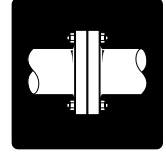


PORTABLE SAMPLING/OWD VALIDATION LOOP

THE KAM® OWD® OIL WATER DETECTOR



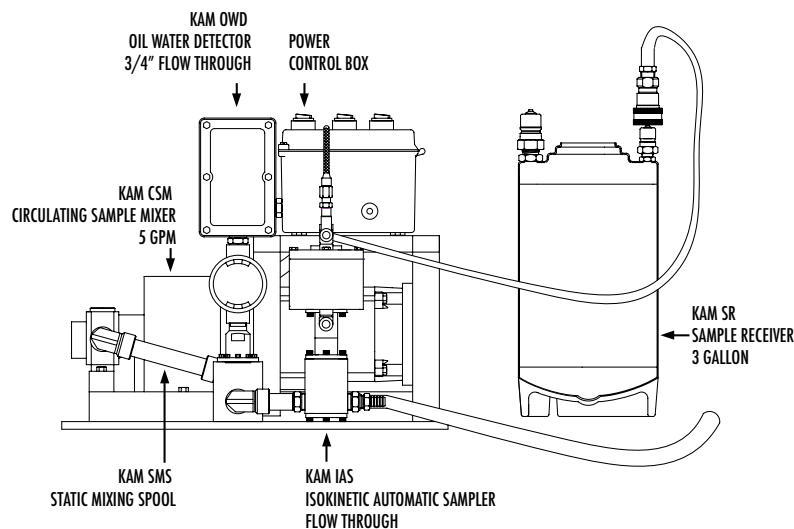
PROBLEM: Using traditional spot sampling plus lab measurement to verify performance for KAM® OWD® high-water installations can be inaccurate, time consuming and difficult to manage. This method potentially requires multiple site visits for calibration and additional sampling and measurement. Multiple OWD® sites and installations further compound these issues.

SOLUTION: A portable KAM® IAS™ Isokinetic Automatic Sampling system with an integrated KAM® OWD® enables on-site validation of OWD® performance with real-time data and increased accuracy. Calibration and additional validation can be accomplished in the same site visit should they be required.

A CONVENIENT AND ACCURATE WAY TO ENSURE ONGOING OWD PERFORMANCE

- OWD validation guarantees absolute accuracy in water measurement, which is particularly key in high-water situations
- A single portable sampling system enables on-site, real-time validation for multiple OWD installations
- Greatly reduces site visits and man-hours associated with spot sampling
- Greater accuracy and real-time information reduce wasted hours and costs associated with produced water

SAMPLING/VALIDATION SKID

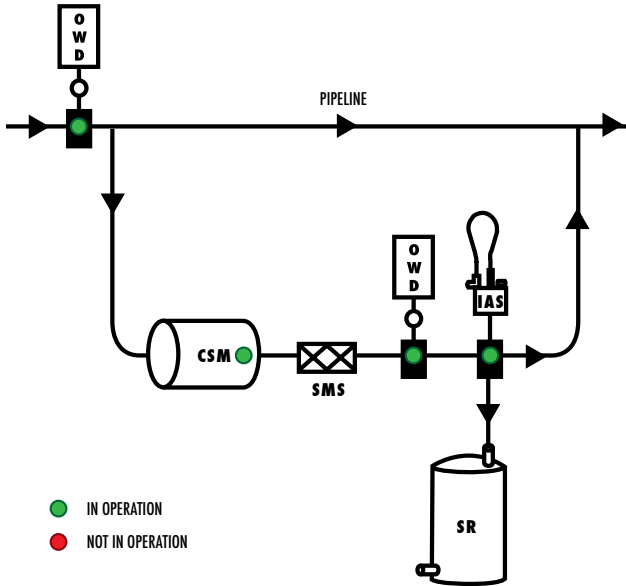


PORTABLE SAMPLING/OWD VALIDATION LOOP

THE KAM® OWD® OIL WATER DETECTOR

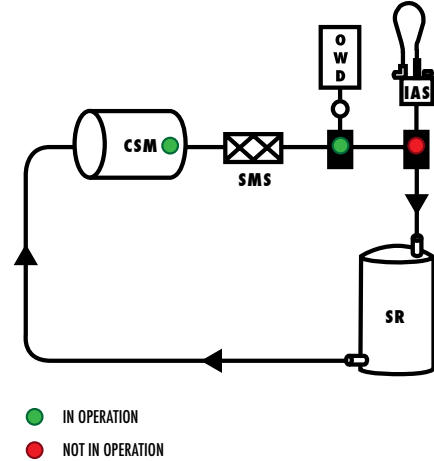
SAMPLING/VALIDATION PROCESS

STEP 1: SAMPLING LOOP



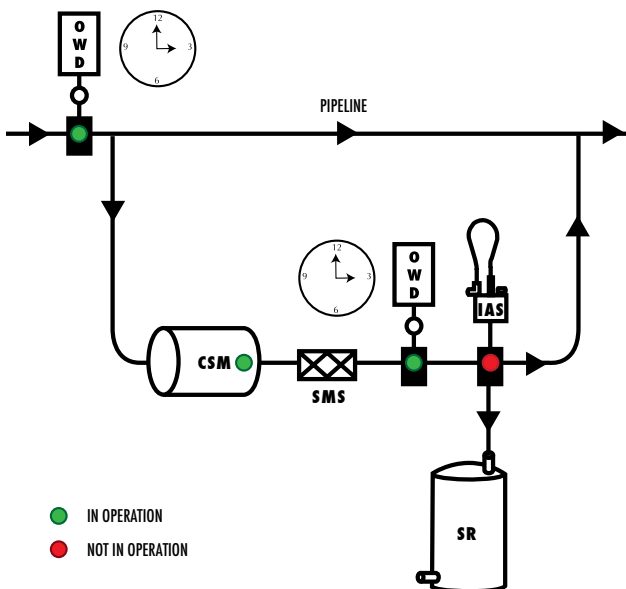
Sampling/validation skid is connected to pipeline via quick connects. OWD takes a representative measurement while a representative sample is collected in Sample Receiver (SR) to required volume. Lab verification of OWD representative measurement can be used to calibrate portable OWD for use as a Master Meter.

STEP 2: VALIDATION LOOP



Skid is disconnected from pipeline and SR is connected to Circulating Sample Mixer (CSM). Sample circulates until OWD readings stabilize, indicating a homogenous flow. Readings can then be used to calibrate and test pipeline OWD if necessary.

STEP 3: MASTER METER



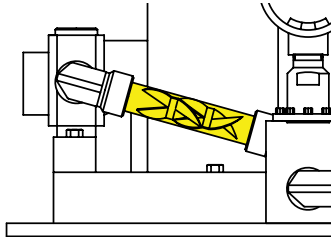
Additional OWD installations can now be calibrated using the sampling/validation skid as a master meter. The skid is connected to the pipeline at each location in the same way as in Step 1. With the CSM operating, performance for the pipeline OWD and the skid OWD can be compared over exactly the same time interval. Or OWD readings can be zeroed out on each meter, then performance compared. Discrepancies in readings can be used to calibrate the pipeline OWD.

PORTABLE SAMPLING/OWD VALIDATION LOOP

THE KAM® OWD® OIL WATER DETECTOR

SYSTEM ELEMENTS

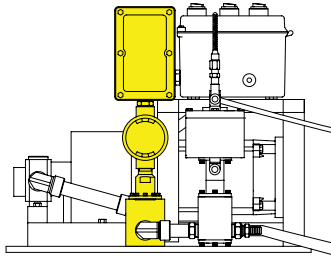
KAM® SMS™ STATIC MIXING SPOOL



- Low pressure drop
- Simple and rugged
- No moving parts
- Uniform density and temperature

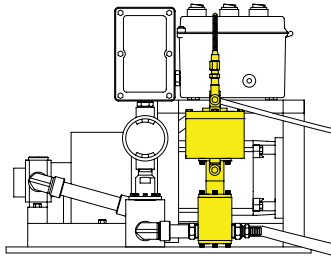
EMAIL Sales@Kam.com
Tel +1 713 784 0000
Fax +1 713 784 0001
www.KAM.com

KAM® OWD® OIL WATER DETECTOR Integrated FT Flow Through Model



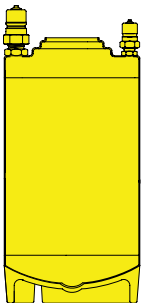
- Automatically corrects for effects of density, sulphur, and salinity
- Automatically detects transitions between oil continuous and water continuous modes and monitors both modes simultaneously
- 1% of full scale accuracy
- No salinity offset required

KAM® IAS™ ISOKINETIC AUTOMATIC SAMPLER Integrated FT Flow Through Model

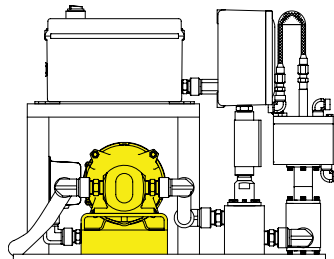


- Extracts a representative sample, regardless of viscosity, pressure, or flow rate
- Positive displacement design
- Pneumatic, hydraulic
- Pressure relief valve

KAM® SR™ SAMPLE RECEIVER



KAM® CSM™ CIRCULATING SAMPLE MIXER



- SR is light weight and easy to clean
- Pressure relief valve
- Rubber feet prevent dents
- Internal spray bars for optimum mixing
- CSM operates at 5 GPM

Please send any comments and/or suggestions to: Sales@Kam.com. Thank you for your business.