

# TrueMud™

## Dynamic Shearing / Mixing + Heating Technology

- TrueMud is a low pressure, patent pending, dynamic shear mixing + heating technology that improves ROP with more effective control of ECD especially when drilling narrow mud weight, pressure sensitive formations
- TrueMud Dynamic Shear completely activates drilling mud chemistries by better hydrating polymers and making stronger emulsions
- Excellent hole cleaning and suspension without “over treating” chemical additives
- Hydrates shear sensitive polymers without “fisheyes” and without degradation
- In HTHP testing - cuts filtrate losses in half and the water in the filtrate by an order of magnitude

### Proven Shear Mixing with TrueMud Technology

- Over 100,000 bbls reliably mixed for critical offshore jobs
  - Out-performed rotor/stator shear mixing
  - Safer mixing at only 80 PSI max pressure compared to 1500+ psi shear mixing
- Fully developed, known rheology without multiple trips through the bit
- Increases Yield Point by 2x without increasing plastic viscosity
- Stable, consistent mud - requires less intervention
- Enhanced performance of Solids Control Equipment with 120°F or greater exit temperatures
- Saves on chemical loading costs

### Dynamic Shear Mixing Makes Better Mud!

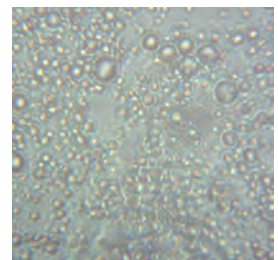
Test Temp. °F	Before Shear		After Shear Dynamic	
	Ambient	@120°F	Ambient	@120°F
<b>14.1 PPG New Mud</b>				
Electric Stability, ES	326		816	
Plastic Viscosity, PV	35	30	48	28
Yield Point, YP	11	4	22	13
Gels	5/7/7	4/5/5	15/17/19	9/10/10
<b>11.7 PPG Mud</b>				
Electric Stability, ES		163		316
Plastic Viscosity, PV	38	26	37	28
Yield Point, YP	27	12	34	22



### Improved Electrical Stability & Rheology Oil/Water/Surfactant Emulsion Magnified to 1000X

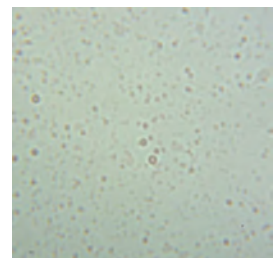
#### Conventional Mixing w/o Shear

- Not a completely homogenous blend
- Potential for early separation in static fluids
- You can't predict performance until it goes through the bit at least one time!



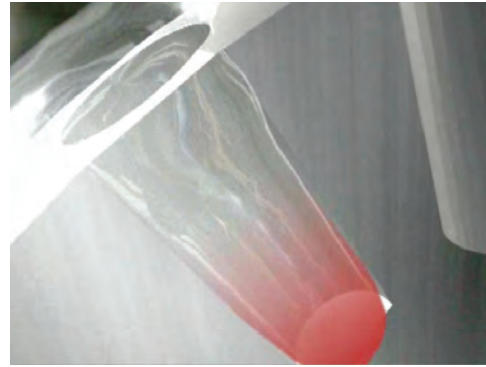
#### TrueMud Dynamic Shear + Heat

- Up to 3x the measured electrical stability
- Prevents separation in static fluids
- TrueMud Properties and Stability without a trip through the bit!



## TrueMud Dynamic Shear Mixing + Heating

- Patent pending, yet proven technology
- Centrifugal force from a spinning disc creates controlled cavitation inside of closed-end boreholes
- Cavitation bubbles create dynamic shear and heating within the fluid
- Reliable, low maintenance, oilfield-tough, low pressure device
- Multiple power options, diesel or electric drives
- Shear results from cavitation bubbles in the fluid - not by mechanical means
- Flameless, scale-free heating up to 300°F



## TrueMud Shear Mixer Configurations



TrueMud Shear Mixer  
"Drop-In" Unit on a 8  
by 10 Foot Skid.



TrueMud Shear Mixer "Self-Contained" in a 20' Box on Location



Laboratory Size TrueMud Shear Mixer

**TrueMud™**  
Dynamic Mixing / Shearing / Heating Technology  
Makes Better Mud

For more information:



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