

EZ-Gauge® Permanent Pressure Monitoring System

Monitor bottomhole pressure in real time

Halliburton's EZ-Gauge® permanent pressure monitoring system accurately monitors downhole pressure without downhole power, electronics or moving parts. Using capillary tubing as the measurement mechanism, the EZ-Gauge system is a reliable and effective tool for long-term monitoring in extremely harsh environments where electronics will not function.

Features

- Capillary tubing negates need for costly downhole electronics
- Durable pressure sensor is resistant to harsh environments
- No temperature limitations

Benefits

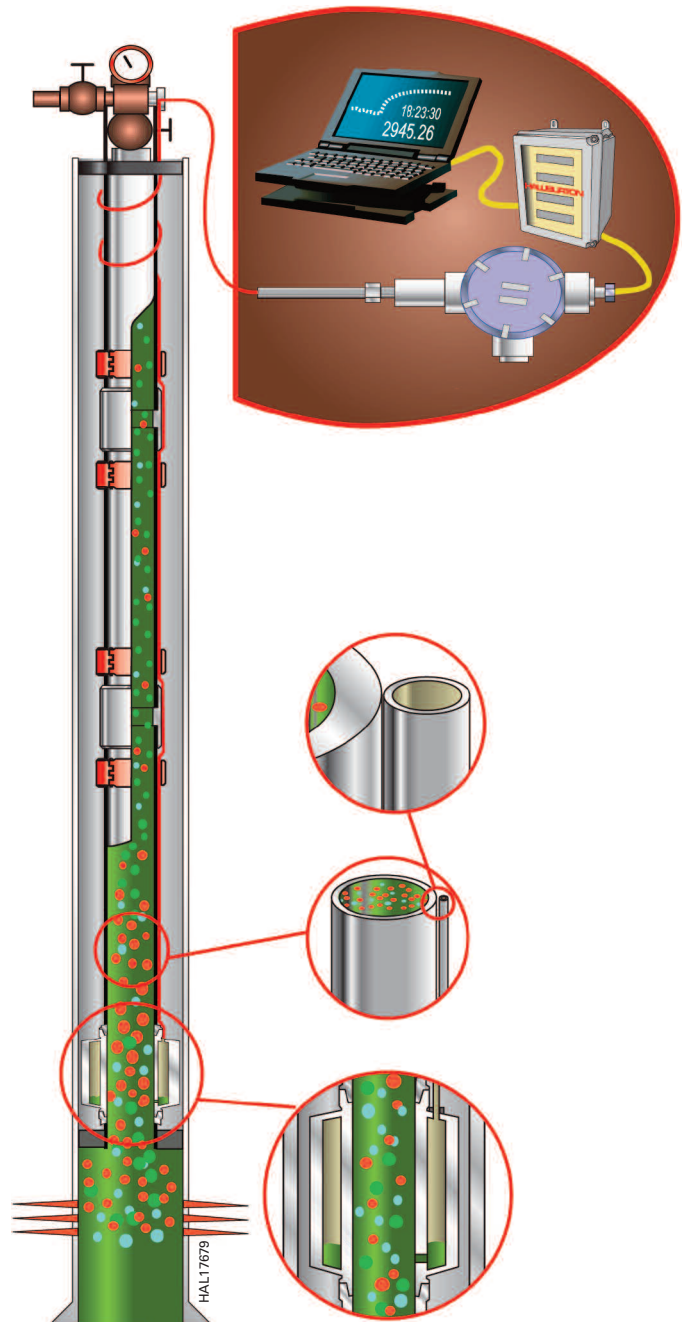
- Check system accuracy without well intervention
- Interchange pressure acquisition systems on user needs
- Minimize drift and accuracy problems by calibrating pressure transducer at any time
- Validate system function through a series of chamber checks and purge techniques
- Run pressure system in conjunction with distributed temperature systems
- Run system as retrievable, permanent or semi-permanent

How the EZ-Gauge system works

The EZ-Gauge system utilizes a small diameter capillary tubing line connected to a downhole pressure chamber. The pressure chamber is placed downhole as an integral part of the completion or run on coiled tubing or spooled in the hole similar to slickline. A pressure transducer is attached to the capillary tubing at surface. The system is purged with a light, inert gas, usually helium.

Once the EZ-Gauge system is installed, the pressure at surface is corrected for the additional hydrostatic pressure of the helium gas column in the capillary tube. The hydrostatic correction includes an iterative process to calculate the helium density as a function of the entire well temperature and pressure.

This provides an accurate means of measuring downhole pressures without the inherent difficulties experienced when using downhole electronics.



EZ-Gauge components

Downhole Chamber and Sensing Point

The downhole chamber and sensing point can be installed in a number of different ways.

- The chamber and capillary tubing can be installed permanently by incorporating them into the casing and cementing into the well. Temporary darts isolate the chamber while the casing is run and cemented in place.
- The downhole chamber can be built into the production string and can be placed above or below packer arrangements for monitoring annulus or tubing pressure.
- For short-term applications, the chamber is attached to the end of a capillary tube that can be run in the well in a manner similar to wireline. The chamber is sized based on the operating pressure and temperature of the well, the depth of the well, and the size of capillary tubing used.

Capillary Tube

The capillary tube size and type is determined by well pressures and conditions. Various tube sizes react differently depending on pressure range and changes.

Surface Instrumentation

The available surface instrumentation ranges from basic pressure readouts to advanced data acquisition devices with memory and real-time telemetry capabilities. The EZ-Gauge system can be used with something as simple as a dial gauge for general pressure display, or as advanced as a high accuracy quartz transducer system that stores and/or transmits data to a central storage and monitoring point.

**For more information on the EZ-Gauge system,
please call your local Halliburton representative or e-mail us at welldynamics@halliburton.com.**

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