



vision

without

limits

**Hydrocarbon Custody
Transfer Analyzer**

CANTY

PROCESS TECHNOLOGY

BUFFALO

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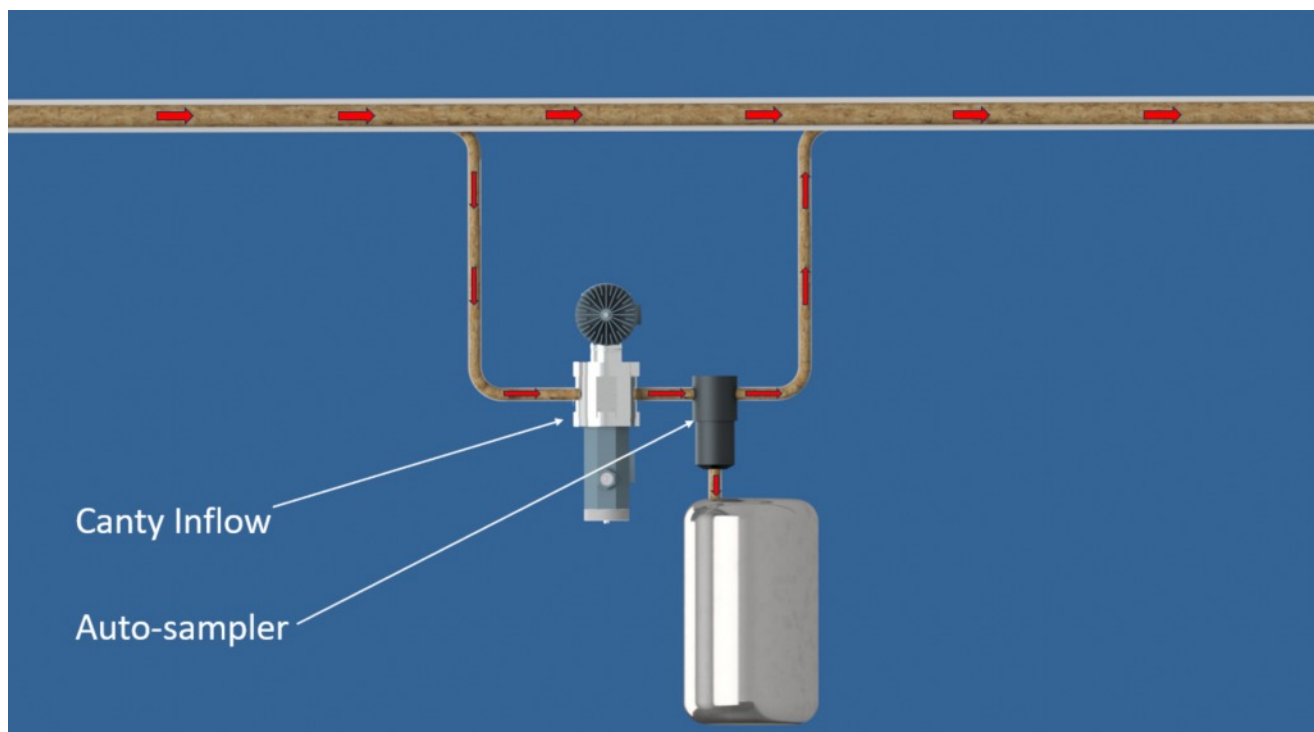
THAILAND

API 10.10 - Online Water and Solids Measurement

API 10.10 focuses on the on-line measurement of water content in petroleum and petroleum products. These include but are not limited to jet fuel, NGL, diesel, gasoline, and kerosene. This is a key measurement in custody transfer as it allows for quantification of the quality of the product being transferred, leading to any financial outcome of these transactions. Water in these streams can lead to many different problems such as corrosion in pipelines or equipment, reduced lubricant life, and the potential to form hydrates. Furthermore, solid particulate in these streams also can lead to issues such as clogging equipment. The Canty Inflow™ has the ability to continuously determine the concentration and particle size of both water and solids directly online in these streams by using the principle of dynamic imaging technology. The Canty Inflow™ can be used in conjunction with the traditional auto-sampling technique for custody transfer. The Inflow™ analyzer features 1" or 3/4" NPT connections and is to be mounted upstream of the auto-sampler on the bypass loop from the main line.

The Canty Inflow™ provides three important functions when used with a traditional auto-sampler. The first is that the analyzer will measure both water and solids in a flowing stream to provide an accurate measure for custody transfer. Secondly, the system can be used to determine whether the mixing tank is properly conditioned and mixed in order to take a sample for custody measurement. At the same time, it will determine the water and solids percentages within the sample holding tank. The third function occurs when the holding tank is emptied and cleaned out. The Inflow™ will determine down to 1 ppm the level of water and solid contamination remaining in the holding tank.

The diagram below shows how the Canty Inflow™ is to be used in conjunction with the traditional auto-sampler.

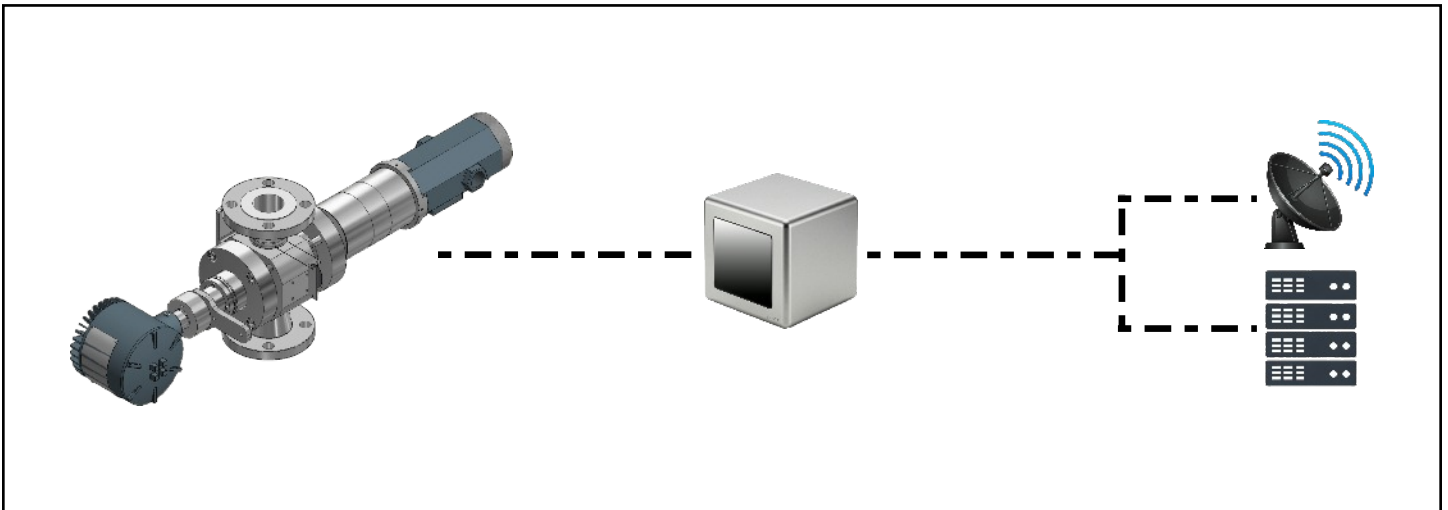


API 10.10 Cont.

Downstream of the Inflow™ is the traditional auto-sampler setup. The auto-sampler is set to take typically a 1mL sample at a specified time interval and send it to a sample drum. Once the drum is filled, the sample is taken to the lab, where the traditional titration method is used to determine the water content in the sample. This is a tedious and labor-intensive sample preparation and a method that can be susceptible to human error. Often times, solids aren't measured in custody transfer applications. If they are, samples would be sent to a lab for analysis, which is also time consuming and prone to human error.

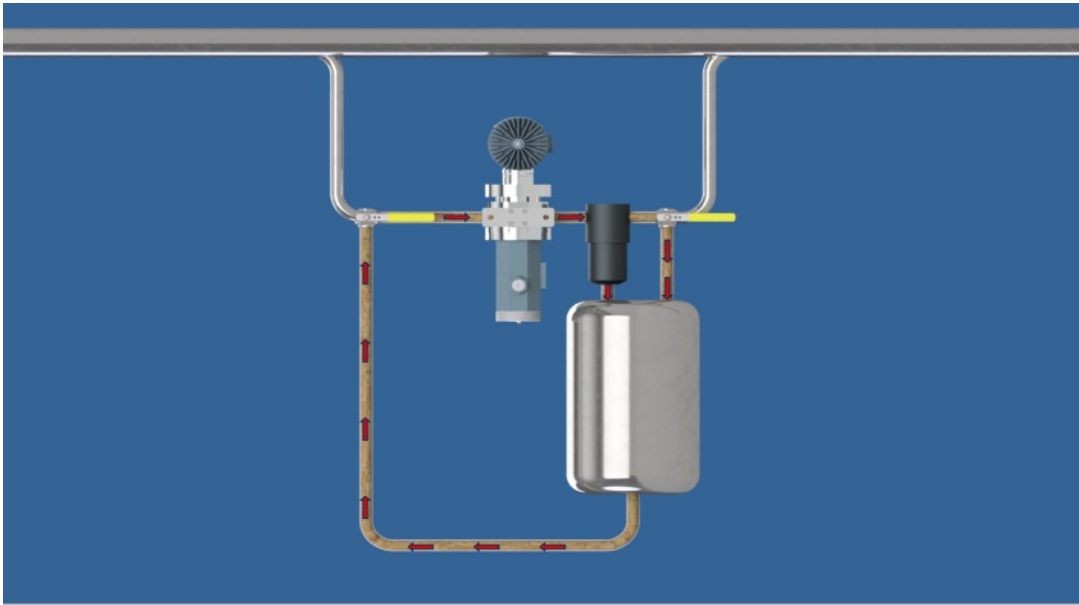
The Canty Inflow™ can be used to compliment or replace the traditional lab analysis methods to determine the water and solids content in a hydrocarbon stream, with accuracies equal or better than the traditional lab methods. The analyzer is able to provide continuous readings of the concentration as well as size and shape parameters of both the water and solids present, while also eliminating error caused by bubbles/gas due to cavitation. This eliminates the sample prep time and potential for human errors that the traditional lab methods of water and solid analysis face. The Canty Inflow™ validates the functionality of the auto-sampler and has the ability to pick up on any issues with the auto-sampler based on the data from each of the methods. When the auto-sampler is down for maintenance or is not performing as intended, the Canty Inflow™ can continue to run and eliminate any downtime that would have occurred otherwise.

Also included is a power supply box with the Vector Control Module inside, which is the image processor for this application. This box also comes equipped with antennas that can be utilized for the end user to pull data from the VCM using a local Wifi network. Another option to extract data is to use the USB connectivity of the system. Once out of the hazardous area, the USB connection can be accessed by removing one of the plugs on the main enclosure. The USB connection also facilitates the option of hooking up to a Universal Docking Station (user supplied), which allows the user to perform in depth review and interpretation of the data, directly on the system's high speed industrial processor, but on a larger screen and more comfortable environment.

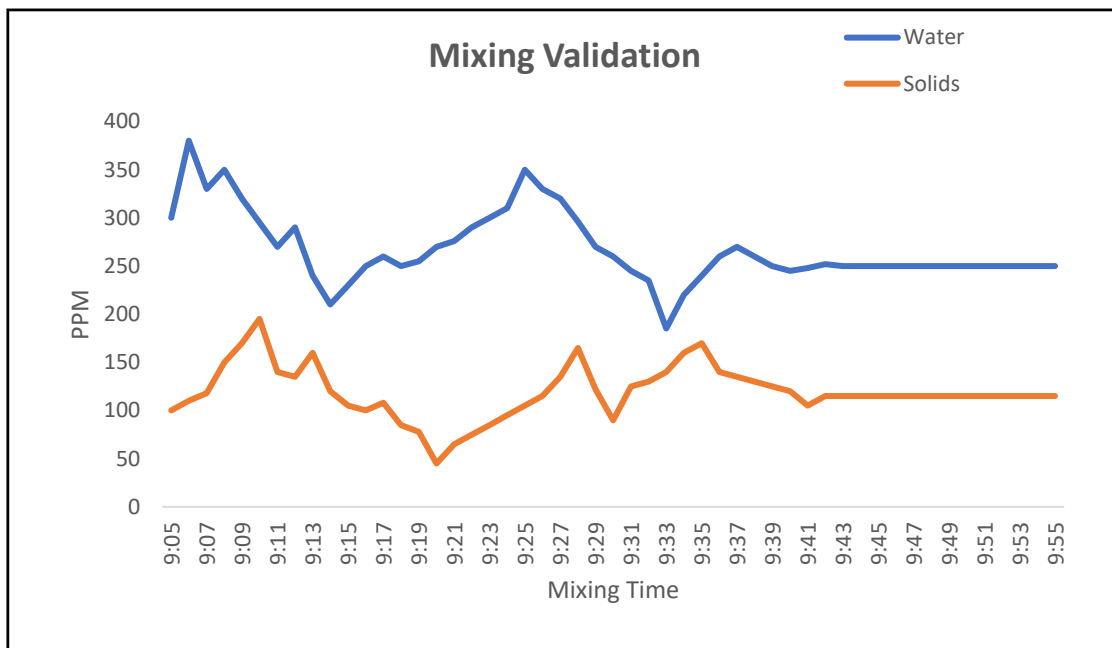


API 8.3 - Mixing Verification

API 8.3 is involved with the mixing and handling of petroleum samples to ensure the sample is representative and can be analyzed further for water and solids content. The following diagram represents the setup that is utilized to ensure the sample is well mixed. Shutting off the valves to the main line, a flow loop is created with the sample drum being mixed to create a homogeneous mixture that can then be sent to the lab for water and solids analysis. Reference below for the flow path during the mixing process.

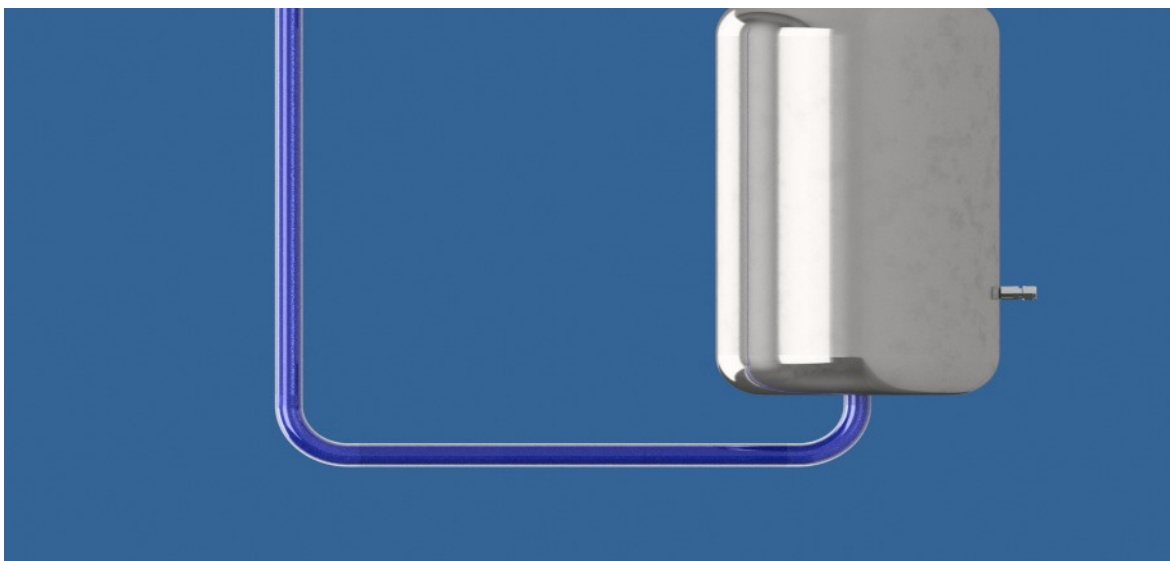


Using the same Inflow as in the API 10.10 system, Canty is able to determine when the sample is well mixed. As the flow circulates through the analyzer, PPM values of both water and solid content are continuously output. Once these values reach a steady state, as indicated by the lines becoming horizontal on the graph below, you know that the sample is well mixed.

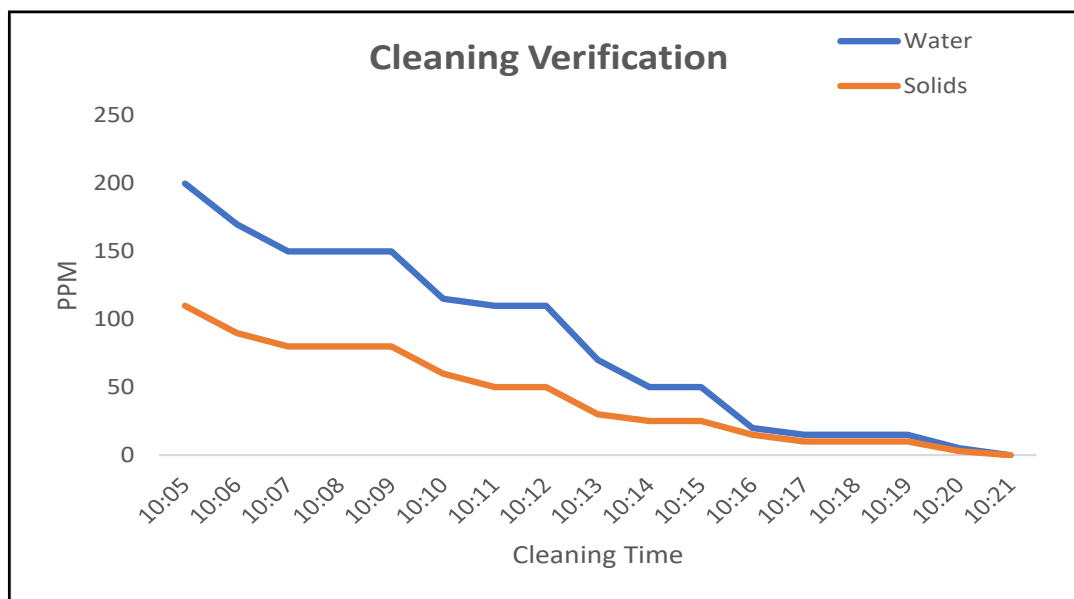


API 8.2 - Cleaning Verification

API 8.2 is involved with the cleaning of the sample drums and auto-samplers that are used to test for the water and solids content in a liquid hydrocarbon stream. Using the same setup as API 10.10 and API 8.3, the valves to and from the main line are shut off, and cleaning fluid, typically a solvent, is injected into the sample drum to clean it. The fluid is then cycled through the loop to clean the auto-sampler as well. Often times, multiple cleaning cycles are used to thoroughly clean the sample drum and auto-sampler to ensure accurate analysis of the liquid hydrocarbon.



Using the same Inflow™ as for API 10.10 and API 8.3, Canty is able to verify when the sample drum and auto-sampler are properly cleaned out. In the beginning cycles of cleaning, the analyzer will read higher concentration levels of solids and water. As cleaning progresses, the concentration of solids and water will decrease over time until it approaches 0, which the analyzer will output. At this point, the cleaning of the sample drum and auto-sampler is verified, and the system is once again ready for product.



**CANTY'S GOAL IS TO PROVIDE EQUIPMENT TO ENHANCE PROCESS CONTROL
AND YIELD. WE ACCOMPLISH THIS BY DESIGNING, MANUFACTURING, AND
SERVICING THE FINEST EQUIPMENT IN THE WORLD.**

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AND YOU!!!



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