



GENERAL DESCRIPTION

Combining mono-crystal micro sensing elements with corrosion and HPHT resistant protective casing that can fit in the palm of your hand, OpenField™ sensors are unique in making microchip technology work in the harshest environments, giving well operators superior data on downhole pressure and temperature.

NOVEL DEPLOYMENT OPPORTUNITIES

Boasting a miniature 8mm proprietary Pressure and Temperature Recorder in a Titanium shell, the SmartBall provides all the data acquisition features of an OpenField™ recorder in a packaging that can flow in pipes. The SmartBall records downhole information during critical operations and can be released from the bottom of a well, and will find its way to the well-head while acquiring data along the way.

THE BENEFITS OF MINIATURIZED TECHNOLOGY

The small size of our revolutionary pressure and temperature gauges offers key advantages to well operators, including easy and innovative deployment options, immediate responses to changing conditions, and low power consumption for several months of downhole monitoring. All of this with data quality superior even to Quartz technology.

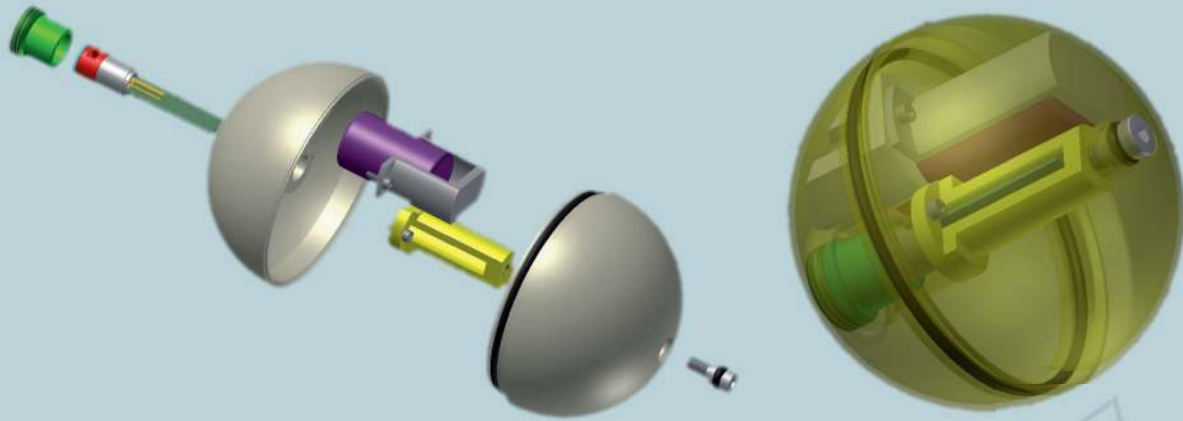
FEATURES

OD	From 50.8mm (2")
Equivalent density	From 0.6 to 1.2
Battery	1 half-AA lithium battery
Memory	1.4 million data points (Time, Pressure, Temperature) 2.8 million in option
Pressure range	5 to 15 kPsi
Temperature range	125 °C (257°F)
Pressure Accuracy	+/-0.01% FS
Pressure Resolution	0.00005% FS
Temperature Resolution	1 mK at 1 Hz
Measurement period	From 128Hz to 1 data every 64sec
Deployment	Time or Event related release from well completion carrier or downhole tool.
Interface	Plug and Play USB for programming and data acquisition

APPLICATIONS

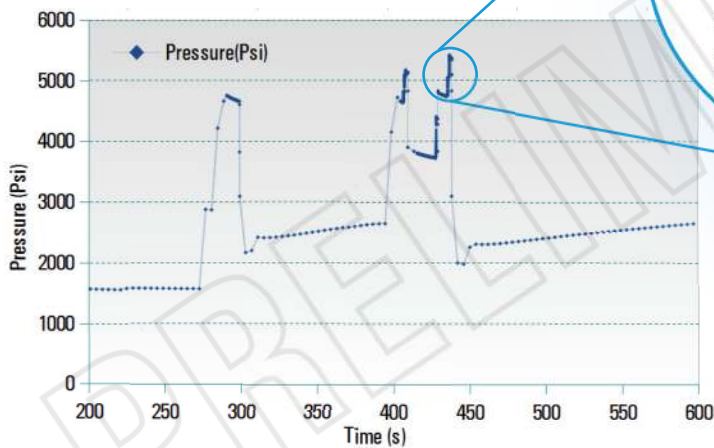
- Multi-stage Frac Monitoring in horizontal wells
- Production logging
- Well monitoring
- Flow assurance
- Gradient logging
- Reservoir evaluation
- Water injection monitoring

HIGH ACCURACY - HIGH RESOLUTION
MEMS MICRO-RECORDER FOR PRESSURE AND TEMPERATURE

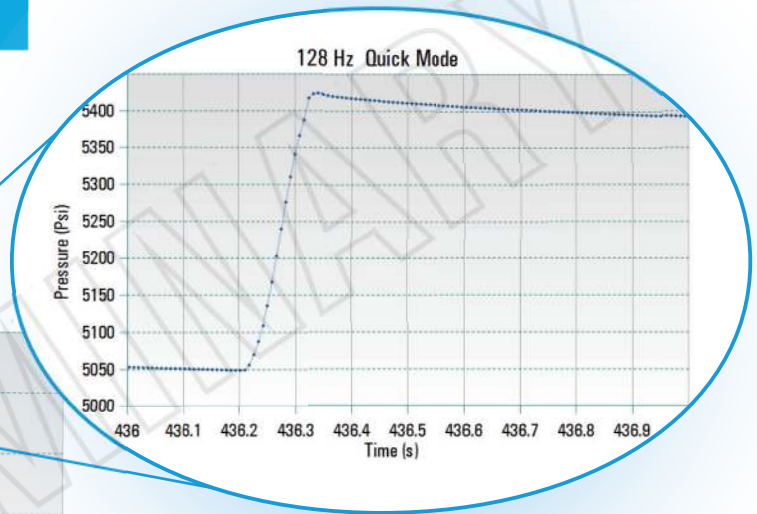


RECORDING MODES

Fracture formation monitoring is made easy with automatic transitions between 'quick' and 'slow' modes according to user-defined criterion. Quick mode measurement frequency can be set between 1 and 128 Hz and slow mode acquisition rate between 1 and 64 seconds.



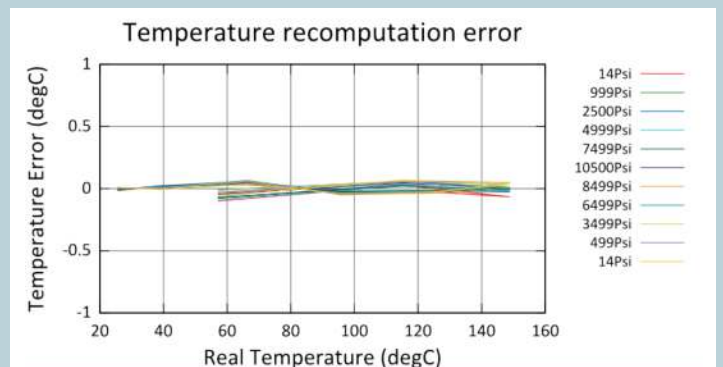
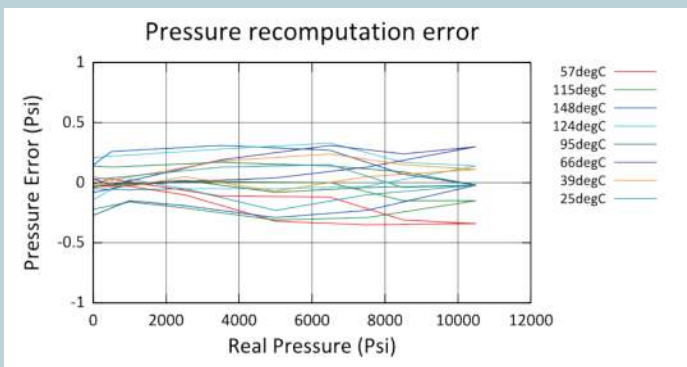
2a Data from a frac job with build-ups. 'Quick mode' threshold set at 3000 Psi.



The transition back to 'slow mode' is triggered according to user-defined criterion :

- Low pressure variation rate
- Absolute pressure threshold
- Fixed elapsed time

METROLOGY



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