Petrojam Chemist Finds New Ways to Use Quality Window

Large quantities of flammable liquid in a technologically advanced setting means that you need to keep a sharp mind when working at on oil refinery. As the chief chemist and Lab Manager for Petrojam, Gladstone Ivey knows the value of a tool that helps you work smarter as well as more efficiently.

A former Quality Assurance Manager with a Fortune 500 company, Mr. Ivey returned to his homeland Jamaica in 1998 and was soon recruited by government owned Petrojam Refinery to manage its Quality Control lab. Crude oil purchased from Venezuela and Mexico is refined by Petrojam into quality products including liquid petroleum gas (LPG), unleaded gasoline (87 and 90 road octane), jet fuel, auto diesel, heavy fuel oil and asphalt.

One of the things Mr. Ivey brought home with him was Quality Window, a statistical analysis tool he had been introduced to in his former career as a QA manager with a multi-national company in South America.

Gladstone Ivey checks petroleum samples in Petojam's Quality Assurance Lab

"I had previously used Quality Window as a statistical process control tool to collect fill weights and volumes on a shampoo packaging line", recalls Mr. Ivey. "Shampoo is much different that petroleum, although both have similar parameters when it comes to statistical quality control."

The Petrojam refinery maintains high standards through a rigorous programme of plant maintenance, equipment upgrade, and stringent safety practices - as well as routine product testing by the company laboratory.

Mr. Ivey discovered that the refinery process technicians were collecting data from over 130 points every 4 hours as part of a process monitoring effort. The technicians would write down the results on paper, and the engineer responsible for each section would scan through the data every 24 hours. A few engineers were then transcribing the data into Microsoft Excel, in order to plot a few graphs. The whole process was tedious and inefficient.

"I knew that Quality Window could perform these types of tasks much more efficiently", said Mr. Ivey. "We undertook a pilot project in 2001 with two summer interns to enter lab data and process data into the program. The results were amazing."

Quality Window's intuitive statistical analysis and charting enabled the engineers to quickly discover the cause and effect for a problem they were having that caused off-spec production. The company was

sold on the idea, and began to enter all data into Quality Window (QW) templates. These QW templates were then made available over the company's network to the process engineering group. Petrojam has since instituted a new DCS system (automated data collection) that automatically sends data to Quality Window. No longer is there a need to manually collect process data.

With process monitoring operations now more efficient, Mr. Ivey's attention soon shifted to the lab. The lab conducted over 6000 analyses per month on hydrocarbon and water samples. All this data had to be compiled and shared with all internal customers. The company was having severe difficulties developing a Lab Information System (LIMS), as it was not cost effective to purchase expensive off-the-shelf solutions as the Refinery was relatively small (35,000 barrels a day).

"We were using Microsoft Excel to collect all lab data into a spreadsheet, and this file was shared across the network", recalls Mr. Ivey. "The program crashed often as the file grew in size and we had to rebuild it several times. We needed a better way of doing things."

Petrojam had hired a software consultant to develop a custom LIMS. Despite two years of work, the project had yet to meet with success. In November 2004, Ivey and his team developed QW templates for lab results and started entering lab data. Once the technicians became accustomed to a new way of entering data, they quickly saw the benefits of the program.

"We now have a reliable means to share lab data with all critical departments", notes Ivey. "But most importantly, if any one needs to see the statistics on any product variable, they need not waste time creating graphs and statistics in another program; it is done already in QW!"

The company is also installing QW at its remote locations so that lab results can be viewed over the LAN as they are entered.

Ivey is currently finalizing a project to automatically generate Quality Certificates for various Petrojam products, including LPG, Gasoline Jet Fuel, Diesel Oil, Fuel Oil and Asphalt. The application will have built-in pop-ups to alert the technician of any off-spec or missing results, before printing. Creating end-user certificates of analysis is a new feature of the latest version of Quality Window.

"This QW certificate project will save us from transcription errors which can occur when we copy from paper to QW then to Excel," said Ivey. "Overall I am happy with the performance of QW and excellent support of the QW team has given us over the years, and I look forward to further developments and continued support."

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Quality Window