

WellWatcher BriteBlue

Multimode DTS fiber

APPLICATIONS

- Measures distributed temperature in production and injection wells
- Monitors reservoir flow contributions and decline
- Monitors production rate to allow easy control of drawdown
- Optimizes gas lift and monitors tubing integrity

BENEFITS

- Enhanced production management and recovery through improved reservoir surveillance
- Reduced downtime and greater productivity because of permanent real-time in-well monitoring and faster, more precise identification of production problems
- Cost savings as a result of greater operating efficiency, less downtime, and increased production
- Events monitored as they occur

FEATURES

- Fit-for-purpose fiber-optic monitoring solution
- Negligible loss characteristics in a hydrogen environment
- Rugged construction and greater operational reliability

WellWatcher BriteBlue* multimode DTS fiber is a permanent in-well reservoir monitoring system that improves recovery through enhanced reservoir surveillance. The fiber can be used for sensing only or for high-speed communication between a downhole sensor and a surface unit.

The WellWatcher BriteBlue fiber design uses distributed temperature sensing (DTS) fiber-optic technology, which allows downhole distributed temperature profiles to be monitored at the surface in real time. At the surface, the data can be transmitted to multiple remote locations via satellite, Internet, and cable communications, allowing operators to immediately identify the time, location, and reasons for changes in flow, all inferred from the temperature profile.

Traditional fiber rating system

Traditionally, DTS fibers have been rated on the basis of the maximum temperature at which they could survive. This system, however, does not take into account the effect of hydrogen concentration on fiber life at high temperatures.

Schlumberger fiber rating system

Schlumberger undertook a 3-year fiber-optic study at its test facility in Lawrence, Kansas, to determine the effect of hydrogen on fiber life. The accelerated testing was conducted in a pure-hydrogen pressure environment at high temperatures. Because of the fiber degradation observed, Schlumberger re-evaluated its method of characterizing fibers used for permanent monitoring. Rather than maximum physical limit only, optimal fiber life is also included, with temperature and hydrogen concentration being the key factors.

For maximum DTS life, the longest-life optical fiber offered by Schlumberger is the WellWatcher BriteBlue HT* high-temperature multimode DTS fiber. At lower temperatures, at which hydrogen degradation is less aggressive, the standard WellWatcher BriteBlue fiber can be used.

- WellWatcher BriteBlue HT fiber applications: 175 degC to 300 degC [347 degF to 572 degF]
- WellWatcher BriteBlue fiber applications: <175 degC [<347 degF].



Schlumberger offers multiple means of deploying a fiber into a wellbore, including fiber pumping, fiber-optic cable, and hybrid optoelectric cable. Shown is the deployment beam used for fiber pumping.

WellWatcher BriteBlue Multimode DTS Fiber Specifications

Fiber type	Graded index multimode
Max. operating temperature, degC [degF]	175 [347]
Fiber coating material	Carbon polyimide
Overall fiber diameter, um	155 ±1
Fiber core diameter, um	50 ±1