

INSTALLATION, OPERATION & MAINTENANCE MANUAL

AQUA SENSE

MOISTURE MONITORING SYSTEM



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BEFORE YOU BEGIN

Your SBS Aqua Sense has been designed specifically for monitoring and alarming based on the measurement of the dissolved water content of a petroleum fluid. The probe cannot read free water content, only dissolved water. Typically, water can dissolve in oil at a rate of 250 to 500 parts per million (PPM).

A display reading of “25” means the probe is sensing the water content is 25% of the total possible dissolved water level (aka humidity level). If an oil could absorb up to 500 PPM of dissolved water before free water is formed, than the 25% reading equates to a 125 PPM (500 x25%) level of dissolved water.

The probe must be placed in a pipe with moving oil. We recommend a minimum flow of 5 gallons per minute (20 liters per minute) past the probe. Do not exceed 500 PSI (40 bar).

Any questions arise regarding these specifications, installation, operating, or maintenance instructions, please do not hesitate to call. The correct installation is our assurance of a satisfied customer.

Sincerely,

SBS Corporation

SBS Serial Number: _____



INSTALLATION INSTRUCTIONS

As with any equipment, proper installation and maintenance will improve performance and life expectancy. The following suggestions are designed to assist you in installing and operating the Aqua Sense. However, it does not exclude other methods or procedures proven by your own experience.

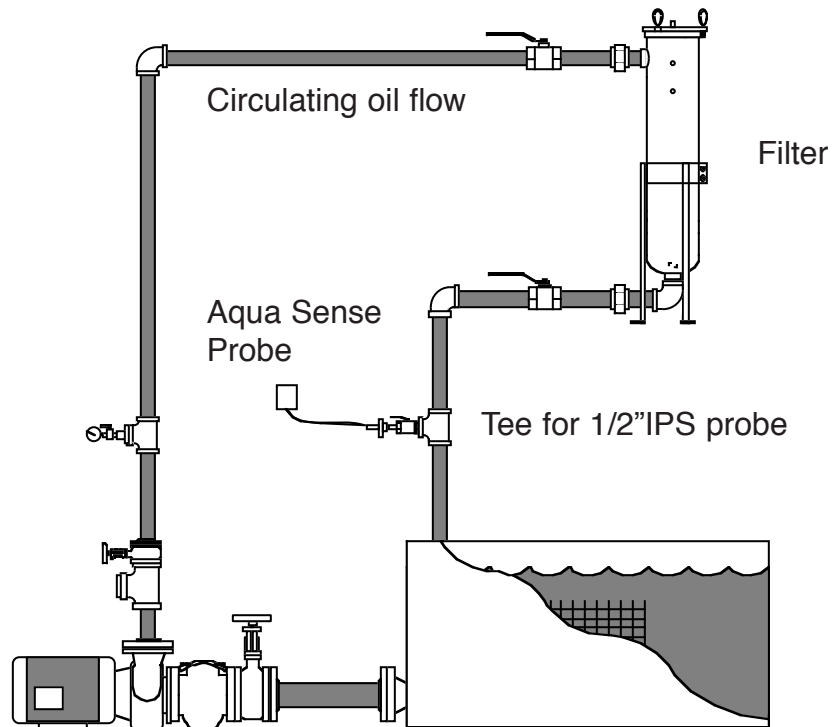
A. INSPECTION

Inspect for signs of physical damage BEFORE accepting and signing the Bill of Lading. Contact the trucking company's claims department immediately if any damage is apparent. SBS Corp. can assist you in filing a claim against the truck line, however, it is your legal responsibility to file the claim as the equipment is shipped "FOB Shipping Point".

B. LOCATION

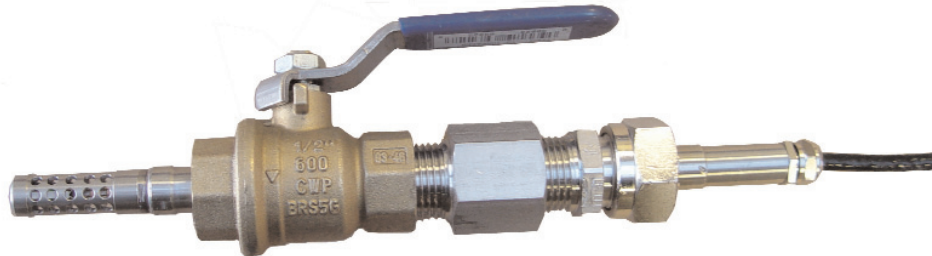
1. The Aqua Sense probe should be placed within a pipe where there is moving oil to sense. The Control Panel should be placed close by, within 25 feet. The probe has a 1/2" male National Pipe Thread connection. Generally, placing the probe in a tank of still oil will not result in accurate readings.

Downstream of an existing filter is an excellent place to put the probe. A tee with a 1/2" IPS branch is required.

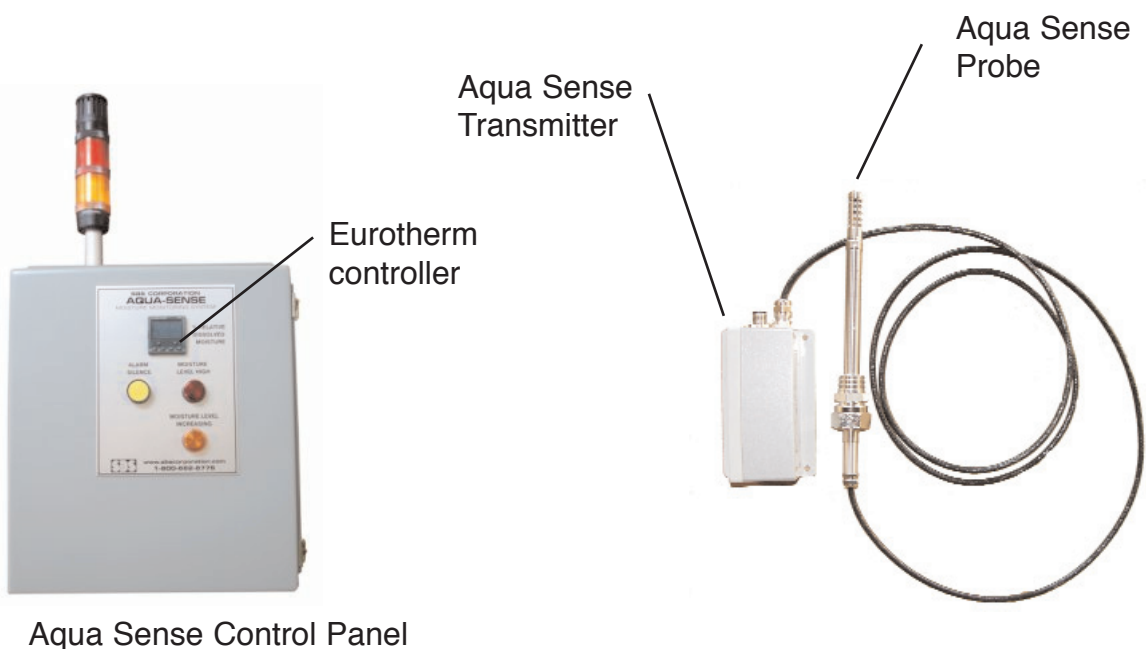




2. A 1/2" full port valve is suggested to isolate the probe from the pipe. The probe should be inserted through the open valve and then into the process stream. The probe has a gland that allows it to be pulled back through the open valve and then the valve closed. This allows the probe to be serviced while the oil pipe remains in service.



3. Contact SBS Corporation for recommendations on alternative locations if any of the above suggestions create a problem.
4. A shielded multi-conductor cord is included to connect the Aqua Sense transmitter to the control panel. Connect one end to transmitter.
5. Bring 120 volt, 1 phase, 60 hertz to control panel. See wiring diagram at end of this manual.
6. Eurotherm controller is pre-configured and should require no programming. Controller is locked out to only allow the alarm points to change.





Aqua Sense Operating Procedure

The purpose of the SBS Aqua Sense is to read the level of dissolved water in quench oil. Please understand the difference between dissolved water and free water. Dissolved water is in solution in oil. Generally speaking, oil can take from 250 to up to 500 parts per million of water in solution. Any additional water will result in "free water" or water NOT in solution.

200 parts per million (PPM) is 0.2% (by mass) water in the tank. Properties of heat treated steel can be effected at 0.5% by volume. The Aqua Sense will give a warning that water will effect quenchability before parts are ruined.

The Aqua Sense probe is located in an oil flow. It monitors the dissolved water by a capacitance probe in a thin film polymer. The Aqua Sense will give a reading of the amount of water dissolved in the oil versus the maximum capacity of the oil to absorb oil. This may be likened to the "humidity" level.

The Eurotherm controller displays the humidity level as a percentage. Normally a heat treat furnace will read 8% to 10% water content. The Eurotherm controller will alert two alarm conditions, a "MOISTURE LEVEL HIGH" and a "MOISTURE LEVEL INCREASING". Each is configurable by changing a setting within the Eurotherm. SBS has pre-selected an alarm value of 90% for moisture level high and "10 % per minute" for moisture level increasing alarm.

Experience with the unit may predicate the use of different alarm values. Start up and shut down of the circulating pump may cause false "MOISTURE LEVEL INCREASING" alarms as the probe is dependent on moving oil across it for accurate readings.

Control Panel Controls

Eurotherm Process Controller - Reads the level of dissolved water in quench oil. Units of percent solubility. Controller has two adjustable setpoints; a high process alarm (factor default 90%) and rate of change alarm (factory default 10% per minute).

ALARM SILENCE: When depressed, turns off the alarm horn. Horn denotes any of the two below alarm condition.

MOISTURE LEVEL INCREASING: The Eurotherm controller has sensed that the reading has changed quickly. Factor default is 10 units per minute. This setting may be changed.

MOISTURE LEVEL HIGH: The Eurotherm controller has sensed that the reading has exceeded a pre-set point. Factor default is 90 units. This setting may be changed.

To RESET alarm, simply press at the same time the two lower left buttons on the Eurotherm controller. They look like this:





MAINTENANCE INSTRUCTIONS

A. CLEANING

1. Cleaning the probe should not be part of the normal maintenance procedure. There is a protective screen over the probe that can be removed and cleaned if required.
2. Spare fuses should be kept on hand. Consult Bill of Material at panel at end of this manual.

B. CALIBRATION

We do not suggest a yearly calibration. After five years, the probe's reading may want to be checked against a known value. The probe and control unit are integral, and both need to be sent out for calibration. SBS has loaners available during calibration.