



Case Study

Testing Confirms 90% Solids-Handling

Swaco, Corpus Christi, Texas

The Challenge

Can Disc Pump handle over 50% solids by volume

Can Disc Pump handle solids over 2-inch in size

Can Disc Pump handle oil-based cuttings

The Discflo Solution

Test showed Disc Pump handles up to 90% sand by volume

Test showed Model 403-14-2D pumps 2-inch solids (larger models can pump larger sizes)

Disc Pump “works very well” in handling oil-based cuttings



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Independent testing by Swaco and MB Energy Services has confirmed that Discflo's Disc Pump can handle solids concentrations up to 90% by volume. The results also showed that Disc Pump technology works very well in handling oil-based cuttings, pumping this high-solids, abrasive fluid with ease.

The first test was carried out in May 2000 at the Corpus Christi facilities of Swaco, part of M-I Swaco, a world leader in solids control equipment, waste management services, and separation and screening products for the petroleum and industrial markets. It was designed to test the pump's solid handling ability, specifically to find out whether it could pass 2-inch solids and fluids with 50% minimum solids by volume.

The Disc Pump under investigation was a Discflo Model 403-14-2D horizontal end-suction unit with back pull-out design. In the initial set-up, a 10HP 1760 rpm electric motor was used. The pump was connected to a mud tank by two 15ft long hoses, a 4-inch hose for the suction and 3-inch hose for the discharge. On the discharge side, the hose was connected to a 2-inch pipe and a ball valve before entering the mud tank.

At the start of the test, 9lb/gallon water-based mud was added to the mud tank. After the pump was started, material containing varying solids sizes were added to the tank until the pump was no longer able to pump. The following results were obtained:

1. Add one bag of pebbles. Pebble size is about ¼-inch to ½-inch. Pump ran for one minute, no problems were detected.
2. Add second bag of pebbles. Pump ran for about 5 minutes, no problems.
3. Add half bag of red volcanic rock. Rock size between ¾-inch and 2-inch. Pump handles volcanic rocks in the beginning. As more rocks were added, flow slowed down and then stopped but the pump was still running.

The next day, Swaco tested the maximum solid content the pump can handle. Play sand was added to the mud tank. Each bag weighs 50 lbs and has a volume of ½ cubic ft. A funnel test was run before the test started to determine the solids level.

See next page . . .

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Flow stopped after 20 bags of sand had been added to the tank. At this point, the mud weight was 12.6 lb/gallon. Solid content calculation showed that at 20 bags of sand, the solid content was around 91% by volume. Swaco gave the Disc Pump full marks for passing the solids size and solids content handling tests: "All the goals set before the test were achieved."

The next step was to move the pump to MB Energy Services, an environmental services company also based in Texas, to test its handling of oil-based cuttings. The Discflo pump test was carried out in two stages. In the first stage, the pump was connected to a cutting trough and oil-based cuttings were circulated in and out of the trough. While in the second stage of the test, the pump was hooked up to a drier.

Swaco's Sam Hu published these conclusions in June 2000 following the final phase of testing:

"Three goals were set before the test: a) cutting solid content should be above 50%; b) pump should be able to pass 2-inch size solids; c) pump able to transfer oil-based cuttings. The test done at Corpus Christie shows that the first two goals were met: a) the pump can pump pump cuttings with solid content up to 90%; b) 2-inch size solids can pass through the pump. The test at MB Energy shows that the pump can pump oil-based cuttings very well."

Call Discflo now to find out how our pumps can solve your problems.



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