

Significance of Reducing Air Contamination in Lubricants in Operating Machinery & How This Property Can Be Studied in the Laboratory

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Introduction

Air contamination in the fluid is a significant concern that can cause severe damage to machinery and negatively influence its reliability. In lubricating oil systems, it will bring various troubles, such as excessive noise, thermal degradation, and cavitation. It is necessary to measure their air-release property so that they can undergo an appropriate releasing air process prior to their application. The Koehler K88530 Air Release Value Analyzer is an innovative instrument that can be intuitively used to determine air-release property.

How Our Device Works

Calibration

There will be a Calibration Tab to show the air and water temperature calibration offset in the starting screen. In another tab, enter the offset value before testing to achieve the accurate results.

Setup

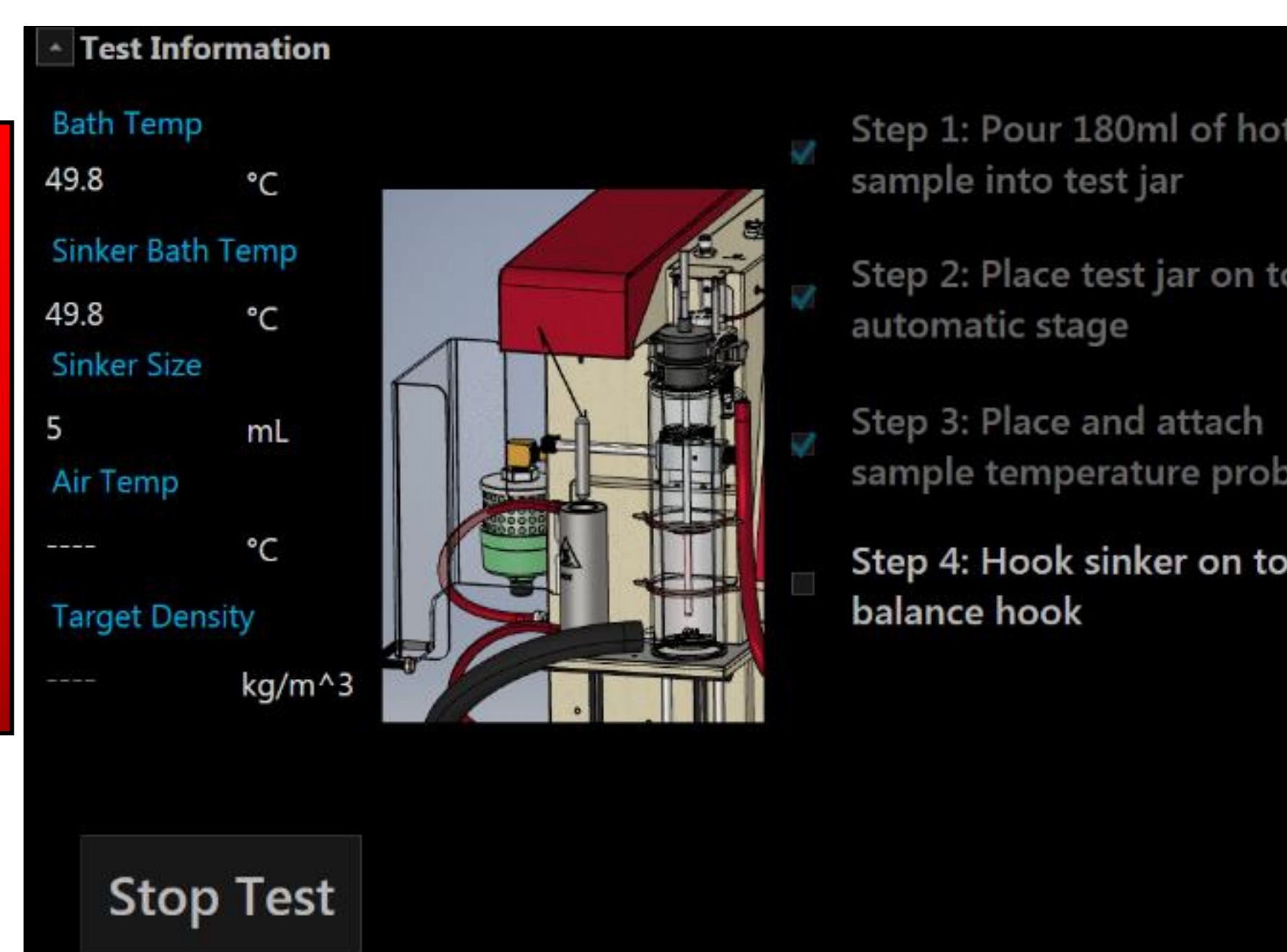
- Pour the hot prepared sample solution to the test jar and assemble it in the device. The screen in device will introduce how to operate in details.

Testing

Once the sinker is in the right position, the test will begin after clicking the "continue" button in the screen.

Results

The device will give the result of how long it will take to let the test solution reach the target density after heating in specific temperature. The time is also the air separation time.



References

ASTM D3427-07“(Standard Test Method for Air Release Properties of Petroleum Oils),” ASTM International
 Koehler Instrument Company, Inc. “air release properties of petroleum oils”
 Koehler Instrument Company, Inc. “K88530, K88539 Automatic Air Release Value Instrument”

Set up for Test

To use K88530 test air release property in lubricants, preparing a sample solution stated in ASTM D3427 procedure is necessary. It is quite simple since it only needs operator warm 200mL lubricant by circulating bath and pour 180 ± 5 mL of it to the vessel. However, for lubricants with different viscosity, the test temperature is different. For lubricants with a viscosity at 40°C of less than 9.0 cSt, the test temperature shall be 25°C. For oils with a viscosity at 40°C between 9.0 and 90 cSt, the test temperature shall be 50°C. Oils having a viscosity at 40°C greater than 90 cSt shall be tested at 75°C. At the same time, warm the sinker of the balance to the test temperature in an air bath is also necessary. The whole warming process will take about 30 min.

Test Method

The test method this device uses is ASTM D3427 – Standard Test Method for Air Release Properties of Petroleum Oils¹. By using this method, air release property value is determined by measuring how long it will take to reduce the sample density to target density, which is 99.8% of the initial sample solution after compressed air is blown through the test sample, which has been heated to a temperature of 25, 50, or 75 Celsius Degree. (Depends on the oil's viscosity) This time is the air release time.



ASTM INTERNATIONAL

ASTM test methods are petroleum industry standards, accepted worldwide for quality and reliability.

Product Advantages

Highly integrated system. This is a all-in-one device so that operator can use it do test and analysis data conveniently.
 Easy to use. With a touch screen panel, operators can do test step by step by detailed guide instructions and see the result intuitively.
 Convenient to carry. As a all-in-one device, it is 53 Kg and has the size of 60.96cm x58.42cm x 86.36cm. Carry it with a small vehicle is available.

Conclusion

The air contamination in lubricants caused various problems in operating machinery so that measure them and removing them is necessary. The Koehler K88530 Air Release Value Analyzer is a powerful device that can determine the air release property base on the ASTM D3427 test method quickly and simply. It can help users to protect their equipment from using high air contamination lubricant efficiently.