

Cloud & Pour Point Testing: An Innovative Automatic Instrument that Serves as an Effective Alternative to Referee Methods

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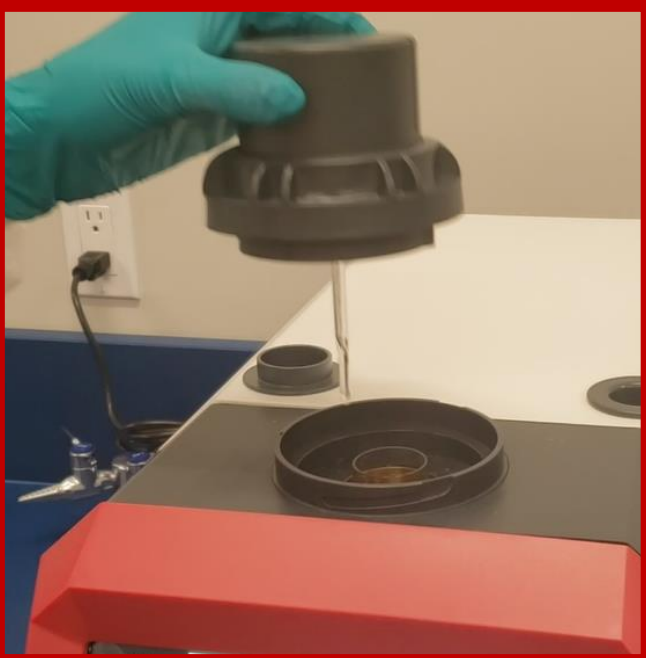
The Automatic Cloud and Pour Point Analyzer is a state-of-the-art instrument for measuring cloud point with the Optical Detection method and pour point with the Automatic Tilt Method. The cloud point will be determined when wax crystals are detected. For pour point determination, the instrument will tilt at specific temperature intervals; once it is detected that there are no movements in the liquid after being held in a horizontal position for 5 seconds, the pour point will be recorded. The type of test performed will be determined by the wireless head attached to the machine. There is a separate head for both the cloud and pour point tests.

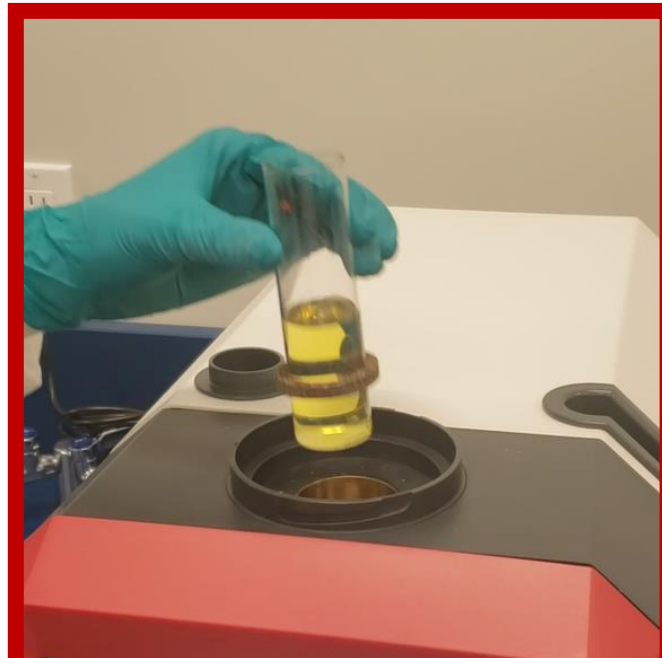
Overview

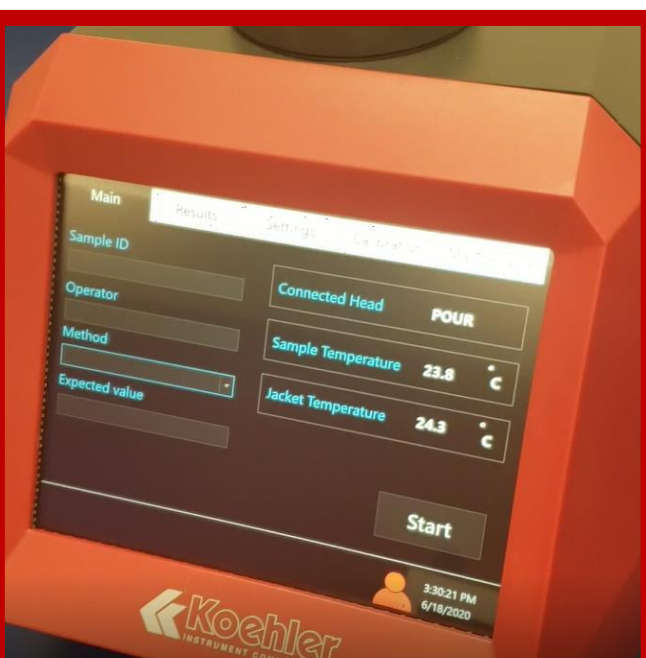
Many petroleum products are exposed to a wide range of operating temperatures, and these products must perform effectively at all temperatures. When looking for optimal performance, top quality fuels and lubricants are necessary. The term "cold flow properties" is commonly used when discussing and characterizing the behavior of petroleum products at low temperature. Some of these properties include the cloud point, pour point, freezing point, and cold filter plugging point. Operation at temperatures near or below the cloud and pour points may result in damage to equipment, so these properties are commonly used as a measure of the lowest temperature for a product's utility. Therefore, it is paramount for the cloud and pour point to be clear so that these suboptimal conditions can be avoided during operation.

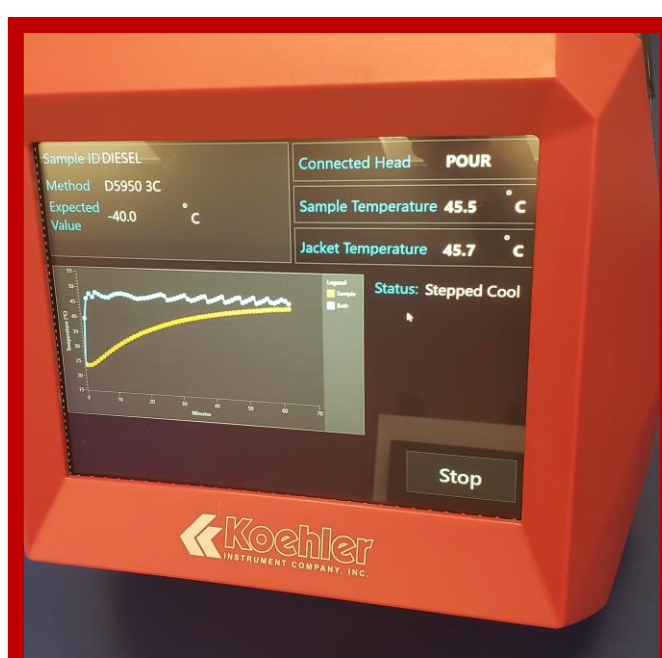
Test methods for determining the cloud and pour points are some of the oldest in the industry, with ASTM D97 first being approved in 1927. The referee test methods for determining the cloud and pour points is performed as per ASTM D2500 and D97, respectively. Recently, new cloud and pour point test methods and instruments have been developed that take advantage of more modern technology and offer countless advantages when compared to the referee methods, such as automated test procedures. ASTM D5771 and D5950 are two of these methods, which are the test methods for determining the cloud point and pour point of petroleum products as per the optical detection stepped cooling method and the automatic tilt method, respectively. This poster will discuss the development of new instruments that comply with ASTM D5771 and D5950, and will explain the advantages these instruments have when compared to the referee methods for cloud and pour point testing.


How Our Instrument Works

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Select the appropriate head for either Cloud or Pour Point testing. The instrument will automatically detect which head has been selected.
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Fill the test jar with the sample, install the cork ring, and load it into the instrument and install the previously selected head.
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The instrument will prompt the user to enter the sample ID, operator, and select a test method before the test can begin.
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When the test is in progress, a graph that shows the temperature of both the bath and the sample will be displayed.
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After the test ends, a result screen will display all the data and there will be an option to print and save the data.

Koehler
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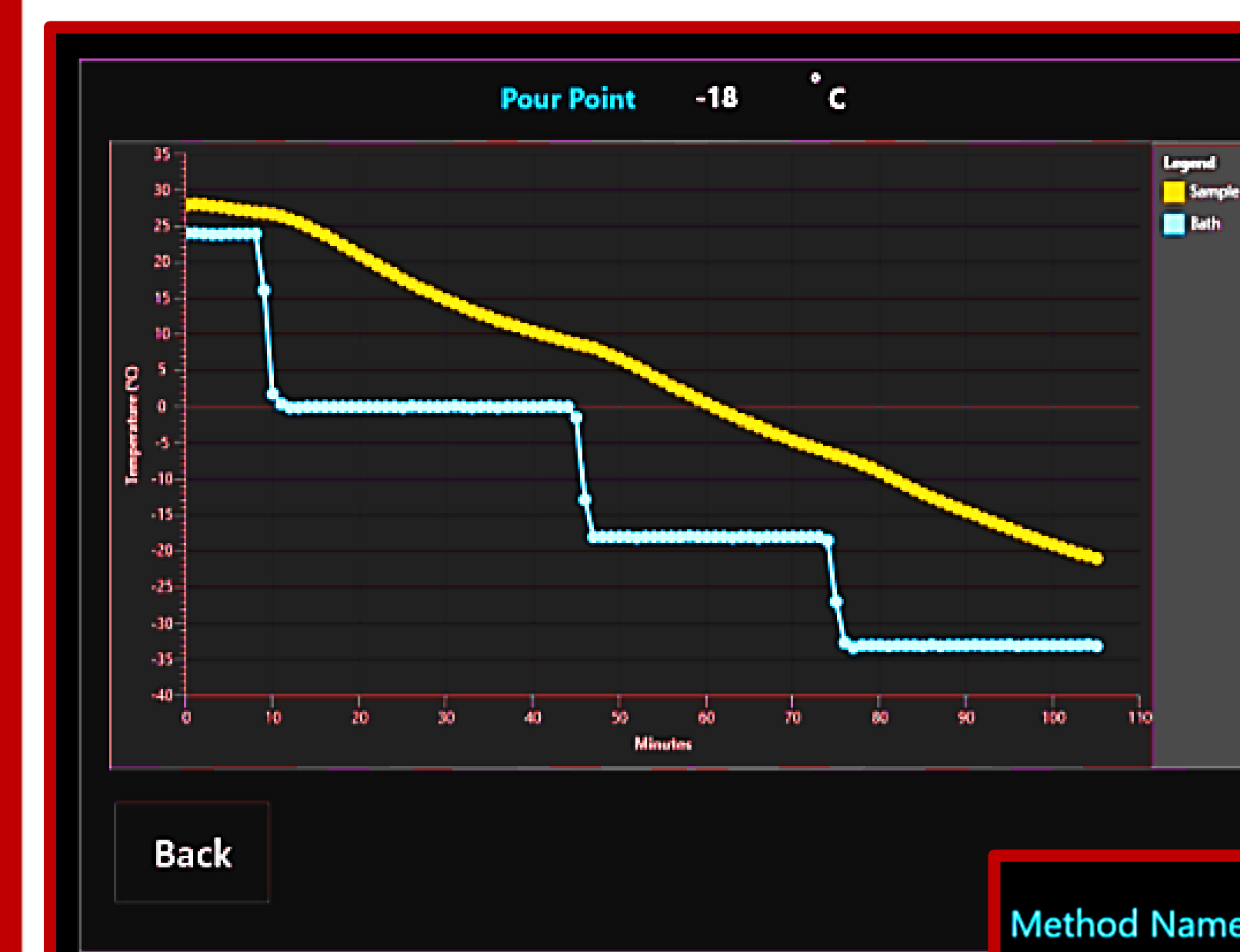
Conclusion

The Auto C&P Point Analyzer is an innovative instrument that allows for efficient and error-free testing. Unlike the traditional referee method, a person does not need to be constantly watching over the samples and the instrument also prevents errors that are caused by human mistakes. Not only that, but the dual usage of testing both the cloud and pour point of a sample makes a vital tool in low temperature testing of lubricants.

References

- ASTM D5771** "Standard Test Method for Cloud Point of Petroleum Products (Optical Detection Stepped Cooling Method)" (ASTM International)
- ASTM D5950** "Standard Test Method for Pour Point of Petroleum Products (Automatic Tilt Method)" (ASTM International)

Data Screen



Specs

Power Supply: 110-240 VAC, 50/60 Hz
Display: 10.4 in. Color Touch Screen
Security: Multi-level password protection
Temperature Range: -105°C to +50°C
Cooling: Internal cooling system
Temperature Accuracy: -0.1°C

Test Number	364
Operator	VS
Instrument Serial No	1234
Sample ID	VHG P50 250
Test Method	ASTM D5950 PREHEAT
Date and Time	8/17/2017 2:30:43 PM
Expected Pour Point	-51.0 °C
Pour Point	-51.0 °C
Observed No Flow Point	-54.0 °C
Comments	Pour Detected

Method Name: _____

Test Type:

Temp Unit:

Pre-Heat Temp: °C

Pre-Heat Time: mins

Tilt Interval: °C

First tilt at: °C

Cooling Method:

Cooling Temp: °C

End Test Criteria: °C

Result Rounding:

Custom Test Help

Pre-Heat Temp: Enter the desired Pre-Heat Temperature.

Pre-Heat Time: Enter 0 for both Pre-Heat Temperature and Pre-Heat Time to turn Pre-Heat functionality off.