MEASUREMENT AND CONTROL

Системы мониторинга скважин. Серия DM200. Описание.

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SENSOR
DATA MONITORING SYSTEMS

Well Monitoring Systems

EASY TO INSTALL | PRE-PACKAGED | TURNKEY

SENSOR, as part of SOR Controls Group, provides data acquisition and automation for industrial applications. Combining its ability to design highly engineered systems with years of manufacturing high performance measurement devices, SENSOR provides turnkey systems for remote monitoring of processes such as tank battery storage facilities, gas and liquid flow meters, compressors, generators, pumps and other assets.

It is possible to automate and monitor a single area of a process and later expand the system for full remote operation to minimize downtime, reduce costs, increase safety/compliance and improve operational performance.

What is the benefit of **Remote Well Monitoring and Control?**

Minimize Downtime and Lost Production

- Have full-time access to well performance data and knowledge of which wells are offline before deploying personnel to the field
- Use data to plan more effective preventative maintenance

Reduce Costs

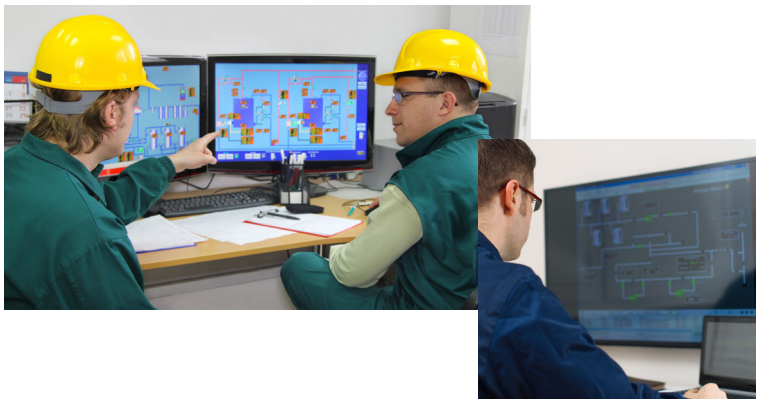
- Minimize or eliminate manual data collection for tank levels, wellhead pressures, as well as other processes
- Gain greater leverage from your field personnel by making it possible to monitor and control more locations
- Make your pumper's routes more efficient; minimize transportation costs
- Maximize efficiency of chemical expense

Increase Safety and Compliance

- Establish alarms (call, text, e-mail) for any measured variable
- Eliminate the need for tank strapping; climbing to top of the tank
- Reduce emissions and exposure to H2S and other potentially harmful vapors

Improve Operational Performance

- Rely upon more detailed, real-time, production information to drive operational decisions



One area, or the entire wellsite

The **SENSOR Remote Well Monitoring and Control System** has a flexible design to provide a multitude of options using off-the-shelf components. Data can be collected wirelessly using communication protocols such as HART® and Modbus into a central control panel that is SENSOR manufactured using “plug-and-play” devices. Systems can be designed for monitoring and controlling the wellhead, separator, tank battery, or flow metering system independently, or provided in any combination to produce a comprehensive remote well monitoring and control system.

The DM**200** Series Data Monitoring Systems are truly turnkey. They can be designed in many size configurations and can include all Human-Machine Interface (HMI) programming and design, alarming, calculations, and control algorithms.

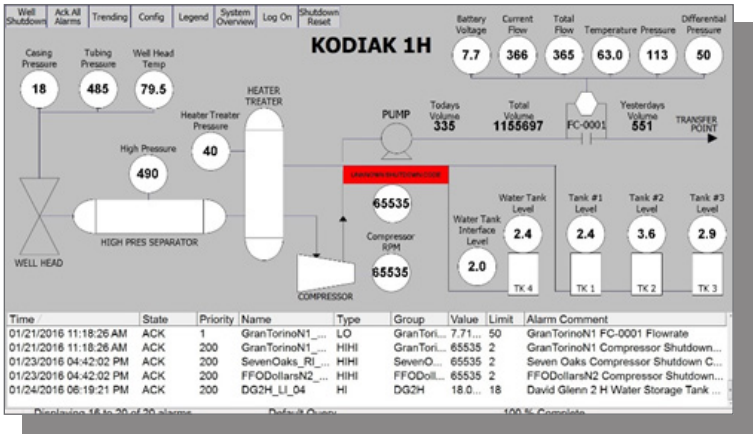
INPUTS

- Wireless
- Hard Wired
- 4-20 mA
- Modbus
- Digital
- 1-5v

OUTPUTS

- Cell
- Satellite
- Radio
- Ethernet

DM**200** Series Data Monitoring Systems



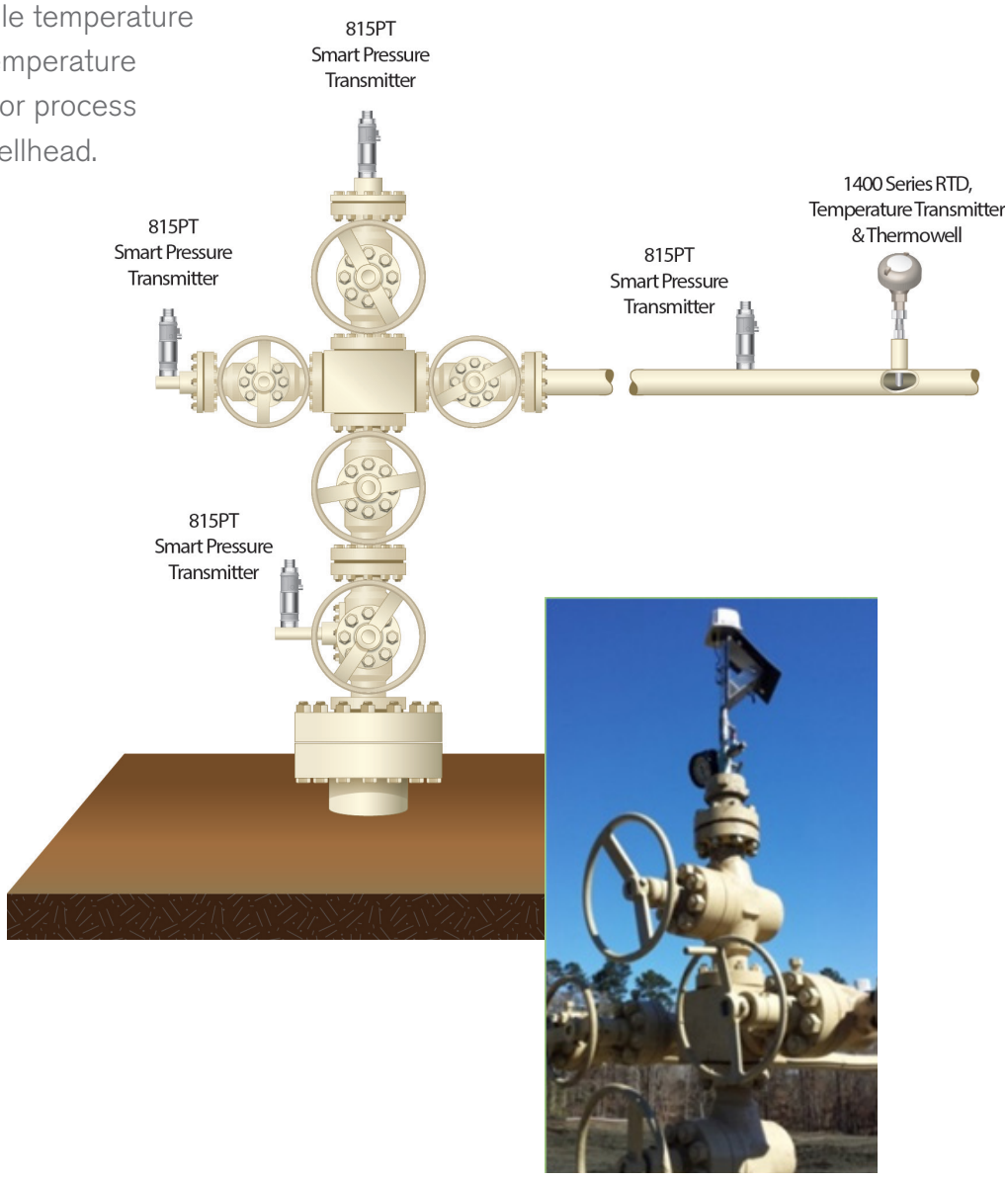
SENSOR-created HMI for complete wellsite automation project in East Texas

We start at the **wellhead**

The wellhead provides support for the tubulars inside the well, a pressure seal between the tubulars, and a means of controlling production from the well. Typically, the wellhead consists of a casing head for each casing string, a tubing head, and a Christmas tree.

Remote operation and control of a free-flowing well is accomplished via SOR 800 Series Pressure Transmitters capable of sending an electrical signal, representing the casing pressure and tubing pressure, to a data acquisition or control device. Commonly, an additional pressure transmitter is installed on the flow line which transfers the produced oil or gas to the next stage of production equipment.

SENSOR can also provide RTD's or thermocouple temperature sensors, as well as temperature transmitters, to monitor process temperature at the wellhead.

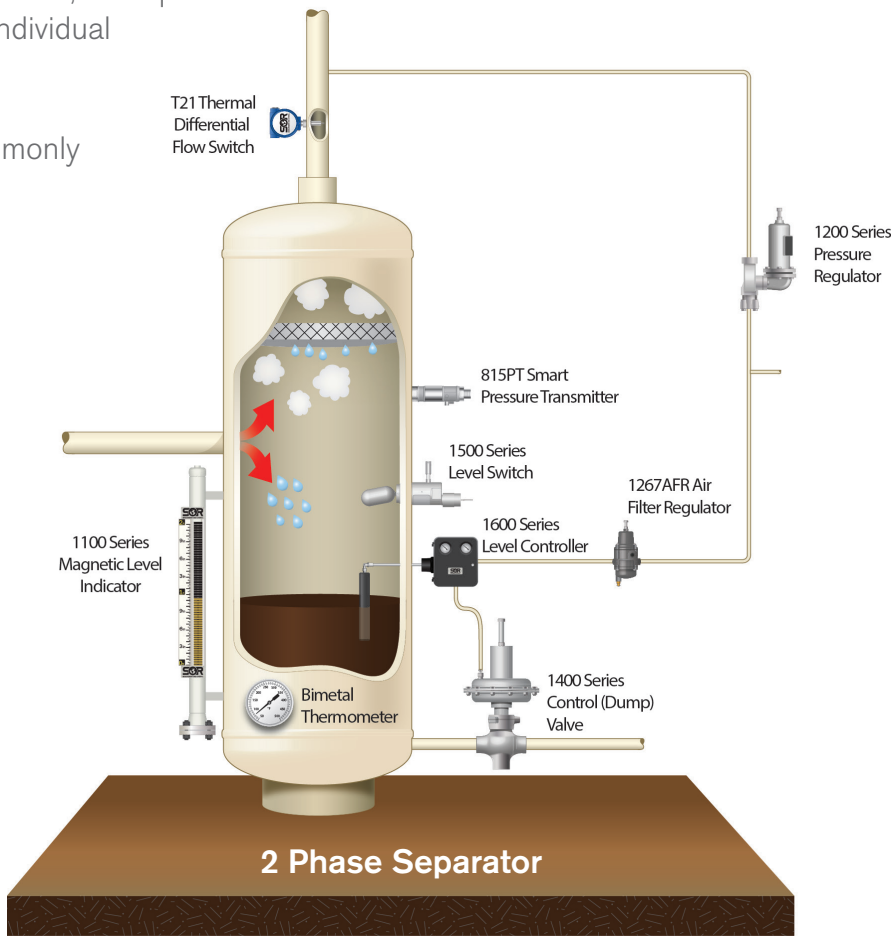


Next comes **separation**

Once liquids are brought to the surface, the oil, gas, water, and any produced solids must be separated for ease of measurement and transportation. A separator is a vessel used to separate liquid from gas and solids. In some cases, the liquid may be additionally separated into individual oil and water streams.

Several physical processes are commonly used in the separation process:

- Gravity settling
- Centrifugal force (pressure)
- Electrostatic precipitation
- Filtration
- Heat



SOR 1600 Series Liquid Level Controller (LLC's) controls the overall level of liquid condensate in a two-phase separator, or the interface of hydrocarbon liquid and water in a three-phase separator.

SOR 1400 Series Control (Dump) Valve opens once the maximum desired level of liquid has been reached to pass the liquid along to the next phase of production processing or storage.

SOR 1100 Series Magnetic Level Indicator provides visual indication of liquid level in the vessel and can be supplied with a magnetostrictive transmitter for full remote control.

SOR 1500 Series Level Switch offers overfill protection.

SOR 815DT Differential Pressure Transmitter monitors filtration efficiency.

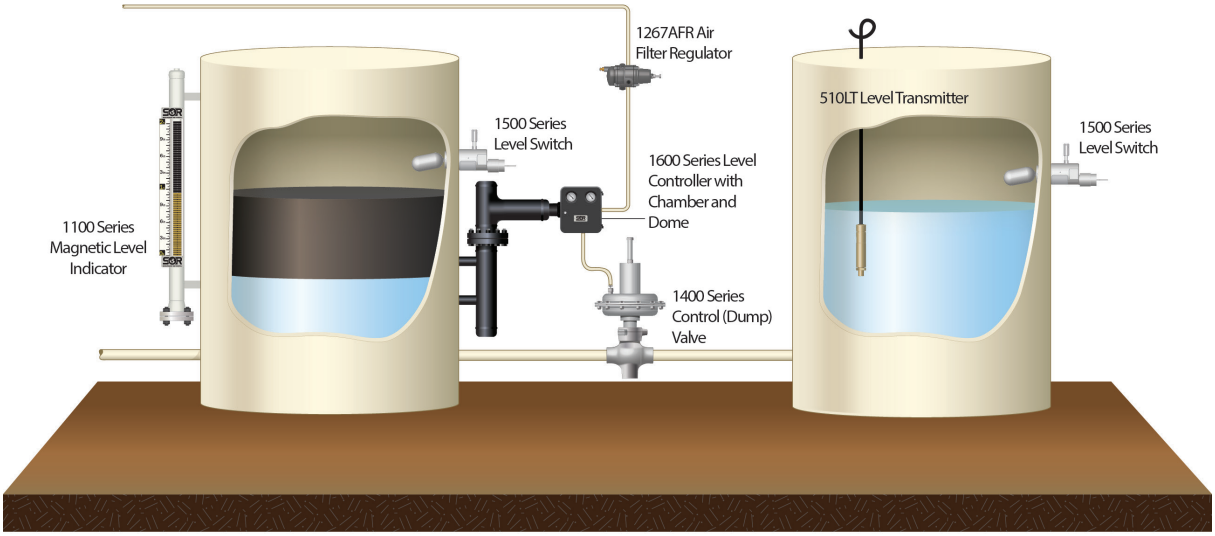
SOR 815PT Pressure Transmitter measures the vessel pressure.

SOR Temperature Sensors are used to measure temperature.

Now the product goes to **storage**

We measure level in the tank battery . . .

Tanks must be provided to hold both oil and water for shipping or disposal. Usually, at least two oil tanks are used, one for shipping and one for filling. The volume of oil being shipped is sometimes determined by simply measuring the height of the fluid in the tank.



SENSOR can provide SOR Submersible Transmitters to measure level in an open tank, or SOR model 815DT Differential Pressure Transmitters for pressurized or floating roof tanks.

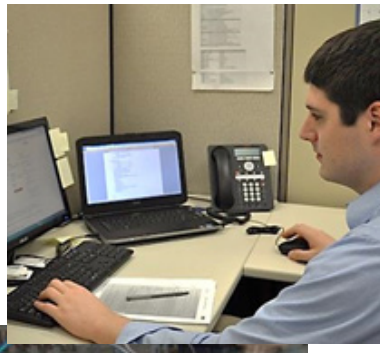
. . . or we measure the flow to a downstream processing facility.

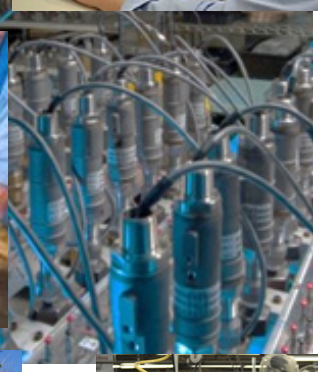
The measurement of produced natural gas or liquids is usually done with an orifice meter, using a differential pressure calculation. Calculating rate of flow using differential pressure requires the measurement of three process variables: differential pressure (DP), static pressure (P), and temperature (T).

Differential pressure is determined by measuring the pressure both upstream and downstream of an orifice restriction such as an orifice plate, flow nozzle, venturi, or v-cone. SENSOR can provide SOR 815DT Differential Pressure Transmitters, 815PT Pressure Transmitters, and temperature transmitters pre-installed and tested in a meter run, and then integrate the measurements with a flow computer, PLC, or other supervisory control device. SENSOR Flow Measurement Systems can be utilized for measurement of gas, liquid, or steam.

The **“SENSOR difference”** is achieved through the association with parent company, SOR Controls Group Ltd. SOR team members include some of the most experienced and capable measurement and control experts in the industry. In addition, the SENSOR team has years of field experience in the automation and control of oilfield production equipment. This combination of “real world” application experience and measurement technology expertise is what makes the SENSOR Data Monitoring Systems team your ideal partner for well monitoring and control.

After a complimentary site survey, SENSOR provides a proposal for automation and remote operation of the entire wellsite, or any of the sub-systems previously mentioned.





Contact SENSOR today and let us help you:

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- Reduce Operating Costs
- Increase Safety and Compliance
- Improve Operational Performance

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