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| Tech Forum: Preparation, Operation and Maintenance of Mud



Systems

BY TERRY FLYNN ON OCTOBER 25, 2018

DIRECTIONAL DRILLING, HORIZONTAL DIRECTIONAL DRILLING, NEW INSTALLATION, TECH FORUM

Proper preparation, operation, and maintenance of your mud recycling system can not only extend the performance and life of your recycler, but can also extend the performance and life of other equipment such as the drill rig, drill pipe, mud motors, hoses, and mud pump expendables.

Clean mud is critical to all aspects of your project success and equipment life. Here are some maintenance tips to keep in mind for the health of your recycling system.

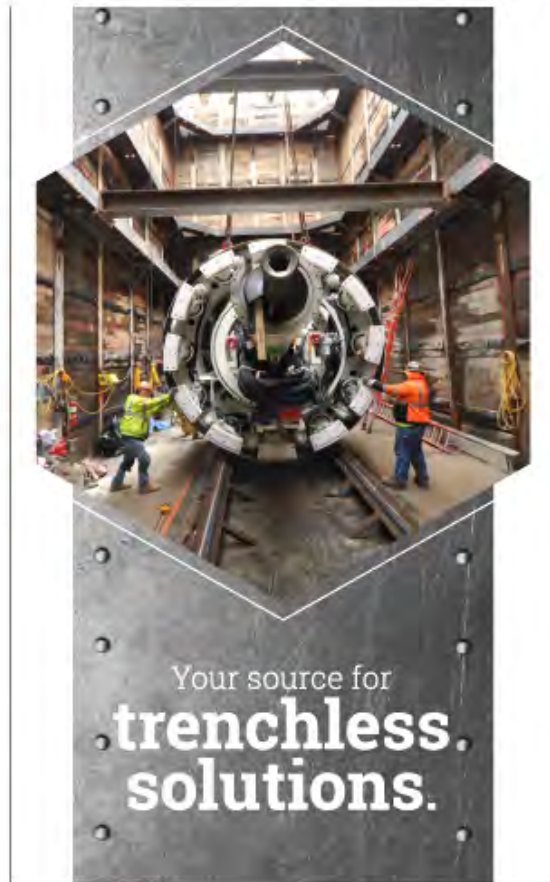


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When preparing your recycler to transport to a new job, ensure your shakers are locked down tightly to avoid damage to your isolation points due to shaker movement during transport. All mud tanks should be emptied of fluids and solids to avoid any excess weight issues. Leave the tank dump gates open during transport to avoid collection of rain water in the tanks. Secure all loose items, fold up walkways and lock them into place for transport.



When you arrive at the jobsite, set up the system on level ground and level additionally if needed. Complete a visual inspection of the system, including but not limited to: check all fluids in engines, ensure the sealing surfaces of screens are in good shape, and inspect the tank bottom for debris before filling the tanks. On airbag equipped models, ensure the bags are in good shape and inflated to the recommended PSI. Grease lubrication fittings per the manufacturer's recommendations.

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When setting up your spoils/pit pump, we recommend that you dig a deep enough returns pit so that you can suspend the pump off the bottom of the pit to keep it out of concentrated thick solids and large stones, but ensuring the pump is submerged for cooling purposes. You also want to keep your hose length within reasonable length to avoid excess friction loss of flow. We recommend a maximum of 100' of hose run connecting the pit pump to the recycler.

After filling the tank with fresh water, test for PH levels and adjust as necessary. Add your bentonite and any additives slowly to properly shear the mud and to avoid clumping.

You'll want to keep an adequate supply of normal expendables on hand to avoid any downtime. We suggest that you keep a supply of various mesh screens on hand to adjust as necessary throughout your bore. Proper operation includes changing screen mesh sizes as needed as you go through various soils as you bore. The correct screen mesh at surface may not be the correct mesh at any point downhole. You should run as fine a screen mesh as the conditions will allow. When your fluid is being processed on the screens, liquid should be approximately three quarters of the way down the shaker, and dry cuttings coming off the end and down the discharge chutes. Maintain your screens and look for damaged areas, and periodically rinse the screens. If a screen becomes damaged, you must replace it as soon as possible to ensure cleanliness of the mud. Damage to components such as valves, seats, pistons, and liners can happen very quickly if you're pumping dirty mud.

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Mesh selection and periodic rinsing will help avoid blinding or plugging the screen mesh. If your screen become blinded, you can pressure wash the screens from the back side to unblind the mesh. Adjust your shaker deck angles as needed to keep a dry cutting discharge.



You will also want to watch to ensure your hydrocyclones are discharging solids. If not, they could be plugged requiring disassembly to clean. Be sure to have your workers kick their boots clean on the bottom stairs to avoid any rock or other tank contamination coming from the bottom of their boots. This is one of the most common reasons how a cone gets plugged.

The condition of your centrifugal pumps can be found by checking your cone manifold pressures. Correct pressures should range between 28 PSI and 32 PSI. Pressures below that can be an indication of excessively worn pump impellers, and should prompt further diagnosis.

In cold weather areas, you will want to ensure that you properly winterize the system when not in use, including draining the centrifugal pumps, to avoid the rupture of components due to freezing liquid. This damage can be very costly in repair parts and down time, so proper winterization is crucial in cold weather.

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Mud system operation is not a “set it and forget it” process. Mud weight and viscosity should be regularly checked using a sand content kit, viscosity cup and funnel, and mud scales. Care should be taken to observe these various points during the operation of your recycler, to ensure you are getting the cleanest fluid possible.

Terry Flynn is vice president of sales and marketing at Tulsa Rig Iron.

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