MultiSense 2.0 dynamics mapping system

Deliver more efficient and consistent drilling performance

The **MultiSense™ 2.0 dynamics mapping system** contains advanced sensing technology to deliver continuous high frequency dynamics measurements. The MultiSense 2.0 system provides a digital drilling record, that can be combined with the **Drilling Insights platform** to create a detailed post-well analysis. The combination of high-quality data and Drilling Insights analysis services will maximize drilling performance and minimize cost-per-foot and non-productive time (NPT) for multiple well applications.

Multiple measurements, one module

The MultiSense 2.0 digital in-bit sensing module is RPM activated and is designed for drill bit applications and multiple placements along the drill string for 5 7/8-in. (149.23 mm) hole size and larger. The module is self-contained and self-activated with multiple sets of synchronized accelerometers strategically offset to provide detailed data for lateral acceleration, axial acceleration, tangential acceleration, true high-frequency torsional oscillation (HFTO) up to 1kHz bandwidth, stick/slip, shock, and revolutions per minute (RPM). This configuration separates operating parameters from drilling vibrations to provide in-depth analysis of both on-bottom and off-bottom activities. Additional technologies include gyroscope, magnetometer, temperature, and a real-time clock.

Easy to use

The MultiSense 2.0 module is self-contained and self-activated making it easy to use. No field representative is required for initial start-up. Just connect the bit with the pre-installed module to the bottomhole assembly (BHA) and run in the hole. The non-invasive side mount installation provides at-the-bit dynamic measurements with no additional BHA length above bit. The module has an external dump port for rig site access to the data and eliminates the need to transport the bit to repair facility to download the data. At the conclusion of the run, a Baker Hughes field representative can download the data immediately after the bit is pulled out of the hole.

Maximize drilling efficiency

The high-density data from MultiSense 2.0 enables you to understand downhole dysfunctions that aid in

Applications

- Single and multiple wells
- Addressing drilling vibrations
- Identifying performance limiters
- Root cause and failure analysis
- Benchmarking and building parameter roadmaps

Benefits

- Rig site access to data
- At-the-bit dynamic measurements
- No additional BHA length above bit
- Reduced non-productive time
- High drilling efficiency
- Consistent and predictable drilling performance

the fine-tuning of bit design and operational parameters to deliver more efficient and consistent drilling performance.

The MultiSense data seamlessly integrates into the Drilling Insights platform to allow you to plan, and execute a single well, multiple wells, or an entire field campaign using actionable insights based on structured data. The Drilling Insights service uses our cloud based digital ecosystem that combines relevant surface drilling parameters with the high frequency in-bit dynamics data.

Contact your Baker Hughes representative to learn how the MultiSense 2.0 dynamics mapping system can help deliver more efficient and consistent drilling performance in your wells.

Module specifications

Sizes	US units	SI units
Bit size range	$5^{7}/_{8}$-in. to $17^{1}/_{2}$-in.	149.2 mm to 444.5 mm
Individual tool length / placements	No additional outer connection, module incorporated inside drill bit shank	
ID restriction	None	
Power	Lithium batteries	
Operating specs and limits	**US units**	**SI units**
Maximum operating temperature	-4° to 302°F	-20° to 150°C
Maximum hydrostatic pressure	15,000 psi	1034 bar
Flow rate range	Same as drill bit	
LCM	Same as drill bit	
Pressure drop	Same as drill bit	
Activation	20 rpm	
Data acquisition and processing		
Sample rate	> 1 kHz	
Interval between statistical records	< 1 second	
Typical continuous high-frequency burst storage	Configurable 250 Hz to 2 kHz	
Run time	200 hours maximum	

Sensor specifications

Vibration		
Measurement	3 triaxial accelerometers	
Vibration range	-40g to +40g	
Shock range	-200g to +200g	
Downhole RPM		
Measurement	Gyro and accelerometer based	
Range	0 to 665+ rpm	
Temperature		
Range	-4 to 302°F (-20 to 150°C)	
Resolution	0.9°F	0.5°C

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