




LEADING THE INDUSTRY IN PERFORMANCE, EFFICIENCY AND RELIABILITY

The FUSION DT (dual telemetry) system is a configuration of the FUSION EM (electromagnetic) and FUSION RP (rotary pulse) data transmission systems. The FUSION DT system provides operators with the proven benefits of the individual EM and RP systems as well as additional benefits that arise when these systems are operated in tandem.

- The advanced talk down capabilities (from surface) of the FUSION MWD technology platform enables the operating mode of the system to be quickly changed from its baseline EM setting to dual transmission mode in which EM and rotary pulse are both operating. This allows the system to be “toggled on-the-fly” to the desired mode through specific legs of the well.
- In dual telemetry mode, geological parameters such as gamma and resistivity can be sent using one transmission method while positional data such as tool face and location can be sent using the alternate signal — a feature available with Fusion DT that many systems do not support.

WHY CHOOSE FUSION DT?

-  Reduce NPT with the redundancy of two transmission systems
-  Realize rig time-savings by eliminating survey wait times in EM mode
-  Support fast drilling with LWD through concurrent data transmission

BENEFITS

In addition to the time and cost savings realized through the FUSION EM system on its own, the dual telemetry offering provides additional benefits through the combined EM and RP configuration:

- **Eliminates trips for MWD failures** in tough drilling sections by providing transmission system redundancy.
- **Generates rig time-savings** by operating in EM mode through the majority of the wellbore while having on-the-fly capability to transmit with rotary pulse through specific challenging well segments.
- **Increases data transmission capacity** and shortens total transmission time when EM and pulse systems are used concurrently to transmit data.
- **Provides consistent steering data** since the directional and gamma ray survey points are common and at the same distance from bit for pulse and EM systems (versus piggyback applications in which the survey point for one transmission system is further up the drill string).

APPLICATIONS

- Operators who want to exploit the time saving benefits of EM, but have concerns about depth limitations or higher impedance formations that can inhibit EM transmissions.
- Tight surface spacing or re-entry programs where tool face control and the ability to steer out of casing is required while gap sub is still in casing.
- Programs with high rig density where interference with EM detection is a possibility and/or the opportunity to run extended EM ground lines is limited.
- Drilling in areas where conditions may vary (or are known to vary).

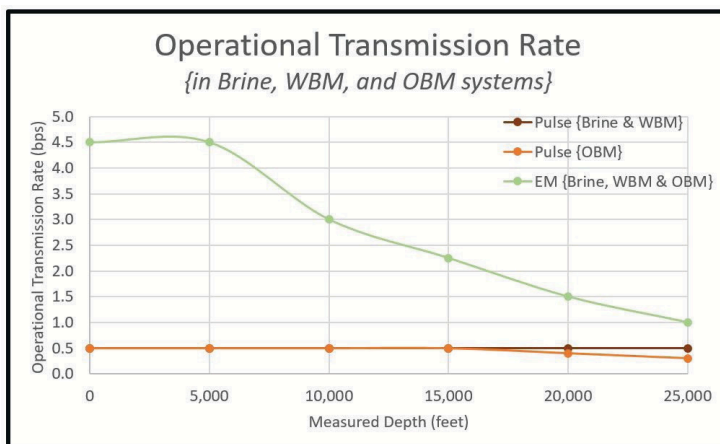
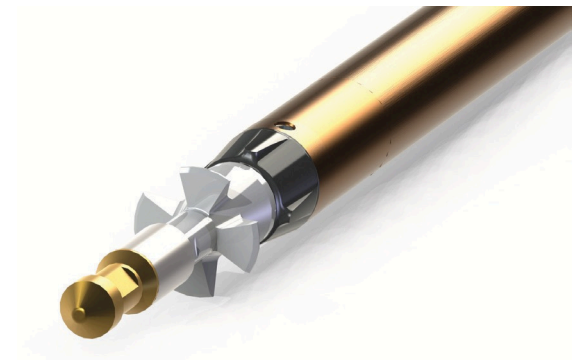
FUSION EM

Operating Parameter	Range
Telemetry Power Source	Electric Dipole Transmission
Transmission Speed	Long life "DD" Lithium Batteries
Transmission Frequencies	Up to 7.5 bps
Transmission Depth Collar	2 to 9 Hz
Size: - Standard - Slimhole	Runs in excess of 16,404' (5,000m)
- Microslim Max Operating	
Temperature Max	4.75-9.50" (121 to 241mm)
Hydrostatic Pressure Mud	3.50" (89mm)
Weight LCM Tolerance	3.125" (79mm)
	300 °F (150 °C)
	20,000 psi (135,000 kPa)
	No Restrictions
	No Limit



FUSION RP

Operating Parameter	Range
Telemetry Power Source	Electric Dipole Transmission
Transmission Speed	Long life "DD" Lithium Batteries
Transmission Frequencies	Up to 7.5 bps
Transmission Depth Collar	2 to 9 Hz
Size: - Standard - Slimhole	Runs in excess of 16,404' (5,000m)
- Microslim Max Operating	
Temperature Max	4.75-9.50" (121 to 241mm)
Hydrostatic Pressure Mud	3.50" (89mm)
Weight LCM Tolerance	3.125" (79mm)
	300 °F (150 °C)
	20,000 psi (135,000 kPa)
	No Restrictions
	No Limit



DUAL TELEMETRY SYSTEM
CAPABLE OF GENERATING
STRONGER SIGNALS FROM
GREATER DEPTHS WHILE
PROVIDING TRANSMISSION
REDUNDANCY

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