Schlumberger

MS Recon

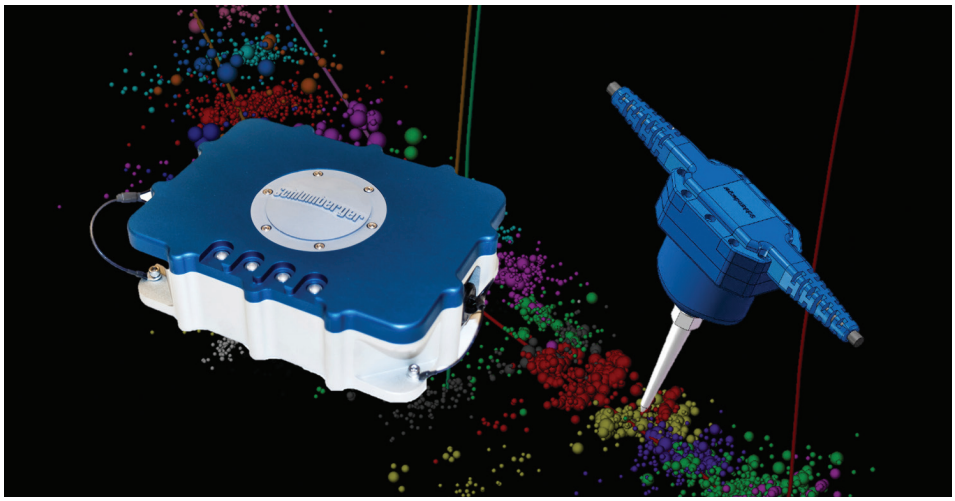
High-fidelity microseismic surface acquisition system

APPLICATIONS

- Surface microseismic operations
- Shallow hole grid microseismic operations
- Ambient noise assessment surveys

ADVANTAGES

- Improved signal quality helps detect smaller magnitude microseismic events
- Wireless nodal provides greater flexibility in deployment and survey design
- Onsite preprocessing and transmission enables real-time operations



The microseismic system features the industry-first proprietary Geophone Accelerometer and ultra-low-noise electronics to produce the widest range of signal detection. The nodal-based wireless acquisition system provides customers increased flexibility in designing and deploying surface and near-surface arrays.

The MS Recon* high-fidelity microseismic surface acquisition system sets a new standard for high-fidelity microseismic signal recording for surface or shallow-well monitoring configurations. This new "fit-for-microseismic" system provides better imaging of hydraulic fracture geometry by optimizing microseismic signal quality.

The system features the proprietary Geophone Accelerometer (GAC) with flat acceleration domain, coupled with ultra-low-noise electronics that enable detection of the smallest micro-seismic events. Wireless waveform transmission streamlines data management, acquisition QC, and processing for the fastest possible evaluation of hydraulic fracture geometry.

The proven GAC sensor has an optimized low-noise input circuitry design for acceleration domain measurement and extended low-frequency response. A dual parallel GAC configuration further improves sensitivity by 6 dB with up to 3 dB lower noise. A compact package of signal conditioning electronics is ideally suited for point-sensor-based recording, in which each sensor is recorded on an individual data channel. Consequently, each sensor can be individually tested for performance and self-corrected. GPS-synchronized data are acquired continuously and transmitted to an onsite operating system by a 2.4 Ghz (or 900 Mhz) WiFi and a 5.8 Ghz backbone. Real-time operations are facilitated by onsite preprocessing, including noise-reduction filtering, digital-beam forming, and event detection. All essential data are transmitted to a Schlumberger data center for processing and interpretation and delivery to customers wherever decisions need to be made.

Key Specifications	
Sensitivity	2.4 V/m/s2, @3-200 Hz (full scale: 1.0 m/s2 and 0.5 m/s2 at 0 dB and 6 dB gain)
Noise power density	<70 nm/s2 Hz1/2 (3-100 Hz), <200 nm/s2 Hz1/2 (1-400 Hz)
Sampling intervals	0.25 ms, 0.5 ms, 1 ms, 2 ms
Array size	Scalable up to 40,000 channels
Wireless transmission range	2-3 Mbit over 3 km (2.4 GHz 400 mW; FCC max), 5 Mbit on 5 MHz Mesh network
Batteries	Booster unit 12 V, hot swappable, solar panel support
Operating temperature	-40 degC to 75 degC

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