

BAGGI BA-2PS 2 Phase Well Test Separator

The SensEvolution BAGGI BA-2PS is part of the **BAGGI BASE® Instruments Series**.

These instruments are the result of combining the latest state-of-the-art-technology with over 50 years of industry experience.

It is a skid mounted two phase (total liquid + gas) well test separator, equipped with all the necessary valves, measurement devices and an embedded computer. The skid is easily truck transportable.

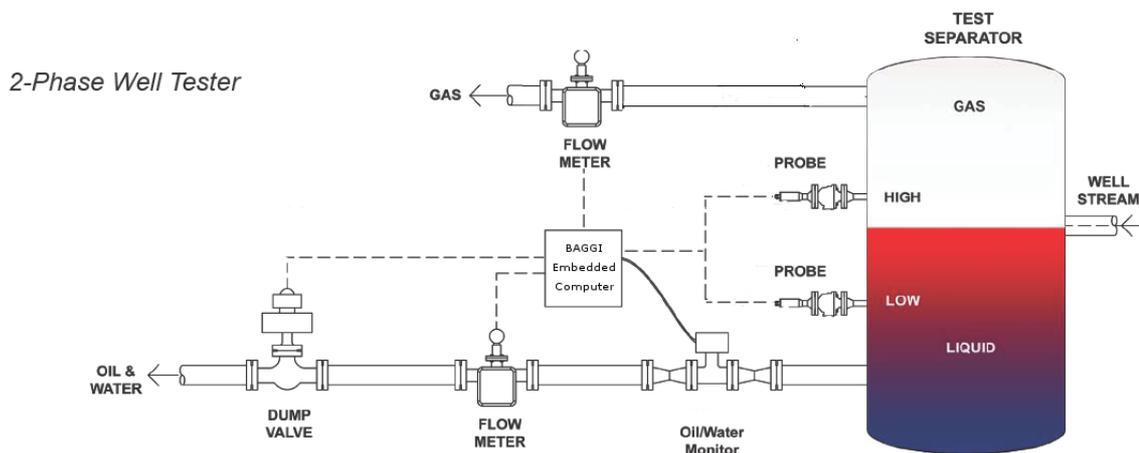
The watercut is determined by applying a high frequency electromagnetic signal to the liquid phase and measuring the related absorption and frequency shift. This technique allows using a 2-phase separator, instead of a 3-phase instrument, for providing reliable and accurate data in well testing applications. The above electromagnetic probe is complemented by Coriolis mass flow meters.

The advantages offered by a 2-phase separator are listed hereafter:

- ✓ Smaller vessel size
- ✓ Reduced retention time: no need to separate oil from water
- ✓ Reduced purging time: small liquid volume
- ✓ Better accuracy: watercut is measured 0 - 100% in the single liquid leg
- ✓ Reduced number of flow meters and valves
- ✓ Less piping and maintenance



The figure beneath gives an overview of the system:

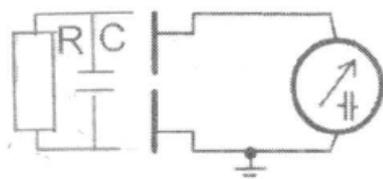


Two probes (of the type described above) are in charge of determining the level of the gas/liquid interface. Their output signals are collected by the embedded computer (BASE® Series), which is able to control the dump valve. In addition, the computer collects the readings from the watercut monitor probe, the flow meter in the liquid outlet pipe and the flow meter in the gas outlet pipe.

The application software, by comparing the readings from the electromagnetic watercut monitor with the readings from the Coriolis densitometer/flowmeter, is able to perform an accurate self-diagnosis.

The computer, besides displaying the actual readings on its LCD screen, is able to archive the historical data in Excel compatible format, to show the measurement trends in graphical format and to generate alarms when out-of-range values occur. Finally, it can transmit remotely the measurements (the flow rates of oil, water and gas and the watercut) by means of 4...20 mA analogue outputs and the alarms by means of digital (relay) outputs. In short the computer, together with its circuitry, acts as a PLC to operate the skid during normal operation, start-up, shut-down and emergency.

As outlined before, the watercut measurement is performed by measuring a Radio Frequency signal absorption and frequency shift by the liquid (oil + water).



The antenna of an RF generator, applied to the outlet pipe, transmits energy into the liquid; please refer to the figure.

The resulting electromagnetic field (modelled by the RC circuit) will change according to the oil/water content of the fluid.

The dielectric loss resistance (R in the figure) will reduce for fluid with water content.

Due to the dipol character of water molecules, liquid water has a very high relative dielectric constant (C in the figure) in comparison with dry crude oil.

The measurement of the C capacity, by the frequency shift of the RF signal, gives a value that is proportional to the water content.

The application software performs the temperature compensation and all the necessary data processing (a temperature sensor is provided).

The BASE® Series embedded computer is the heart of the system. The figure shows an ATEX certified version, contained within an enclosure provided with a protective air purge system and a Vortex cooler (connected to the plant instrument air).



Here follow the typical specifications of the BA-2PS phase separator.

For specific requirements, please contact the e-mail address below:

info@baggi.com

Specifications	
Vessel size, cm x m	100 x 2
Working pressure, kPa at °C	9,930 at 37.8°C or 9,170 at 125°C
Min. operating temperature, °C	-20
Max. operating temperature, °C	125
Safety valve set pressure, kPa	9,066
Max gas flow rate (low liquid level)	1.66 million m ³ /d at 9,930 kPa
Max gas flow rate (high liquid level)	1.16 million m ³ /d at 9,930 kPa
Max liquid flow rate (low liquid level)	1,914 m ³ /d
Max liquid flow rate (high liquid level)	3,980 m ³ /d
Hazardous area certification	Zone 1, gas IIB, T4, EExd, ATEX 94/9, CE marked
Overall dimensions (LxWxH), m	4.00 x 2.46 x 2.70
Weight, kg	15,000
Inlet/Outlet connections	3-in (pressure safety valve outlet: 4-in)
Measurement accuracy	1% ÷ 5%
Certifications	Third party certifications available upon request

All the specifications subject to change without notice
Rev 1.0