



BAGGI

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TECHNOLOGIES

SENSEVOLUTION RVP Reid Vapour Pressure

From the collaboration between Baggi and Lintech born SENSEVOLUTION RVP, the new device for monitoring Vapour Pressure of Petroleum products.



ASTM D323

Standard Test Method for Vapour Pressure of Petroleum Products (Reid Method).

This test method covers procedures for the determination of vapour pressure of gasoline, volatile crude oil, and other volatile petroleum products.

Procedure A is applicable to gasoline and other petroleum products with a vapour pressure of less than 180 kPa (26 psi).

Procedure B may also be applicable to these other materials, but only gasoline was included in the interlaboratory test program to determine the precision of this test method.

Procedure C is for materials with a vapour pressure of greater than 180 kPa (26 psi).

Procedure D for aviation gasoline with a vapour pressure of approximately 50 kPa (7 psi).

Abstract

Different regulations agree about the fact that Reid vapour pressure (RVP) is a key property in determining whether a substance meets the definition of a liquid or gas as per the definition of dangerous goods for transportation and to reduce evaporative emissions that contribute to ground-level ozone and diminish the effects of ozone-related health problems.

It is well known that RVP must be considered before put liquids into the pipeline for legal fulfilment and for pipeline and refinery safety. In this scenario, SENSEVOLUTION RVP plays a fundamental role in every refinery, where its simple and rugged design supplies a reliable instrument for accurate and repeatable measurements. It is ASTM D323 fully compliant, with a Siemens PLC that supervise all the operations and a Siemens Touch Panel for intuitive management and maintenance of the instrument. The DCS communication is guaranteed by ModBus protocol in its RTU or TCP version depending on the customer's requests.

It conforms to and extends Zone 2, IIB, T3 requirements.

Principle of operation

The SENSEVOLUTION RVP has a fast-loop sampling valve that is linked to the measuring cell by a pressure reducer and a filter for a longer instrument life and to reduce maintenance.

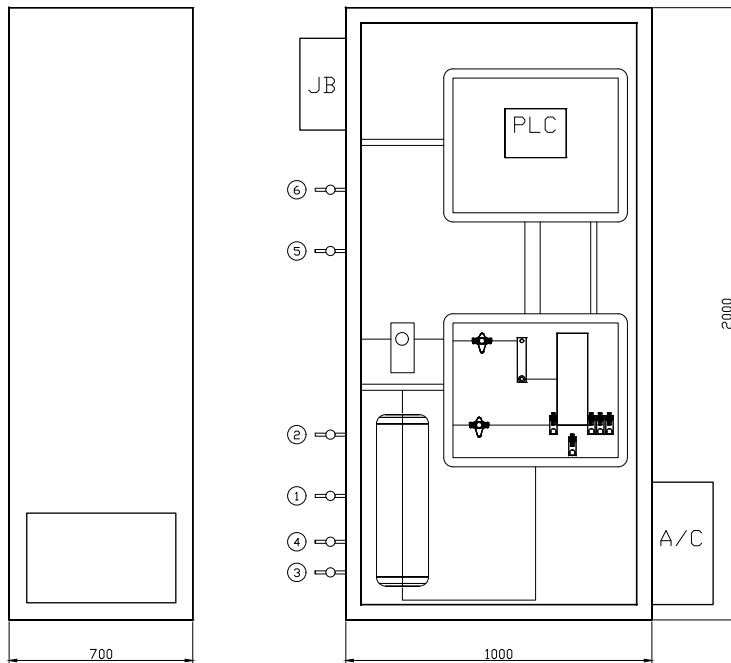
The ASTM D323 standard foresees that vapor pressure apparatus is filled with a quantity of the sample and shaken until a constant pressure is observed.

This is achieved with a precision motor-controlled variable-size cell that permits the sample to flow assuring fresh sample for every test and create the exact volume ratio needed by the test.

The shake is driven by a Festo pneumatic actuator controlled by the PLC which constantly monitors the shaker action and the pressure inside the cell.

When a constant cell pressure is detected the reading, suitably corrected in temperature, is reported as the Reid vapor pressure.

The instrument performs an automatic-calibration with a CRM sample regularly on a user-customizable schedule.



Features

- Self-climatizing SS316L measuring cell
- Rapid analysis cycle of a maximum of 6 minutes
- Minimal sample quantity
- Analog 4-20ma outputs
- Modbus interface
- Siemens PLC with 7" Touch screen display
- Emergency push-button
- Dry contacts outputs for main alarms
- F&G plus 3 user-definable safety shutdown digital inputs
- SS316L IP65 Cabinet with Air Conditioner
- Exd enclosures for safety-critical components
- Surge protection
- UPS for extended operation in absence of main supply
- Digital PLC-monitored selectivity module for overload protection
- Password protected easy to use user interface
- Extensive alarms and diagnostics
- Leakage detection

Specifications

- Measuring range: 0-15 psi
- Accuracy: 0.1%
- Repetability: 0.05 psi
- Instrument range: 0-36 psi
- Response time: 63% 30 seconds
- Cycle time: 5-6 minutes
- Detector: pressure sensor
- Pressure rating: ANSI 150#RF
- Seal ring material: FKM
- Flow cell material: AISI 316L
- Flow cell size: 4 ml
- Body material: AISI 316L
- Sample discharge: ¼ NPT
- Instrument air connection: ¼ NPT inches
- Air pressure: 4 - 8 - 12 barg
- Sample source connection size: ¼ NPT
- Sample return connection size: ¼ NPT
- Power supply: 110 / 220 Vac - 50/60 Hz
- Power consumption: 500 W
- Electrical connection: M20 × 1,5 ISO
- Explosion proof: Atex EEXD
- Enclosure protection: IP65
- Analog output signals: 4...20 mA
- Analog output signals description: Cell pressure, Result, Deviation
- Digital output signals: 4 alarms
- Digital output signals description: Overpressure, Sample not present, Leakage detected, Result out of range
- Switch type: Dry contact
- Switch quantity: 4
- Contact form: Relay
- Contact rating: 16 A
- Local monitor: Siemens TP700
- Communication port: MODBUS
- Surge protection device: Present
- Surge protection devices quantity: 1
- Digital input signals: Fire and gas dry contact N/C+ 3 spares
- Calibration unit: Automatic calibration
- Analyzer cabinet: SS316L
- Cabinet protection: IP65
- Hazardous area classification: Zone 2, IIB, T3
- Air conditioner: Cabinet mounted
- Purging system: Pressurized air