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## E-SERIES ESP MONITORING SYSTEMS

Deploy our E-Series monitoring systems to prolong your electrical submersible pump (ESP) runlife and enable both well and ESP surveillance using key parameters surrounding your motor and pump.

Maximise the runlife of your electrical submersible pump and optimise production while reducing costs.

## E-SERIES ESP MONITORING SYSTEMS

E-Series monitoring systems are compatible with all ESP equipment and provide you with an independent source of well data for analysis.

Multiple specifications enable an economical system to be deployed that suits your wells; parameters can be hand-picked to measure the data that is valuable to your operation and options range from a simple three-parameter system to a full seven-parameter system. Sensor accuracy can be selected to be either 0.1% or 0.2% to suit your well performance.

Zenith E-Series sensors are temperature rated for continuous 150°C operation and are fully tested to survive higher temperatures that occasionally occur during ESP operation.

“ A sensor installed in the Middle East recently survived more than 96 hours at over 210°C, enabling analysis to be conducted on problematic conditions. ”

13 chrome metalwork is used as standard, providing long service life and allowing repeated deployment. A modular construction results in a field-serviceable system with easily replaceable sub-assemblies, and a surface system which can be upgraded in the field.

**For low production wells** with small economic impact we recommend measuring intake pressure and temperature to prevent pump-off protection and provide well pressure surveillance. Data is transmitted to surface by way of the ESP cable. Communication is via Modbus link to SCADA systems.

**For more prolific wells** or wells with difficult operating conditions the addition of discharge pressure, motor winding temperature and vibration enable full well analysis to be undertaken to diagnose performance and optimise production. Zenith can provide secure data analysis through our online well analysis service available at [www.zenithoilfield.com](http://www.zenithoilfield.com)



## E-SERIES SYSTEM BENEFITS

### Maximise runlife while reducing costs:

Automatic alarm and trip feature safeguards your ESP and well preventing unnecessary workovers and minimising expenditure, protecting against:

- » Motor overheating
- » Excessive well draw-down
- » High or low flow rates (pump upthrust or downthrust)
- » Dead heading or shut in
- » Resonant vibration frequencies

### Optimise production:

Dual pressure option enables full validation and analysis of well and ESP operating conditions

Feedback intake pressure level to your VSD frequency setting to provide automated control of draw-down

Fast sampling and accurate sensors enable analysis of draw-down and build-up pressure transients

### Independent source of data for analysis:

Identification of pump wear issues

Validation of inflow/outflow data

## E-SERIES SYSTEM FEATURES

Five-second update of intake pressure (one-second update option)

High resolution and accuracy for transient analysis

Downhole data collection

- » SD card option — simple data transfer to removable memory card
- » Data display with live on-screen data charting, drive mounted or enclosure
- » Data trending software
- » Dedicated engineers' port to laptop or Zenith hand-held PC
- » Connectivity to remote data collection or SCADA systems

High quality, modular construction—13 chrome metalwork as standard

Long service life allowing repeated deployment

Field-serviceable system with easily replaceable sub-assemblies, and a surface system which can be upgraded in the field

Compatible to all major ESP supplier equipment

Communications and power supply via the ESP cable

Continues to operate when ESP is shut down

Calibration stored in the downhole tool

System megger test up to 5KV

## E-SERIES SYSTEM OPTIONS

### Sensors can be configured to monitor:

Pump intake pressure

Pump discharge pressure

Intake temperature

Discharge temperature

Motor oil or motor winding temperatures

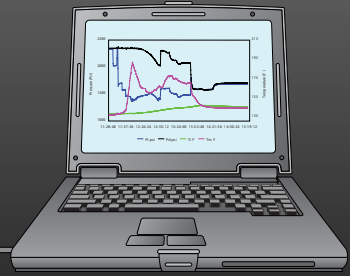
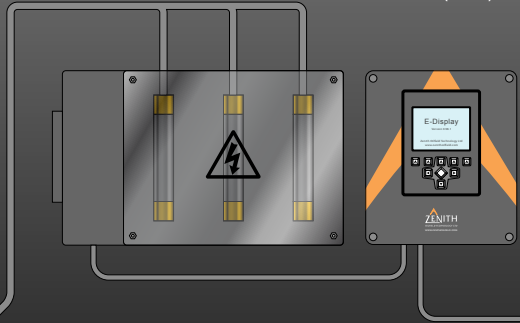
Vibration (X & Y axes)

Current leakage

Surface Choke Module

Zenith Surface Panel (ZSP)

Current Leakage  
Analogue Inputs  
Analogue Outputs  
RTU SCADA Link  
Alarm and Trip Relays  
Data and Event Logging



Laptop / PC / Net Book / PDA

Pump Discharge Pressure

Discharge Pressure Assembly

Discharge Head

Discharge Pressure Line

Pump

Pump Intake Pressure

Pump Intake Temperature

Seal

Motor Oil Temperature or  
Motor Winding Temperature

Motor

ESP Vibration - X Axis

ESP Vibration - Y Axis

Motor Base Crossover

E-Series Sensor