing:
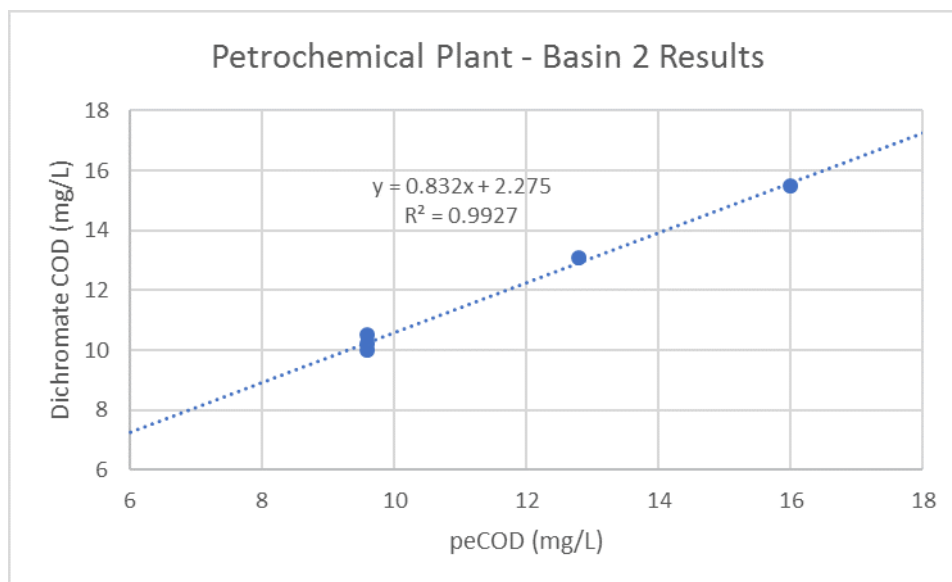

Figure 1. PeCOD vs Dichromate COD Comparison, Basin 2 at LNG Plant

OPTIMIZE YOUR RESULTS. PROTECT OUR ENVIRONMENT.

With the implementation of peCOD, the operators were attaining results themselves within <10 minutes compared to the 3+ hours it would take to receive a result from the lab for their old COD method. After the first week of testing, the lead operator at the LNG plant had the following to say:

> *"The PeCOD® COD Analyzer will prove invaluable for plant upsets where we fear steam condensate/boiler feed water contamination from the amine gas sweetening process. It saves hours in analysis time which is huge for an operating gas facility. This allows us to troubleshoot process upsets in our water system, preventing the spread of contamination outside of the equipment, and saving money on decontamination. We can also get almost real-time monitoring of our waste water effluent during critical operations, decreasing the overall environmental impact. Perhaps most importantly, it allows us to start up the plant almost immediately after a complete outage vs. waiting 4 hours for the test result. This gets us back to full production quicker and reduces deferred gas volumes by over $100,000 per outage."*

The plant operators continue to use the PeCOD® on a daily basis, and plan to implement an online PeCOD® COD Analyzer on the plant effluent in the future.