

Benefits of Mud Cleaning and Recirculation Equipment

Mud Mizzer, 60, 100, 150, and 250 GPM Units

Customer Profile: Who should use a cleaning system?

- Any Directional Drilling contractor using boring machines with pumping capacities of 25 GPM or larger regardless of soil type or conditions
- Contractors typically making bores larger than 6-1/2" Diameter and more than 200 feet long
- Contractors utilizing mud motors in rock drilling applications
- Contractors working in areas where mud disposal is expensive or restrictive

Economic Benefits

The industry wide cost to mix a gallon of mud (2 bags per 300 gal) is \$.08 to \$.12/gal. Thus each gallon of mud cleaned and reused will save the average operator \$.10.

- **Example:** Assume a cost of 10 cents per gallon and pumping at a rate of 25 GPM.
 - At 25 GPM X 60 Min per hour X .10 cents/gallon = the mud cost savings while recirculating is \$150 per hour of pump operation
 - The same assumptions at 100 GPM yields a savings of \$600 per hour

Note: The above example of savings does not include the equipment and disposal cost of the used mud if it is not cleaned and reused.

Technical Benefits

- Minimize Frac outs by allowing the use of higher volumes of fluid to clean the annulus of solids, which results in lower down hole pressure. This pressure will cause fluid to migrate to lower pressure areas causing loss of fluid, or Frac outs.
- Pumping higher volumes of fluid also provides an adequate presence of bentonite to repair filter cake as it is being scarred by rotating drill pipe. Keeping the filter cake in good shape will reduce chances of formation swelling while drilling in clay or shale thus reducing the chances of getting stuck.
- Clean mud significantly reduces repair costs to mud pump, mud motor and circulation system components.
- Mud Mizzer (MM) advantages over competitive units
- Removes solids as small as 10 to 15 microns. Competitive units only remove down to 80 to 100 microns (sand is 73 microns).
- Compact and lightweight.
- Designed and built specifically for the HDD user
- Mini Vac mud suction system moves the solids contaminated mud from the pit to the shale shaker. This suction system frequently avoids the necessity for centrifugal transfer pumps found on competitive units.
- "Quick Clean" Mud mixing Nozzle. No tools required, cleans in 30 seconds
- For safety and field repairability reasons, no electrical driven equipment is used on the Mud Mizzer.
- The shale shaker is variable speed. This allows for vibratory frequency adjustment based on cuttings type and site conditions. Other units offer single speed shakers only.
- Does not require a full time dedicated operator. The unit is monitored for proper operation by the boring machine operator.

Unit Sizing

Unit sizing is influenced by two factors. First, the pumping capacity, in GPM, of the pump moving fluid and second, the type of cuttings being removed from the bore. If the cuttings are inert, such as sand or rock cuttings, the unit should be sized just a little larger than the pump capacity. For example, a Mud Mizzer 150 (GPM) unit would be used on a boring machine having a 135 GPM pump.

If a high cuttings volume is expected, such as with fast boring in soft formation, the next size larger unit may be considered. Follow operational tips as outlined in the "Tips and Tricks manual", which is provided with each Mud Mizzer.

The Impact of 1/4% Sand

Assume a pumping rate of 100 GPM and a pumping time of 60 minutes. A sand content of 1/4% or .0025% will allow, $[100 \times 60 \times 1/4\%] = 15$ gallons of sand to be pumped through the pressure pump per hour of operation. This is why the Mud Mizzer is designed to clean mud to essentially zero percent sand content and further remove solids down to the 10 to 15 micron range. Clean mud saves you money! The Mud Mizzer is the only cleaning system with the ability to clean to this level.