

ISL VIDA Density Meter

INTRODUCTION

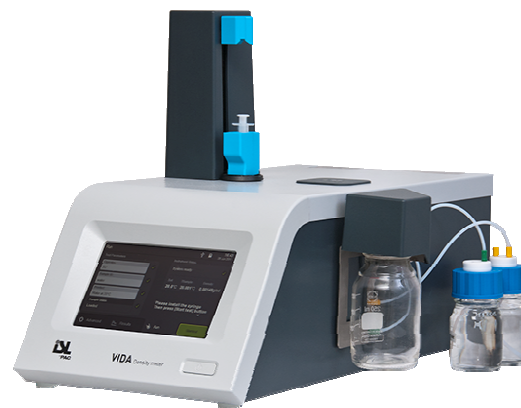
In the petroleum industry, density is one of the most prevalent physical properties used to classify and characterize the finished products that come out from the refineries. The level of speed and accuracy the lab performs the analysis therefore plays a crucial role in optimization and blending processes. The faster and higher precision of the analysis, the more efficient the operators can tune the process to work closer to product specifications.

Performing density analysis on heavy samples, such as black oils, fuel oils, fuel oil blends, and crude oil, can be difficult since they can be highly viscous. This creates at least two major issues: the sample must be heated prior to analysis and the thickness of the sample makes it difficult to clean the system. In this case study, we will show how the ISL VIDA was a better solution than the traditional hydrometer for determining the density of heavy samples at the Valero refinery lab in Meraux, LA, USA.

Traditionally, this Valero refinery lab utilized hydrometer technology for determining the density of very viscous (12 API) samples, such as residual oils, reduced crude oil, and gas oils. However, hydrometer technology can take a long time for the operator to start a test since the sample must be heated in a separate 140°F hot bath to bring it to the desired test temperature, which takes up to 30 minutes. To determine the result, the technician must read the hydrometer scale and apply the necessary corrections to get the final density value with moderate precision achieved. These results can be inaccurate due to human error. Once the test is done, the technician must manually clean the hydrometer using aggressive solvents since these thicker samples tend to stick to the system. With the hydrometer, technicians are exposed to high temperature ovens, devices, samples, and containers, as well as aggressive solvents, such as toluene, during the sample handling and manual cleaning after the test.

The Valero refinery lab is now using the ISL VIDA Density Meter, which uses the oscillating U-tube technology, for testing its viscous samples. After using the instrument for several months, they found that it had significant benefits over the hydrometer, including:

- **Easier to start a test** – Only need to fill a 2.5mL sample in a syringe, enter sample ID, select product, and press “start”
- **Faster analysis** - the VIDA produces results in only 5 minutes versus the 30 minutes it took with the hydrometer
- **Safer to use** – since the sample is heated in the VIDA, technicians no longer have to pour the extremely hot sample into the hydrometer cylinder
- **Simple to clean** – automatic ultrasonic cleaning technology is utilized in the VIDA to automatically clean and check the cleanliness of the system
- **Higher accuracy** – the VIDA displays the temperature corrected result on the screen so there is no manual correction of the result via API tables



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Ralph Guidry
Valero Chemist

“We chose the ISL VIDA because we got more for our money. Our technicians are extremely pleased with its ease of use and fast analysis. It is extremely simple to start a sample since it only takes 60 seconds of hands on time for sample prep to start the test. All we do is put in the syringe and hit go,” said Ralph Guidry, Chemist at the Valero refinery lab. “In addition, the fast analysis time means we get the results back to the refinery quicker which enables them to make corrections to the process faster. This is especially important if the refinery is having any issues. The faster they get the results means that they can get the process back into operating range quicker.”

About PAC

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